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# ***Mythology to History Through Astronomy***

V. S. S. MANI,  
JANTHOMÉ, MAURAS

SEMINAR PAPERS



# ***Mythology to History Through Astronomy***

SEMINAR PAPERS

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## *Preface*

**T**he Seminar on Astronomy as aid to History was conducted in February, 1979, under the auspices of the Ethiraj College and Varalatra Peravai. Important papers presented at the Seminar dealt with such themes as "The Cradle of Man", "Tamil History 8,000 years ago", "Hanumanta's Journey from Kishkinda to Lanka", the "Date of Birth of Sri Krishna and Sri Rama", "Date of Mahabharatha War", "The Almanac of Bharat", "The Equinoxes", "The Sapta Rishi Era", "The Kaliyugadi" and "Kali Eras". These were prepared by Shri V. G. Ramachandran, G. S. Sampath Iyengar, Dr. R. Nagaswamy, Dr. K. R. Hanumanthan and G. S. Seshagiri under the leadership and guidance of Prof. K. Srinivasaraghavan.

These papers were supplemented by others presented at the Seminar by eminent Indologists, ephigraphists and Historians. Mention may be made of "National Method of Indian Historical Research" by Swamy Sakyananda, and "Astronomy as aid to History" by Dr. Nagaswamy, "Indus Script in the Indian Historical Tradition" by Iravatham Mahadevan, "Astronomical Data in the Early Inscriptions of Northern India" by K. G. Krishnan, "Rig Vedic Mythology and Cultural History" by Sunder Raj and "Astronomy: Ancient and Modern" by G. S. Seshagiri. Since all these papers contain valuable information, it was decided by the Seminar Committee to print the same in the form of a book.

Salient features of the previous discussion have been retained. For the benefit of the readers, the Inaugural Speech by Prof. G. R. Damodaran and the Valedictory Speech by Dr. V. C. Kulandaiswamy and Reports of the various committees and the recommendations of the Seminar have been included.

I hope that this volume will be well-received by the public, research scholars and historians. I further hope that these papers will assist the readers to think further on the subject and enable them to proceed on the task of rewriting Ancient Indian History based on additional facts provided by astronomical studies.

I am thankful to all those who have helped me in making the Seminar a success.

*N. Mahalingam*  
Editor-in-Chief.

# Contents

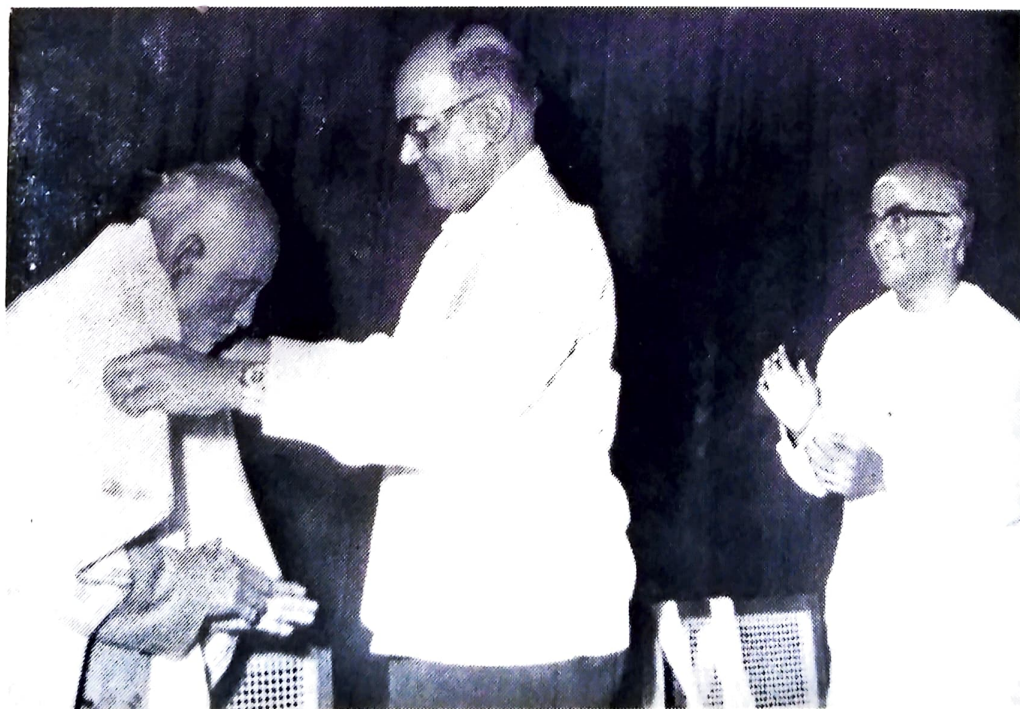
Chapter	Title	Page
	Welcome Address	1
	Inaugural Address	7
I	Fundamental and Vital Aspects—	11
II	The Cradle of Man	26
III	Ancient Heritage of Tamils	40
IV	Astronomical Tools	52
	a. : How to find Thithi and Nakshatra	54
	b. : The method of determining Planetary Combinations	58
	c. : Accuracy of Luni-Solar System	65
V	Puranic, Genealogical and Literary Sources	70
VI	History of Ancient Calendar	88
VII	Historicity of the Epics	92
VIII	Hanumantha's Route to Lanka	101
IX	Date of Birth of Sri Rama	115
X	Date of Birth of Sri Krishna	123
XI	Date of Mahabharatha War	127
XII	Almanac of the Bharat	145



XIII	The Equinoxes	152
XIV	Kaliyugadi Era	158
XV	Sapta Rishi Era	167
XVI	<i>Special Papers</i>	177
	(1) National Method of Research — Swamy Sakhyananda	
	(2) Indus Script — I. Mahadevan	
	(3) Astronomical Data and early Inscriptions — K. G. Krishnan	
	(4) Rig Vedic Mythology and Cultural History — M. Sunderraj	
	(5) Astronomy as Aid to History — Dr. R. Nagaswamy	
	(6) Astronomy : Ancient and Modern — G. S. Seshagiri	
	(7) Kumari Nattu Vana Nool Arignarum Thalaikkazhaka Kalamum — Prof. R. Mathivanan	
XVII	Valedictory Address Dr. V. C. Kulandaiswamy	265
XVIII	Committee Reports Resolutions	273



Sri N. Mahalingam, Chairman Seminar Committee, welcoming the gathering



Prof. G. R. Damodaran, Vice-Chancellor University of Madras honouring Prof K. Srinivasa Ragavan with a Ponnadai while Sri N. Mahalingam is seen applauding



**Prof. G. R. Damodaran and Sri N. Mahalingam engaged in a lively conversation with members of the Committee**



**A view of the audience**

## Welcome

I am indeed very happy to welcome our esteemed Vice-Chancellor and the eminent guests, including our renowned Editor of "*The Mail*", Sri V. P. V. Rajan, who have come to participate in this Seminar. It is very generous of our Vice-Chancellor, not only to have agreed to inaugurate this Conference, but also to have deputed scholars of various departments of the University to participate, not only in the Seminar, but also work along with us during the last 1½ months to make preparations for the same. We are very much beholden to His Holiness Sankaracharya of Kanchipuram for the blessings that he has specially sent to us. We also received blessings and messages from various other people, which will be shortly read by a student of this college.

Indian history has been an old one. Unfortunately, it has not been well established and authenticated with relevant documents till date. While I was a student, Ramayana and Mahabharatha, were taught as a part of history and by the time my sons had gone to school,

these epics were even excluded from the history books. If this is the change that had taken place during the last thirty to forty years, then, the amount of change that would have happened in the last 2,000 to 3,000 years should be a matter for us to explore. It is said that even in the days of Mahabharatha, the pristine purity of the tradition and culture of Bharath had declined. It is for that reason great commentators say that the Mahabharatha war was not fought according to the Kshatriya Dharma. If Mahabharatha's date itself was during period of the decline of that civilisation, (it is more than 3100 B. C. according to Prof. Srinivasa Raghavan ) then, Lord Krishna must have been born nearly 5000 years ago. So, we have yet to explore the greatness and depth of our civilisation as to when it arose, the details of its culture which existed in this country, before 5000 years, and these must be ascertained by undertaking researches in Universities.

For a long time, I have been feeling that many relevant records of our own country, Tamil Nadu, are not available to us. The Tamils had been sailing in big navigable vessels in the Sangam Age and trading with Rome in the West and with Vietnam and China in the East, but our own literary documents and relevant records do not give the exact information. So, it is essential for us to depend upon what is available, namely, the *Ithihasas* and *Puranas* to supplement the other factual evidences that are already available both in North India and in South India in Sanskrit and in Tamil, in modern and ancient languages and on epigraphical evidences available upto 3rd Century A. D. All the other relevant informations can be obtained from alternative sources only, perhaps by delving into the historic past of other countries from China to Rome, along the coast line, which were traversed by our ancient traders and salesmen. The languages and documents of 2000 to 3000 years of

antiquity will have to be ascertained and studied. That is a matter, Mr. Vice-Chancellor, Sir, which the Universities alone can undertake. We, on our part, and the college as a Member of the University, are very proud of sponsoring this Seminar with Dr. R. Nagaswamy of the Archaeological Department. We are only trying to highlight in this Seminar the exact date of birth of Sri Rama, Sri Krishna, the date of Mahabharatha War, the time of Agasthya and the date of Vaivaswatha Manu when the first calendar was drawn, namely Saptha Rishi Era. These are the four or five dates on which we propose to confine the deliberations of the Seminar during the next two days. I will appeal to the Chairmen of the Committees and the delegates who have come to participate here to kindly restrict themselves to fixing these dates.

Mr. Srinivasa Raghavan, a retired Professor of Mathematics from Vivekananda College, Madras, has been doing work in this field for more than twenty-five years and he is able to delve deep into the literatures of the ancient past and the astronomical facts have been made available. He has mathematically calculated from the positions of the planets, the position of the Stars and the Sun. He has calculated backwards and has found that the date of Birth of Lord Krishna comes to about 3100 B. C. and that of Sri Rama comes to about 4400 B. C. and these calculations completely concur with the dates given in Valmiki's *Ramayanam* and Vyasa's *Mahabharatha*. Hence, his view had been that the Great Rishies of our country, Valmiki and Vyasa, when they gave specific informations, did not write from mere imagination. He holds Rama and Krishna as historical personages of the country, whose activities have been made into beautiful poetry by these great sages. Basically, the aim of the Seminar is only to see what exactly were the dates of some of the very eminent citizens of this

country. We are deeply indebted to Prof. K. Srinivasa Raghavan, for the preparation of the basic data and to his student Sri G. S. Seshagiri who had been working a lot on the astronomical data.

Sri G. S. Sampath Iyengar and his able son, Sri Seshagiri, an electronics engineer, are also participating in the Seminar. More than a dozen eminent professors and scholars worked for over two decades to show that the past history, which was considered a mythology, was in fact a reality. Sri V.G. Ramachandran, an eminent lawyer of the Supreme Court of India, and a constitutional expert, at this old age, has been travelling throughout Tamil Nadu and lecturing about the ancient glory of Tamil Nadu which existed 8,000 years ago. I heard his lecture in the N.G.M's College at Pollachi and read his series of articles published in the "The Mail" and only through this I came into contact with him and I was able to get the bug. The Seminar is the result of my meeting Prof. Srinivasa Raghavan and the consequent correspondence I had with the gentlemen of Bangalore. The introduction came through the articles which appeared in the October and November issues of "The Mail" and should thank Mr. Rajan for publishing them. He is the Editor of "The Mail," and a well known senior journalist of our State. Hence, in the last two months, we had a Committee of Experts from various fields, meeting and trying to evolve as to how to project this idea and to see that the findings are examined by experts and the truth well established. In olden days, all the new Tamil works were placed in Sangams and if only they were approved by the Sangam, they were accepted. As there is no Sangam in existence now, I hope the Seminar will take the place of the Sangam. So, in the next two days, nearly forty-five to fifty eminent persons of the various Universities of South India and colleges of Tamil Nadu who have registered themselves

as delegates, will be going in depth into these matters. Ladies and Gentlemen, we are going into an era which has become forgotten.

I read an interesting novel, the *Source*, which dealt with the ancient history of the Jewish race. An American researcher went to Arabia and researched in an interesting way. He has combined the modern research progress and the ancient history as far back as 3000 B. C. Since my reading that book, I have a feeling that we should do some enquiry into our ancient past, of not only the existing land, but also that part of the land in the South of Tamil Nadu called Kumari Kandam which got submerged under the sea. Lot of valuable literature belonging to Tamil Nadu was lost in Kumari Kandam and the information now available is from Sangam literature and *Tholkappiam*. These are the matters which scholars have to establish and I do hope that, esteemed Vice-Chancellor Sir, you will be able to persuade or try to get information from the Satellite Centre of the U.S.A. or Russia about the photographs they have taken about the Indian Ocean and to enable us to see whether the old Lanka of Ravana, between Madagascar and India, or of the land mass existing below. These are the other matters which have to be gone into detail after the Seminar. So, the delegates of the Seminar, as I pointed out, will restrict themselves to fixing the important dates of the past History of India, to establish the history of Bharat as having been evolved even from 8000 B.C. and to say that Tamil Language had a grammatic level of excellence in 6000 B. C. which was the date of Agasthya referred to in the Rig Veda. So these are the matters which are of interest for the scholars and I hope the young ladies gathered here will take interest to delve not only in our modern books but also the Puranas so that they may gather some information regarding our past. In our country, Tamil and Sanskrit are the



two ancient languages which have a holy tradition and vast literature and both are alive and existing and because both the languages are alive and existing, we are able to retrace our hoary past. In addition, astronomical data helps us to check up our past history and without it, we cannot get additional information from the literature of these two great languages, which were called the two eyes of Lord Siva. So, with this, I do hope, in the next two days, the eminent delegates who have come here will concentrate on these problems and help us to revive the past glory of our mother land. I have great pleasure, again, in welcoming the Vice-Chancellor and in requesting him to inaugurate the function.

*N MAHALINGAM*

## Inaugural Address

**I**t gives me great pleasure to inaugurate the Seminar on '*Astronomical Data as Aid to History*' jointly organised by the Ethiraj College for Women and the *Varalathru Peravai*. Thiru N. Mahalingam, Chairman of the Seminar Committee has evinced keen interest in the organization of this three-day Seminar by inviting some of the most distinguished and eminent astronomers and scholars like Prof. K. Srinivasaraghavan, Dr. B. V. Raman, Prof. G. S. Sampath Iyengar, Prof. V. G. Ramachandran, Dr. Avvai Natarajan and others. I am happy to associate myself with you all and thank Thiru Mahalingam and other members of the Organizing Committee for inviting me to participate in this evening's function.

The meeting of world renowned astrologers and scientists of astronomy with epigraphists to hold discussions and arrive at certain conclusions regarding the utilisation of astronomical data for re-writing Indian History, is indeed an auspicious event, for, the scholars present here with their astronomical imagination might forecast a bright future for

the growth and development of these studies on interdisciplinary approaches at the higher seats of learning in India.

Astronomy exemplifies the most imaginative and analytical powers which have made it one of the most remarkable triumphs of the human mind. With the Greeks, the down-to-earth, every day utility of astronomy seem to count for less than its speculative grandeur. The dignity which they confer upon astronomy among the disciplines reflects the scope and majesty of its subject-matter.

The Greek Philosophers, Plato and Aristotle pay glowing tribute to the special worth of astronomy. In the opening chapters of his *Metaphysics*, Aristotle associates astronomical inquiry with the birth of philosophy. For Plato, man's intellectual relation to the heavens does more than initiate philosophy. Man's self-rule, his purity and peace of soul, is at stake in that relation. Hence the Greek philosopher Plato makes astronomy, a required part of the curriculum for the education of rulers !

Immanuel Kant, the Great German Philosopher, moralist and astronomer himself declares in a passage which has become universally known, " fill the mind with ever new and increasing admiration and awe, the oftener and more steadily we reflect on them : *the starry heavens above and the moral law within* " Astronomy with its view of a countless multitude of worlds *annihilates*, as it were, my importance as an animal creature ". Morality " elevates my worth as an intelligence by my personality, in which the moral law reveals to me a life, independent of animality and even of the whole sensible world ".

Astronomy has connections with biology and psychology, as well as with mathematics and physics. The obvious fact that the sun supports terrestrial life—operating here as a unique and indispensable cause—occasions the inference

by Saint Thomas Aquinas that it may also operate as a cause in the production of new species by spontaneous generation from putrefying matter. This notion bears some resemblance to the theory in contemporary genetics of the effect of cosmic radiations upon *gene* mutations.

Speculations concerning celestial influences upon psychological phenomena seem to cross the line between astronomy and astrology.

‘ Mathematical physics ’ and ‘ Astro-physics ’— though the phrases may be modern, the ancients recognised the special character of these sciences which apply mathematics to nature and which consult experience to choose among hypothesis arising from different mathematical formulations.

Philosophers have grouped astronomy and music too ! They say that music is rather the arithmetic of harmonies, while astronomy is the *geometry of motions*. So amazing are such relatedness of astronomy with other exact sciences, that it baffles our imagination and quenches our thirst for investigations at higher planes of living !

Man’s pulsating interest in the higher heavens is perhaps as old as the beginning of his career as *homo sapiens* on this planet.

The science of astronomy ( Jyotisa ), according to Hindu nomenclature, is contained in the vast body of the sacred Hindu literature particularly in the Vedas. It is affirmed that the ancient literatures of India contain numerous astronomical data in respect of events, in the History of India.

If the astronomical data is used correctly by scholars and if their interpretations are calculated with scientific precision, then, their study will aid the historians to recast the dates of important ancient events like the

dates of the Mahabharata and the Ramayana wars. Perhaps, archaeological discoveries coupled with documentary evidences of reports made by foreign visitors in the past, may throw new insights.

We are now passing from the Nuclear Age to Solar Age, solar activity, solar energy, solar magnetism, solar-terrestrial relationships, solar physical studies and astrophysical studies—these modern devices are bringing about spectacular discoveries. It is for the scientists to put them for right uses. Engineering knowledge and skill are of the utmost importance in the construction of astrophysical instruments. Electronics does play a significant role in the advancement of these studies.

I have just outlined the paramount significance of the study of astronomy with its allied disciplines. The experts who are present here will throw new insights on crucial issues. I wish them success in their deliberations and hope that they will arouse a deeper and more reflective awareness of the significance of the theme under study.

*G. R. DAMODARAN*

## Fundamental and Vital aspects

PROF. K. SRINIVASA RAGHAVAN

I wish to address you all on certain fundamental and vital aspects of Astronomy and our ancient heritage so as to help you in understanding the working papers that have been prepared under my lead by G. S. Sampath Iyengar, V. G. Ramachandran and G. S. Seshagiri. My ardent youthful disciple G. S. Seshagiri has prepared an excellent thesis on *Vedanga Jyotisha* which is the only real yardstick to determine correctly the vast astronomical data strewn in our epics. It is absolutely necessary to establish that our epics are Itihasas i.e., narration of events in the hoary past as they are of fact. This task of re-establishing the value of Vedanga Jyotisha has arisen since the westerners and Indians, who hung to their pigtails, have dubbed the epics as mythologies on the ground that the astronomical data therein do not stand the test of western methods eg. the Bentley School. It was forgotten that when Vyasa wrote the *Mahabaratha*, the science of *Vedanga Jyotisha* was universally accepted and the astro-

nomical data recorded in the epics is as per the principles laid down in *Vedanga Jyothisha*.

Vedic Astronomy is one of the 32 *Vedic Vidyas* (secret knowledge). The *Brahmanas* to a certain extent give the key to the Rig Vedic Mantras.

I shall narrate a few examples.

i) The thithies (30) have distinct names (not as we count now Prathama, Dwitheeya etc.) They are given in a single Rik-Samgnyanam, Vigyanam, Sobanaha, Sobamanah, Kalyanaha. Each thithi was sub-divided into 15 parts etc. and each part had a specific name (the above Rik is now-a-days used as a blessing).

ii) Again, the Nakshatras are named after Vedic gods. Whenever the name of a Vedic God is mentioned it means the corresponding Nakshatra. The day was divided into 27 nakshatras and each Nakshatra was divided into 4 parts, totalling 108 parts (and not into 360 degrees as we do now). The sine table of *Aryabhata* is for this unit of angle which is equal to  $3\frac{1}{4}^{\circ}$ .

iii) The day was divided into 4,32,000 units of time (mathra). The Rig Veda contains 4,32,000 units of sound. Vedic students are taught to repeat the Rig veda in one siderial day. All Vedic Scholars chant with the same speed. Time unit is impressed in the tongue of the Vedic scholars, (Kalvaitha Varam test for memory of verses and time). The most ancient Tamil Grammar Tholkappium, even in the beginning defines Mathra, unit of time, and says it should be learnt only from Vedic Scholars.

The same code name of Nakshatras is adopted by Valmiki, Vyasa, Vedanga Jyothisha. Thus as per Valmiki, Sita was married on Bhaga day (Uthara Phalguni Nakshatra). Sita tells Rama that the day they

started for the forest was *Brihaspathy day* (Pushya Nakshatra). The preliminary ceremonies for the Maha Bharatha War were done on Chakra Deivatham day (Jyeshtha day).

This research of mine, started in 1925 with the guidance of Dr. R. Vaidyanathaswamy Iyer, formerly Professor of Mathematics, University of MADRAS, took a definite shape in 1961. Many Sanskrit scholars and professors of Astronomy helped me in the matter. Then, a number of copies were prepared and sent round to various scholars for their criticisms and suggestions. I gave lectures on the date of Mahabharatha War in colleges and associations. My friend (late) G. Mahadeva Iyer, took me to Swami Chinmyananda in 1968. In spite of his heavy programme, he spent more than two and a half hours in reading through the manuscript of the Date of Mahabharatha War. My friends helped me to print it in September 1969. Copies were sent to various libraries and interested scholars. Jagad Guru Sri Sankarachariya of Kanchi Kamakoti Peetam listened to my reading it through. He blessed me and asked one of his disciples to buy 24 copies of the book. He advised for a translation of the same into Tamil.

During 1972-73, Prof. Kaveeshwar, Principal, Sanskrit College, Indore gave a number of lectures on his version of the date of the Maha Bharatha War. Swami Chinmyananda told him about my book. There upon I was invited to attend the Oriental Conference at Ujjain University and deliver a lecture (in October 1973). At the Seminar on the Date of Mahabharatha War, I clearly proved my stand on Astronomical methods.

All these created a stir among scholars and a number of papers were published by archaeologists, and historians The Vidur Sewa Ashram, Vidur Kuti, Bijnor,



Dist. U. P. arranged for a Seminar in October 1975 and called for papers on the Date of Mahabharatha War. Sri G. S. Sampath Iyengar, of Karnataka and his son Chi. Seshagiri prepared a paper under my guidance and sent it to Vidur Ashram. I attended the Seminar and explained the paper for nearly 2½ hours. It was that paper which dealt with the subject on the basis of the many Astronomical details available from the Mahabharat Text. It was appraised by the judges as the best of the 30 papers selected.

Great saints and scholars are of opinion that the M. B. War\* marks a definite change in the social, political, economic, religious and literary history of Bharat. It is therefore necessary that we should know the date of the Mahabharatha War. Many attempts have been made by European and Indian Scholars which can be classified under three headings—*Puranic* Archaeological and Astronomical. The original Puranas have been mutilated and from the mutilated *Puranas* no definite date can be fixed. The pure astronomical method has not been used by scholars so far. What they call astronomical is mostly puranic or historical.

Astronomy alone can fix the dates of the historical events correctly. Just as every moment has its own unique horoscope, every horoscope has its own time of incidence. This related sense of time and history was adopted by the ancient Rishies of Bharathavarsha. The Vedas, Ramayana and Mahabharatha are evidences for this historical sense in ancient times. Even now, 10,000 years after Vaiwaswatha Manu, we, when performing any, religious function, clearly state in our *sankalpa* the year Ayana, Month, Thithi, Vara, Nakshatra, etc. of that particular moment. Veda Vyasa has clearly stated the position of the planets also (horoscope) for every event.

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\* *Mahabaratha War*

From 1700 AD Western Scholars and the Indian Historians have neglected, either out of ignorance or because of their biased views, this aspect of the question.

In my book, the "Chronology of Ancient Bharath," I have fixed the correct date of a good number of events of Ancient History of Bharath, by adopting the methods of Modern Astronomy. It must be noted that they are consistent. The Heliacal rising of the Sun, the precession of the Equinoxes, the horoscope of the event, Athimasa in the Panchanga of M. B. days, technical Astronomical terms etc., are some of the methods.

The Heliacal rising of the Sun was adopted by Lokamanya Bala Gangadhar Tilak, and Jacobi for fixing the age of the Vedas. They thus refuted the opinions of many other scholars about the age of the Vedas. The Heliacal method was known to our Rishies and the method was used continuously during the ages. Varaha Mihira in his *Brihat Samhitha* describes it in the very first chapter.

The precession of the Equinoxes was adopted by Prof. Sen Gupta.

The Horoscope method has not been used by European or Indian Scholars in fixing the dates of events. Some attempted the method, but found it impossible to fix the date and explained that the data were interpolated and not correct.

The Athimasa and the technical terms have been the rock on which many have knocked their heads and cried in despair.

It is now my duty to lay before you the errors committed by them and show that the data were not interpolated but genuine. I propose to take them up, one by one.

1. MR. BENTLEY : In his book on Hindu Astronomy (1825 A. D.,) Mr. Bentley fixed the date of Kaliyugadhi on 17/18 February 3102 B. C. The purpose of this book was to show (i) that Kaliyugadhi is a myth, (ii) that the Hindus learnt astronomy only from the Greeks in the early centuries of the Christian era and (iii) they invented the concept of Kaliyugadhi and anti-dated it to show that the Hindus were a very ancient race. The basic facts on which Bentley proceeded were two fundamental data of Ancient Hindu Astronomy. They were 1) about the beginning of the Kaliyuga, the planets were together at the beginning of the zodiac. 2) The beginning of the Zodiac was the beginning of Ashwini Nakshatra ( or Mesha Rasi ).

I have shown in my book that he was wrong in assuming Meshadhi as the beginning of the Zodiac and that his Ahargana (the total number of days from Kaliyugadhi to date) is also wrong. I have shown that in those days Mid-Shravishta (300 degrees of the Modern Indian Zodiac) was the initial point of the zodiac and that the five planets, Saturn, Jupiter, Mars, Venus & Mercury were at the initial point of the zodiac at about 5. a. m. on 10th January 3104 B. C.

But the Vedic Yuga (the *luni-solar year*) began with the Sun and moon at Midshravishta on Friday 28th December 3101 B. C. All the *Puranas* reckon time in Saptha Rishi cycles of 100 years and Kaliyuga era was not brought into use till about 400 A. D. The Rishies have given the relation between those two fundamental eras. Kaliyuga began with the 76th year of the Magha cycle of 100 years and the sun and the moon were at Midshravishta at the beginning of both the eras. Hence, it is easily reckoned that the Saptharishi era was started on Friday 21st November 8576 B. C. It is clear that the Sapta Rishi era was in vogue till 826 A. D. (The

Quilon Gazetteer states that the Kollam Andu was fixed by scholars gathered from all over Bharat). It was the beginning of the 9401th year of the Saptha Rishi era and the cycle of hundred years was *Sravishta cycle*. The Yudhishtira era, Jaya Bharatha era and Kali era were later confused as they were not in constant use. The other important era was that of 556 B. C. of Patali Putra emperor, who was a close friend and ally of Cyrus the great of Persia (Refer Cambridge Historical Series). It is now a forgotten era, as it was superseded by the Ujjain Vikram era of 56 B. C. still current in Northern India.

2. PROF. SEN GUPTA, a special Research Scholar of the Calcutta University, devoted his attention to the precessional method of astronomical work for fixing the date of the Mahabharatha War. Maha Rishi Veda Vyasa has clearly stated that Bheeshma died at Midday on the day following the winter Solstise (Utharayana—Rathasapthami) and the day was Magha Sukla Ashtami, Rohini Nakshatra (8th day of the bright fortnight in the Luni-Solar month of Magha). His key point is the statement of Varaha Mihira, that the interval between Udhishtira and Saka eras is 2526 years. He took 78 A. D. as the Saka era and concluded that the date of Mahabharatha as 2449 B. C. Any reader can easily see his travail to equate with Vyasa and Varaha, and his failure made him lose his patience and exclaim that Vyasa was a bad astronomer and his statement is wrong. He tried methods for correcting Vyasa and failed. If he had taken 556 B. C. as the Saka Era, mentioned by Varaha, he would have arrived at the correct date of the coronation of Yudhishtira as Samrat (after Raja Suya) in 3082 B.C. I thank him heartily for having paved the way for me to get at the correct date, certainly after a travail of many years. He ought not to have taken the planetary positions given by Veda Vyasa and unnecessarily

criticised the same without proper understanding and translating them.

3. DEWAN BAHADHUR L. D. SWAMIKKANNU PILLAI tried to make a compromise between Mr. Bentley and the Siddhanta astronomy of 500 A. D. He collected almost all data (beginning of Zodiac, periods of planetary revolutions etc.) and after a strenuous and laborious work of many years produced his *Ephemeris*, whose results are almost correct for the period 1700 to 2000 A. D. He has given methods of finding the positions of a planet on any given date. He applied it to the horoscope of Rama, Krishna, Sankara, Vaigai Flood (Tamil Sangam Poem) etc. and miserably failed because he assumed that these events happened only in A. D. Years. Failing to find a correct date, he corrected some and still failed. Then, in a fury he explained that Vyasa, Rama, Krishna, etc., are only mythological and not real historical figures. I have, however, used his tables to verify the results obtained by modern Astronomical methods and found them helpful. He has used only one method, the horoscope method.

4. SRI S. B. ROY : What Prof Roy calls Astronomical has very little to do with Astronomy. His date 1432 B. C. is obtained only from the mutilated Puranas, where Chandra Gupta Morya is made a contemporary of Alexander. Mr. Bury, an authority on Greek History, has clearly stated that Alexander did not know of the River Ganges and the city of Pataliputra. He was hunted out of India and was murdered in the desert before he reached Babylon. This alteration in the Puranes has swallowed nearly 1200 years of our ancient history. His theory stands on a single greek letter in one of Asoka's edicts, which is disputed by historians. Even assuming it, we know that Phoenecians borrowed their alphabets and numerals from the Hindus and the Greeks in turn learnt them from the Phoenecians\*

Let us now look at his application of the principles

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\* *Encyclopedia Britanica*

of the precession of the equinoxes to this date already pre-determined from his own puranic versions. He proposes to put "the Sun and the Moon in the witness box in the court of the stars". He completely ignores the other astronomical facts in his book, by stating that Vyasa was ignorant of planetary astronomy. He proceeds to fix the position of the winter solstice (*Utharayana-Ratha Sapthami*) following the Mahabharatha War. He starts with the Jyeshtha Amavasya before the war, and asserts that the war began the very next day, though all the internal evidence is against it. Sixty eight (68) days later, at the time of Bheeshma's death, he finds the month is Pushya and not Magha, and the Thithi is Tritheeya and not Ashtami. By quibbling with the words of the text, he makes the traditional Bheeshmaashtamy, thritheeya. He suppresses the Nakshatra of the day, which Maha Rishi Veda Vyasa had clearly given to be Rohini. (Shantiparva ch. 45 S1. 3). That is an evidence against him. He forgets that Maha Bharata was recited to large audience for three continuous generations by Vyasa and his disciples. If there was any mistake, it would have been pointed out by many of the actors in the MB and other Rishies. Many heroes of Mahabharata were well versed in Astronomy, Krishna, Karna, Bheeshma etc. When he finds that he fails in his acrobatics, he changes the text and says that much of Vyasa's statement should be rejected, ( P—116 ).

5. SRI A. N. CHANDRA has done his work very well so far as puranic information is concerned. But he has made a simple mistake and missed the correct date of Mahabharatha War. He states the statement of Sahadeva that Kali began on the day Krishna died. Nowhere in the Puranas do we find a Kali year. All-along up to 400 A. D. we find only Saptha Rishi Era. The Kaliyuga mentioned by Sahadeva is Kali ( Dharma ) Yuga, which was delayed in its action by the presence of Sri Krishna and again by Sri Parikshit ( according to

puranas ). Yet, in the end of the Vana Parva Hanuman's statement to Bheema, in the Udyoga Parva Krishna's statement to Karna, in the Adi Parva Vyasa's statement to his mother, he asserts that Kali ( Adharma ) Yuga had begun. In an astronomical discussion, we should not rely on a statement like that of Shahadeva for chronological purposes. Now, let us look at the truth on Krishna's death. Kali era and M. B War were not related astronomical events. Rajasuya was performed 2526 years before the Saka era 556 B. C. i. e. Rajasuya and the Samrat coronation of Yudhishtira took place in 3082 B. C. 15 years later, i. e. in 3067 B. C. the Mahabharatha War was fought. All the Astronomical references of Vyasa satisfy the positions of the planets in 3067 B. C. This can be verified by Modern Astronomical methods or by the methods suggested by Dewan Bahadur Swami Kannu pillai.

### **Astronomical Terms**

i) *Visakya* : Scholars equate it with Visaka Nakshatra which was originally called Radha and next was Anuradha. Visakya means cutting point i. e., the points of intersection of the Sun's path and the celestial equator i.e., the point of vernal equinox and autumnal equinox. Now, Vyasa's verses will be meaningful to readers. Again, Rishies never called Nakshatras by their name. They named them only by the presiding gods.

ii) *Pedayathe and Vakra Peedyatha* : When an eclipse occurs, even illiterate people perform *Peeda Pariharam*, to avert the *Peeda*. Take a triad Asvini, Magha, Moola. If the eclipse occurs in any one of them, the *Peedapariharam* must be done by all those whose nakshatras are any one of these three. Again, Saturn in Magha has direct peeda to Moola ( clock wise ) and Vakra peeda to Aswini ( anti clock wise ). The same rule should be applied to all the nine triads of the Nakshatras. Now-a-days we call this *Vedai*. Dasa, bukthi, etc., also depend on this triad principle.

## The Athimasa of Vyasa's Days

The present system of Athimasa and Kshyamasa were introduced by Varaha Mihira, when astrology based on the 12 constellations of the Zodiac became important.

During the days of Saptha Rishies, the yuga of five Siderial years had two athimasas (Luni-Solar months) one at the end of the third year and the other at the end of the fifth year (normally). The year then began with the autumnal equinox (Sarad ruthu) with Sun and Moon at Mid-Shravishta. Later, during the days of Viswamithra the autumnal Equinox began with Sravana (due to precession of the equinoxes). But the tropical year or bukika year began with Sarad Ruthu. This necessitated a change in the Almanac. The Nakshatra system alone was considered important. Hence, Viswamithra made the following change. The Luni-Solar year (or the sacrificial year) began with the Sukla Prathama immediately following Autumnal equinox. The year had twelve Luni-Solar months (beginning with sukla Prathama and ending with Amavasya). *Whenever a thirteenth Amavasya came, that month following it was considered an Athimasa.* I shall herein show the Athimasa from the Rajasuya yaga to Bheeshma's death. Next to the Saptharishie, Viswamithra and Dheergathamus, Parasara, Vedavyasa were very great astronomers of old. The description of the South and North Polar skies and many others show their greatness. It was they who wiped out the Dasyus from the soil of Bharat. The following points may be noted.

i) 3082 B.C was the year of Rajasuya. During the Rajasuya the Amavasya (New moon) was on Jyeshtha, Moola day, i.e., at 12 noon the sun and moon were at 241 degrees of our present zodiac. According to the law of the precession of the equinoxes, the vernal equinox was at 48.6 degrees, and the autumnal equinox was at 228.6 degrees.

ii) During 12 lunations the sun moves 29.530 into 12



equal to 354.3672 days. Therefore, the Amavasya goes back every 12 lunations by 365.2564 mins 354.3672 equal to 10.89 days equal to 10.74 degrees.

iii) Since the first luni-solar month of the year was Margasira, the Athimasa was Krithika.

iv) Now the first year begins with Rajasuya day.

**Athimasa from the Rajasuya Year**

Year	Sun & Moon at	
I	241.00	
	10.74	
II	230.26	
	10.74	
III	219.52	
	29.13	Athimasa
	248.65	
	10.74	
IV	237.91	
	10.74	
	227.17	
	29.13	Athimasa
V	256.30	
	10.74	
VI	245.56	
	10.74	
VII	234.82	
	10.74	
	224.08	
	29.13	Athimasa
VIII	253.21	
	10.74	
IX	242.47	
	10.74	
X	231.73	

### Athimasa from the Rajasuya Year (contd.)

Year	Sun & Moon at	
	10.74	
	220.99	
	29.13	Athimasa
XI	250.12	
	10.74	
XII	239.38	
	10.74	
XIII	228.64	
	10.74	
	217.90	
	29.13	Athimasa
XIV	247.03	(Year of Hiding)
	10.74	
XV	236.29	
	10.74	
	225.55	
	29.13	Athimasa
XVI	254.68	(The year of M. B. War)
Amavasya ends		254.68
Two months : Margasira and Pushya		58.26
Beginning of Magha month		312.94
Six Thithies		5.83
Magha Sukla Sapthami—Ratha Sapthami—Sun at		318.77

Next day Magha Sukla Ashtami Sun at 319.77 and Moon at 319.77 plus Ninety minus 360 equal to 49.77 (Rohini Nakshatra). This is Bheeshma Mukthi day. This is in complete accord with Vyasa's words—3067 B. C. Autumnal equinox (Sarad Ruthu) 228.8.

### Year of Mahabharatha War

	Date BC 3067	Julian day	Week day		Sun	Rahu
Full Moon Lunar Eclipse	28 Sep.	601473	Saturday	6.51	210.32	220.55
New Moon Solar Eclipse	13 Oct.	601488	Sunday	0.25	224.89	219.74
Full Moon	27 Oct.	601502	Sunday	0.99	239.16	218.93
This is the day of 3 thithies, with full moon Thithi suppressed.						
New Moon	11 Nov.	601517	Monday	1.78	254.02	218.13
New Moon	11 Dec.	601547	Wednesday	3.31	283.15	216.52

### 35 years later – year of Yadawa Civil War

	Date BC 3032	Julian day	Week Day		Sun	Rahu
New Moon	15 Oct.	614274	Thursday	4.695	227.61	262.30
New Moon Solar Eclipse	14 Nov.	614304	Saturday	6.225	256.74	260.69
Full Moon	29 Nov.	614319	Saturday	6.995	271.31	259.89
Day of 3 thithies with Full Moon Thithi suppressed						
New Moon	13 Dec.	614333	Sunday	0.765	285.87	259.08
New Moon	12-2-3031	614393	Thursday	4.215	344.13	258.28

Twelfth-February 3031 is day of Yadava Civil War and destruction, 13th February 3031-Friday, Chaitra Sukla Prathama Uthara Proshtapada Nakshatra, Sri Krishna ascended Heaven.

### Conclusion

I have done my task in explaining the essentials of Astronomy which will help us all in our deliberations at this Seminar. I am 85 years old and have toiled on Vedic astronomy and Chronology of Ancient Bharat for over fifty years. I feel my task is not yet over, as there is a lot of mist in

the horizon preventing the younger generation of Historians and Indologists to grasp these truths, hypnotised as they have been for long, (two centuries and more) by the untruths propagated by Westeners as to our Ancient heritage. It is the duty of all patriotic Indians to rescue the youth of this great country from the mesmeric spell of the west. May be I may not live long, but I shall rest greatly solaced and satisfied if in this Seminar so well organised by a sincere patriotic Indian as Sri N. Mahalingam, the torch of true knowledge is taken up by this erudite congregation to be handed over, in turn, to future generations of Bharatiyas.

## II

# The Cradle of Man

V. G. RAMACHANDRAN

**I**t may be safely stated that it was Bharat that gave birth to the first developed man Swayambu Manu a million years ago. The earliest human record is acknowledged to be the Rig Veda (6500 B. C.).

Rig Veda depicts the birth of Swayambu Manu many many thousands of years ago in the Shiwalik range of Himalayas on the banks of river Saraswathi. It was at Prethishtama (Allahabad) that Vaivasvatha Manu, the law giver, reigned in so early a time as 8576 B.C. What is more, in the battle of Kurukshetra, (Mahabharata War) was fought in this region. It was Bharat (Saptasindu area) that was the Cradle of man as stated by the Rig Veda (which Veda is admittedly dated more than 6500 B.C.) Recently, American scientists have stated (in 1976) that on a comparison of the genes of the ape and man, sampled out from the Shiwalik range and also from Africa and Mediterranean regions, it was found that the genes of the Apes of the Shiwalik Range alone agreed with that of man. That proved that even as per the doctrine of evolution, man evolved from the Ape, only in India.

The Harappa and Mohenjadaro excavation has proved that it was the Tamils (Vysias and craftsmen not brahmins or Kshatriyas) that built those cities far way back prior to 3000 B.C. earlier than the Mahabaratha War.

### **1. B. B. Chakravarthi's work**

Prof. B.B. Chakravarthi in his research treatise on the "Decipherment of the Indus Valley seals" (1976) adverts to this and adds that the seals show Brahmi script and Tamil language. This Indus Valley or Harappa Culture had also been found extended to certain places South of Vindhya, also in Rajasthan and Gujarat, all tending to show the pervasiveness of our ancient Tamils who were also a seafaring Community.

### **2. Paradise Lost**

Milton in his 'Paradise Lost' (Vide, Verity Edition 11th Book) refers to the fall of Adam. Adam who had sinned felt very sorry. The Lord in his Mercy directed Archangel Michael to enthuse Adam that the Kingdom of God was wide, His glory magnificent and that his Grace was certainly available to Adam. Michael takes Adam to the top of the Hills and from there shows the huge kingdom of God on earth, Samarkhand, Russia, Agra, Lahore, etc—which mountain could this be except the Himalayas. Adam the first man was thus located in the Shiwalik range of Himalayas by Milton.

### **3. The Holy Bible**

The Bible also refers to the three wisemen of the East (India) who followed the star to the birth place of Jesus in Jerusalem. This shows that wisdom originated from the East; be it culled from the Vedas or the Bible or from Confucius of China. Europeans got their moorings in knowledge only from about the Christian era. Jesus was born only in the East. It was the Bharatiyas that colonised Sumaria in 3000 B.C. and established their culture and civilization for the first time.

#### 4. Arya Dharma

The Panis of the Rig Veda who committed the crime of being 'un-arya' in Dharma, having taken to blackmarketing, slave trade and usury were banished by the community way back prior to 6000 B.C. These Panis went west towards the Mediterranean areas and established colonies with Indian Culture. These are the modern Phoenician's ancestors. They knew seafaring by going in Yachts. In fact sage Vasishta urged Bharatiyas to go and spread our ancient Arya Dharma all over the Universe—“ *Kriyantu Visvam Aryam* ”. Arya is only 'Shreshta' in Dharma i.e. excellence in one's own kula Dharma. Sage Vasishta and his disciple are said to have gone on sea voyage in 6000 B.C. towards European countries to establish our Dharma. This explains the Wanderlust and colonisation of our Bharatiyas which took them to Persia, Mediterranean countries, Germany and even to British Isles. Our Bharatiya culture was thus established there and we see temples of Lord shnu and Siva in some of these countries.

The term 'Arya' means only Dharma and not a race. All of us are Aryas (all Castes in the Hindu fold) so long as we keep to our *Swadharma* which is our *Kula Dharma*. When these Aryas grew in numbers, they spread out West, North, East and South. The latter waves of Aryas pushed the earlier waves to the South. 'Dhra' in Dravida (e.g. Dhavam, Dravakam) means moving down. So, those that moved South after crossing the Vindhya were called Dravidas and there were five groups called Pancha Dravidas. It was at this stage that Sage Agastya improved the culture of our ancients by giving them a nice Tamil language and Grammar. The Western critics who were jealous of our ancestry wanted to divide and rule us by inventing the canard of the two race theory of 'Aryan' and 'Dravidian.'

#### 5. The Manjari Note

In a recent publication in Manjari (Tamil Journal) of

January 1978 reference is made to the researches of P. N. Oak whose article in Akhand Anand ..... (Gujarat) speaks wonderfully about how even in Great Britain a Community called 'Druid' recited in their prayers Sivasamhita and Vishnu Sahasranama, that the term 'Druid' means 'good' (note 'Arya' is only Shreshta). In Italy in the Palace walls Ramayana pictorials are sketched, in Europe the *Druids* worshipped the Sun God just as the Aryas; both Druids (Dravidas) and Aryas were part of one community from Rig Veda times (6500 B. C.).

All these show that our Bharatiya Heritage is very very ancient dating back to even 10,000 years. In Grece and Rome it was all much later. But in India high thinking and low living of Bharatiyas were beacon-lights of culture way back in 6500 B. C. i. e. 8500 years from now. If you find the Arya way of life in European countries and you also find the Tamil Culture spread out in far off Egypt, Africa, Mediterranean countries and further in South East Asia e. g. Cambodia, Thailand, Singapore, Malaya, Java, Sumatra, Indonesia, Vietnam etc. as early as in 4000—2000 B. C, it will only show the catholicity and universality of the outlook and colonisation spirit of our ancients. It was Sage Agastya who spear-headed the spread of Tamil culture South of Vindyas and in the West while it was Sage Koundnya who headed the Tamil Mission in South Eastern countries. The temples and the ancient records of these countries speak of this. The colonisation in European countries is well depicted in A. Kalyana Raman's two volume treatise called '*Arya Tarangini*'.

## 6. South India

Thus, it is apparent that our ancients had only indigenous origin within India and that Bharat became the cradle of human civilisation as early as 6500 B. C. It is to the glory of the South that civilization took a firmer and finer tone in South India as North India was always torn by wars, earth-



quakes, and floods. This explains the early flourishing civilization of the Pandyas even in Ramayana times. The Epics written in Sanskrit referred to the glory of the Tamils. Sanskrit and Tamil were the two bright luminous eyes of our ancient Bharat.

In *Tholkappium* ( 5500 B. C. ) we have Sanskrit words and so also Tamil words are found in Vedic literature. All were Bharatiyas the northern brothers revelling in Sanskrit while those of the South revelled in Tamil.

## 7. Savants of the East and the West

It is necessary to mention here that the so called Aryan invasion of India in 1500 B. C. is a myth. This is mentioned by our respected savants Swami Vivekananda, Aurobindo Ghose and Kanchi Acharya. The Khetas of mediteranean countries are the ancient Kshatriyas of India. The Sumerians are none but Soma-Aryans of India. To cite European Savants :—

a) Prof. Hekkal in his “ History of Creation ” states that Lemuria (Gondwana land) was the Cradle of human race.

b) Prof. Raleigh in his ‘ History of the World ’ said “After the great deluge, the Indian human race first appeared.”

c) Topinard asserts “South India was the most ancient part of South Asia.”

d) Sir Johan Ewans, President of British Association, said, (1897) “ Man had his origin and development only in South India.”

e) Scott Elliot in his book “ Lost Lemuria ” observes “ Most ancient civilisation of man was in South India—an extension of which was the submerged land of Lemuria.

f) Sir T. W. Holderness in his work “ The Great Indian people ” (Ch. I page 28) speaks of the Indian Peninsular civilisation as very great and ancient.

g) Rev. Father Heras states "The Harappa Culture started in the very dim past (about 5000 B. C.) from the Cauvery basin and advanced along the west coast to Kathiawar Sind and the Punjab and then moved to the near East and Mediterranean under the sponsorship of the redoubtable Tamils."

h) Swami Vivekananda poignantly declared "what you European pandits say about the Aryans sweeping down from some foreign land snatching away the land of the aborigines and settling in India by exterminating them are all pure nonsense, foolish talk, strange that our Indian scholars to say "Amen" to them and all these monstrous lies are being taught to our boys. This is very bad indeed."

i) Dr. B. K. Mukherjee in his treatise on "Hindu Civilisation (Page 153) states "Indian tradition knows of no Aryan invasion from the North-East or from outside India. On the other hand, it speaks of an Aila (Aryan) outflow, the expansion of Drihyus to the North-Western countries too."

j) Will Druant, the famous historian records that the Hebraic features must now be considered as strictly Indian in origin."

k) The late A. Kalyanaraman in his "*Arya Tarangini*" states: "The Indo-Aryans were autochthonous to greater Sapta Sindu ; the Persians should be considered a branch of the great Arya Community who eventually broke away from the parent fold to set up themselves in an adjacent land having wedded themselves to a Schismatic faith wholly at variance with Vedic Texts. Rig Veda refers to Persians as Parsus or Parsuavas .."

The Zend Avesta of Parsees is far later in origin than Rig Veda and concentrates on the one Sun God. Parsees are anti-Somayagna and anti-Indra. Zend Avesta also refers to

a Dasavathar of different type. All these show that Parsees are Indian Arya rebels.

1) Weddel says in " Makers of Civilisation," the Aryans of India settled in Susa and they were called the Sumerians. Soma (Moon) Worshippers are Sumerians. (Soma + Arya). They spread their culture over the whole world.

The Danish Experts Expedition in 1961 carried out a remarkable exploration in the Kuwait island of Falaka. The expedition uncovered there a staging point, wharves, houses, storeyards, etc. Among the ruins of these were found numerous stealite seals of the same type as are found in Mohenjodaro and in Urr in Mesopotamia. The Report explicitly asserts that the race of civilised immigrants who came into Sumeria about 3000 B. C. hailed from East of the Persian Gulf (India). The Danish Archaeologists hold that the incidence of the seals make it almost certain that these intruders were none other than the Indus Valley people whose adventurous trading communities had emigrated to other lands to capture markets and settled their surplus population on the model followed by the Phoenicians round the Mediterranean in historical times."

Sir Leonard Wolley thinks—(Vide Arya Tarangani PP. 112-113) that there should have been colonies of Indian trade agents settled in Urr, (Mesopotamia) Nippu, Babylon etc. ( where the Harappa type of seals are most common ). That there should be overseas agents, at such a distance from the Indus Valley bespeaks, in Wolley's opinion, a flourishing mercantile aristocracy in India with considerable sea-going facilities and with large foreign interests as early as 3500-4000 B. C

## 8. The Epics

It is a great pity that our Indian historians were taken in by the propoganda of Westerners. They tragically refer

to the Aryan invasion of 1500 B. C. and the Dravidian intrusion in 2500 B. C. forgetting that there were no such separate races as Arya and Dravida. There was only one Bharatiya race inhabiting all over India, a cultured community whose hoary tradition and culture date far back to 7000 B. C. and even earlier. To suggest that civilization was brought to India by the Westerners is utter falsehood.

It is a pity that we do not know even our heritage, nor do we care to know them. The Westerners, who ruled us, conceived of a "divide and rule policy" and so invented two historical falsehoods. One was that in ancient India there were only aboriginals and civilization came to us with the advent of the foreigners in 2500 B. C. and 1500 B. C. These foreigners were dubbed respectively as Dravidians and Aryans—a concept which is historically untrue. Our History books even after the advent of Independence, repeat the same falsehoods. People cried hoarse in 1977 simply because a false scroll of National History from 1950 secreted in a capsule was buried far deep down the earth for the edification of posterity. Ten thousand rupees and more was spent to unearth this capsule. When we cry out for this recent capsule destruction, are we not ashamed to keep in our history books and Tamil literature books the old canard of the invasions of 2500 B. C. and 1500 B. C. yet alive?

### **The Western Canards**

It is my privilege to mention as to how these canards are false, with facts and figures, based not on mere surmises but on solid historical truths from unimpeachable sources and documents. First, let me mention that our Tamil Heritage had its origin from the date of Sage Agastya in 6500 B.C. It was Agastya who gave shape to Tamil as a delightful language with a simple grammar called *Agathyam*. He was the founder of the First Tamil Sangam located in the then Pandyan Kingdom's capital 'Ten Mathura' (South Madurai) on

the banks of Pahruli river. The Pandyan Kingdom was then west of modern Ceylon. This Sangam functioned till 4800 B. C. when the deluge compelled the shifting of the capital to Kapapattapuram farther east. The second Tamil Sangam flourished there till 2800 B. C. when another deluge submerged that city and the surrounding land. The king had perforce to retreat into peninsular end of South India with his Tamil subjects. Modern Madura was chosen as the new capital, with the third Sangam flourishing there till 500 B. C. with Nakkeerar as the President.

The Agastya Grammar literature having been washed away by the deluge, what we have now as the earliest Tamil literature is *Tholkappium*, the second Grammar written by Agastya's disciple Tholkappiar. It is in Kalaviyal of Tholkappium we have the erudite annotation (Urai) of Erayanar, who gives a short history of the two earlier Sangams, their kings, poets and their works. There, it is stated that among the second Tamil Sangam members were Irundayyur Karunkozi, ( இருந்தையூர் கருங்கோழி ) Moosi (மோசி) Vallur Kappian ( வள்ளூர் காப்பியன் ) Thirayan Maran ( திரையன் மாரன் ) and Thuvarai Koman ( துவரை கோமான் ). The Tamil lexicon (1930) Vol. IV page 1993 explains that "*Thuvarai*" is "Dwaraka" and "*Koman*" means 'Lord' Thuvarai Koman is correctly identified as Lord Krishna, the Lord of Dwaraka.

This is quite in keeping with the Bakthi Tamil songs of the Yadhavas, Krishna's Kinsmen and the great Tamil Hymns of the Alvars who followed the Krishna Cult. So, then, this takes us to Mahabharatha times (3100 B. C.) when Lord Krishna took effective part in expounding the Geeta and also in securing victory for the Pandavas over the evil hordes of the Kauravas. The internal evidence in Vyasa Mahabharatha as revealed by many astronomical data relating to Krishna's birth, Bhishma's death, the date of the Mahabharatha war—all disclose that Krishna was a historical figure and the War did take place on 22nd November 3067 B. C. Lord Krishna was

born on 27th July 3112 B.C. in Rohini Nakshatra. Even today, we celebrate the Jayanthi of Sri Krishna and Sri Rama. The positions of the Stars, Planets, and the Equinoxes recorded by Vyasa and Valmiki (themselves great astronomers) cannot be doubted. These give us the date of Rama's birth as 10th, January 4439 B. C.

### **The Pandyas during Ramayana times**

The question arises, since both Ramayana and Bharatha are true histories, do they refer to the heritage of the Tamils in any way? Yes, they do refer in good detail and they are quite irrefutable evidences of the hoary heritage of the Tamils way back to 5000 B. C.

In Valmiki Ramayana, there is a clear recital of the flourishing Pandya kingdom. The Pandyan king attended Dasara's Council when the issue of the crowning of Rama was being discussed. Both Valmiki and Kamban refer to this. Both also refer to Sugriva's directions to Hanuman to proceed quickly to Lanka in quest of Seetha without tarrying near "Pothia Malai" (Pothia hills) where sage Agastya and his disciples were holding their Sangam.

Thus, Ramayana of Valmiki ( 4400 B. C. ) refers to the existence of the Pandyan king and of the first Tamil Sangam meeting in the presence of sage Agastya. This is indeed a valuable evidence. It must be remembered that once there is a Tamil Kingdom of Pandyas, thousands of years should have elapsed for civilization of the Tamils to ripen into the establishment of orderly Government under a king. That takes the Tamils farther back to 6000 B. C. and more.

The date of Ramayana is further strengthened by the details given in the Sthalapurana of Sri Ranganatha Swami of SriRangam. This Purana mentions that in or about 4000 B. C. king Dharmaveera Chola promised Vibishana to build a temple at the place where the Vimana carried so far by Vibishana as

a present from Sri Rama got stuck up. The king also promised that the Vighraha will face towards Vibishana's Lanka so that he could offer worship from there itself. It transpires that this temple was renovated and rebuilt by a later Chola King Killivalavan. The present Temple ( 1978 ) is a further later renovated Temple. This Sthala puranic account approximately tallies with the Valmiki's date of Rama as 4400 B. C. as culled from the astronomical data. Truly recorded ancient Sthalapuranas thus also serve as aids to History.

### **11. Tamils of Mahabaratha Time**

Vyasa Mahabaratha relates that the Pandyan king attended Draupadi Swayamvara; the Pandavas were helped by the Pandyan Chola and Chera armies in the great war. Furthermore, Vyasa Baratha relates the following :

1. That Krishna conquered Kapatapuram of the Pandyas.
2. That Sahadeva vanquished Chola, Pandya and Chera kings before the Rajasuya Yaga.
3. Sri Krishna conquered the Pandyas in a war.
4. The Pandyan King fought Drona and was slain by Aswathama.
5. Arjuna in his theerthayathras married Uloopi a Deccan Naga princess and also Chitrangada, daughter of King Chittarvahana Pandyan - whose capital was Manaloor ( near Madura ).

All these factors prove that the Tamils had a high ancient heritage and an enviable civilization during Mahabaratha times. It was equally so during the Sri Rama - Ravana days ( i. e. 4400 B. C. )

### **12. Ravana's Lanka**

I must now take you to the true history of Ravana a

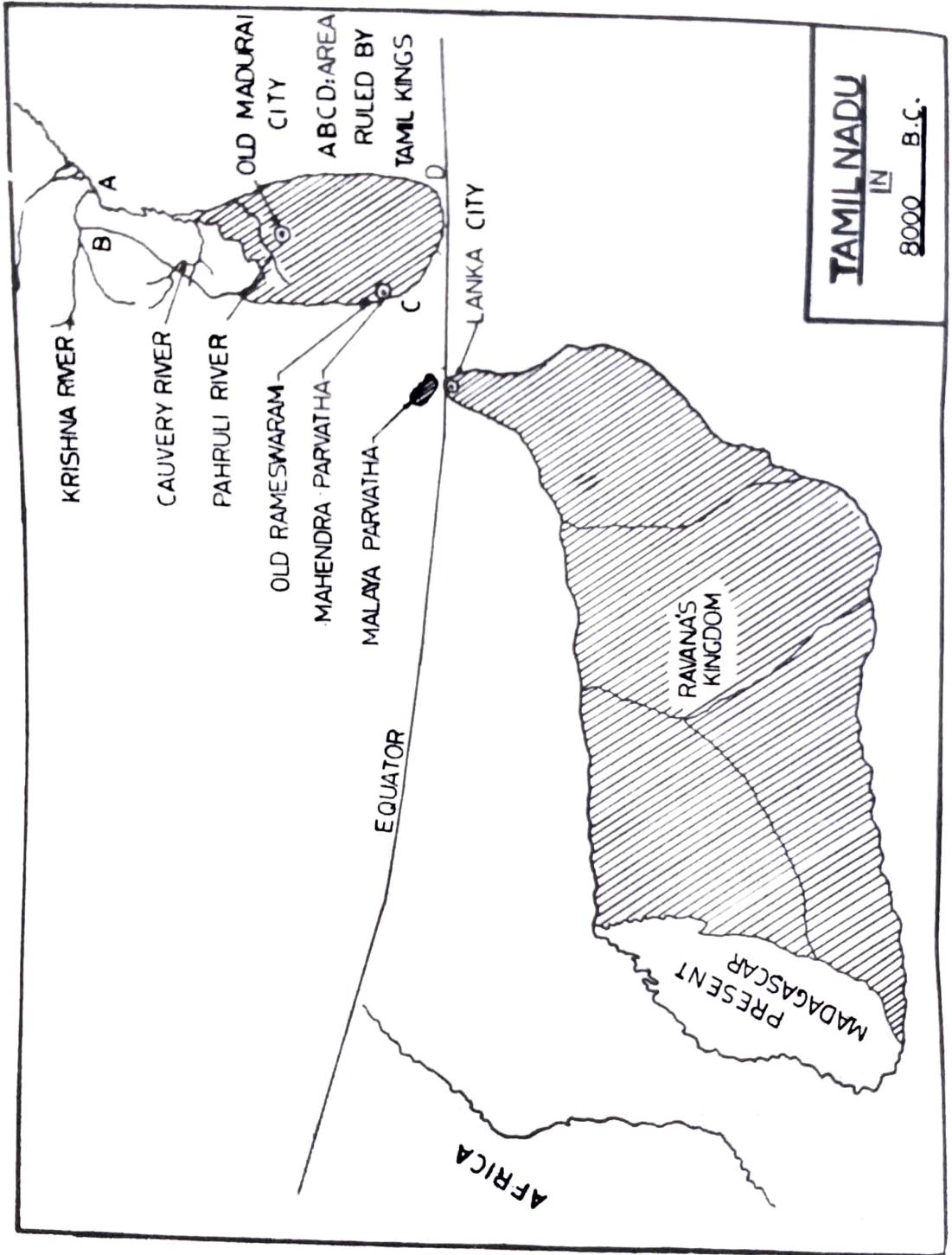
good Tamil and an excellent Sivabaktha. Ravana's ancestors were driven South from North of Vindhya and perforce they had to retreat far South and found an empire in the Old Tamilagam which extended, as already stated, from West of Modern Lanka upto the western edge of Madagascar near Africa. When Ravana attained high prowess by severe penance to Lord Siva, he sought to retrieve his lost territory in India north of Vindhya. But the powerful king Karthaveerya Arjuna (கார்த்தவீரிய அர்ஜுன) defeated him and drove him south. There also, he was defeated by King Vali (Modern Karnataka—Mysore). Thence, further south, the Pandyan king gave stiff battle, aided and blessed, as they were, by Sage Agastya. It is said in Ancient Tamil literature that Agastya invited Ravana to a musical 'Yaz' contest in which the latter was vanquished and so he had to retreat back to Lanka (Old Ravana's Lanka 500 Miles west of Modern Ceylon)—History records that Agastya was honoured by Ravana with a hermitage in Lanka itself. Ravana, Maricha and others spoke Tamil and also Sanskrit. They were Tamilians; Ravana was a Brahmin with Rakshasa powers and habits. When Valmiki describes Maricha's wail to Ravana, when the latter asked him to take a deer's shape to entice Rama away, he says 'Oh Ravana, I am afraid of even the first letter 'Ra' in Rama' So, Valmiki uses the phrase "*Rakaarethi nee*" There is no such usage in Sanskrit where the usage in Grammar would only be '*Raepathi nee*'. Research Scholars say that this is proof enough to show that Valmiki knew Tamil. In fact Professor K. Srinivasa Raghavan in his work "*Chronology of Ancient India-the heritage of Tamils,*" adverts to all these and asserts Valmiki was a member of the first Tamil Sangam. Also, the poet refers to Kapatapuram as the capital of the Pandyas. The poet says further that Hanuman spoke in Tamil to Sugriva and that Sri Rama knew both Tamil and Sanskrit.

### 13. Islamic Lore

The grand ancient heritage of the Tamil is high - lighted even in Islamic ancient literature as spoken to by Dr. Mustapha, editor of '*Courier*' and the Chief Editor of the '*Tamil Nadu*



# RAVANA'S KINGDOM AND OLD LANKA



State Tamil Development Publications'. He states that prior to Prophet Mohamed ( who spoke Urdu ) there were eleven older prophets many of whom spoke Tamil and were residents in Ceylon, that Adam, the first man, was born there and he spoke only Tamil. Adam's speak in Ceylon is a concrete proof of the ancient Tamilian Adam.

### **Subsequent Epigraphic Proof for the War of 3067 B. C.**

The astronomical data that Prof. K. Srinivasa Raghavan used for fixing the date of Mahabaratha War in 3067 B. C. is greatly supported and corroborated by Epigraphic evidence.

1. Aihole Inscription of Pulikesi II (Mysore)
2. Hissa Borla Inscription of Devasena (in Akola) completely corroborates the Aihole Inscription fixing the date of Mahabharatha War in 3100 B. C.
3. The Nidhanpur Inscription (590 A. D.) by Bhaskara Varma who refers to his forebear Baghdatta (King of Assam) who was killed in the Mahabharatha War. Bhaskara Varma lived 3,700 years after Bhagadatta 3700 B. C.—590 A. D. = 3110.
4. The Jaswalmir Inscription of Hanuman Temple in Rajasthan referred to in A.N. Chandra's "The Date of Kurukshetra War" pp. 94-95. The inscription refers to the consecration of the temple in the year ending 4898 after the accession of Yudhishtira to the Hasthinapura throne. The Inscription is of 1796 A.D. So, the date of Yudhishtira Era was in the region of 3102 B. C.
5. The most clinching evidence is the Janmejaya Copper Plate Gift Inscription of 3012 B. C. Janmejaya is Arjuna's great grandson and he endows the gift of land for the temple of Sri Sita and Sri Rama on the banks of Tungabadra.

The Emperor Janmejaya inscription finds authentic mention in the "Indian Antiquerry" pp 333-334 and is cited also in Kota Venkatachalam's "Ancient Hindu History" Part 1 pages 13 to 15.

### III

## Ancient Heritage of Tamils

V. G. RAMACHANDRAN

**T**hat the age of the first Tamil Sangam was from 6500—4800 B.C. and that of the 2nd Sangam 4800-2800 B.C. and of the 3rd from 2800-500 B.C. have been substantiated by historical data and evidence. Infact the ancient heritage of the Tamils extended upto 800 years ago, when our brave forbears colonised lands in far away Mesopotamia, Egypt, South Africa and Parts of Europe in the West and further extended their cultural contacts in South East Asian islands and in the east upto China and Japan.

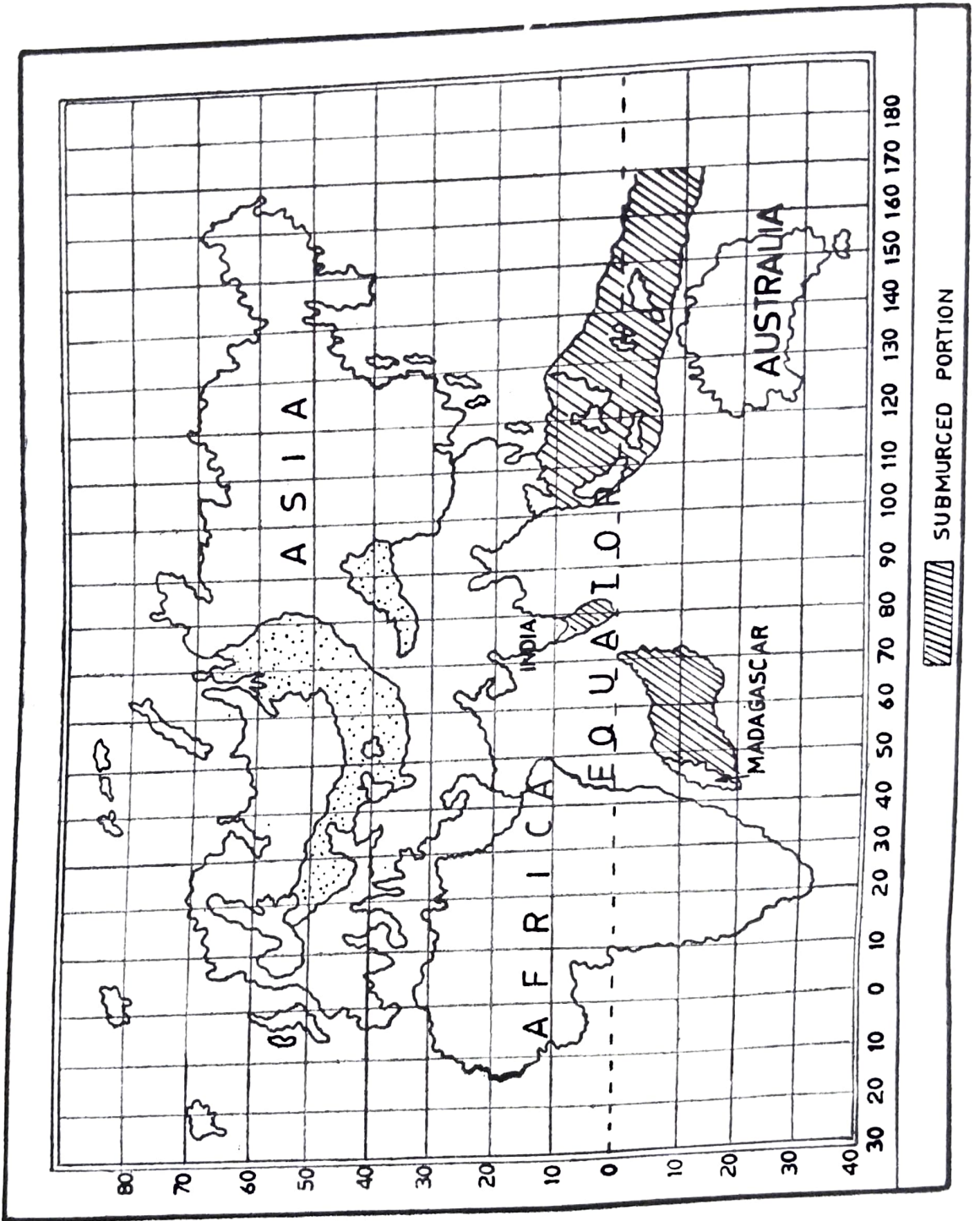
The ancient excellent tracts of our Tamil ancestors, their enterprise, catholicity, high thinking, low living, their achievements etc. make us feel ashamed of our present docile achievement—less humdrum existence. We ponder and pose the query: “where is that great Tamilian of old? Has he disappeared altogether?”

Have we not evidence that the ancient Cholas discovered South America, long before Columbus did it and that the Inca Sun Worshippers of Peru are none but the descendants of “our Chola ancestors” (vide Neelakanta Sastri-History of S. India

and M. Monohan's "Cholas in America 1976" — pp 11-20). The Incas had their Temple of the Sun God in Cizo (Peru) much like the one in Konarak in Orissa built by the Cholas. The Chola Chieftains (Incas) of America styled themselves as "*Raghukula Manickam*". This shows that they belonged to the Raghuvamsa of Sri Rama whose ancestor Sibi Chakravarthi is well described in ancient Tamil literature as the Chola king Sembian. This takes us to a very relevant inference that the ancestors of Dasaratha are as much the ancestors of the Tamils. One other ancestor of Sri Rama, Musu Kunthan, is none other than the Musu Kuntha Chola in ancient Tamil history. This Musu Kunthan's reign was during the second Tamil Sangam age 4800-2800 B.C.

The Matsya and Vishnupurana refer to Sri Rama as belonging to the Tamil Clan of Cholas who in fact belonged to the Surya Kula dynasty. Sri Rama knew both Tamil and Sanskrit and so could understand easily Hanuman's Tamil conversation. All this demonstrably strengthen our dictum that the Bharatiya people were only of one race. The Sanskrit and Tamil segments of that one race has been needlessly and mischievously dubbed as Arya-Dravida races by our erstwhile Western rulers. The Tamils were only Indigenous Bharatiyas and not migrants from Mesopotomia. This is more specifically clear from Rev. Father Heras' study of the Harappa—Mohenjodaro seals. He records it all pithily thus in the Journal of Indian History Vol. XVI. Part 1. "After the study of the above 1800 inscriptions which upto now have been deciphered by the present writer it is easy to realise that the wave of migrants of the Mediterranean race, which was supposed to have been from West to East, must now be finally settled as having taken place in the opposite direction i.e. East to West. The development of Mohenjodaro script, the religion of these two countries and that of Egypt, the titles of Kings, the number of Zodiacal Constellations among the Proto-Indian people and the relative position of these constellations,

WORLD IN 8000 B. C.



the changing of the Proto—Indian constellations of the Harp (Yal) for Tarus (the Bull) which might have taken place in *Sumer* the tradition of ancient People of Mesopotomia recorded by Berosus, the parallel by biblical account in Genesis, (as to sacramental bath, offerings, fire ceremony, monthly and periodical religious festivals etc.) all point to the same conclusion that the migration of the Mediterranean race commenced from India and extended through South Mesopotomia, and northern Africa, spread through Crete, Cyprus, Greece, Italy and Spain and across the Pyrennes reached Central Europe and the British Isles ”.

The Rigvedic Rudra of the Aryas is none other than Lord Siva of the Tamils. We had referred to the origin of Tamil language as having been due to the creative genius of Sage Agastya. There is the Kandapurana legend that it was Lord Siva who directed Agasthya to proceed to the Vindyas to balance the disastrous land-tilt and to protect the Tamils. So it was that the Tamils had special veneration for Lord Siva. Sir John Marshall in his Preface to “*Mohenjodaro and the Indus Civilization*” says: “Among the many revelations that Mohenjodaro and Harappa have had in store for us, none perhaps is more remarkable than this discovery that *Saivism* has a history going back to the Chalcolithic age or perhaps even further still, and it thus takes its place as the most ancient living faith in the world ”.

Arthur Lilie observes in his book *Indian Primitive Christianity*, “Col. Todd believes that the religion of Siva was spread abroad at a very early age by the Tamils before the Phoenicians came in with their Baal working ..... Paterson, an erudite orientalist wrote that in the Asiatic researches the doctrine of Siva’s seems to have extended themselves over the greatest portion of mankind. They spread amongst remote nations who were ignorant of the origin and meaning of the rites they adopted. This ignorance may be considered as the cause of the mixture and confusion of images and ideas which characterised mythology of ancient Greeks and Romans.”

The so called Aryan invasion of India in 1500 is false and that the Aryans were always in India from a period earlier to Rig Veda times (6500 B. C.) The Rig Veda refers to a war between the Aryan King Sudas and un-Aryan (not non-Aryan) ten kings helped by Dasyus, Asuras, Panis etc. in 7000 B. C. Dr. Rajamanickam Pillai in his book (1962) "*Mohenjodaro or Indus valley civilization*" prefers to call Dasyus as the black Dravidians that the Aryans massacred them all in Mohenjodaro (city of the dead). On the face of it, this narration is ludicrously an anachronism. How could Aryans who are said to have invaded India in 1500 B. C. have fought a war with Dravidas in 7000 B. C. Dr. Rajamanickam's thesis is that the Tamils were always resident in India. That is true as it is our thesis also that the heritage of the Tamils dates back to more than 8000 years. Dr. Rajamanickam's view is best countered by the brilliant dissertation of Prof. K. Srinivasa Raghavan, *Chronology of Ancient India* wherein he states : "during 7500 to 7000 B. C. the Aryan culture and the Aryan way of life was established all over Bharat. The non-conformists were driven out of Bharat or driven away into the wild mountain forests. But sporadic war continued among the Surya Vamsa Kings and the Chandra Vamsa kings because of their land hunger. It was about 7200 B. C. that the Battle of the 10 Kings described in the Rig Veda was fought".

"Oriental scholars describe it as a battle between the Aryan and Dasyu kings. It is not so, but it was a great battle between Sudas (39th from Vaivasvatha Manu), King of Tritus of the Bharata clan and Ten United Kings, five of whom belonged to the five tribes of the sons of Yayathi. *Purukutsa*, 24th of the Ikshvaku line, was killed by Sudas in this great battle. The enemies were routed, and Sudas became a very great Emperor and ruled over the whole of Aryavarta."

Thus, it would appear that the war was not against Dasyus (un-Aryas i. e., not conforming to Arya Dharma) but against the Ten Kings. Dr. Rajamanickam confuses it all by dubbing Dasyus with the caption of Dravidas or Tamils. The

Tamils were nowhere in the picture in that War. The scene of War was not Mohenjodaro at all but in the place ruled by Yayathi's sons.

The hoary past of the Tamils cannot be doubted. There is much truth in Shri P. T. Srinivasa Iyengar's dictum.

“தமிழர் தமிழகத்தின் முதுகுடி மக்கள்  
மட்டும் அல்ல. உலகத்தின் ஆதி மக்கள்”

The Tamils were not only the most early citizens of Bharat but were the most ancient of mankind itself. The cradle of man was only Bharat and the cradle of civilization was South India where alone Bharatiya culture could be well nurtured fostered and developed. The Northern part of India was unsuited for this as it was subject to earthquakes, floods, deluge and constant wars. The Tamils owe it to sage Agastya for welding them all into a civilised community. As Silapathikaram (11-5-) mentions, the tribal Tamils were in the Kumari mountains in a semi-civilised State, belonging as they did to the clan of Gandharvas of the Dhruyu race (son of Yathi of Lunar Dynasty). These tribes were divided into four groups according to the Musical instruments they used.

“ துடியன், பாணன், பறையன் கடம்ப என்று  
சிந்நாள் இல்லது குடியுமில்லை ”

Prof K. Srinivasa Raghavan adds that their dialect was a corrupt form of the Yadhava language. So, sage Agastya conceived of the idea of colonising the Kumari Kandam with many enterprising families of the Yadava groups. Hence, eighteen clans of Yadavas became the early settlers ( பதினெண் வேளிர் ) the 18 clan settlers who in 6500 B C. sailed from Dwaraka to colonise the vally of River Pahruli.

The Tamils thus grew in population and formed their own Governments. Their land was originally 'Tamilagam', but, after the deluge, they hastened to the Cauvery basin and



manned the area from “Vengadam to Kumari” (Cape Comorin).

Thus, we see the Tamil segment of the Bharatiyas are a good enterprising and civilized counterpart to their northern brothers of the Sanskritic segment. Often, the Tamil Kings—Cholas and Pandyas were able to occupy by conquest areas in the Himalayan region. One pass, in Sikkim, is called the “*Cholapass*” indicative of the presence of Cholas in that area. This most wonderful heritage of the Tamils and of the other Bharatiyas of the north, clearly denote a wholesome integrated Indian culture.

Apart from the Agasthya episode and the Tholkappium literature, we have to rely upon the most valuable evidence in the two epics Ramayana of Sage Valmiki and Mahabaratha of Vyasa Baghawan. It is only with the help of astronomical data in the epics that we can fix the age of the Ramayana period as 4400 B. C. and of the Mahabaratha war as of 3067 B. C. As these epics clearly mention the existence of the ancient Tamil Pandya Kings and of their capitals in the then Tamilagam, we could safely say that the Tamil civilization extended further back than 4400 B. C. The Rig Veda being of 8000 B. C. and since it specifically mentions of Sage Agastya as the master of two grammars (Sanskrit and Tamil) and since it also contains Tamil words *Nir* as *Neera*, *Pazham* as *Phala* etc. it is reasonable to conclude that the Tamils existed even prior to 6000 B. C. This in effect leads us to the conclusion that the Tamil civilisation is certainly at least 8000 years old from now.

All this reasoning is sought to be shattered by the Western colonialists who were more eager to assert their so called superior and more ancient civilisation. So, they questioned the astronomical data in the epics as erroneous forgetting those dates were as per the Vedanga Jyothisha which alone served as the Yardstick to discern astronomical data of the Epic period. Mr. Bentley abrogated to himself superior know-

ledge, declared that the Epic data were all erroneous if not spurious.

### **The mistakes of the Bentley school of astronomy**

It is necessary here to shortly state how British astronomers like Bentley made gross miscalculations as to the astronomical data furnished in the Indian epics. As expounded clearly by Prof. K. Srinivasa Raghavan, “according to Indian Tradition Astronomical Kaliyuga began with the five planets together at the initial point of the Zodiac. But Bentley showed that they were disposed as follows : Sun  $351^{\circ}$  ; Moon  $355^{\circ}$  ; Mercury  $318^{\circ}$  ; Venus  $23^{\circ}$  ; Mars  $340^{\circ}$  ; Jupiter  $8^{\circ}$  ; and Saturn  $332^{\circ}$ . On this erroneous basis he fixed the date of Kaliyugaathi as 18th February 3102 B. C. and then worked out the position of planets on that day by modern astronomical methods. He forgot that the Indian traditional method of calculation was based:

(a) on a Vedic Yuga of 5 years as per *Vedanga Jyothisha Texts* which always begins with the *Samvatsara* on Magha Shukla Prathama. But Bentley and other Western Chronologists took Meshadi as the beginning of the then Sidereal years ;

b) the first Kali Year ( 18-2-3102 B. C. ) is seen to be Anuvatsara, the 4th Year of the 5 year Yuga of Vedanga Jyothisha. Hence the Yuga began 2 years later with the Magha Sukla Prathama on Friday 28th December 3101 B. C This was Bentley’s second error.

(c) Moreover, the Astronomical Kali Yuga began on Magha Sukhla Prathama Sunday 11th January 3104 B. C. ( 26 lunations before 18 2 3102 B. C. ) because at 5 P. M. on Sunday 10th January 3104 B. C. the 5 planets Mercury, Venus, Mars, Jupiter and Saturn were at  $300^{\circ}$  ( MidShravishta—The initial point of the Zodiac of Vedanga Jyothisha ) with the Sun and Moon at  $314^{\circ}$ .

Mr. Bentley who laboriously worked out the positions of the planets from 18.2.3102 B C. to 1800 A. D. to prove that Indian Tradition was false, failed to go back by 26 lunations. Had he done so, he would have recognised the truth and correctness of the traditional statement.

With the erroneous fixation of the Kali Era by Bentley the calculations as to the date of Mahabharata also became erroneous and so the Bentley school opined that the astronomical data in the two epics cannot at all be true. So, the Epics were dubbed as false. If the Indian Traditional method was applied by Bentley the truth of the data would have been too clear.

Prof K. Srinivasaraghavan also lays bare how the L. D. Swami Kannu Pillai's deductions in his "*Indian Ephemerals*" cannot be accepted.

### **Agasthya's contribution**

It was sage Agasthya (6500 B C ) who welded the various tribes of the South of Vindhya into a homogeneous body as the Tamils. It was he who produced the first Tamil Grammar *Agathyam* that is now extinct. The hoary Tamil literature prior to 2800 B C. were all washed away by the deluge that sank the greater portion of Tamilagam. The Tholkappiam, the second Grammar in Tamil, written by Tholkappiar, a disciple of Agasthya, is as old as 2500 B. C. It is based on an earlier Sanskrit Grammar *Indrium*. This is clearly referred to by Sri Ganesayyar's preface to his edition of Tholkappium. It was King Mahakeerthi Pandyan who presided over the Arangetram of Tholkappium. This Pandyan King reigned only about 2300 B. C. or so.

### **The Telugus**

The Telegus, the Kannadigas and the Malayalees are the other Southern ancients. The earliest work extant in Telugu is the Bharat of Nannayabatta, the Court poet of the Chalukya King Raja Raja (1023-63 A. D.) He is considered as the first

poet in that language. As pointed out in the “*History of Kan-  
nada Literature*” by R. Narasimhachariar on page 10 of  
“ Poetical Inscriptions of an earlier period have been found  
such as those of the eastern Chalukya King Gunaga—Vijaya-  
ditya (844-888 A. D.) in Ongole Taluq and the Pillar Inscription  
at Bezwada of the Eastern Chalukya King Yuddhamalla who  
ruled in the early part of the 10th century. That Nannayya  
Bhatta also happens to be the first grammarian of the Telugu  
language and grammar presupposes the existence of previous  
literature.” So, we may infer that Telugu was spoken even  
earlier, say just before the Christian Era began.

### Malayalam

Sri R. Narasimhacharya points out “ with regard to  
Malayalam literature, the Scholars of that language, say upto  
the 10th century, the language of Kerala was ‘Sendamil’ i. e.  
pure Tamil omitting *Manipravalam* works, *Ramacharitam* of  
Sri Rama, a Travancore King of the 13th Century, is the earliest  
work in Malayalam literature. Tunjattu Elluthatchan of the  
16th century is considered as the father of modern classical  
literature in Malayalam.”

It may be noted that the early *Cheras* ( Kerala people )  
spoke pure Tamil. The Great classic ‘*Silappadikaram*’ in Tamil  
was the work of the Chera King Senguttuvan’s younger bro-  
ther, Illango Adigal. Strangely enough it was a foreigner  
Dr. Gundert who wrote the first Malayalam Grammar.

Later days saw the rapid growth of Malayalam which  
took in many Sanskrit words. The influence of Sanskrit was  
great, *Vi-sa-vis*, the Southern languages such as Telugu, Malaya-  
lam and Kanarese. Tamil always kept up its separate identity  
and was verily the younger sister of Sanskrit. If Sanskrit was  
10000 years old, Tamil is now 8000 years old.

## **Kanarease**

The literature of Kannada is of course of greater antiquity than Telugu or Malayalam. The earliest Kannada work is a treatise on poetics called ' *Kavi Raja Marga* ' by Nripa-tunga or Amoghavarsha, the Rashtrakuta King who ruled from 815 to 877 A. D. This king wrote also a Sanskrit work called *Prasnottaramala*. Originally, Kannada had many Tamil words. Jayamkondar ( 11th Century A. D. ) says that it was later a mixture of Tamil and Telugu. The script for Kanarease is the same as in Telugu. It has latterly taken in many Sanskrit words. The Hal Kannada (Old Kannada) was largely akin to Tamil. The New Kannada is now more Sanskritic with Telugu influence also. Kannada inscriptions made their appearance from the 5th century A. D. e. g. Chickmagalur, Sravana Belgola, and Kodur inscriptions.

## **Hoary History of Mysore**

May be Kanarease literature had its birth in the Christian Era. But Mysore State is the ancient preserver of our heritage. As pointed out by G. R. Josyer (pp. 5-7) in his *History of Mysore* "part of the immortal Ramayana episode is laid in Mysore". Mysore was originally the kingdom of Vali. Sri Rama made friends with Vali's brother Sugriva at Kodur. It was with Hanuman and Sugriva's help that he vanquished Ravana. The Epic event of Agastya Rishi killing the demon brothers Vatapi and Ilwala, was in Nelamangala in Bangalore District. It was in Melur that sage Kanva's Ashram was situated. It was there that King Dushyanta married Sakuntala. The Parasurama episode was associated with many spots in Mysore State. Parasurama's father Jamadagni had his habitat at Sorab. The temple of Renuka, is at Chandragutti. Kartaveerya Arjuna was slain by Parasurama near Kolar. Hiremagalur in Kodur District Commemorates the valour of Parasurama.

During the Mahabaratha period, the Pandavas spent their exile period in Shimoga. It is stated that Arjuna married

Chitrangada, daughter of King of Manipura near Chamaraj Nagar. Later, coming that way, with the sacrificial horse before the Aswamedha Yaga, his unknown son, Babru Vahana captured that horse and gave him (Arjuna) fight. Arjuna's great grandson Janamejaya, to whom the Mahabaratha was recited, is said to have performed his serpent sacrifice at Hiremagalur in Kodur District.

Thus, of all states, Mysore has the privilege of having been the place of ancient History from the Pre-Ramayana times. It is a state of plenty, peace, culture and happiness. Mother Cauvery's blessings on Mysore State mark a golden chapter in the history of India.

### **Need for an Oceanic Exploration**

For the doubting Thomasses, it is best if some productive attempts are made in further research on the lines indicated below :

1. the first and 2nd Sangam literature (6000 B. C. 2800 B. C.) ;

2. the Genealogical table and Heirarchy of the Pandya, Chera, Chola Kings from 5000 B. C. upto the British conquest of India ;

3. the existence of the submerged Lemuria or Tamilagam which would help in the reconstruction of the Tamil Ancient Homeland, Ravana's Lanka etc.

This is certainly possible if only the Government of India is persuaded by the Tamil Nadu Government to have an oceanic expedition in the area west of modern Ceylon upto Africa. With modern facilities as satelite survey etc. the submerged land may be located, its features examined, ruins of our ancient civilisation rediscovered etc. May be oil wells also are there which will help Indian Economy very much.

## IV

# Astronomical Tools

**T**he stars are seasonal and can be seen at a standard time on the earth in different seasons. The Chart given in this chapter seeks to present quick vision of earth's distinct neighbours and their movements. The chart can be divided into two :

1. The Vedic seers had fixed 27 stars and the longitude was started from  $0^\circ$  Mesha and this was known as Sidereal year. They used to mark the moving tropical year also so that longitude also begin from  $0^\circ$ . The position of this tropical year is shown on the fig. the English equivalent of Mesha etc. are given in the Bands.

2. Explanation for Bands from a to f.

a. Hour band. All the 27 fixed stars that will rise and set every day is divided into 24 equal parts i. e. 24 hours per day.

b. Shows the tropical month from Madhu equal to March 21st etc. They are all moving months as per seasons. The present tropical  $0^\circ$  longitude is shown in Meena Rasi.





c. There are 12 permanent constellations equal to 27 Nakshatras used by Vedic seers known as sidereal months equal 30°. This is based on star with Sun.

d. Cycle of Rahu and Kethu i. e., the nodes formed by the Moon path with ecliptic. This band is divided into 18.6 parts then each into 12 equal parts.

e & f. The ecliptic is divided into 27 equal parts and each Nakshatra into four *padas*,

g. This shows the five year Yuga Panchanga Luni—Solar system. S. P. equal to Shukla prathama KP = Krishna Prathama. Sun in Dhanista is the starting point of Yuga system. Adhi masa is added once in 3 years and two years.

### How to use the chart

If the dialling system is introduced it is very easy to find out all the stars including the tropical year, and eclipses, but on this plain paper without the dialling system one position alone is possible to show. Band gives the position of Rahu and Kethu every month and thereby its periods of revolution along the ecliptic once in 18.6 years. To know an eclipse, see if you find Rahu Kethu points just below them in bandg. Find out there is an SP or KP. If there is an SP then it is solar eclipse, if there is KP then it is a lunar eclipse in that month. This eclipse, with the Moon—Sun—and—Earth in the same position, repeat once in 18 years 11 days 8 hours. The name of any of the year in five year Yuga can be found out and accordingly that line is selected considered from mid point of Shravasta at the starting point, Samvatsara being the first year of the Yuga. This proves that during Mahabharatha war we had two eclipses in the same month as Vyasa puts it.

In the present band position it is indicating the star with sun at 12 noon on March 21st, hence stars at zenith at different times or places. Similarly, for other months. If a reverse process is followed we can find time seeing the Zenith star and

star with the sun on March 21st. This proves that during Mahabharatha war vernal equinox was at  $48^\circ$  and during Ramayana vernal equinox was at  $68^\circ$ .

### a. How to find Thithi and Nakshatra

The Sun was at r (vernal equinox) at 11.30 A. M. I.S.T. on 21st March 75 The Aswinyadi of Government of India is  $180^\circ$  exactly opposite to (Spica) Chitra Nakshatra and is therefore  $23^\circ 23'$  East of r. But the true position of Aswinyadi is  $21^\circ 37'$  East of r (correction is  $1^\circ 46'$ ).

#### The Position of the Sun and the Moon at O G. M. T. or 5.30 A.M. IST

Date	Ephemeris		Government of India		According to K.S. Raghavan	
<b>1975</b>						
<b>March</b>	<b>Sun</b>	<b>Moon</b>	<b>Sun</b>	<b>Moon</b>	<b>Sun</b>	<b>Moon</b>
21	$359^\circ 45'$	$91^\circ 48'$	$336^\circ 22'$	$68^\circ 24'$	$338^\circ 08'$	$70^\circ 11'$
2	$0^\circ 45'$	$105^\circ 32'$	$337^\circ 22'$	$82^\circ 09'$	$339^\circ 08'$	$83^\circ 55'$
3	$1^\circ 44'$	$119^\circ 41'$	$338^\circ 21'$	$96^\circ 18'$	$340^\circ 07'$	$98^\circ 04'$

Now what is the Thithi at any moment? Find the difference of the longitude of the Moon and sun and divide by 12 and count 1, 2, 3 etc. What is the Nakshatra at any moment? Divide the longitude of the Moon by  $13\frac{1}{3}$  and count Aswini, Bharani etc.

You can see the Thithi does not depend on r or Aswinyadi, but the Nakshatra changes when the moon's longitude changes. The Thithi and Nakshatra at 5.30 A. M. on the above dates are :

March 1975	Thithi	Nakshatra
21	Sukla Ashtami	Aridra
22	Navami	Punarvasu at 5.30 A.M.
23	Dasami	Pushya

## How to Find the Ending Moment of Thithi?

Let it be x hours after 5.30 A. M. Find the longitude of Moon and Sun and divide by 12 and equate to the next whole number. The value of x is obtained.

## How to Find out the Ending Moment of Nakshatra?

Let it be Q hours after 5.30 A. M. find the longitude of the Moon and divide it by  $13\frac{1}{3}$  and equate both next whole number. The value of Q is obtained.

Thus the ending moments of the Thithi and Nakshatra on the 3 days are as follows :—

1975 March	Thithi	Nakshatra
21	Sukla Ashtami- 0.57 P. M.	Aridra - 10.39 P. M.
22	Sukla Navami-11.26 A. M.	Punarvasu- 8.48 P. M.
23	Sukla Dasami- 9.10 A. M.	Pushyam - 7.40 P. M.

Note :—1. Given any moment on any day the correct Thithi and Nakshatra to a decimal fraction can be easily fixed by the above method.

2. Thithi is based on the difference of the longitudes of Moon and Sun.

1. The position of vernal equinox among the fixed stars is reckoned every year, a number of times, by astronomers. This is done with reference to the fixed stars. This is called the longitude of the stars. This is published in the Ephemeris. The position of Sun and Moon and planets (i. e. the longitude) with reference to r is given for every day at intervals of hours. For our purpose let us take the longitude at 12 Midnight Greenwich mean time at 5.30 A. M. Indian Standard Time.

2. The fixed Zodiac of the Rasis has a number of single bright stars and their longitudes are given in the ephemeris. But we know the distance from Aswinyadi Pushya (8

canari)  $106^{\circ} 40^1$ , Jyeshtha (Antras)  $226^{\circ} 40^1$  and so on at  $13\frac{1}{3}$  per Nakshatra from Aswinyadi). Therefore the correct distance of r to Aswinyadi is reckoned. This is called Ayanamsa.

3. Having determined Ayanamsa, the longitudes of the Sun, and Moon, for every day at 5.30 A. M. is reckoned.

4. We shall determine the exact moment of the ending of the Thithi.

				Longitude	
				Sun	Moon
March	21	5—30	A.M.	$338^{\circ} 08^1$	$70^{\circ} 11^1$
	22	5—30	A.M.	$339^{\circ} 08^1$	$83^{\circ} 55^1$
Increase in 24 Hours				$1^{\circ}$	$13^{\circ} 44^1$

(Longitude given here is  $1^{\circ} 46^1$  more than that of Government of India) Difference in longitude between Moon and Sun at 5—30 A.M.

$$= (70^{\circ} 11^1 + 360) - (338^{\circ} 08^1) = 92^{\circ} 03^1$$

$$\text{Dividing by 12} \quad Q = 7\frac{161}{240}$$

∴ Thithi is 8th

To find the ending moment. Let it be (X) hours after 5—30 A.M.

$$\text{The longitude of Moon} = 70^{\circ} 11^1 + 360 + \frac{13^{\circ} 4^1}{24} (X)$$

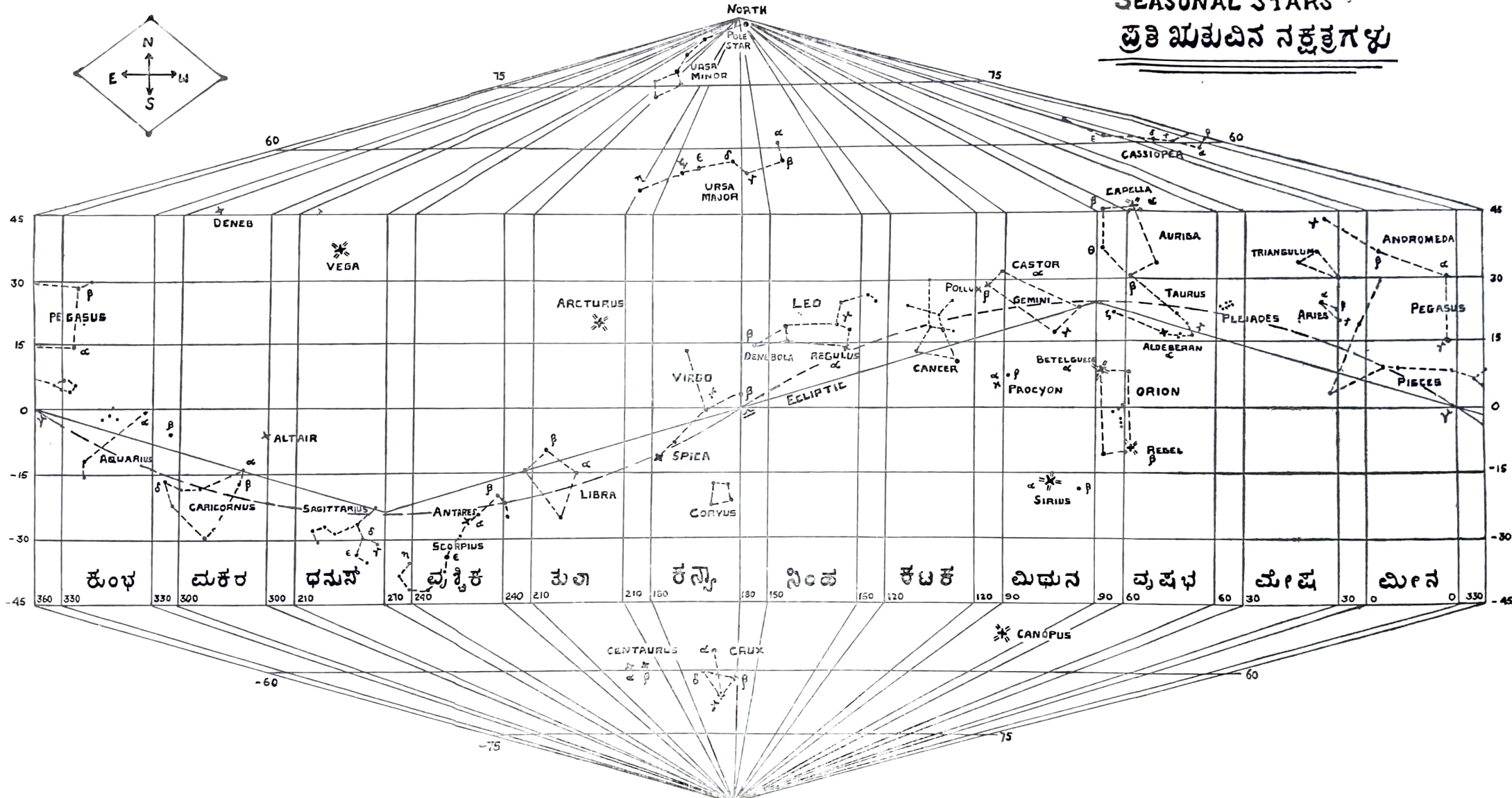
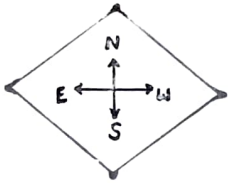
and the longitude of the sun

$$= 338^{\circ} 08^1 + \frac{1}{24} (X)$$

Difference

$$= 92^{\circ} 08^1 + \frac{12^{\circ} 44^1}{24} (X)$$

# SEASONAL STARS ಪ್ರತಿ ಋತುವಿನ ನಕ್ಷತ್ರಗಳು



ಕುಂಭ

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But this should be  $96^\circ (12 \times 8)$

$$\circ \quad 12 \frac{44}{60} (X) = 3 \frac{57}{60} \text{ i. e. } (X) = \frac{237}{764} \times 24 \text{ hours}$$

$$\frac{24}{24}$$

i. e.  $(X) = 7$  hours 27 minutes.

i. e. ending moment of Ashtami

$$= 5.30$$

$$+ 7.27 \text{ A.M.}$$

$$\hline 12.57 \text{ A.M. or } 0.57 \text{ P.M.}$$

To find the Nakshatra

Longitude of Moon at 5.30 A.M.  $= 70^\circ 11'$

Therefore the Nakshatra is

$$\frac{70^\circ 11'}{13^\circ 20'} = \frac{4211}{800} = 5 \frac{211}{800}$$

6th Nakshatra — Aridra

To find the ending movement of Aridra

Aridra ends at  $80^\circ$  Longitude. Let it be  $(X)$  hours after 5.30 A.M.

*Longitude of Moon.*

$$\text{Longitude of moon} = 70^\circ 11' + \frac{(X)}{24} \times 13^\circ 44'$$

$$\circ \quad \frac{(X)}{24} \times 13^\circ 44' = 80^\circ - 70^\circ 11' = 9^\circ 49'$$

$$\text{i. e. } (X) = \frac{589}{824} \times 24 \text{ Hours} = 17 \text{ hours } 9 \text{ minutes}$$

Therefore time of ending of Aridra  $= 5.30 \text{ a.m.}$

$17.09 \text{ a.m.}$

$22.39 \text{ a.m.}$

or  $10.39 \text{ p.m.}$

## b. The method of finding and determining the date for planetary Combinations

There are 2 aspects to the application of astronomy for this :

- (a) Given the Planetary position, find the date.
- (b) Given the date, fix the position of planets.

The first is a search. There is no single method of efficient working. Guess, research and a bit of intuition are necessary. Combine this and test the position of the planets by the 2nd method. The 2nd is more scientific though many have not used it.

There are three methods : (1) The modern astronomical method of which x, y, z system is important. They are very difficult for ordinary persons to understand; but one who wants to be perfect in this science must know them.

(2) Dewan Bahadur Swamy Kannu Pillai's method :— The details are given in his *Indian Chronology* and *Indian Ephemeris*. There are tables to fix planetary positions from 3000 B. C. to 1900 A. D. But they give only the mean position and there are a few fundamental errors. But its results are very valuable for the period 3000 B. C. to 2000 A. D. Having fixed the mean position, the correct position is determined by a process of cyclic repetitions. For these, huge books and tables must be available.

(3) Sri A. L. Narayana Rao's Method :— He has published a book on ephemeris. It gives accurate results for 200 years from 1800 to 2000 A. D.

### Special method

But the best method is that of Sri K. Sreenivasa

Raghavan, Madras. The theory is Sun's position gives the date of the year. Sidereal revolutions of the Sun brings it back to the same place. Similarly also sidereal revolutions of planets. Hence by calculating the Julian day and then Kali day from 12th February 3102 B. C, we can fix the position of the planets.

The following sample problems clearly explain the way to find out the planetary position as per Raghavan's method. As regards the other methods, readers are advised to read books of Narayana Rao, Swamykannu Pillai and study them.

Whenever we try to find the position of planets two errors are very common. These should be avoided. The first error is that many people take and follow the nautical almanac of the European countries. This is wrong. They try to fix the longitude of planet, termed to be the same as the longitude of the beginning Nakshatra Segment on the ecliptic. This method is wrong. The best way is to consider when the planets in the beginning of Nakshatra Segment are on the meridian at the same time and then only, we can say that the planet enters the beginning of the Nakshatra segment. That is why Varahamihira fixed the planets by its polar longitude and polar latitude. The Second error is about the difference between mean position and apparent position. We should always take the apparent position not the mean position.

### **The recurrence of "Jupiter" with Sun**

One sidereal year of Jupiter

$$= (a) \quad 4332.58482 \text{ days}$$

$$= (b) \quad 11.86 \text{ years of Earth.}$$

Multiply (a) and 365.25636 (the sidereal year of earth) so that their difference yields a very small number. This is by trial and error method.



4332.58482 X 7	365.25636 X 83
(c) 30328.09374 days	(d) 30316.27788 days

Take the difference of (c) and (d)

$$\begin{array}{r}
 \text{i. e.} \quad 30328.09374 \\
 \quad \quad \quad 30316.27788 \\
 \hline
 \quad \quad \quad 11.81586 \text{ days} \\
 \hline
 \end{array}$$

Now by the time Sun rolls over 11.81586 days, the Jupiter will have moved,

$$\begin{aligned}
 &= \frac{11.81586 \times 360}{4332.58482} \text{ dgr} \\
 &= 0.9817920 \text{ degr.}
 \end{aligned}$$

To have a better advance value taking 30315 days 4 hrs. 38 minutes (considered by Sri L. N. Rao) we get, on similar steps 1 degr. 4 mins. 21 secs. as the advance.

### To find the position of Jupiter on 27th July 3112 BC

Multiply 4332.58482 by a number such that the result comes into ephemeris.

$$\begin{array}{r}
 \text{i. e.} \quad \frac{4332.58482 \times (400 + 10)}{1733033.92800} \\
 \quad \quad \quad \underline{4332.584820}
 \end{array}$$

$$\text{(a) } \underline{1776359.77620}$$

Now (a) is near the ephemeris.

Take a chance for 001 to 009. By this we can see that (a) when added to the product of

$$\begin{array}{r}
 \underline{4332.58482 \times 9} \\
 \underline{38993.26338}
 \end{array}$$

comes into the ephemeris

$$\begin{array}{r} \text{i. e.} \quad 1776359.77620 \\ \quad \quad \quad 38993 .26338 \end{array}$$

$$1815353.03958 \text{ days..... (b)}$$

Similarly find a number close to this by multiplying  $365.25636 \times X$  ?

Now taking  $X=4000$  gives 1400000 and add for  $X=5000$  it will be more than 1820000. Therefore it is near to the number 5,000.

Proceed as follows :—

$$\begin{array}{r} 365.25636 \times 4000 \\ \hline \text{(c)} \quad 1461025.44000 \end{array}$$

Now try from 100 to 900. Clearly it is 0900; multiply by this the number 365.25636 viz.,

$$\begin{array}{r} 365.25636 \times 900 \\ \hline 328733.72400 \\ \text{Add (c)} \quad 1461025.44000 \\ \hline \text{(d)} \quad 1789756.16400 \end{array}$$

$$\begin{array}{r} \text{R} \quad \quad \quad 3112 \\ \quad \quad \quad - \quad 3102 \\ \hline \quad \quad \quad 0010 \times 365.2422 \\ \hline \quad \quad \quad 3652.422 \\ \quad \quad \quad - \quad 208.000 \\ \hline \quad \quad \quad 3444.422 \\ \quad \quad \quad + \quad 49.000 \\ \hline \quad \quad \quad 3493.422 \end{array}$$

Try from 0010 to 0090

0090 is not possible

0080 also not possible

0070 may hold good which should be checked by multiplication.

$$\begin{array}{r} \text{i. e.} \quad 365.25636 \times 70 \\ \hline \quad \quad \quad 2556894520 \end{array}$$

add (d)  $\frac{1789756.16400}{\phantom{000000}}$

(e)  $\frac{1815325.10920}{\phantom{000000}}$  ... So, this is now in the

ephemeris. Difference between (e) and (b) = 27 days.

∴ Jupiter is  $\frac{27}{4332.58482} \times 360 = 2$  degrees behind sun.

Find out the position of Jupiter in degrees from the ephemeris by subtracting 3493 days (refer to R) by (e)

i. e.  $\frac{1815325.1092}{\phantom{000000}}$   
 $\frac{3493.4220}{\phantom{000000}}$

$\frac{1811831.6872}{\phantom{000000}}$  ... This number is searched in the ephemeris and the position of Jupiter in degs = 87 degs.

Therefore finally the answer

= 87 degs + 2 degs = 89 degs. Now to bring this into Vedanga Joythisha point, we have to add 1 deg. 46 mins. Hence the position of the Jupiter on 27th July 3112 B.C. = 89 degs + 1 deg. 46 mins. = 90 degs. 46 mins.

### 1. Some facts useful for Calculation

Christian Date	Julian day	Kali day from 18 2.3102	Week day	Ayanamsa
1 Jan. 1968 A.D.	2439857	1851392	Mon	23° 24' 29''
1 Jan. 1900 A.D.	2415021	1826556	Mon	22° 28'
21 Mar. 499 A.D.	1903397	1314932	Sun	2° 58' 4''
22 Mar. 285 A.D.	1825235	1236770	Sun	0° 0' 0''
27 Dec. 3101 B.C.	589144			
18 Feb. 3102 B.C.	588466	1	Fri	-46° 34' 35''
11 Jan. 3104 B.C.	587698	-768	Sun	-46° 36' 34''
13 Dec. 3105 B.C.	587669	-797	Sat	
23 Dec. 3106 B.C.	587313	-1153	Sun	-46° 38'

## 2. Position of r and Autumnal Equinox

8576	B.C.	120° r	Magha	300°	Aut. Dhanistha
4439	B.C.	68°	Aridra	248°	Moola
3112	B.C.	48°	Rohini	228°	Jyeshtha
411	A.D.	0°	Aswini	180°	Chitra
1975	A.D.	21° 37 <sup>l</sup>	i. e., 338° 23 <sup>l</sup>	158° 23 <sup>l</sup>	
		or 23° 23 <sup>l</sup>	(ved.jy. point)		
			Uttarabhadra	U.Palguni	

## 3. Dates

Rama's date of Birth	...	10th January	4439 B. C.
Krishna's date of Birth	...	27th July	3112 B. C.
Kaliyuga Astronomical	...	10th January	3104 B. C.
For Panchanga Calculation	...	28th December	3101 B. C.
Mahabharatha War	...	22nd November	3067 B. C.

## 4. Sapta Rishi Mandala

Year	Chronological	Movement
8576 B. C.	Magha	Magha
4400 B. C.	Shatabishag	Dhanista-Sravana
3176 B. C.	Magha	Magha
3076 B. C.	Magha 100th Year	Aslesha-Pushya
1975 A. D.	51st Year of Punarvasu	Hasta-Swathi

## 5. Abhijit Star

Was a Pole Star	10000 B. C.	90° Latitude
In Rama's period	4400 B. C.	between 75 ° & 80°
In Krishna's period	3112 B. C.	70° and 75°
Present period	1975 B. C.	43°

6. Once in 19 tropical years, same thithis repeat with 2 hours difference.

7. 5475 sidereal years brings it back to the same position with 45 minutes difference.

8. Perihelion (advances) takes about 1,15,000 years to come back to its original position. Vernal equinox (precess) comes back once in 27,000 years i. e., Vernal equinox meets perihelion 5 times in one revolution of perihelion.

9. Bhishma uses a remarkable word Vishakyohah. This means the intersecting points of the equator and the ecliptic. This is a technical word of Vyasa. Vyasa uses technical words like these throughout Bharatha and these technical words are superior to that of modern words.

10. From the above discussions the starting point of our history may be summarised as follows : — At the beginning of the S. R. Era, on 21st Nov. 8576 B. C. it was the beginning of the Sarad Rutu, the first year was Samvatsara, (the first of the Vedanga Jyotisha five years cycle and also Akshaya (the first of the 60 year cycle, though it is now placed as the last). It was the first day of the segment of Kumbha (Rasi) the Solar-month Isa, and the Luni-Solar month Magha. The day was Friday, Maga Sukla Prathama, Shravishta Nakshatra, with the Sun and the Moon at Mid Shravista, the Kali Yuga began on the 1,999,782 nd day of the S. R. Era.

### **How to write our History**

#### 11 (a) *Historical*

The names of 100 kings of Rama's family are given in Vishnu Purana. The last king of this family was killed by Pandavas in Mahabharata war. Strange indeed, that a king of Rama's family fought on behalf of Kauravas, Politics! Garga further gives the names of kings upto Nanda family.

#### (b) *Astronomical*

In Mahabharata Uttarayana point is clearly given, the date of Sri Krishna's birth is clearly given and also that of

astronomical Kali Yuga. The date of Kritiyuga is given. And there are 2 ancient statements by which the starting point of autumnal equinox in Maghamasa could be found out by going back 5475 years from Kaliyuga Era. And all these could be checked by the present vernal equinox position. If this method is adopted in detail we can easily rewrite our history for the last 10000 years.

### c. Accuracy of Luni-Solar System

Astronomically birth and death days should be as perfect as possible. For this purpose luni-solar system is the best. Perfection here is that the Moon shining with the help of Sun i.e., the different phases of the Moon at the different moments is the same all over the globe. This combined effect is again attached to the fixed zodiac of stars, yielding more accuracy.

If this luni-solar system with stars is split into tropical-solar, sidereal-solar, sid-lunar and lunar calendars, then each independent calendar will have an yearly terminal error. These errors, more than a compensating one, as in the case of luni-solar, are Cumulative errors. This results in a large error after some years.

One more advantage in this luni-solar system is that it does not have any arbitrary datums line as we consider in designating the dates in the Christian Calendar. Or finally, we can conclude that the luni-solar is the best system which takes the effect of both Sun and Moon with the fixed stars.

#### **Errors at the Terminals of the Calendar**

**TROPICAL-SOLAR :** Because of precession, end point of a year does not coincide with the starting point of the year. This error accumulates; finally, after one cycle of precession, we will be doing the birthday one year earlier, in the middle of the cycle  $\frac{1}{2}$  a year earlier, so on. We must remember here that birth days are not seasonal !

## Sidereal-Solar

Topographically entry of Sun into a nakshatra is different; secondly, a sidereal day lags behind the solar day, which day is the duration from rising Sun to rising Sun.

In the above two calendars we cannot fix up the eclipses as they neglect lunar effects on the birth days.

## Sidereal-Lunar

At once, we can see that it does not consider the movement of earth which is fundamentally wrong. Here, birth day should be done every sidereal lunation which is absurd.

## Lunar

This also suffers from the same defects as that of sid-lunar in that every lunation is a birth-day. First one completely neglects the Sun, though the second, partially observes, cannot tell anything about the annual movement of the earth or sun. **Luni-Solar, Sidereal with Tropical** makes the calendar a universal one, making the errors more compensating for the best practical approach to the UNIVERSE.

The principles analysed so far helps us to rewrite our history very clearly. What a glorious history we have! what a glorious culture based on scientific principles we have! The observations made by an American research woman, that our culture stands on sound foundation is perfectly true. Our Vedic Rishis used to start Yagnas in Sharadruthu. Sharadruthu was the Ist month of the year. When it was Sharadruthu in Northern hemisphere it was Vasantharuthu in Southern hemisphere. Rakshasas in Southern hemispeare used to perform Yagnas in Vasantharuthu only. Now a days, we pass budgets in Vasantharuthu and valuable time is lost in country's reconstruction. But during Vedic times, they used to pass the budget in Vasantharuthu and the country used to start its activities in Sharadruthu.

There is another natural law. Just as there are three seasons in a year, similarly there are three general seasons, winter, rains and heat in a cycle of 27,000 years, Ice age starts when vernal equinox is between  $240^\circ$  and  $120^\circ$ . Age of plenty starts when it is between  $120^\circ$  and  $0^\circ$  and heat begins between  $0^\circ$  and  $240^\circ$ . There will be general rise in sea level particularly between latitude  $10^\circ$  north and  $10^\circ$  south, till vernal equinox reaches  $330^\circ$ .

Based on these facts, we can easily see that Shri Narasimha was born when autumnal equinox was in Vrishabha rasi, Vaishakmasa; Vamana was born when vernal equinox was in Simha rasi Shravana masa; Rama was born when Uttarayana was in Meena rashi  $338^\circ$ , Chaitramasa; and Krishna, the herdsman was born when Dakshinayana was in Simha rasi  $138^\circ$ , Bhadra-pada masa.

## Conclusion

Our great Saptarishis had a clear picture of our universe but the confusion was caused, when the original truth slowly dwindled. All the astronomers in the early Christian era, tried all combinations of sidereal, tropical and Luni-solar years, even going to the extent of repudiating the revolutionary theory, asserting their own oscillation theory. Autumnal equinox in Rohini was the starting point of ice age; then, in Vaivaswata manu's age, he changed it to Dhanishta Nakshatra and then by Visvamitra to Sravana, which was clearly followed by Parashara and his son Vyasa. Valmiki also in Ramayana has asserted this very clearly. Anyway, Vyasa's rules continued for another 1500 years without confusion. Then Garga amended the Calendar with necessary changes. After this, confusion started in the country. May be, the recent astronomers in India compare themselves with the teachings of Vashishta who advocated the tropical year from autumnal equinox to autumnal equinox. In fact the word Ramayana itself means tropical year which changes in the fixed sidereal zodiac.



All the Vedic seers did their calculations based on geocentric system (in particular topocentric) i. e., direct observation. Westerners misinterpreted this and said that the Indians were not aware of the heliocentric system i. e., the revolution of the earth around sun. They continued this mischief by calculating the geocentric position of the planets considering the mean positions. This resulted in condemning the practical, perfect observations and the five year Yuga Panchanga. We shall digress here briefly to an example, telling the difference between the mean apparent positions. Suppose a car leaves point A and reaches B in four hours with a uniform velocity, another car with varying velocity in the same period. Let them start at the same moment. Here the former car, relative to the later, gives the mean positions of the latter car between the two stations A and B. So, also the Sun, due to varying orbital movement will have its different apparent positions.

This nature is something remarkable. Whether our ancient called it as 'GOD' is not the point. But the mysterious side of it is governed by natural divine laws. Only recently are we aware of these laws. But the point is, that whether the Rishis knew this or not? What was their conception of God? Were they leading their life according to nature? Whether the religious functions have significance relative to nature? All these have been told in brief by Einstien who made a deep study of space and time. "The main source of the present day conflict between the experts of religion and of science lies in the concept of personal God. It is the aim of science to establish general rules which determine the reciprocal conceptions of objects in time and space".

The more a man is in line with ordered regularities of events, the more his conviction that there is no room left by these ordered regularities for causes of a different nature. So in 1940 A.D. he enumerated his theory "a state of rest and state

of motion with constant speed cannot be distinguished because each feels the other is moving and he is at rest.” Now we shall examine whether our ancient rishis knew this. If they had not known this they would not have defined the tropical and sidereal years so thoroughly. They knew that the earth is moving, Sun is at rest and fixed stars are at rest. In between these two fixed celestial objects, they considered the real heliocentric and relative geocentric orbital systems. Through this nature we must think of God Luni-solar culture will help to acquire the necessary skill. To realise God, the causeless cause, we have to approach through the rituals ruled by astronomical natural laws. Not only that, no one feels like understanding our scriptures and epics based on Astronomical facts, and no wonder then that we have not produced another Valmiki or Vyasa.

## Puranic and Genealogical Sources

**E**uropean scholars (from 1690 to 1800 A. D.) evinced great interest in Indian literature, Mathematics and Astronomy and wrote many papers with conflicting theories. A few of them maintained that they were original, independent and more advanced than Greeks, while others held the view that everything, Indian was borrowed from the Greeks after the 2nd century A. D. It was then about 1800 A. D. Mr. Bentley wrote his book, "Hindu Astronomy," which is full of "Vitiuperative vulgar abuse." He wrote that the Hindus were a thankless nation, who borrowed everything from the Greeks, but modified them to show they were independent discoveries of ancient and later days. The fundamental basis for his criticism was the statement of Ancient Indian Astronomers that at the beginning of Kaliyuga, the planets were together at the beginning of the Indian Zodiac. With the help of Mr. Laland, he fixed 17/18 February 3102 B. C. as the date of Kaliyugadhi, and showed that on that day the planets were not together. Not only that, he made Mr. Laland work out the positions of the planets for the beginning of every century from 3102 B. C.

to 1800 A. D. and showed that the error in the positions of the planets decreased upto 500 A. D. and then increased in the other direction clearly indicating that (i) Some astronomer of 500 A. D. made that statement (ii) it was an assumed date and not a real one and (iii) the date was back-worked on the basis of the assumed astronomical constants which were not correct. This challenged the truth of the ancient history of Bharat as given in the Puranas.

This was enough for all the others to join together and rewrite the history of India in their own fashion. The first and great historian of India was Sir *WILLIAM JONES* who published "*The Chronology of the Hindus*" in 1778 A. D. from his day, the datum line of Indian History is taken as 320 B. C. the date of the so called invasion of India by Alexander, the Greek warrior, an earlier edition of Chengiskhan and Tamerlane, whose invading army was completely routed, leaving only a very few to go back to Greece. Another mistake these historians have made is to swallow, wholesale, more than 1000 years of ancient Indian History as narrated in the Puranas.

Alexander's contemporary was Chandragupta of Andhra Britya Surya Vamsa Kings of Pataliputra, who were good friends of Cyrus the great of Persia who had an elephant regiment and a big battalion of very good Indian warriors. Cyrus conquered all the lands to the West, south west and North of Persia, but he did not extend his empire eastwards. His son Darius was also a good friend of Pataliputra. It was the great Pataliputra army of Kurukshetra, poised for a war, that made the Greek generals of Alexander refuse to move forward beyond the Sutlej. This ultimately led to the destruction of the Greek army, and made Alexander retreat along the Makran coast and get murdered at the hands of the wild tribes in an unknown place.

Instead of this Chandragupta, they equated the Emperor, Nanda Vamsa Chandragupta, founder of the Maurya (Mayura) dynasty, who ruled at Pataliputra, more than 1000

years earlier. His grand father Nanda, conquered the whole of Bharat, and performed Aswamedha sacrifices and erected a great number of Jyastambas, now called Asokan Pillars. (It must be noted that this pillar has become our present national symbol, and the peacock of Chandragupta our national bird). Instead of accepting the fact that Chandragupta's throne, flag and Seal had peacock emblems, and hence called "Mayura" (Pronounced Morya in prakrit), they concocted an ingenious lie that he was born to a low class woman named Mura, which has no historical or traditional support. Sanskrit scholars maintain that Sanskrit grammar does not approve this derivation. Moreover, if the Greeks came to India and had political and social contact with Pataliputra, the time of Chandragupta and later, what about their silence about his grandson, Asoka, who sent Buddhist missions to every civilized country of those days. The truth is the Greeks of Asokan times were a semi-naked wild tribes roaming in the forests of Northern Balkan Peninsula. The British historians allowed their imagination to run riot and allowed their scissors to distort the Puranic History into a pattern which they present as "Ancient Hindu History."

One more interesting fact. The British conqueror wanted to claim a right to conquer India, and so they used the double-edged weapon, the creation of the Aryan and the Dravidian Races in India. There is no reference to a Dravidian Race in any ancient book, Indian or foreign. The word Dravidian came into political usage only after 1800 A. D.

It was a product of the fertile imagination of that German Sanskrit Scholar Max Muller who was bought and paid to teach at Oxford. His main duty was to train the young British ruling class to feel confident that their mission in India was to civilize the Semi-Civilized people of India (contrast this with the report of the first envoy of Britain to the Court of the great Moghal, Jehangir). Accordingly he invented the theory of the Central Asian Home of the Aryans. If one branch of the Aryans invaded India and destroyed the then

inhabitants of India ( now named Dravidians ), why not another branch of the same Aryans, now coming from the west destroy the culture, heritage and freedom of the present inhabitants of India. It was " in an unholy hour the word Dravidian race was coined " and now we see the havoc caused by the creation of races on linguistic basis all over the world.

Thus, in one direction, they partly accepted the Puranic traditions that the great Mahabharata war was fought about 2000 B. C., yet they invented the theory that the Aryans ( wise people ) came into India only about 1500 B. C. " The Aryan conquerors were horseman, semi-civilized, rude and crude and worshippers of nature Gods, and their songs were the Vedas , " ( Any reader of the Vedas can easily see that this statement is a base lie, and that the Vedas are the production of a very highly advanced culture. It was Manu Vaivaswatha who first wrote the code of conduct for man, social, political and religious ). It was therefore easy to create a new hypothesis that the Ramayana and the Maha Bharata are fictions that were written during the early A. D. years. Rama, Krishna, Vedavyasa and Sankara are all mythological persons, and not historical personages. How can their imagination go back to the age of Manu, Zoraster, Viswamitra and Valmiki ? But these ancients have left clear foot prints on the sands of time, discernible only to the humble and earnest scholars. These foot-prints are the innumerable astronomical data which are self consistent.

Therefore the historians began to prove that such planetary combinations, as described in these ancient works, never existed during the last 2000 years. During this period when the British History of India was written, the learned scholars of Bharat were very orthodox and would not even approach a foreigner. Only *dubashis*, not the well-versed, were consulted by Mr. Bentley, and from the data he got from them, he established Kaliyugadhi on 17/18 Feb. 3102 B.C. Being very anxious to disprove the ancient definition of Kaliyugadhi, his mind was absorbed and would not allow him to look back a few months. The amount of labour spent to work out the data for 5000

years, was a waste. Twentysix luni solar months before 17/18 Feb. 3102 B. C. ( i.e. 5 A. M. on Saturday 10th Jan 3104 B. C. ) all the 5 planets were seen together with the crescent moon at Mid-Shravishta, the first point of the Zodiac of Vedanga Jyothisha. The end of the New Moon that day was at 5 p. m. But this was not at the beginning of the Yuga of Vedanga Jyothisha, according to which, the Yuga of 5 sidereal years began with Maghasukla Prathama and Sravishta Nakshatra. The Saptha Rishis started the Vaivaswatamanvantara Yugadhi ( which we repeat every day in our Sankalpa ), called the Saptharishi era, in the Puranas, 5475 Sidereal years before Kaliyugadhi, because both the eras began with the Sun and the Moon at Mid-Shravishta. Hence the date of Kali Era is Friday, 28 Dec. 3101 B. C. and that of Saptha Rishi Era is Friday 21st Nov. 8576 B. C. On both these days, it was Magha Sukla Prathama with the Sun and the Moon at Mid Shravishta, the first point of the Zodiac of the Vedanga Jyothisha. —

The Mahabharata is teeming with a good number of self-consistent astronomical data and therefore its data is easily fixed ( by modern astronomical laws ) as Friday, 22 Nov. 3067 B. C. Consistent with this, the well known horoscope of Sri Krishna gives his date of birth as Friday, 27 July 3112 B. C. ( Sri Krishna was 45 years old at the time of the Mahabharatha War ).

### **Puranic History**

The Puranas give a list of 100 kings from Manu to Mahabharata war and Sri Rama is the 71st King of the Solar line of kings. His horoscope gives his date of birth as Wednesday, 10th January 4439 B. C. which agrees very well with the Puranic chronology. The Puranic chronology after the Mahabharatha war is clear and correct and according to it, the Surya Vamsa dynasty ruled in Kosala for 1504 years ( 3067—1563 B. C. ). There were 30 kings in the dynasty. The 22nd to 25th kings were Sakya, Suddhodana, Siddartha ( Buddha ) and Rahula. So, Buddha was born about 1259 years after the Mahabharata war i.e., in 1816 B. C.

Again, the Sisunagas ruled for 360 years (1923—1563 B C.) at Giri Vraja. There were 10 kings of the dynasty and the last was Maha Nandin Vidisara or Bimbisara the 5th of the line. He was 5 years junior to Buddha and as already mentioned Buddha was born in 1816 B.C. Maha Nandin was the last and 10th king of the dynasty.

His son Maha Padma Nanda (or Nanda) ascended the throne in 1563 B C. He was called Dana Nanda. The ancient Tamil book *Paripadal*, mentions his name a number of times and states that he hoarded gold in the bed of the Ganges. The Nandas of the Dynasty ruled for 100 years (1566—1463 B. C.). The Nandas were exterminated by a crafty and capable brahmin Chanakya who placed the Maurya Dynasty on the Throne. Chandragupta, a grand son of Nanda, was placed on the throne by Vishnugupta (or Chanakya or Kautilya). He was a great conqueror and he ruled the entire Bharath from Hindukush to Cape Comorin. His grandson was Asoka, who sent Buddhist, Missions to all countries of the World. This dynasty is called Maurya dynasty (1460—1147 B.C.) (mis-spelt Mourya). This Chandragupta was a great and saintly person, who ruled his vast empire according to the code of Manu. He maintained “eka Patni Vratha” (vow of only one wife) like Sri Rama of old, and refused to marry a second wife and looked all other women as his own sisters. So says tradition. But British historians give him a bad birth and placed him as the contemporary of Alexander, the invader of India in 326 B. C. But they believe the tradition that when he grew old, and his son was of age to rule the vast empire, he took to Sanyasa and spent the last years of his life as a recluse in an ashrama in Mysore State.

Twentyseven years have gone by, after the British slipped out of this ancient holy mother-land of ours and our children even now are studying the distorted history of Bharat, written by the British historians, and their true Indian disciples. Is it not time we put an end to this so called Ancient Indian History ?

The Maurya dynasty ruled from 1463—1147 B. C. a



period of 316 years. This was followed by the Sunga dynasty of rulers for 300 years (1147 - 847 B. C.) Next comes the Kanva Dynasty which lasted for 60 years (847—787 B. C.) to be followed by the *Andhra Dynasty* of Rulers for 456 years (787-331 B.C.). Then came the *Andhra Britya Gupta* Dynasty of Pataliputra who ruled for 245 years (331—86 B. C.) It was during this period in 326 B. C. Alexander invaded India and beat a hasty retreat as he found Samudragupta's huge army more than a match to his already exhausted army. *Samudragupta* is called Sandracryptus in Greek history, as the son of Sandracotus (i.e. Chandragupta Vikramaditya). It is at this point the Western historians identified Chandragupta Vikramaditya as Chandragupta Maurya, who we have already mentioned ruled Pataliputra in 1463 B.C.—a big chunk of history from 326 B.C. to 1463 B. C. = 1137 years has been erased. Worse still the dates of Asoka the great is now brought down by 1000 years. Western historians forgot that if Greek History mentioned Samudra Gupta as the Great General and son of Chandra Gupta Vikramaditya who scared away Alexander to retreat, it looked absurd to equate the Chandragupta Maurya with Chandragupta Vikramaditya. The absurdity is too glaring as the Chandragupta Maurya's son is Bindusara (Father of Asoka) and not Samudragupta !

Along side the *Andhra Britya Gupta* Dynasty (331—86 B. C.) the *Pramaya* dynasty in *Avanti* *Rashtra* ruled with Ujjain as their Capital from 380 B.C. to 275 B.C. The *Avanti* *Rashtra* at Ujjain had a distinguished king called *Vikramaditya* (82 B. C.) who was responsible for heralding *Vikarmasakaera* (55 B.C.). There was yet another great king *Salivahana* whose name is perpetuated by the *Salivahana Saka* Era of 78 A. D.

### **Genealogical list of kings ( 3067 B. C. to 78 A. D. )**

In order to give a clear Genealogical tree of the several dynasties that rules *Bharat* from the time of the *Mahabarat* War, the following dates are important.

**1. Hastinapura dynasty : ( 1504 years from 3067 to 1563 B. C. )**

- |                      |                   |
|----------------------|-------------------|
| 1. Yudhishtira       | 16. Pariplava     |
| 2. Parikshit         | 17. Sunaya        |
| 3. Janamejaya        | 18. Medhavi       |
| 4. Satanika I        | 19. Ripunjaya     |
| 5. Aswamebat         | 20. Urva          |
| 6. Adhiseema Krishna | 21. Thigma        |
| 7. Nichaknu          | 22. Bhruchadratha |
| 8. Ushna             | 23. Kasudana      |
| 9. Chitrada          | 24. Satanika II   |
| 10. Suchirada        | 25. Udayana       |
| 11. Vrishnimanta     | 26. Kihinara      |
| 12. Sushana          | 27. Dandapani     |
| 13. Suneedha         | 28. Niramitra     |
| 14. Nrupegakshu      | 29. Kshemaka      |
| 15. Sukibala         |                   |

**2. Kosala dynasty : ( 1504 years from 3067 to 1563 B. C. )**

- |                   |                  |
|-------------------|------------------|
| 1. Brihatkshana   | 16. Amitrajit    |
| 2. Uruyaksha      | 17. Brihat Bhaja |
| 3. Vassavyuha     | 18. Dharmi       |
| 4. Prativyoma     | 19. Krutra Jaya  |
| 5. Divakara       | 20. Rananjaya    |
| 6. Sahadeva       | 21. Sanjaya      |
| 7. Brihadasva     | 22. Sakya        |
| 8. Bhanuradha     | 23. Sudhodhana   |
| 9. Pratitasya     | 24. Siddharta    |
| 10. Supratika     | 25. Rahula       |
| 11. Marudeva      | 26. Praesnajit   |
| 12. Sunakshatra   | 27. Kshudraka    |
| 13. Kinnara       | 28. Suradha      |
| 14. Ananda raksha | 29. Sumitra      |
| 15. Suprana       |                  |

**3. The Brahadrada dynasty of Magada : (1006 years from 3067 to 2061 B. C. )**

- |                        |                 |
|------------------------|-----------------|
| 1. Somadhi or Marijari | 12. Amurvata    |
| 2. Srutasravas         | 13. Dharmanetra |
| 3. Aparatipin          | 14. Nirvriti    |
| 4. Niramitra           | 15. Suorata     |
| 5. Sukurita            | 16. Dridhasena  |
| 6. Brihatkarman        | 17. Sumathi     |
| 7. Senajit or Senajit  | 18. Suchala     |
| 8. Srutanjaya          | 19. Sunetra     |
| 9. Mahaabala           | 20. Satyajit    |
| 10. Suchi              | 21. Virajit     |
| 11. Kshema             | 22. Ripunjaya   |

**4. Pradyota dynasty : ( 138 years from 2061 to 1923 B. C. )**

- |                |                   |
|----------------|-------------------|
| 1. Pradyota    | 4. Janaka         |
| 2. Paalaka     | 5. Nandi Vardhana |
| 3. Visaakhyupa |                   |

**5. Sisunaga dynasty : ( 360 years from 1923 to 1563 B. C. )**

- |                  |                   |
|------------------|-------------------|
| 1. Sisunaga      | 6. Ajatasatru     |
| 2. Kaakavarna    | 7. Darbaka        |
| 3. Kshemadharman | 8. Udayana        |
| 4. Kshathrawajas | 9. Nandi Vardhana |
| 5. Vidhisara     | 10. Maha Nandin   |

**6. Nanda dynasty : ( 100 years from 1563 to 1463 B. C. )**

- |               |                                   |
|---------------|-----------------------------------|
| 1. Maha Padma | 2. Sumalya and his seven brothers |
|---------------|-----------------------------------|

**7. Maurya dynasty or Mayura dynasty (316 years from 1463 to 1147 B. C. )**

- |                  |                 |
|------------------|-----------------|
| 1. Chandra Gupta | 7. Harsha       |
| 2. Bindusara     | 8. Sangata      |
| 3. Asoka         | 9. Salisuka     |
| 4. Suyasas       | 10. Somasarma   |
| 5. Dasaratha     | 11. Satadhanvan |
| 6. Indrapalitha  | 12. Brihadradha |

**8. Sunga dynasty : (300 years from 1147 to 847 B. C.)**

- |                |                                    |
|----------------|------------------------------------|
| 1. Pushyamitra | 6. Ghoshavasu                      |
| 2. Agnimitra   | 7. Pulindaka                       |
| 3. Vasumitra   | 8. Vajramitra                      |
| 4. Sujyestha   | 9. Bhayavata                       |
| 5. Bhadraka    | 10. Deva Bhutti or<br>Kshema bhumi |

**9. Kanwa dynasty**

- |                   |             |
|-------------------|-------------|
| 1. Vasudeva Kanwa | 3. Narayana |
| 2. Bhumimitra     | 4. Susarma  |

**10. Andhra dynasty : (456 years from 787 to 331 B C.)**

- |                                  |                                     |
|----------------------------------|-------------------------------------|
| 1. Sri Mukha Saatakarni          | 17. Megha Saatakarni                |
| 2. Sri Krishna Saatakarni        | 18. Arishta Saatakarni              |
| 3. Sri Malla Saatakarni          | 19. Hala                            |
| 4. Sri Punothsanya<br>Saatakarni | 20. Mandalaka                       |
| 5. Sri Saatakarni                | 21. Pulindrasena                    |
| 6. Skanda Saatakarni             | 22. Sundra Saatakarni               |
| 7. Lambodara                     | 23. Chagkore Saatakarni             |
| 8. Apitatoa                      | 24. Siva Saatakarni                 |
| 9. Meghaswathi                   | 55. Goutami Putra Sri<br>Saatakarni |
| 10. Sataswathi                   | 26. Puloma Saatakarni II            |
| 11. Skanda Saatakarni            | 27. Siva Sri Saatakarni             |
| 12. Murugendra Saatakarni        | 28. Sivaskanda Saatakarni           |
| 13. Kuntala Saatakarni           | 29. Yajan Sri Saatakarni            |
| 14. Soumya Saatakarni            | 30. Vijaya Sri Saatakarni           |
| 15. Sata Saatakarni              | 31. Chandra Sri Saatakarni          |
| 16. Puloma Saatakarni I          | 32. Puloma (Minor) III.             |

**11. Andhra Britya Gupta dynasty of Pataliputra :  
(245 years from 331 to 86 B. C.)**

- |                     |                     |
|---------------------|---------------------|
| 1. Chandra Gupta I  | 5. Skanda Gupta     |
| 2. Samudra Gupta    | 6. Narasimha Gupta  |
| 3. Chandra Gupta II | 7. Kumara Gupta II. |
| 4. Kumara Gupta     |                     |

**12. Pramara dynasty or Ujjain : (523 years from 86 to B. C. 135 A. D.)**

- |                 |                          |
|-----------------|--------------------------|
| 1. Pramara      | 6. Vikramaditya--57 B.C. |
| 2. Mahamara     | 7. Devabakta             |
| 3. Devagi       | 8. (Not known)           |
| 4. Devadatta    | 9. Salivahana -78 A. D.  |
| 5. Gandarvasena | 10. Sali Hotra           |

**Varaha Mihira**

Varaha Mihira in his *Brihat Samhita* has two verses, regarding the Ancient History of Bharat. Adhya 3—Volume I page 22 ( Mysore Edition ). “ The sun’s southern course began at one time from the latter half of Aslesha, and the northern from the beginning of Dhanista. This must indeed have been the case as it is so recorded in the Sastras”—According to the law of the precession of the equinoxs, the age of Vriddha Garga, referred to herein, is 1400 years before that of Varaha Mihira.

The second verse is in Adhyaya 13 sloka 13, page 156, the seven sages were in the lunar mansion Magha when king Yudhishtira was ruling over the earth the period of that king being 2526 years before the commencement of the Saka Era. ”

There are now only two eras in use :— the Vikrama Era of 56 B. C. in North India and the Salivahana Era of 78 A. D. all over Bharat. Whatever be the age of Varaha Mihira, and whatever be the age of the Saka referred to by him it is clear that Yudhishtira lived earlier than  $2526 - 78 = 2448$  B. C. Since we now know by correct astronomical determination, the dates of birth of Sri Krishna, the Mahabharata war and Raj-suya to be 27 July 3112 B. C, 22 November 3067 B. C. and 26th October, 3082 B. C. respectively, it is easily seen that the era referred to by Varaha Mihira is the forgotten Era of Patali-putra of 556 B. C.

**Vedanga Jyotisha**

The Vedanga Jyotisha, as available, has thirty six (36)

Verses in the Rig-Vedangajyothisha and 43 verses (forty three) in the Yajur Vedanga Jyothisha. Thirty verses (30) are common to both. They are very unintelligible to modern scholars who have tried to interpret them in different ways. The present version is that of Laghada. The following are five important verses. The rest give the method of fixing the Thithi and Nakshatra There is no discussion about planetary motions. Adhi Sesa was an earlier Astronomer who knew the planetary motions very well.

தாராகணப்போர் விரித்துரைத்த வெந்நாகம்

“The fair skinned Naga who has given a detailed commentary on the conflicting motions of the planets and other celestial objects”.

### Rig Vedangha Jyothisha

- i) Vedahi yagnartham abhi pravrittah Kalanupurrya  
 Vihitaea yajnah ( tasmad idamkala //  
 Vidana .....saveda jyajnam //

The Jyothisha Vedanga was written by Mahatma-Lagnada to help the Rishis to perform the Vedic rituals in the proper season. Since the yagnas and their details are mentioned in the Vedas, the Vedanga Jyothisha must have been codified during ( or even earlier than ) the Vedic period (i e. Rigveda 6000 B. C. Yajurveda 5000 B. C. )

- ii) Magha chukla prapannasya pausha  
   krishna samapina /  
 Yugasya pance varshasya kala jnanam  
   pracaxte //

The five year Yuga begins with the bright half of Magha and ends with the dark half of Pausha.

- iii) Svar akrameti somarkau yada sakam  
   savasavu /  
 Syat tadadi yugam magastya huklo  
   dinam thyajah //

When the Sun and the Moon with the constellation Dhanishta will together occupy the sky, than there would be the first cycle, the month of magha, the bright half of the lunar month and the abandonment of days ( Sudakara Dwarivedi).

iv) Prapadyete Sravishthadau Surya  
 Chandra-masovapi /  
 Sravishtarde daxinarka magha  
 Sravanayoh sada //

The Sun and the Moon together reached the beginning of Sravishta. From the middle of Sravishta the Sun was in the south during the months from Magha to Sravana. During the Rig vedic age there were no Dakshinayana and Utharayana. There was only Piturayana and Devayana, when the sun was in the Southern half and northern half of the ecliptic respectively. The names Varsha and Sarad for the year reveal that the elapsed years were counted by the Varsha Ruthu and the current years were counted by the Sarad Ruthu (The year begins with the sarad ruthu).

v) Sravishtayam gunabhyastham pra-  
 grilaguan Vinirdhi coth //

This verse gives the rule to determine the lagna. Lagna is the Nakshatra rising in the east at sun-set time (acronically rising star). The heliacally rising star i.e. the Nakshatra rising with the Sun is called the Maha Nakshatra. Herein is stated that Sravishta is the first of the Nakshatras from which lagnas should be determined. ( This verse is interpreted in more than 8 different ways by Vedic Scholars of the west and the east.)

### Ancient Tamil Works

a) There is a statement in 'Manimekalai,' one of the five great epics of Tamil Language, that Buddha's birth nakshatra is the pendant in the garland of nakshatras. This means, that Vishaka was the fourteenth nakshatra of the garland of twenty-seven nakshatras. Therefore, at that time Krithikha was the first nakshatra, i. e., Buddha was born in the period

2400 B. C. to 1500 B. C. This agrees with the previous determinations of Buddha's date of birth as 1816 B. C. from Puranic statements.

b) We have already determined that the age of Nanda's and Mourya's was 1500 B. C. to 1300 B. C. To confirm this the following verses of Sangam poets is given herein. They also show that the Nanda's and Moryas (Mauryas) ruled the entire Bharath from Kashmir to Cape Comorin.

- i அகநானூறு — 69 — உட்டுர் கீழார் மகனார்  
பரங்கொற்றனார் — ‘ வினைபொரு நெடுவரை  
இயல்தேர்வாரியர் பொனடினை திசிரிதிரிதரக்  
குறைத்து அறைஇருந்து அகன்றனர்

Refers to the Road built by Mauryas up the Podiyil hills to the Shrine of Saint Agastiyar.

- ii. “ அகநானூறு — 251 — மாமுலனார் “ நந்தன்  
வெறுக்கை எய்தினும் (13) “ பொதியிலே  
மோகூர் பணியாமையின்  
பகைதலை வந்து மாகெழதானை—வம்பமோரியர்  
புளைதேர் நேயா உருளிய குறைத்த  
இலங்குவெள அருளிய அறைவாய் உம்பர் ”

Refers to the defeat of the Pandyas in the battle of Mohur (near Madura) and the beautiful roads laid by Mauryas.

- iii. “ அகநானூறு — 265 — மாமுலனார்—  
தின்புகழ் நிறைந்த வெல்போர்நந்தர்  
கிர்மிகு பாடலிர்குழி இக்காபகை  
நீறமுதல் காந்த நிதியங்கொல்லோட

Refers to Nanda's greatness as an Emperor and the great hoard of Gold he hid under the Ganges.

- iv. “ களைகுரல் இரைக்கும் விரைசெல்லகடுங்களை  
முரணமிகு வடுகரமுன்னுற மோரியர் தென்திரை மாதிரம்  
முன்னிய ரெவிற்கு விண்ணுற வொங்கிய பனிஇரும்  
குறைத்து ஒண்கதிர் ததிகிரி உருளிய  
குறைந்த அறை ” —



Refers to the Maurya army with the Valiant Andhras in the Vanguard and the excellent chariot roads laid by them up the Podiyil hills.

c) There is an excellent verse in the *Paripadal* anthology. It is one of the earliest collections of Tamil Verses. Swami Kannuppillai made a simple mistake in translating one work, and found it difficult to fix a date for the planetary positions given in the verse. Then, he complains that the poet did not know any astronomy and that in general the Tamilians of that time did not know any astronomy. If that one word had been properly translated, the verse will reveal the date of the poem and the excellence of the astronomical knowledge of those days.

### **Date of Composition of the 11th Verse of Paripadal**

Paripadal is one of the most ancient anthologies in Tamil. It is a collection of 18 verses of a particular type, by poets, some of whom lived long before the dates ascribed to them by modern critics. These verses give us a clear picture of the culture of the people who lived on the basin of River Vaigai, ruled by the Pandyas of Madurai.

The eleventh verse of *Paripadal* gives a beautiful description of the planets in their own houses at the time of a lunar eclipse. Modern critics wish to show that it is all a fancy with no astronomical truth behind it.

The eleventh verse of *Paripadal* is :

விரிகதிர் மதியமொடு வியல்விசம்பு புணர்ப்ப  
ஏரிசடை எழில்வெழும் தலையெனக்கிழிருந்து  
தெருவிடை படுத்த மூன்றென பதிற்றிரு க்கையுள்  
உருகெழு வெள்ளிவந் தேற்றியல் சேர  
வருடையைப் படிமகன் வாய்ப்பொருள தெரி  
புந்தி மிதுனம் பொருந்தப் புலர் விடியில்  
அங்கி உயர்நிற்ப அந்தணன் பங்குலின்

இல்லத்துணைக்கப்பால் எய்த இறையமன்  
 வில்லிற கடை மகரம் மேவப் பாமருபால்லை  
 மதியம் மறைய வருநாளில் வாய்ந்த  
 பொதியில் முனிவன் புரைவறைக்கீரி  
 மிதுனம் அடைய விரிகதிர் வேனில்  
 எதிர் வரவு மாரி இயைகென இவ்வாற்றால்  
 நெரிதருஉம் வையைப்புனல்

This verse is misconstrued and wrongly annotated to show that no astronomer poet sang this verse, and the (astronomical details given in this verse are purely imaginary and did not point to any particular date, when the planets were in their own houses in the Zodiac as described in the verse.

“ At the turn of the South West Monsoon, the river Vaigai was swollen with the freshes. It was a delightfully beautiful fullmoon night and early in the morning, just before Sun-rise, the moon came out of the grasp of Rahu (ascending Node-indicating the close of the lunar eclipse), and was shining with extraordinary brilliance ”. This must be the beginning of the month of Adi (Cancer) when all the South Indian rivers are swollen with freshes by the South West Monsoon. In spite of the explicit statement about the position of the Moon and Rahu on this full-Moon night, the translators state that this happened in the month of Simha (Leo). The reason for drawing this conclusion is the phrase “ Angi ” meaning ( Agni-Krittika) that Krittika was at the Zenith. But Angi should be taken as Mars “ Angaraka ” as that is his name in Indian Astronomy. The entire verse is beautifully consistent. I do not understand how Dewan Bahadur Swamikannu Pillai assumed the translation that the Sun was in Leo with the full moon at Capricorn. As Budha (Mercury) cannot be more than 23, from the Sun and as Sukra (Venus) cannot be more than 45, from the Sun, the Sun cannot at all be in Simha, if Budha and Sukra, should be in their own houses.

Again, he decides that such a combination of Planets did not at all exist (having searched from 1 A. D. to 1900 A. D).

and hence the poem is only a poet's fancy.

On Wednesday, 25th June 540 B. C., Julian Day 1524364, just before sunrise, the full-moon was eclipsed and all the planets were in their own houses ; the Sun was at 95 of the present Indian standard Zodiac, the Moon and Rahu at 275. This can very easily be verified by any Astronomer.

NOTE :

On Julian Day 1524364, the planets were as follows in the Indian Standard Zodiac ;— Sun 95, Moon 275, Mars 15, Venus 55, Jupiter 353, Saturn 298, Rahu 275.

### **Agastya Udayam**

d) This work quotes Agastyas (the star) visibility. It was very important to note the time of Agastya's rise, as it immediately gives the day of vernal equinox and also Dakshinayana. Tamilians knew it in 540 B. C. Varaha Mihira in the very beginning of his "Brihat Samhita" states very clearly the correct method of finding the date of Agastyas rise, and what rituals should be done (i. e. Value of 55 B. C. thought it important for practical astronomers).

e) Aryabhatta (556 B. C.), was a South Indian Brahmin. He was a great astronomer and Mathematician even at the age of 23. He and his father lived under the patronage of the great Emperor of Pataliputra. His trigonometrical tables and notations of numbers, and the solutions of Indeterminate Equations and Continued Fractions reveal an originality or perhaps the traditional one.

f) Adi Shankara has mentioned the name of Pataliputra and has not mentioned any other name of a City. So he must have lived in the hey day of Pataliputra before it was destroyed. His biographies (both northern and southern) give the

same horoscope, according to which his date of birth is 608 B. C. Hence the astronomers of that time knew the Rasi Chakra and the Nakshatra chakra of the Zodiac and calculate the methods of locating the planets in the Zodiac (this was when the Greeks were still uncivilized).

## History of Ancient Calendar

**T**he first Almanac was framed by the Saptha Rishis during the reign of Emperor Vaivasvatha Manu. The beginning of the year was fixed as the beginning of the Sarad Ruthu i. e., the first day of the bright fortnight. On that day, the Sun and the Moon were together at the middle of Sravishta Nakshatra, i. e., the 300th degree of the present Indian Zodiac. The unit of time was five sidereal years, called a Yuga. In one Yuga there are 62 lunations or luni solar months and again one yuga=67 lunar sidereal months. The names of the 5 years are *Samvatsara*, *Parivatsara*, *Idavatsara*, *Anuvatsara* and *Udayatsara*. One lunation=29.5306 days. One lunar sidereal month=27.3217 days and one sidereal year=365.2564 days. These three are of constant duration. One yuga=1830 days (nearly 5 sidereal years).

Hence the year was taken as 12 lunations, the 3rd year and 5th year of the yuga had 13 lunations. In the course of a Yuga the small difference between a Yuga and 5 sidereal years may increase. When this difference became equal to a lunation, the last year (5th year) of that Yuga was allotted only 12 lunations i. e., the extra lunation was cut out. The

lunations were named by the Nakshatra in which the full moon of the lunation occurred i. e., *Magha, Phalguni Chaitram, Vishakha, Jyeshtha .....Pushya.*”

Again the tropical year, year of Seasons, was divided into 12 tropical months, on the basis of the north to south and south to north movement of the sun. Beginning with Sarad Ruthu the names of the months are Isa, Uriga Sahas, Suhesya, Tapas, Tapasya, Madhu, Madhava, Sucra, Suchi, Nabhas, Nabhasya.

Again the lunation is divided into sixty thithis, and a day is therefore referred to by its thithi and Nakshatra. Hence when the Vaivasvatha Manvantara was fixed, it was the beginning of the year Samvatsara, at the beginning of Sarad Ruthu on *Magha Sukla Prathama, Sravishta Nakshatra day.*

Thus in the Hindu Calendar, the sidereal solar year, the tropical year and the luni solar year are blended together and tied together by the knot of a yuga.

A thousand years after the Saptha Rishis, it was noticed that the beginning of Sarad Ruthu had moved backwards from Sravishta to Sravana (because the tropical year is shorter than the sidereal year). This backward change is called the precession of the equinoxes. The rate of precession at that time was 75 years per degree of the Zodiac or 1000 years per Nakshatra. (The present rate of precession is 72 years per degree of the Zodiac) This called for an adjustment in the Calendar. Maharishi Viswamitra was the leading Rishi at that time. He called for a conference and made Sravana the first Nakshatra. (So states Maharishi Veda Vyasa in his Maha Bharatha) and made the rule that the Vedic ceremonial year should begin on the Sukla Prathama by following the Sarad Ruthu. Therefore, the first luni-solar month in his time was *Pushya*. The same rule was applied later on when Maharishi Parasara made Margasira the first month. (Sri Krishna in the Bhagavat-Gita states that Margasira was the first month in his time). The names of the Adityas of the 12

months began with Kesava, Narayana, Madhava, Govinda, etc (it still continues like that). The same rule was adopted by Maharishi Garga when he made *Krithika* the first months of the year. Later when the Vernal Equinox was made the beginning the year, the first luni solar month was Visakha and Varaha Mihira changed this to *Chaitra* on the same principle.

These changes did not affect the sidereal solar yuga which continues the best time-reckoning method for astronomers. But Visvamitra was faced with the problem of adjustment of the extra days. The Sukla Prathama immediately following the Sarad Ruthu began the Vedic ceremonies year, 12 lunation completed the cycle. When the 13th Amavasya come in before the Autumnal equinox (or Sarad Ruthu), the lunar month following the Amavasya was considered an extra month (Athimasa) and no religious function was performed in this month. This continued for thousands of years till Varaha Mihira changed the basic Nakshatra Zodiac into the Rasi Zodiac of 12 houses. The year begins with the Vernal equinox, but the religious year began with the first sukla prathama and it was *Chaitra*, when 2 Amavasyas came in a Rasi, the second luni-solar month was considered extra (Achikamasa). This involved another trouble, that when there was no Amavasya in a Rasi month, it was considered a Kshaya Masa of no religious functions were performed then. But now the vernal equinox has gone 23° back of Mesha and calls for new adjustments. Maharishi Viswamithra's law is an excellent one and should be brought back into this Calendar. For some more centuries the first luni solar month will be Chaitra and the Adhimasa will be Phalguna (13th month to be dropped). But some times Phalguna may be the first month and the Athimasa may be Magha.

Working on the basis of the law of the precession of Equinoxes (formulated by Modern Astronomers) we find the statements of the Rishis to be perfectly accurate. It also helps us to assign the correct date for the following events :—

1. Date of Manvantradi or Saptha Rishi Era = Friday  
21st November 8576 B. C.

2. Date of Kali Yugadi ... .. = Friday  
28th December 3101 B. C.
3. Date of Sri Krishna's date of birth ... .. = Friday  
27th July 3112 B. C.
4. Date of Mahabharatha War ... .. = Friday  
22nd November 3067 B. C.

### Vedic Calendar

One Sidereal year	=	365.256898 days
One Tropical year	=	365.2422 days
One lunation	=	29.530588 days
Moons motion among the fixed stars	=	27.32166 days
Five Yugas	=	67 sidereal periods of Moon
	$67 \times 27.32166$	= 1830.5512 days
62 synodic periods	$= 62 \times 29.530588$	= 1830.8965 days
5 Sidereal years	$= 5 \times 365.356898$	= 1826.284 days
5 tropical years	$= 15 \times 365.2422$	= 1826.211 days

Thus number of accumulated excess days at the end of 7th Yuga of 62 lunations is 4.6125 days so this 7th Yuga was allotted only 61 lunations. Shyama Shastri and others have clearly explained this while explaining the meaning of the Rig Vedanga Jyotisha verse.

At the end of 160 years of 32 yuga :

160 sidereal years = 158441.104 days.

1979 lunations = 58441.034 days.

2139 sidereal periods of the moon = 58441.085

The Adbi masa once in three years and two years will be restored to original position of Amavasya in Dhanista Nakshatra. Thus this above Vedic Calendar is more perfect than the present one of 4 year Panchanga.



## VII

# History of the Epics based Astronomical Data

**T**he ancient Rishis have instituted the system of horoscope reference which is now very common with every Hindu. Almost every son of Bharat has his horoscope and believes in it. The horoscope is a reference to an event whose identity cannot be effected or altered because it refers to the position of the Sun, Moon the 5 planets and the 27 nakshatras at the time of the occurrence of the event.

Conversely if the horoscope is known the time of the event can be fixed by one who knows the laws of motion of these celestial objects. Hence the Rishis, guided by Indra, discovered the laws of motion of these celestial bodies. Predicting the future course of events of the horoscope is called Astrology. But the method of framing the horoscope is called Astronomy. The complicated rules of the motion of these celestial objects have been studied analysed and simplified in what is called Ancient Hindu Astronomy. But during the long course of history the exact method adopted by the Saptha Rishis, Agasthya, Viswamitra, Parasara, Vyasa and Garga have been forgotten. But only fragments are left behind and with the help

of the divine hand of the same Indra the whole thing may be reconstructed by any earnest student of this ancient lore.

The recording of events at present as adopted universally is based on the concept of calendar. The calendar gives the number of days intervening between any two events. It does not give the horoscope for the event. The method adopted by the ancient Rishis was the institution of the *Panchanga*. The *Panchanga* gives all the elements necessary for writing out the horoscope of any event.

The special features of the *Panchanga* should be studied by one who wants to master the Astronomy of the ancients. The calendar systems of all the peoples of the world apart from the Hindus depends on the beginning of the tropical year and is based only on the tropical year, which extends from the moment of one vernal equinox to that of the next. But the year according to the Vedic Rishis is a twisted strand of three threads, as is the sacred thread which dangles on the shoulders of the Hindu. There are three types of years blended together to give a Yuga of five sidereal years modified by the moving tropical year and the lunisolar year. We shall now study the nature of these three types of years.

The sidereal year is the interval in time between two successive transits of the sun with respect to any nakshatra. The tropical year is the time interval between two successive vernal equinoxes (beginning of Vasanta Rithu). The luni-solar year began with the first Sukla Prathama (first day of the bright fortnight) following the beginning of the Sharadrithu (Autumnal equinox). The month was began from Shukla Prathama.

The Sun's path among the fixed stars is a fixed great circle called Ecliptic. The Sun moves from West to East along this fixed circle, and its velocity is not uniform and there is slight variation in it. The Moon also moves from West to East and its path is a belt of 5 degrees with the ecliptic as the central line. The variations of the velocity of the Moon are noticeable. The 5 planets, Saturn, Jupiter, Mars, Venus and Mercury move

normally from West to East along a belt extending to the zodiac. One thing to be noted is that the planets do not move along any fixed circle. They move generally from West to East (direct motion) and some times from East to West (retrograde motion). The laws of motion are complicated but astronomers from the ancient times have mastered the subject.

For locating the position of the Sun, Moon, and the planets the zodiac is divided into 27 equal parts and each part is called a Nakshatra. Each nakshatra extends over 13-1/3 degrees. The vedic Rishis named them as Shravishta, Shathabishak, Purva Bhadrapada and Sravana. They chose Shravishta as the first Nakshatra because on the day when manu performed the Aswamedha, the sun and the moon were together at Mid-Shravishta and it was the beginning of autumnal equinox. All the three kinds of years began on that day when the era, Vaivaswatha Manvantra was initiated. The counting of days began that day and the first day was named after Bhrigu (Bhrigu Vara or Friday). The continuous reckoning of days was maintained by the Rishis.

The sidereal year is equal to 365.2564 days. The lunation, the period from Shukla Brathama to Amavasya is equal to 29.5306 days. The period of the moon's motion among the fixed stars is equal to 27.3217 days. Thus in a period of 1830 days there are 62 lunations and 67 periods of the moon's motion. This period is nearly equal to 5 sidereal years. They called this a Yuga. At the beginning of every Yuga, the Sun and the Moon were in Shravishta and the year began with the beginning of the Sharaduruthu. 100 years of this cycle was considered as the unit of time measurement, and that unit was named after Nakshatras. The first cycle of 100 years was noted Magha. The next was Purva Phalguni and so on. It is said that at the beginning of Kali Yuga the Sun and the Moon were back again at mid Shravishta and it was the beginning of the 76th year of the Magha cycle of 100 years. This is easily verifiable. The duration of time between the beginning of Vaivaswatha Manvantara (Saptha Rishi Era) and Kali Era is 5475 sidereal

years. This is an exact multiple of the Sun and Moon's sidereal motion and also a multiple of the luni-solar months and years.

The tropical year was divided into three major seasons, of Heat, Rain and Dew. It was sub-divided into six Ritus beginning with Autumnal equinox (Sharadruthu). Each Ruthu was divided into two equal parts and so the years had 12 tropical months (of slightly unequal number of days). The Yuga has 62 luni-solar months. Distributing twelve months per year the two extra months were added one at the end of the 3rd year and the other at the end of the 5th year. But in the case of the Tropical year the religious year began with the Shukla Prathama following the Autumnal Equinox, the previous dark fortnight (Krishna Paksha) was called the Mahalaya Paksha when the Pitris (fore-fathers) are worshipped. The first 10 days of the year constitute the Dasara or Mahalakshmi Puja (Durga Puja). In the case of the tropical year normally there are only 12 luni-solar months, but if there is a 13th Amavasya, the month following it was considered an Adhika-masa.

### **Further Comments**

So long as the Nakshatra system alone was considered as the basis of the year, the above was the definition of the Adhikamasa. This was altered when the Rasi system was introduced. The rain was found in the Adhika Masa or Kshayamasa introduced by Sri Varaha Mihara. If during the passage of the Sun in a Rasi there are two Amavasyas, the Adhikamsa was introduced. But if there was no Amavasya in the Rasi month then the kshaya month is introduced. This is important for determining the birth, death and other anniversaries.

Now Kali Yugadhi is the starting point of the present era. As already stated, at the beginning of Kaliyuga the Sun and Moon were at mid shravishta, magha sukla prathama beginning. Another important Phenomena is also mentioned by our ancients. About the beginning of the Kali Yuga era the five planets were at mid shravishta. Most of the western scholars confused themselves about the beginning of the Kali

Era. Mr. Bentley (1800) fixed the Kali Era on 17/18th February 3102 B.C. We found that the Sun and the Moon were not together at the beginning of the Mesha (which he considered as the beginning of the year) and he also found that the planets were scattered about. Hence he began to beat a big drum that there was no Kaliyugadhi except as a myth. But 18th February 3102 B. C. is taken as the beginning of the Kaliyuga by all our Indian Astronomers though Bentley has disproved it himself with various arguments in a book running to nearly 450 pages. But it is true that the Kaliyuga Era began with the sun and moon at mid shravishta (the first point of the Vedic Zodiac) on 27th December, 3101 B. C. Again the five planets were clustered together at the same first point of the Vedic Zodiac at 5 p. m. on 10th January 3104 B. C. on Magha Shukla Prathama day. Hence it must be established and accepted by all our astronomers that Kaliyuga began on Magha Sukla Prathama day on 28th December 3101 B. C.

One more important point to be noted about the Vedic calendar is the knowledge of the precession of the equinoxes. A few centuries after the inauguration of the Saptha Rishi Era, Rishis found that the beginning of the Sharadruthu was sliding back from mid-shravishta along the zodiac. Exactly 1500 years from the beginning of the Saptha Rishi Era, Maharishi Viswamitra fixed the beginning of the Sharadruthu at the beginning of Shravana Nakshatra. The rate of precession then was a thousand years per Nakshatra. 300 years, after Viswamitra, Parasara the great astronomer and astrologer found the beginning of Sharadruthu was at the beginning of Moola Nakshatra. During the days of Vyasa the Sharadruthu was at the beginning of Jyestha. (i. e.) during the days of Mahabharatha Sharadruthu began with the Sun at the beginning of Jyestha. The present rate of (precession) of the equinoxes is 960 years per Nakshatra (or 72 years per degree) of the Zodiac. The Rishis very carefully adjusted the beginning of the religious year (luni-solar year) at the beginning of the sharadruthu, by careful observation of the beginning of the Sharadruthu. Many of the experiments and observations made by these astronomers in their obser-

uations point out the exact determination of the movement of the beginning of the Sharadruthu. Again, there are references to the Rasis of the Zodiac in the Rig Veda, Valmiki Ramayana and Mahabharatha. Some assume that the Rasi system was imported from the Greeks to India. It is not so, because there was Nakshatra segments on which the Rishis based their calculations. The rasi system was used extensively in Astrology and very sparingly in Chronological purpose. Thus, we may conclude that the Kali Yuga Era was started on Friday 28th December 3101 B. C. and that the Saptha Rishi Era or Manvantharadi was started on Friday 21st November 8576 B. C.

The next important land mark in the chronology of ancient Bharat is the date of the Mahabharatha war. The *Puranas* and the innumerable astronomical observations mentioned in the Mahabharatha are consistent. The Thithi, Nakshatra and the lunar and the solar eclipses and the position of the planets just before the Mahabharatha was to determine the date of the war as *Friday Margasira month Shukla Ekadasi Kritika Nakshatra, 22nd November 3067 B.C.* Incorrect and mistaken readings of the relation between Krishna's date of death and the beginning of Kaliyuga has caused erroneous determination, 36 years before or after the correct date. Bentley, Swamikannu Pillai and Sengupta have struggled with the law of the precession of the equinoxes alone and unable to determine any date with the details of the planetary positions. Many concluded that the Mahabharatha was a myth or atleast Krishna and Vyasa are mythological persons. Two or three others have attempted to determine the date of the Mahabharatha War with reference to Puranic details and the law of the precession of the equinoxes. Failing to get a correct interpretation, they have asserted that Vyasa, if at all he existed, was no good astronomer. But Arya Bhatta has given the exact number of years between the date of coronation of Yudhishtira as Samrat i. e. 3082 B. C. and the (forgotten) era of 556 B. C. of the Pataliputra Empire of the Shathavahanas.

#### **Explanation of Viswamitra's Adhika-masa**

- a) Sidereal year is the time taken by the Sun to make

one revolution with respect to the fixed star. The Vedic sidereal year began with the Sun at mid Shravistra i. e. 300th degree of our Zodiac (with the error of 1 deg. 46').

b) The Vedic Yuga is *Magha Sukla Prathama* to *Magha Sukla Prathama* after 5 rounds of the sun i. e., 5 sidereal years. The Yuga has 62 luni-solar months (Amavasya to Amavasya) or 67 lunar sidereal months (mid Shravista to mid Shravista) but there is a slight shifting of the luni-solar months. It is adjusted as 61 at the end of 7 Yugas. In general the Vedic Yuga equals 5 sidereal years in course of time.

c) The luni-solar months are named *Magha Phalguna* etc. to Pushya. In a Yuga after 3 rounds of 12 months a nameless month is interposed. It is named after a *Deva-Anhasapatty*. Similarly, after another 2 rounds of 12 months and these nameless months named after Anhasapatty is introduced to make up 62 months. Then, the cycle of 12 luni-solar months begins again. The two months named after Anhasapatty are extra name-less months i. e. *Adhi-Masa*.

d) This sidereal system is intended only for astronomers and astrologers and not at all for civil, social or ritual purposes.

e) Again, the tropical year began in autumnal equinox or Sharadrutu. Tropical year is slightly shorter than sidereal year (due to precession of equinoxes. 1 deg. in 72 years is the present rate of precession). The tropical months based on the motion of the sun alone at 30 degrees per month. The months are *isa*, *arja-madhu—madhava—*. These are also intended for astronomers and astrologers and not for rituals or civil purpose. Garga, during the days of Nanda changed the beginning of tropical year from Sharadruthu to Vasantarutu.

f) The civil, social and ritual year began with the 1st *Sukla Prathama* after autumnal equinoxes, the months are luni-solar and named *Magha Palguna* etc. the same 12 old luni-

solar months. But if a 13th Amavasya came before the autumnal equinox that extra luni-solar month becomes an adhikamasa-here the month is named Kritika Adhikamasa or Phalguna Adhikamasa etc.

g) Varahamihira changed the months from luni-solar to tropical and named them Mesha, Vrishabha etc. He linked luni-solar months with the tropical months. This is what we have in our *Panchangas* now. But the tropical months have moved back. Hence we should change the calendar in 1 or 2 ways either as in Viswamitra or as in Varahamihira.

### Viswamitra

h) The year should start with the 1st Suklaprathama following Vasanta-rutu and have 12 luni-solar months and some times an adhikamasa.

### Varahamihira

i) The year starts with vernal equinox in the months of madhu, madhava etc. (Varahamihira is wrong in linking tropical months with luni-solar months). The luni-solar months may be linked with them and we may get 2 amavasyas in a tropical month, the 2nd one is adhikamasa. If there is no amavasya in the tropical month, the corresponding luni-solar month is cancelled and is turned Kshaya month. (As is done in our panchanga) following the principles of Varahamihira). One must note here that Varahamihira changed all these things because in his days, tropical year began and coincided with the sidereal year at 0 degrees. In a way a confusion commenced with this system.

j) Any way, the Panchanga must be remodelled, the best is that of Viswamitra (for the Varaha method will be good only when tropical month and rasi month began together as in the days of Varahamihira). Viswamitra has only an adhikamasa and no Kshyamasa. Varaha did it because it suited his astronomical and astrological basis but it is no more useful either way. The best is to have the Saptarishi era



cycle of Yuga or 5 years and cycles of 100 sidereal year named after a nakshatra solely for astronomical purpose and the luni-solar ruthu combination of Viswamitra for all civil social and ritual purposes. This is what we find from the Mahabharata. The adhikamasa before the Mahabharatha war is that of Viswamitra who is quoted by Vyasa as the one who changed the Nakshatras system and the ritual system. Garga adopted it and it was continued till Varahamihara, the astronomer, meddled with it and flattened the year on the rasi system. For reckoning of time the Saptharishi System was adopted e. g. when questioned by Duryodhana, Bhishma gives the reckoning in Virataparva. Here, it is a clear case of Sapta Rishi reckoning. The Gods approved it as, we see Arjuna regained his masculine form at the end of the 13th year. The difference in time between the two reckoning... .. Yudhistira had to stay 18 days long. If a person dies within the 1st 6 or 7 days, of a month, then 13 Masikas for him, if he dies after 10 days, there are only 12 masikas. Yudhistira lost his Kingdom and left for the forest within the 1st few days, following the autumnal equinox. If some one had died that day, there would have been 13 masika for him during the year.

The best is that of Viswamitra because his system is not linked to Nakshatras for the beginning of the year. But it depends on the position of the Sun regarding Sharadruthu alone. There are 2 cycles of (1) 100 years of sidereal year Saptarishi era good for astronomers (2) 60 years of tropical years — Viswamitra— good for ritual purposes. Both started at the same time and have only luni-solar months.

**Note:** The difference between Adhimasa and Adhikamasa— Sidereally it is known as Adhimasa. Tropically, it is known as Adhikamasa.

## VIII

# Hanumantha's Route to Lanka

G. S. SAMPATH IYENGAR

**T**radition is, no doubt, good; but some times it leads to wrong conclusions. One such incident in Ramayana is Hanumantha's journey from Kishkindha to Lanka. Tradition is that he went to Lanka, the present Ceylon from Rameswaram, East Coast City of India in Tamilnadu. But is it supported by facts in Valmiki Ramayana? If one is to take facts as they are, one would be surprised at the conclusions. I will simply take facts from Valmiki Ramayana and it is for the readers to judge whether they are right or wrong.

After Ravana took away Sita, both Rama and Lakshmana searched for her near Pancavati and while they were coming in Southerly direction they met Kabandha who gave them some hints about the way of finding Sita. He asked them to make friendship with Sugriva and observed: "Make friendship with Sugriva who knows every place in this world". The reader must note that next to Visvamitra of 7000 B. C. and Vyasa of 3000 B. C. Sugriva who knows every place in this world. The reader must also note that next to Visvamitra of 7000 B. C. and Vyasa of 3000 B. C. Sugriva of 4400 B. C. was

the greatest astronomer. So one must have the faith in the words of Kabandha.

Rama and Lakshmana then proceeded to Risyamuka Parvata where Sugriva was living. They make friendship with each other and Sugriva promises to find out the whereabouts of Sita. Herein lies the secret of Hanumantha's journey. Sugriva divides the entire world into four divisions, East, West, South and North and describes the boundaries of South with Vindhya Mountains as the starting point.

Since he knew that Ravana was in an island, in Southern Ocean, he entrusted the search for Sita to Hanuman. He asked Hanuman to start the search and visit all the South Indian places and finally jump to Lanka from Mahendra Parvata situated in the West Coast.

India in 8000 B. C., extended upto equator and Southern portion was ruled by Tamil Kings. Kapatapura was here and Mahendra Parvata also was in the west coast. He uses the word Malaya Mountains as equal to Western Ghats. Sugriva asks Hanuman to go in the direction of Agastya Ashrama. Since he was an astronomer, he uses the word with a double meaning. One must note that, one could see Agastya Nakshatra from 7000 B. C. to 7000 A. D. Due to a change in the position of vernal equinox, it will be very difficult to see that star after 7000 A. D. and one could see it only in the Southern hemisphere of the earth.

After getting these instructions, Hanuman immediately went to Vindhya Mountains which is north of Kishkindha. Many people believe that Hanuman went to some imaginary Vindhya Mountain in the South. How could he go against the directions of his master? *Only if we could understand this point the whole secret of Hanuman's journey could be found out and truth established.*

When Hanuman and others began their search in Vindhya

range they were caught up in Swayambhabha cave and by the time they came out a month had already expired which was the time allotted to Sugriva to search Sita. They were on the Sea shore near Narmada River and they were contemplating to end their lives. Sampati, brother of Jatayu, who was on the Vindhya mountain came to their rescue. After hearing all their difficulties, Sampati narrates his own story and tells them that he could see Lanka 400 Yojanas i. e., 1600 miles in a straight direction. This shows that Lanka was to the west of India, a part of Madagascar. He asks them to go in the southern direction and asks them to jump from Mahendra Parvata. What is more, Sampati clearly uses the word ' Sampurna ' Sampurna means 4 and so Lanka is 400 Yojanas i. e. 1600 miles from Vindhya Mountains and the Narmada River in a straight southernly directions whereas he used the word only ' Satayojana ' from Mahendra Parvatha to Lanka i.e., about 400 miles to Lanka. One must note here that Valmiki never makes mention of any southern states, this simply shows; that Hanuman after getting instructions from Sampati went by the sea shore to Mahendra Parvata. Valmiki never minces any words or places; it is better to believe his words rather than think in our own way.

Evidently, we Indians of the present century are unable to understand the correct geographical position of India in 4000 B.C. Vindhya is the mountain separating Bharatha between North and South. The sea beach was at one end of the Vindhya. In those days, Rajaputana was a sea and to those who were living on the banks of Saraswati river, Arabian sea was the southern ocean. That is why Valmiki uses Mahasagara which is an extension of southern ocean. Added to this, Sampati himself explains as follows :

“ When the forest appeared like grass, the rivers like threads and mighty mountains like the Himalayas, the Vindhya and the Meru like an elephant immersed in a pond, we were

dazed by the glare of the sun. I fell down on the Vindhya hill and Jatayu on Janasthan ”.

What better explanation is necessary than this and how could Sampati fall in the southern ocean, far away from Janasthana. The above explanation clearly proves that Sampati fell on Vindhya Range. Valmiki is very definite about the position of Vindhya Range, Malaya hills, Mahendra Parvata and Lanka.

From the above discussions, it is very clear that Hanuman went to Vindhya Mountains, from there along the sea shore to Mahendra Parvatha and from there went to Lanka 400 miles away from Mahendra Parvatha. It fell on Magha Purnima day 4401 B C., and before entering Lanka first, he got down near Malaya Parvatha near Lanka.

After Hanuman's return to Kishkinda, Rama takes the nearest possible route to Mahendra Parvatha via the present Phalghat section of the Kerala State. From there, he goes to Mahendra Parvatha and then to Lanka. If the Government of India makes an honest attempt, they can easily find out the bridge now submerged under the Sea. On his way back also Rama takes a little bit different route as he was travelling by plane. Instead of crossing to India at Phalghat section, he crosses into India near Mangalore, goes straight to Kishkindha, stays there for few hours and reaches Bharadvaja Ashrama on the fifth day of "Chaitra" 4400 B. C.


Valmiki uses the words Mahendra Parvatha, Vindhya and Malaya consistently. How could a great poet like Valmiki use the same words with different meaning. Mahendra Parvatha is used by Sugriva and Superaiava by Sampate for the same mountain situated in West Coast in Southern India.

The point however is that when the extreme south of south India submerged in Sea in 2700 B. C., and since this

# INDEX

D DWARAKA SWALLOWED BY SEA IN 3032 B.C.

V BOTH SOUTH AND WEST SEA MEET AT 'V'

⊙: SUBMURGED IN 2700 B.C. 

M MAHENDRA PARVATHA

DNEFGHIOD : DAKSHINA DISHA

DNMGHIOD : DAKSHINA SAMUDRA

C CHITHRAKUTA

A AYODHYA

P PANCHAVATHY

J. JANASTANA

K KISHKINDA

W: WESTERN GHATS, MALAYA MOUNTAINS.

→ → → SRI RAMA'S ROUTES.

→ → → SRI HANUMANTHA'S ROUTES.

H ⊙: AREA RULED BY TAMIL KINGS.

2 VALI'S KINGDOM.

3 RAVANA'S ARMY CENTRE.

4 THATAKAVANA.

5 KIRATHARJUNA.

6 ANAREA DESA.

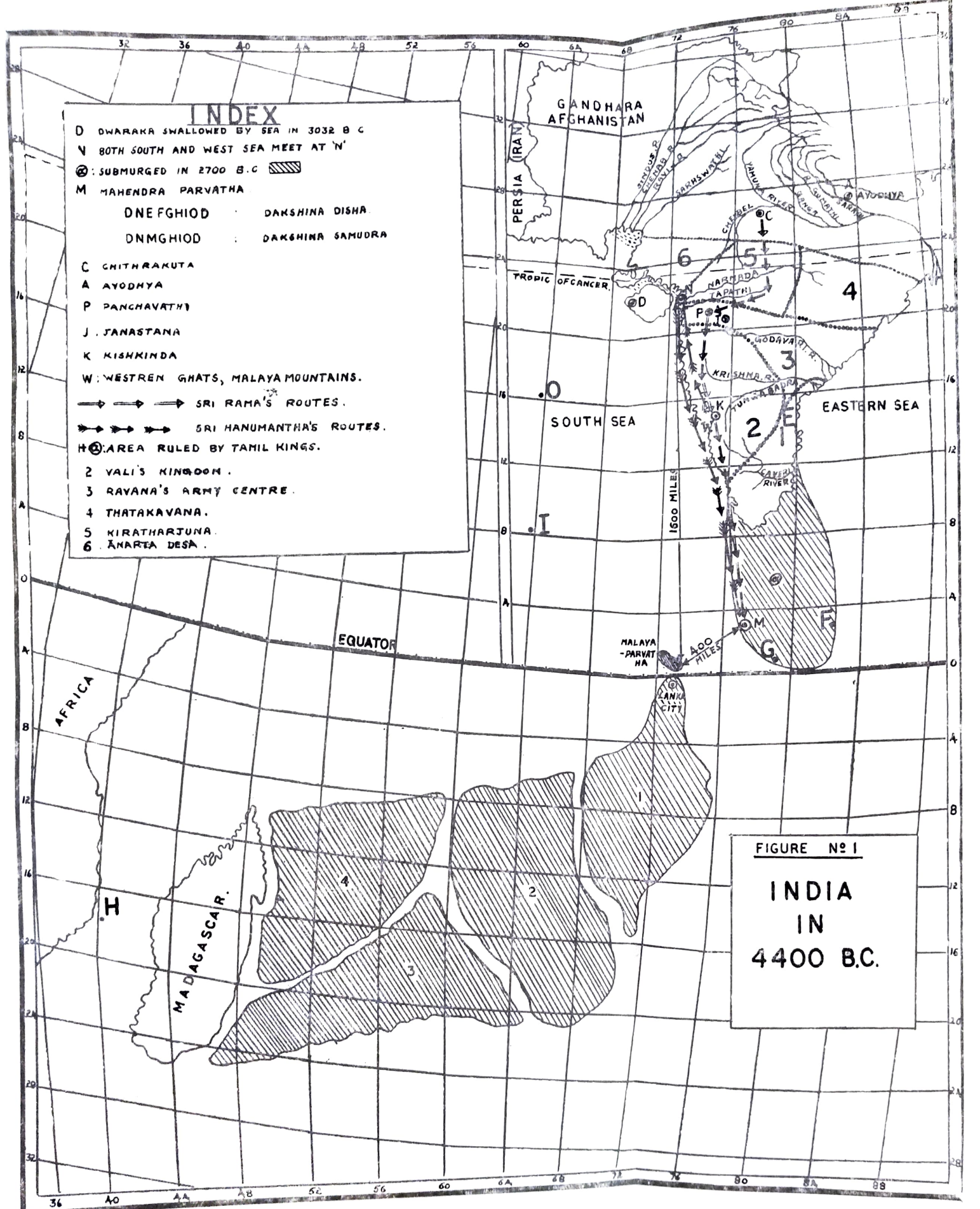


FIGURE No 1

INDIA  
IN  
4400 B.C.

submerged portion was under the rule of Tamil King, the then Tamil king who was the last man to wash his feet in the sea, created this Rameswaram which was very near to present Ceylon, the remaining portion of the submerged area. Ravana was a black man and black in colour in the characteristic feature of Africa, and Valmiki has clearly testified to this aspect of the matter.

There are evidences in the Valmiki Ramayana to show that Lanka was on the equator. It is true that at one or two places big orchards existed but it was due to Rama's divinity rather than to the condition of natural phenomena. Even now under forcible conditions we can have such type of garden. But that is a very rare case. Thus it becomes very clear that Lanka was on the West Coast of India and Hanuman came straight from Vindhya mountain to Mahendra Parvatha and flew to Lanka. We request the readers to read the latter portion of Kishkindha kanda in full to form their own conclusions on this subject.

#### **Some facts about Ramayana**

1. Rama's date of birth 4439 B. C. Chaitra Navami 10th January
2. Rama's Departure for Forest—4414 B. C. Chaitra Saptami.
3. Hanuman's Entry into Lanka 4404 B. C. Magha Purnima—Ekadasi—Lanka on Poornima
4. Coronation : 4400 B. C. Chaitra Saptami
5. Publication of Ramayana 4378 B. C. Pushya Masa
6. Rama's death—4377 B. C. Chaitra Masa
7. September 23 — Autumnal Equinox—Danas 248 Pushya.  
March 21 — Vernal Equinox — Mithuna 68 Ashadha.  
June 21 — Dakshinayana — Kanya — 158 Asvija.  
December 22 — Uttarayana—Meena 338 Chaitra.

#### **The influence of dravidian culture in Africa**

This study of Hanuman's visit to Lanka gives us a clue

to the spread and influence of Tamil culture, or to be more particular Tamil Culture in South Africa. Last year, when Kaunda, the great Africa statesman who had come to India to receive the Nehru Award made a reference to this when he visited Madras. But unfortunately nobody in India gave a correct version of Ramayana to him. A recent German writer Erich Ven Deniken, in his books "*Gods from Outer space*" and "*Chariots of the Gods*" has spoken about this point very clearly. That apart this study of Hanuman's route to Lanka, clearly proves that Tamil Nadu had spread their culture into South Africa through Lanka—Ravana, the African tried his level best to colonise South India. But having failed in his attempt came to an agreement with all South Indian Kings with only one concession and that is to keep the army in Janasthana Ravana was always friendly with Tamil Kings, and in particular, he was very friendly with Agastya, the founder of Dravidian culture. Agastya had been allowed to have his Ashrama not only to the North of Lanka but even to the South of Lanka Dwipa.

Tamilians used to have trade relationship with Africa through the parts of Marica and Kapata cities.

Even during Rama's period this submerged portion was almost sinking and the Mahendra Parvatha mentioned in Valmiki Ramayana was half sunk in Sea.

### **Conclusion**

Valmiki is the most economical poet in the world ever born and he is correct to the second and mile in all his calculations. To the maximum extent, he never uses any extra word. His discription of night on the day when Hanuman started from Lanka conclusively proves that Lanka was to the West of India. In Sundara Khanda Sarga 56 slokas 2, 3 and 4 he describes the night as follows:—



East	Swathi	Pushya	Pn: vasu	Meena	Dhanista	Shravana
Leo	India	Lanka			with Sun	West
Chandra						

This was the position of Akasha at 6 p. m. Magha on Pornima at the time of his start from Lanka.

He reaches India at 6.00 A. M. in the morning on Magha Krishna Paksha Prathama. The position of the Akasha was as shown below :

East	Sharavana	Swathi	Leo	West
Surya			Chandra	
Dhanishta	India	Lanka		

Thus anuman starts from India where Sun was in Dhanishta (Note he never used the word Chandra), entered Lanka when Sun was setting with Dhanishta, started from Lanka on his return Journey when Sun was rising with Dhanishta. Hanuman himself said that he saw Chandra, Pushya and then Sun in order. How careful he was in using words. He saw Chandra first in the East, then as he flew he saw Pushya and Punarvasu and Chandra then began to see Swathi and then he saw Sun in Dhanishta. What beautiful astronomical observations. This conclusively proves that Lanka was to the West of India.

We shall just find out the accuracy of Valmiki. The distance of South Pole from Lanka as given in Valmiki Ramayana works out at 6250 miles almost equal to present day findings. He travelled from Lanka to India at a speed of 50-60 miles per hour like a ship. He travelled from Ayodhya to North Pole and back to a speed of 500 miles to cover a distance of 6000 miles both ways like an aeroplane. Then, he flew to Himalaya mountains to bring medicine to Lanka in 15 minutes almost equal to the speed of space craft. How wonderful and accurate are his findings. His accuracy can be further appreciated if we analyse the words in Yudhakanda Sarga 124 sloka 1 in Valmiki Ramayana.

## “ Poorne Chaturdashe Varshe ”

What a wonderful description of sidereal year and tropical year. On the day Rama left Ayodhya with Sita and Lakshmana to lead a forest life, it was Sapthami Thithi with Pushya Nakshatra. Suppose we call it as the first day of Tropical year. Then, on his way back he arrived at Bhardwaja Ashrama on Panchami Thithi. The next was Pushya and the next was Sapthami. So all these three factors, which were on the same day, came on different days on his return journey. Evidently, Sri Rama who knew the calculations well, thought that Bharatha might commit suicide on any one of these days. So, he sent Hanumantha immediately to Bharatha on the completion of the tropical year itself, just to say Bharatha's life. Of course there might be other considerations, but one should appreciate here the great accuracy of Valmiki in using these beautiful words.

### Daily notes prepared while reading Ramayana


Aryanya, Kishkinda, Sundara, Uddha and Uttara Kandas contain plenty of information about Vanaras and Rakshasas. But one must link them properly.

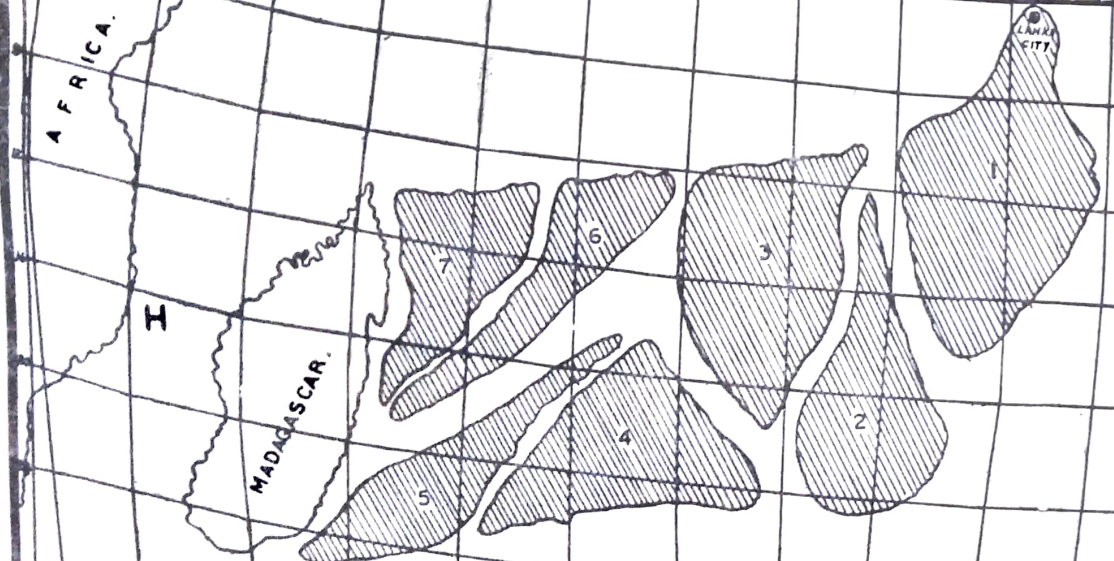
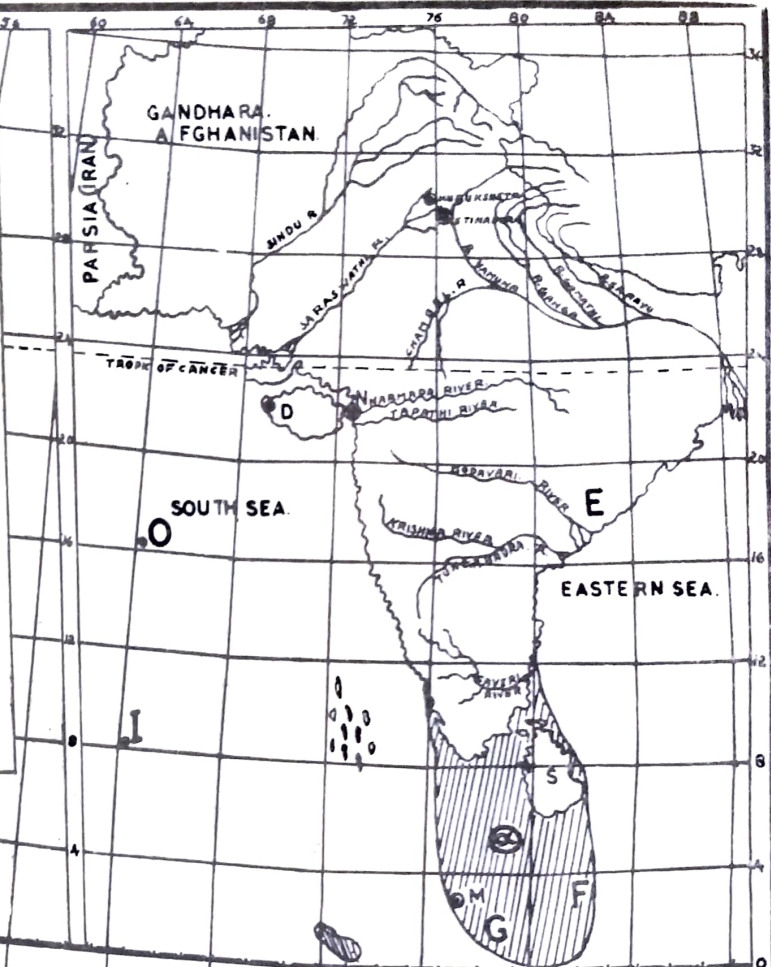
1. *Hampi* on Tungabhadra River Pampa Sarowavara is the site of ancient city of Kishkanda, (this is accepted by all writers and critics). Many were Vanaras, who lived on roots and fruits unlike the Rakshasas who lived on raw meat.

Vali's Empire extended from Vindyas to Nilgiris along the western Ghats, on both sides of it, including the narrow forested foot hills region. Sri Anjanayana son of Kaseri was born at *Gokarnam hills* facing the sea. His mother came from Anjanaikalam in kerala.

The names of the Vanara kings and the army strength is clearly given in Sugriva's side and as employer of armies.

# INDEX

- D: DWARAKA SWALLOWED BY SEA IN 3032. B.C.  
 N: BOTH SOUTH AND WEST SEA MEET AT 'N'.  
 S: SIHMALA IS JUST FORMING.  
 ⊕: IS HALF SINKING PORTION.   
 M: MAHENDRA PARVATHA BUT NOT VISIBLE.  
 DNEFGHIOD : DAKSHINA DISHA.  
 DNMGHIOD : DAKSHINA SAMUDRA.



**FIGURE NO 2**  
**INDIA**  
**IN**  
**3100. BC.**

Vanaras came even from Ganges basin forest and Chota Nagapur plateau.

2. According to Ramayana, Mahabharatha and Puranas, Vindhya was taken as the central place to divide. Bharat as North and south (Pandavas Digvijaya and Sugriva's orders to the 4 vanaras chiefs of his army). Again Angadha's search for Seetha in towns and villages and hills and forests, make Vindhya as the central point).

3. Ravana, while carrying away Sita, flew low in order to avoid being seen by people in the villages and towns. He flew along the Eastern side of the ghats and crossed it at the Phalghat gap, when he was caught by Sampathi's son (read Sampathi's story to Angadha) once on the western sea shore, he flew straight to Lanka.

4. Lanka was not an island. It was the capital city of a huge empire extending to Africa almost along the equator. The city was built on a plateau between 3 hills overtopping the sea. It was on the N. Eastern tip of the continent. The vastness of the Continent can be seen from the army brought by Ravana for Mulabala war. To its north, lay the Maldivian range (of hills, now Islands) called Malaya Dweepa on which Hanuman landed after the journey (read, the cradle of man and the essay on Tamils). The jump must have been from Anamalais to Lanka, Equator a distance of 100 Yojanas.

1. YOJANA = 4 miles.

5. Originally, the continent was the home of Rakshasa and their cousins the Yakeshas (read Valmiki's description of Rakshas and Vyasa's description of the Rakshasa). They lived in the hills and forests of Bharat everywhere.

Mali, Sumali, Malayavan were 3 sons of Kashyapa and Dhanu. They were Aryas like Daityas and Adityas. They joined hands with Daityas and fought against Adityas. Danavas were favourite of Siva, and so they refused to join the Devas. Hence

Sri Vishnu was implored, he became destroyer of Daityas and Danavas. The Daityas escaped to the south east continent in the Indian Ocean (now the many islands, read cradle of man) while Danavas escaped to the South West continent, Subramanya was the first conqueror and he colonised the areas. He is the God of Yagna. Vishnu, as Nara-Narayana, defeated the Danavas.

6. Yekshas were cousins of the Rakshasas. Rishi Visravas married an Yaksha Girl and organised the Yakshas. Kubera was his son. He built the great city of Lanka and drove the Rakshasas westwards.

Now, Malyavan's daughter was given in marriage to Rishi Visravas. Her sons Ravana and his brothers were trained in the Aryan war cult to conquer Bharat. At the outset, he met Vali, got defeated and made peace with him. One of the conditions of peace was "everything of mine including woman are yours and vice versa".

That was why Rama was advised to make friends with Sugriva. Next, Ravana met Kartaveerya, got defeated and made peace with him. Next, he turned his attention towards the Tamil country. He was defeated by Rishi Agastya. Thereupon, a conference was set up by these four persons for an alliance (north Deccan K. Arjuna, Western Deccan Vali, Eastern Deccan Ravana, Southern Deccan, Pandyas).

Rama's work was to reconquer Deccan and annex it to his father's empire and establish universal Dharma all over Bharat. All the great Vanara heroes were born just about the time of Sri Rama's birth except Vali, Sugreeva and a few others. Hanuman and Angadha were quite young.

I have given the ages of the great personalities as follows :

Event	Age of				
	Vali	Ravana	K. V.	Arjuna	Parushurama
1. Ravana's Digvijaya	25	25		45	38
2. Birth of Rama	30	30		50 (died)	43
3. War	68	68			81

When the great S. W. continent, together with southern Tamil Nadu sunk, (read history of Tamil) The Ceylon island was left uninhabited when the people ran back to the main land under the leadership of the Pandyan Emperor. A few Yakshas were left there. Even now the forest tribes of Ceylon call themselves Yakshas. Then it was colonised and the new Rama Sethu and Rameswara were created. Rama flew straight from Lanka to Kishkinda. On the way, he showed Sita, the place where he worshipped Siva. Before a great battle Shiva is always worshipped by a special kind of Yagna. On the 12th night of the Mahabharatha war Krishna advises Arjuna at mid night to perform that Yagna so that Siva's blessings would save them the next day during Jayadrutha's battle. Therefore, Rama Sethu and Rameswaram must have been built at Ernakulam and got sunk later with Lanka. The region was not inhabited then except by forest tribes. For building the bridge huge rocks and trees were brought. It would have been possible if it were near W. Ghat and not far away where forests trees and rocks are not available and the intervening place is occupied by towns and villages.

There is an old saying 'Keralas vanaru Acharac'. This means the land was occupied by Vanaras. I felt that it must be perhaps Kerala North of Calicut upto Bombay and Surat. The Southern Kerala was too dense with forests and too rocky for cultivation, and therefore not colonised till the sea receded and made a fairly wide area fit for colonisation. It is said that Parasurama brought large numbers of men and women and colonised the area, just as the eastern plains were colonised by Agastya many years ago.

### Further evidence from Mahabharatha

After giving two or three instances, from Ramayana I shall narrate several incidents in Mahabharata and prove that Lanka is to the south west of India.

In Uttara Ramayana, Valmiki calls Ravana as a *Nairuthendra-Rukshasas* of the South West region. This proves that Lanka was to the south-west-of India. When Rama begins his fast before 'Mahasagara', the Mahasagara comes in the form of human being and calls upon Rama to shoot the arrow in the northerly direction on the *Mari Bhumi* of Rajaputana. This proves that Mahendraparvatha was on the west coast of India. ( *Mari Bhomi* means marsh and desert.)

We shall now take some instances from Mahabharatha. Vyasa clearly says that Mahendraparvata and Vindyparvatha and Sailaja parvatha were on the west coast of India.

Valmiki says that both western sea and southern sea met at the mouth of the Narmadha river. Vyasa also says like that when he defines the boundaries of South, North, West and East.

When at the time of the Raja Suya Yaga, all the Pandavas went to conquer the whole world in different directions, Sahadeva goes in the direction of South and reaches Mahendra Parvatha on the west coast of India. Then he, sends Ghatodgaja to Lanka with a request to Vibhishana, the tenth king of first Vibhishana of Ramayana period to send riches and money, gold and all other materials necessary for Yaga. After the deluge, the great Lanka empire broke in to small bits and finally in 2700 B. C. only the present Madagaskar remained there. Bits continued as the part of Lanka empire. This proves that Lanka was to the west of India.

# INDEX

○ DWARAKA SWALLOWED BY SEA IN 3032 B.C.

N BOTH SOUTH AND WEST SEA MEET AT 'N'.

S SIHMALA PRESENT CEYLONE.

⊗ SUBMURGED PORTION

DW: NEW DWARAKA.

B : CHAGOS' ISLAND IS ONE OF THE REMAINES OF -  
THE SUBMURGED LANKA.

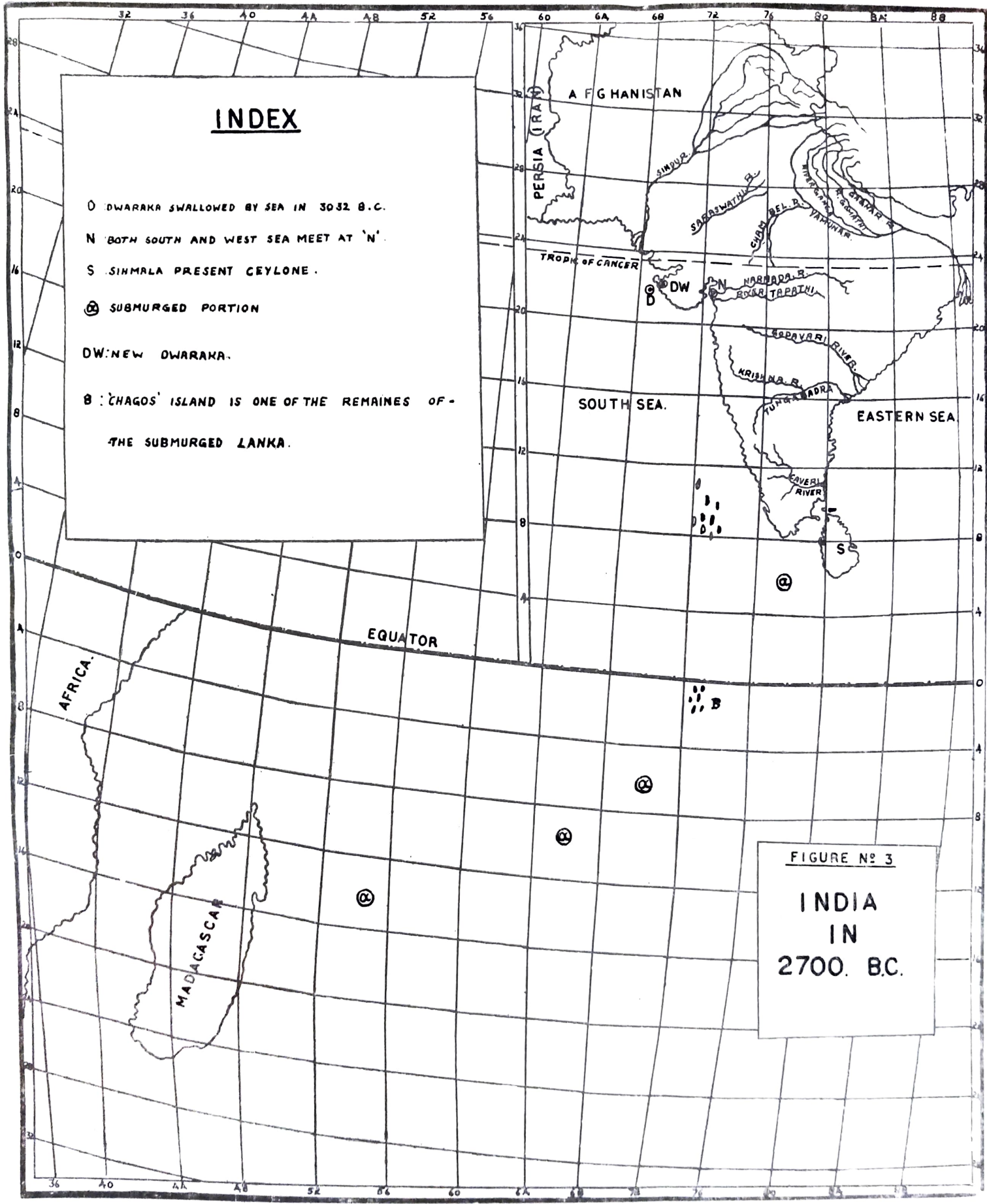


FIGURE NO 3  
**INDIA  
IN  
2700. B.C.**



People in India particularly some Historians have begun to say all sorts of things which are not there in epics. If they say something outside the epic, it is different matter.

But we are reading this epic for the last 5 to 6 thousand years and if people say something which is not there, they are truly doing some injustice to India. This happened at the beginning of Christian era. Some Indians joined hands with foreigners and made fun of our ancient culture.

In India, people do not read the epics in full neither do they study our ancient Vedic Calendar. All the calculations in our epics are based on vedic calendar which is again based on Astronomy. Our ancient culture is not based on any religious dogmatic views but is based on natural Astronomical facts. If people in India are not able to understand this, there is no use in blaming Valmiki and Vyasa for that. At least if they keep silent they will be doing great justice to India.

The position of 'Abhijith' star and "Saptharishi Mandala" are clearly given in Ramayana and Mahabharatha. The date of birth of Rama and Krishna are clearly given. The position of Vernal equinox is also clearly given. And so, one can easily calculate the age of Ramayana and Mahabharatha. So, instead of wasting time let, the Historians in India, rethink of these times of epics and bring out truth.

By the time of Mahabharatha the great Empire of Lanka had formed into small islands and Vyasa clearly says in Mahabharatha about this. Finally, these islands got submerged in 2700 B. C. due to a tilt in Pole axis.

Vyasa clearly mentions the name of Adikavi Valmiki and also mentions the presence of the 20th Valmiki ( in the family of Valmiki ) during the death of Bhishma. Vyasa explains Ramayana not only once but several times throughout Mahabharatha. Ramayana itself is a astronomical word. Rama + Ayana i. e., tropical year that means our culture depends upon the correct marking of tropical year in the fixed sidereal year.

The above facts clearly prove that Ramayana is earlier to Mahabharatha and its age could be easily fixed as 4400 B. C. and that of Mahabharatha war 3067 B. C. I only hope that historians in India will study these epics in detail and do not issue statements purely on guess work.

In Mahabharatha, it is clearly stated that Lanka and Simhala were quite separate. In Mahabharatha also Vyasa clearly mentioned the names of Lanka and Simhala. It is stated further in Mahabharatha that the central meridian was situated joining Lanka, Kanyakubjari, Ujjayan and Hastinapura. He clearly mentioned that Lanka was in the South West of India. Valmiki clearly gives the distance between South pole and equator and North pole and equator as roughly about 6500 miles which is very nearly equal to the present day findings.

### **Conclusion**

In concluding this analysis I only request all those who are interested in those studies to read Valmiki Ramayana and also the original Mahabharatha. Both Valmiki and Vyasa clearly explain the boundaries of South Sea and West sea and also Dakshinadesha. If this approach is clearly understood, probably one could arrive at the right conclusion. We only pray God to bestow the spirit of correct research on all our scholars in India.

## IX

### Sri Rama's Date of Birth

**T**he position of the equinoxes and Rama's Rasi Chakra help us to find out the horoscope of Rama. Ramayana means Uttarayana. Rama belongs to Surya Vamsa i. e. Rama always means brightness. And, so we can conclude that he must have been born in Uttarayana Sukla Paksha mid-day, almost the opposite of Krishna's birth. The names of Rama and Krishna are given just to indicate the starting point of Uttarayana and Dakshinayana in their respective periods. Again, the age of Ramayana is about 4400, because Sapta Rishi era is given and the position of Saptarishi is given as Surya in Dhanistha. Working back from the Sapta Rishi era of 76th year in Magha Nakshatra in Krishna's period, we can see exactly that Rama was living about 1300 years before Krishna's birth. Again, Vyasa says that Rama was living in almost at the junction of *Treta and Dwapara Yuga*. Again, in Uttara Ramayana Vaishakha and Jyeshtha are called as Sishira Rutu that means the position of Uttarayana is given and Chaitra is the Ritualistic month for Uttarayana purposes. Working back you can conclude safely that Rama was living some where in 4400 and 4500 B. C. Working back from Krishna's Rasi Chakra you can

354°13' Venus	Sun 1.12' Merc4.°10' Rahu151°5'		
	RASI	Moon93°5' Langa 93°16' Jup118.°12	
Mars 286°			
		Saturn 187°12'	

conclude safely his Rasi Chakra as follows and his date of birth is 10th January 4439 B. C. In Sri Rama's horoscope of 10 January 4439 B. C., the position of the planets were as follows :-

Lagna 93° 16', Sun 1° 12', Moon 93° 5'  
 Jupiter 118° 12', Sat. 187° 12', Mars 286°  
 Venus 354° 13', Mercury 4° 10', Rahu 151° 5'  
 Vernal equinox 66° 8' (Govt. of India Zodiac in which spica Chaitrasis at 180°).

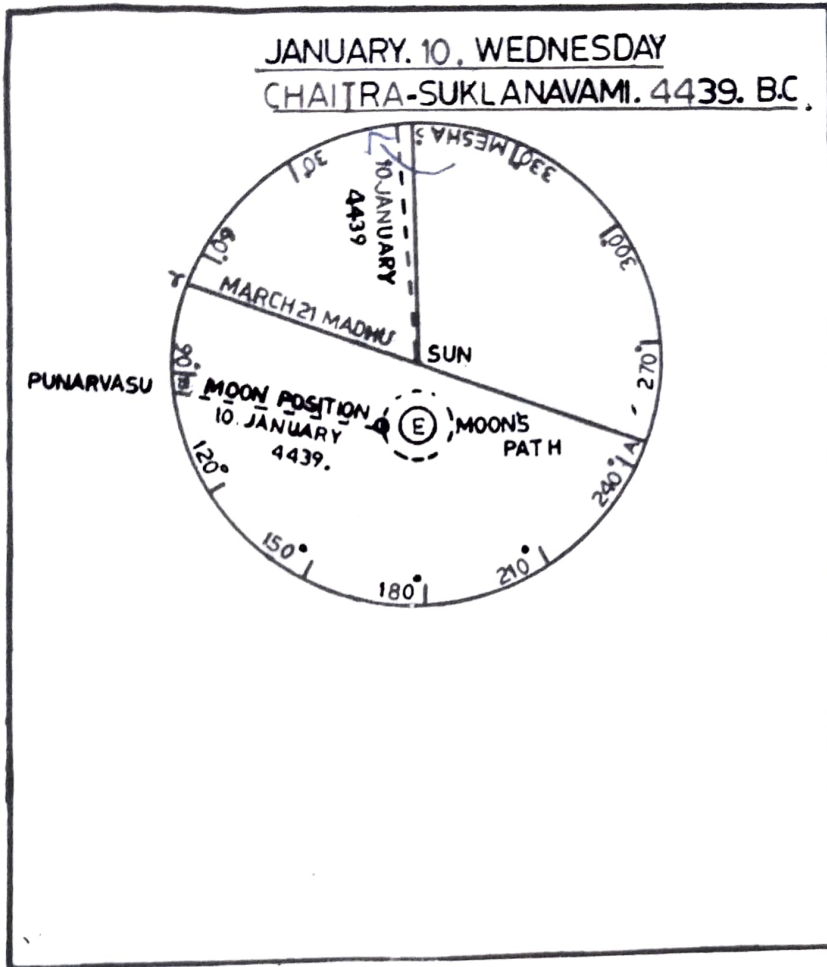
Is there any evidence to prove this? Yes, there is. Just examine the statement of Dasaratha, who says very clearly that his death is imminent on account of the junction of planets with his nakshatra Bharani. We shall examine this.

25 sidereal years + 22 days = 9153rd day.

(i) The Nakshatra that day was Punarvasu. The next day, when Sri Rama and Sita started on their exile, Sita states it was Pushya Nakshatra.

(ii) It was Sukla Sashti (6th day from New Moon). The day that Sri Rama started on his exile was Sapthami. It is

## Sri Rama's Date of Birth



1. a. Sidereal solar sun entering Kumbha.
  - b. Luni-Solar Magha Masa Sukla Prathama with Sun entering Dhanistha on Amavasya day. Previous to this Sukla Prathama.
  
2. a. Tropical solar at 68° Vernal equinox 248° Autumnal equinox.
  - b. Civil year Pushya Sukla Prathama after Autumnal equinox. In this figure Sri Rama's date of birth is given by dotted lines. Sun entering Mesha Second day and moon entering Punarvasu 93° 20'. Thus, in Rama's days sun used to enter Mesha in Jan.; in Krishna's days February.

therefore, necessary that at the end of the exile, Sri Rama should hurry back at Ayodhya on Sapthami day.

(iii) Sun is at Mid Bharani

(iv) Mars is at Mid Bharani

(v) Rahu is at Mid Bharani (Rahu in the 10th Place in Sri Rama's horoscope indicated Dasaratha's death).

(vi) Saturn in Poorva Phalguni-Janma Anujanma of Bharani, Saturn has retrograde Vedai aspect on Bharani. Veda Vyasa in his Mahabharata has mentioned such Vedai aspect. Moreover, it was the end of Saturn's  $7\frac{1}{2}$  years period for Sri Rama, again indicating a great domestic calamity for Sri Rama.

(vii) Mercury (malefic) in Mesha with the sun

(viii) Venus in Mesha with the sun.

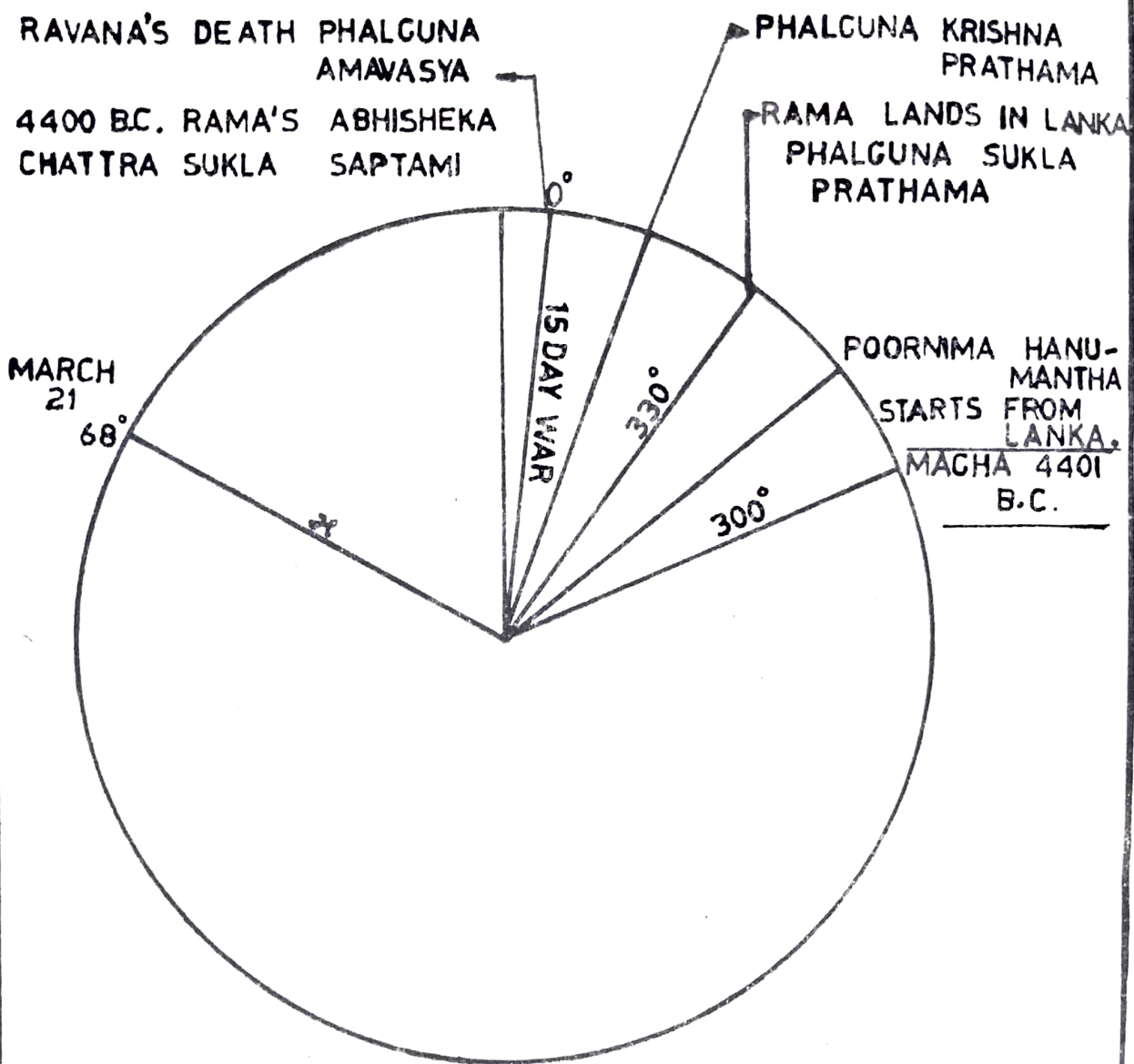
(ix) Jupiter in Uttara Phalguni, Kanya Rasi, is in the 6th house from Bharani. Thus, Maha Rishi Valmiki's statements is seen to be astronomically true. This, again proves the correctness of Sri Rama's horoscope. It is seen that Sri Rama went on exile when he was 25 siderial years and 22 days old.

You must also note one more point that all brothers were born in the same Thithi but in different Nakshatra.

When we read Ramayana, the usual mistake committed by scholars is that they equate Dasahasra as 1000 and Satasahasra as Lakh. This is all wrong. In Sanskrit figures like 1000, lakh and crore have got correct equivalent words. Valmiki uses *Ayutha* for 10000 throughout the Ramayana.

*When he uses the word Das Varsha Saharsha, it means he lived for 10 years very happily with Sita. But in his 11th year, he was forced to send her away to the forest to live in Valmiki's Ashrama and so when Valmiki uses Dasavarsha Saharsha, it means he lived in Ayodhya less happily because Sita was not there and he was feeling a little bit less happy. That is why Valmiki uses that word Saharsha and Shatha to*

# DETAILS OF RAMAYANA WAR



show the difference in degree of happiness. In Uthara Ramayana, the poet clarifies this sentence, he says very clearly that Rama lived happily for 10 years and sent away Sita in the 11th year and again after about 11 years, he says very clearly that he performed Aswamedha and died soon after the passing away of Sita from this world.

And so when we read Valmiki's words, we must be very careful and we should not exaggerate things too much. He was a man like us and some extraordinary persons are born now and then to help the nation to recoup its strength. We must analyse great personalities like Rama and Krishna only from this point of view.

To explain Valmiki's accuracy there is one remarkable word he uses in Yudha Kanda:— *Poorne Chaturdasha Varshe*. In this one word he explains whole of astronomy. He combines both tropical year and the sidereal year. Suppose for e. g., we say that when he started on his 14th year journey to forest, tropical year coincides with sidereal year. Astronomically we know that the tropical points fall back from the sidereal point by few days in 14 years and that is why Rama doubts that tropically Bharatha may die just after the completion of *Panchami* thithi. But the difficulty is he could enter Ayodhya only siderially i. e. *Saptami Pushya Nakshatra*.

That is why he stays back and sends Hanumantha just to avoid this catastrophe and at the same time keeps up to his father's orders to enter Ayodhya siderially.

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#### DETAILS OF RAMAYANA WAR

← *Hanumantha left India on Magha Sukla Ekadasi 6 a. m. reached Lanka on the same evening. Left Lanka on Poornima night and reached India on Krishnapaksha prathama 6 a. m. Reached Kishkinda on Thritheeya Morning. Rama left for Mahendra parvata on the Chaturthi night and reached Lanka on Phalguna Sukla Paksha Prathama and war went on and Ravana was killed on Phalguna Amavasya and Rama left Lanka via Kishkinda and reached Ayodhya and Abishekam took place on Chitra Sukla Saptami. (on the day Hanumantha left Lanka there were Ekadasi, Dwadasi and Trayodasi Thithis and the next day there were Poornima and Chaturdasi thithis).*



## Mr. L. D. Swamy Kannu Pillai's mistake

Dewan Bahadur Swamy Kannu Pillai did not believe in the reality of Maharshi Valmiki or his words. He, however, tested the horoscope of Sri Rama by searching for the date corresponding to his horoscope in the 7th to 9th century A. D. and failing to get a correct date, he boldly stated that the horoscope is a fake.

Prof. K. Srinivasa Raghavan clarifies the doubts raised by Sri L. D. Swami Kannu Pillai and others thus :

It is contended that Mesha Sukla Navami and Punarvasu Nakshatra cannot come together. Ordinarily this is true. From the beginning of Mesha to the end of Punarvasu it is  $93\frac{1}{3}^\circ$ . The interval for eight thithies between the Sun and Moon is  $8 \times 12 = 96$ . Therefore Navami should ordinarily begin at 96. In the case of rare Avatars, such rules should be carefully worked out. As is seen in the case of the horoscope of Sri Krishna, the planetary combination remains as such only for a very few minutes, and thereafter they break up in different ways.

It is seen by reference to any Panchang ( Ephemeris ) that the duration of Thithis and Nakshatras vary from  $22\frac{1}{2}$  hours to  $25\frac{1}{2}$  hours. This is due to the changing rate of movement of the Sun and the Moon along their paths and also due to the inclinations of their orbits to the equator etc., The calculations of this rare situation in the case of Sri Rama's Horoscope is shown here. One Nakshatra segment =  $13\frac{1}{3}^\circ$ . Let us consider the case when the period of a Nakshatra is 64 Naligis. Therefore the moon goes in 1 day  $\frac{40}{3} \times \frac{60}{64} = 12^\circ 5'$ . The average rate of sun = 1 degree per day. Consider the case when Amavasya ( New Moon ) occurred  $x^\circ$  before Aswinyadi and the sun was  $3/4^\circ$  from the beginning of Aswini when the moon was at  $93^\circ$  ( Punarvasu )

O	X	$3/4$	A	R	
		Aswinyadi	SUN	MOON	93

$$\begin{array}{l} \text{Number of days for the sun to move} \\ \text{from O to A} = \frac{x + 3/4}{1} = \frac{4x \times 3}{4} \end{array}$$

$$\begin{array}{l} \text{Number of days for the Moon to move} \\ \text{from O to B} = \frac{x + 93}{12.5} = \frac{2x + 186}{25} \end{array}$$

$$\text{But both are equal i.e. } \frac{43 + 3}{4} = \frac{2x + 186}{25}$$

$$\therefore 92x = 669 \text{ or } x = 7.27$$

i.e. the sun has moved from Amavasya for  $7.27 + .75 = 8.02$   
i.e. on the 9th day from Amavasya, the sun is at  $0.75$  from  
Aswinyadi and the Moon is at  $93^\circ$  ( or Punarvasu ).

It should be noted that Rama was born on the second day of the month of Mesha, with the Moon almost at the end of Punarvasu and it was Sukla Navami. These are combinations of planets, and they indicate that the horoscopes are those of Avatars. The same difficulty arose in Sankara's horoscope—a reverse case where Vaishakha Sukla Panchami was with the sun in Mesha and the Moon in Punarvasu.

(2) Yet, again the astute poet Valmiki has mentioned the birth Nakshatras of Bharata, and the twins. He has not mentioned the Thithi, as he has done in the case of Sri Rama. It is because, they were all born in the same Thithi, Sukla Navami. Sri Rama was born at about 12 Noon, the following night before Sun rise, Bharata was born. Since Rama was born almost at the end of Punarvasu and the beginning of Navami, Bharata was born in Pushya Nakshatra and Navami thithi. Then, the next day just before Noon, Pushya had gone by, and Aslesha was there, but Navami was a long thithi and so when the twins were born, it was Aslesha Nakshatra and still Sukla Navami. That is why the Rishi has not mentioned the thithies for the brothers, but has carefully given their time of birth.

The laws of astronomy are complicated, and we normally take only approximate results. Details like, latitude of the place, season of the year, position of Vernal Equinox amongst

the Nakshatras, etc., should be taken into consideration for very accurate results. At the time of Sri Rama's birth, the Vernal Equinox was at  $66^{\circ}.8'$  of the present Indian Zodiac i.e., almost at the end of Mrigasira Nakshatra (  $53^{\circ} 20'$  to  $66^{\circ} 40'$  ) at or the beginning of Ardra Nakshatra. ( The present position of summer solstice is  $66^{\circ} 30'$  ).

We may mention that according to all the Puranas, there were only 100 kings of the solar line from Vaivasvatha manu ( 8576 B. C. ) to Brihadbala who died in the Mahabharata war in 3067 B. C. The interval between 8576 B. C. and 3067 B. C. is 5509 years only. Sri Rama was the 71st king of the solar line. Taking the average life of kings as 100 years. Sri Rama's date may roughly be taken as 4700 B. C. But by astronomical determination of the planetary positions as given in his horoscope, it is seen to be Wednesday Mesha Sukla Navami Punarvasu day 10th Jan. 4439 B. C.

Western scholars take the average span of kings etc., in fixing dates in the absence of clear data. But fortunately, in the Indian Epics, we save unimpeachable astronomical data recorded by the Great seers with astronomical expertise and besides those seers, Valmiki and Vyasa were actual contemporaries respectively of Sri Rama and Sri Krishna. Their Jayantis are even now celebrated, each year, all over India only on the above horoscopic astronomical basis recorded by peerless seers. Unfortunately Mr. L. D. S. Pillay, had no faith in Sri Rama as an *Avatar*, he being a christian. So we may say his opinion is not only sound but also biased.

## Date of Birth of Lord Krishna

**F**rom the evidence that is available in Mahabharatha we have been able to fix up the position of Uttarayana, Bhishma's death, Astronomical Kaliyuga and Kaliyuga Era. This leads us to the fixing up of Sapta Rishi Era too. The next evidence available is Krishna's Rasi Chakra. We shall examine this in this paper. Both in Mahabharatha and other ancient scriptures it is stated very clearly that Sri Krishna's birth took place in Bhadrapada month Krishnashtami, Rohini Nakshatra at about mid-night. The very name Krishna must give us a hint that his birth must have taken place in Dakshinayana Krishnapaksha at mid-night, because every thing should be dark. This coincides very well with his date of birth because Bhadrapada is the ritualistic starting point of Dakshinayana during Krishna's date. Now, we shall find out his exact date of birth as we know his Rasi Chakra. Westerners were not able to find out his date of birth exactly because they were not able to appreciate our tradition and our way of thinking on this subject. If they had searched for this Rasi Chakra, somewhere near 3100 B. C. they would have got the truth.

	RAHU	$\frac{L}{\text{MOON}}$	
	RASI		JUP
MARS			SUN
		VENUS SAT	MER

i) Lagna and Moon	52° 15'	Rohini	(4)
ii) Jupiter	91° 16'	Punarvasu	(4)
iii) Sun	148° 15'	Uthara Phalguni	(1)
iv) Mercury	172° 33'	Hasta	(4)
v) Venus	180° 15'	Chitra	(3)
vi) Saturn	209° 57'	Vishaka	(3)
vii) Mars	270° 1'	Uthara Ashada	(2)
viii) Rahu	16° 1'	Bharani	(1)

(i) *Sun and Moon*

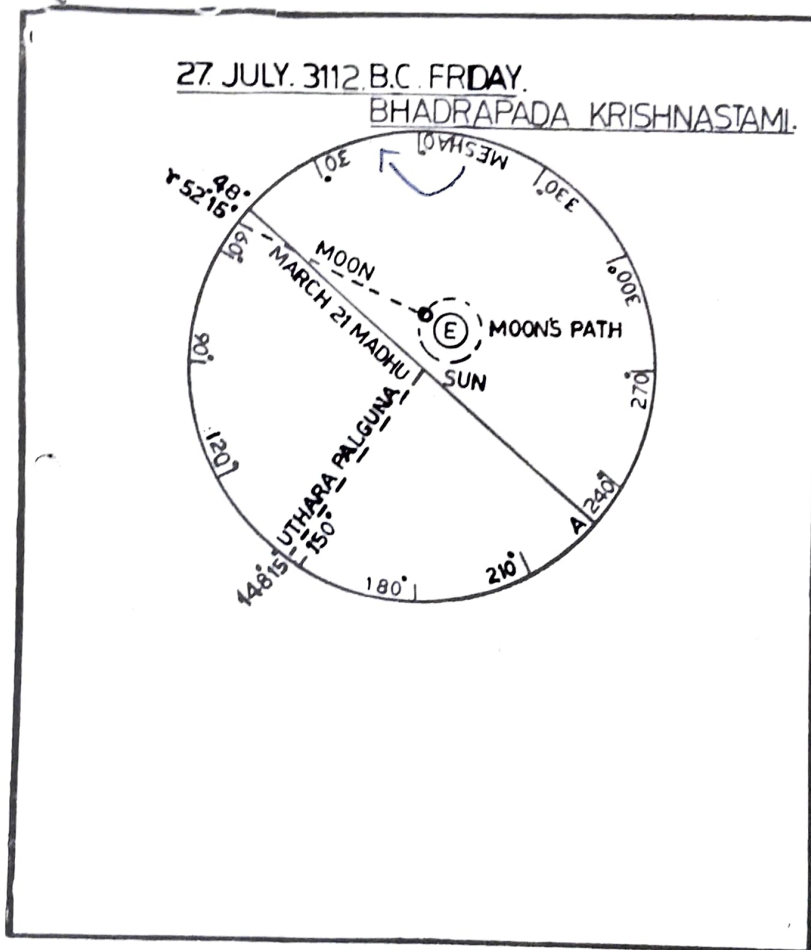
On Saturday, 10th Jan. 3104 B. C., at 5 P. M. the sun and the moon were together at 312.61.

$$92 \text{ Lunations} = 2716.814 \text{ days.}$$

$$7 \text{ Sidereal years} = 2556.798 \text{ days.}$$

$$\text{Difference} = 160.016 \text{ days} = 157^{\circ}.826 \text{ of the Zodiac i. e., New Moon occurred 7 years 160.016 days before}$$

## Sri Krishna's Date of Birth



1. a. Sidereal Solar Sun entering in Kumbha 300°.
  - b. Luni-Solar-Magha Masa Sukla Prathama Previous day Sun entering Dhanishta on Amavasya day.
2. a. Tropical Solar at 48° Vernal Equinox and 228° Autumnal equinox.
  - b. Civil-Margasirsha Masa Sukla Prathama after autumnal equinox. In Sri Krishna's days Sun used to enter Mesha in Feb. In this figure Krishna's date of birth is given correctly. Sun entering Uttara Phalgun and Moon in Rohini by dotted lines.

5 P. M. on 10th Jan. 3104 B. C., and at New Moon the sun and Moon were at  $312^{\circ}.61 - 157^{\circ}.826 = 154^{\circ}.78$ .

Therefore the previous Krishna Saptami ended at

- (a)  $154.78 - 7.74 = 147.04$  or } range.  
 (b)  $154.78 - 8.10 = 146.68$  }  
 i. e. (a)  $2716.814 + 7.872 = 2724.686$  days } range.  
 or (b)  $2716.814 + 8.21 = 2725.024$  days }

Before 5 P. M. on 10th Jan. 3104 B. C.

The corresponding Julian Day reckoned from sunrise at Kurukshetra.

- is (a)  $587691.46 - 2724.686 = 584972.774$  days } range.  
 or (b)  $587691.46 - 2725.024 = 584972.436$  days }

The position of the Moon at the time was

- (a)  $147.04 - 96 = 51.05$  } range — last quarter of Rohini  
 (b)  $146.68 - 96 = 50.68$  }

Converting to the Zodiac of Vedanga Jyotisha, by adding  $1^{\circ}.15'$ , the sun was at  $148^{\circ} 15'$  and the Moon at  $52^{\circ}.15'$ .

Hence it was just at 11.40 P.M. on Friday, 584973rd Julian day, Bhadrapada month, Krishna Ashtami, Rohini Nakshatra Lord Krishna was born, with the sun at  $148^{\circ} 15'$  and the Moon at  $52^{\circ}.15'$ . The corresponding date is Friday, 27th July 3112 B. C.

(ii) *Position of Rahu*  $= 230^{\circ}.22' + 144^{\circ}.24' + 1^{\circ} 15' = 376^{\circ}.01'$   
 $= 16^{\circ}.01'$ .

(iii) *Saturn* :

170 cycles of Saturn  $= 1829067.37$  days

5008 cycles of sun  $= 1829206.55$  days

$\therefore$  Saturn is ahead of sun by  $4^{\circ}.39'$

The corresponding Kali day is  $1829206.55 - 3493$

$= 1825713.55 = 11$  Sep. 1897 A. D.

$\therefore$  Position of Saturn  $= 213^{\circ}.21' - 4^{\circ} 39' + 1^{\circ} 15' = 209^{\circ} 97'$

(iv) *Jupiter* :

412 cycles of Jupiter = 1815353.0396 days

4970 cycles of sun = 1815326.74 days

∴ Jupiter is behind sun by  $2^{\circ} 15'$

The corresponding Kali day = 1815326.74 - 3493

= 1811833.74 = 11 Sep. 1859 A. D.

∴ Position of Jupiter =  $87^{\circ} 46' + 2^{\circ} 15' + 1^{\circ} 15' = 91^{\circ} 16'$

(v) *Mars* :

2643 cycles of Mars = 1815687.2017 days

4971 cycles of sun = 1815691.5528 days.

∴ Mars is ahead of Sun by  $2^{\circ} 16'$

The corresponding Kali day = 1812198.5528

= 10th Sep. 1860 A. D.

∴ Position of Mars  $271^{\circ} = 02' - 2^{\circ} 16' + 1^{\circ} 15' = 270^{\circ}.01'$

(vi) *Venus* :

8074 cycles of Venus = 1814242.219 days

4969 cycles of sun = 1814230.5256 days

∴ Venus is behind the sun by  $18^{\circ} 15'$

The corresponding Kali day = 1810738

= 10th Sep. 1856 A. D.

∴ Position of Venus =  $160^{\circ} 15' + 18^{\circ} 45' + 1^{\circ} 15' = 180^{\circ} 15'$

(vii) *Mercury* :

20628 cycles of Mercury = 1814595.8587 days

4968 cycles of sun = 1814596.2713 days

∴ Mercury is ahead of the sun by  $1^{\circ} 35'$

The corresponding Kali day = 1811103.27

= 11th Sep. 1857 A. D.

∴ Position of Mercury =  $172^{\circ} 23' - 1^{\circ} 35' + 1^{\circ} 15' = 172^{\circ} 33'$



## Date of Mahabharatha War

**M**r. T. S. Narayana Sastri, an Ancient History scholar observes that “ the date of the Mahabharata is quite important in Indian history. The whole of Indian history entirely depends on the date of the Mahabharatha War, for, the dates of accession of kings of various Hindu dynasties are invariably calculated in all our puranas and other works of authority from the time of the Mahabharatha War. Prof. M. Rangacharya, another eminent historian, opines that “ if we wish to adopt the three-fold chronological classification of history in addition to the progress of civilization and of human events in India also, the date of the Mahabharata War acquires a characteristic importance. A comprehensive view of Indian civilization, as unfolded by Indian literature, shows distinctly that what may be called the Ancient history of India was really at an end by the time of this war which was thus chronologically coincident with the medieval history of India. ”

There are many references to the Mahabharata War, the Yudhishtira Era, Kali Era and Saptarishi Era in our ancient books. Some of them are :

- i) *Varaha Mihira*: The great astronomer Varahamihira

In his book *Brahat Samhita* states "that the Sapta Rishis (the great seer) were in Magha Nakshatra when Yudhisra was rulling the earth. To get the epoch of *Saka Kala*, add 2526 Years to the epoch of Yudhisra."

This reference to Saka Kala, has often been mis-interpreted. The late Prof. V. Thiruvengkatacharya in his treatise "Popular Astronomy" rightly poses it when he holds, "the epoch of this Saka is therefore 3077 B. C.—2526 = 551 B. C. Unfortunately all our historians and chronologists took this Saka as Salivahana Saka of epoch 78 A. D. and fixed the age of the Mahabharata War. This is an absolutely incorrect and illegal procedure." This statement of Varahamihara implies that the epoch of his Saka was not well known at his time and to fix its epoch, he linked it to the *Yudhisra Saka*. This simple fact has been ignored and this has caused a lot of confusion in the chronology of Indian history. It is a pity that even the members of the Calendar Refrom Committee have refused to take a proper view of this matter, when their attention was drawn to it. The Yudhisra era was started 25 years after Kali era i. e., with the beginning of the Poorva Phalguni Cycle of the Saptha Rishi Era.

ii) *Vridha Garga*, quoted by Bhattotopala, 'at the junction of Dwapara and Kali, the Saptha Rishis were in Magha.'

iii) *Vishnu Bhagavata etc., Puranas* state that Kali-yuga began with the 76th year of Magha Cycle of Saptha Rishi Era.

iv) In *Mousala Parva of Vyasa Mahabharatha*, it is stated, "when 35 years were over after the Mahabharatha War at the time indicated by the curse of Gandhari, the Yadavas saw bad omens portending their destruction"—Krishna pained by Yadava civil war, ascends to heaven on the 36th year from when Kali as of fact began to take effect since it was dormant so long as Krishna lived.

v) In *Swargarohana Parva of Mahabharatha*, it is

stated that Yudhisra ruled for 36 years after the Mahabharatha War and then left the world.

In fact after Krishna departed, the Pandavas also started on their Mahaprasthan journey.

- vi) (a) *In Mousala parva-Ch I.*, it is posited —  
“ Though Kali has come, it was Kritayuga because of Sri Krishna. ”
- (b) *Arya Bhatiya-Gatika 5 states* “ Kali began from the Mahaprasthan of Pandavas.
- (c) Vishnu Bhagavatha and other Puranas say ‘Kali Yuga began on the day Sri Krishna left the world.’

To sum up our study, Krishna was born on 27.6.3112 B. C. The astronomical Kali yuga was on 11.1.3104 B. C.; the M B War began on 22-11-3067 B. C. Yudhisra ruled till Bhishma's death 18.1.3068 B. C., Krishna's ascension 3103 B. C ; Parikshit began his rule 3103 B. C.

### **Mahabharatha War**

Now having fixed Sri Krishna's date of birth, we shall proceed now to fix Date of Mahabharatha War. Vyasa gives sequence of events just before the war and gives the following details.

The Mahabharatha is teeming with plenty of astronomical information regarding its own age. It is proposed to arrange them in order and determine the exact date of the Maha Bharatha War. This paper is based entirely on the many astronomical data supplied by Sri Veda Vyasa which are all consistent.

(A) The following statements are seen in the Mahabharatha-Udyoga Parvan :—

(i) Sri Krishna left Upaplaviya for Hastinapura on the mission of peace in the Maithra Muhurta ( 3rd Muhurta of the morning from 7.36 A. M. to 8.24 A.M.) on Sukla Dwadasi,

Revati Day, in the month of Krithika. Enroute he halted for a day at a town called Vrikasthala—Chap. 82, 83 and 85.

(ii) He reached Hastinapura on Bharani Day Ch. 89.

(iii) He met various persons to discuss the conditions for averting a war. The meetings went on up to Pushya day—Ch. 90 and 91.

(iv) On Pushya Day (Krishna Panchami), Duryodhana finally refused all conditions for peace, and ordered his men to prepare the battlefield of Kurukshetra—Ch. 180.

(v) Sri Krishna left Hastinapura on Uthara Phalguni Day with Karna in his chariot. Their conversation is very interesting and illuminating. Sri Krishna told Karna that the seventh day from then, Jyeshtha Day, was Amavasya, and asked him to advise Duryodhana to begin the war preparation on that day Ch. 142.

(vi) He returns to Upaplaviya on Chitra day. Three days later i. e., on Anuradha day. Sri Bala Rama comes to Upaplaviya to know the result of Sri Krishna's mission, and coming to know of its failure, he decides to go on pilgrimage and leaves the place for Dwaraka with Pradyumna and others. Ch. 157.

(vii) On the following Pushya Day, Sri Krishna with the Pandavas moved towards Kurukshetra ( stated twice in the Salya Parva—Ch. 35 ).

(viii) 17 days after his return from Upaplaviya, on Pudarvasu day, Balarama started on his pilgrimage from Prabhasa, at the mouth of the River Saraswathi Salya parva Ch. 34. A number of chapters following Ch. 34, describe the pilgrimage of Bala Rama along the course of the River Saraswathy, dotted with many holy Rishi Ashramas. 42 days after starting on his pilgrimage i. e. on Sravana day, he comes to Kurukshetra, on the evening of the 18th day of the Maha Bharatha War. The 19th morning, when Duryodhana died was

Krishna Paksha Chaturdasi, Sravana Nakshatra i. e. 59th day from the Jyeshtha Amavasya.

(ix) 2 days after Bala Rama left Upaplaviya i. e. on Moola day, Rukmi, the great warrior and brother of Rukmini, came to the Pandava camp and offered his help. It was refused and he went away-Udyoga Parva chap. 158.

This disproves the conjecture of many scholars who state that the Maha Bharatha war began on Jyeshtha Amavasya day.

B) (i) Yudyoga Parva ch. 142 and 143 give the following information ( astronomical ).

(a) The day was Uthara Phalguni day, when Sri Krishna left Hastinapura after the failure of his peace mission.

(b) Seven days later, it was Jyeshtha Amavasya day.

(c) Saturn was very bright and was with Rohini Nakshatra.

(d) Rahu was approaching the sun.

(e) The moon was approaching the Amavasya.

ii) Bheeshma Parva—a number of astronomical observations are given here.

iii) *Mousala Parva Chap. 3* :—

When Amavasya came on the 13th day, Sri Krishna said : “Again Rahu has caused Poornima on Chaturdasi day. Such a thing happened at the approach of the Maha Bharata war. It has now come for our destruction.” He then found it was the 36th year, after the Mahabharatha war, and was reminded of the curse of Gandhari.

iv) Sri Vaishnava Guruparampara and “*Eedu*” commentary of Nammalwar’s Thiruvoimozhi— “Sri Krishna left

the world in the beginning of kali yuga on Friday, Chaitra Sukla Prathama, Utharaproshtapada Nakshatra, and Sri Satagopa was born 43 days later in the month of Vaishaka, Friday, Sukla Chathurdasi day, Poornima Thithi and Vishakha Nakshatra.

C) The night battle of Drona on the 14th night is very graphically described by Maha Rishi Veda Vyasa (Drona parva). At about midnight Gatotkacha was killed by Karna. The fury of the battle was tremendous but the warriors on both sides were very tired. Just then, at about 1 A. M. Arjuna declared a truce for one muhurta ( 48 minutes ), till moon rise. The moon rose at about 2 A. M., “ when 1/3 of the night was still left. ” The description of Moon-rise is excellent, and the battle that followed it was terrible. Drona became mad with fury and killed Virata and Drupada at about 5 A.M. The sun rose on the 15th morning to give a short respite for both parties for Sandyopasana. Therefore it was Krishna Paksha Dasami on the 15th morning and hence it was Krishna Chathurdasi on the 19th morning.

D) On Jyeshtha Day both sides went to Kurukshetra which was still wet and slushy. The Pandavas chose the western side of the bank of the Hiranya Nadi, while Duryodhana chose the eastern side ( Udyoga parva ). They started cutting canals, building comfortable camps, house and palaces, laid beautiful roads, etc. Duryodhana's camp was like another Hastinapura, connecting it by well laid chariot roads. The camps were well provided with plenty of good water, food, medicines and armoury. There were plenty of doctors, nurses, attendants etc. All this took just only one month. The next amavasya ( 30 days after Jyeshtha Amavasya ) came on Poorva Ashadha day. This was the first Amavasya of the month of Margasira ( at the beginning of Sarad Ruthu, which began the year in Sri Krishna's time ). Hence Navarathri or Durga Pooja began the next day \* ( just 2 years before on a similar holiday, Yudhishtira performed

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\* This Navarathri is termed Sarad Navarathri in the Dharma Sastras. There is another called Vasantha Navarathri celebrated at the beginning of Vasantharuthu. Our present Navarathri is celebrated at the beginning of Saradruthu.

Durga Pooja, and on the Vijaya Dasami day, he performed Ayudha Puja and then entered Virata Nagar ). On the 10th day i.e. Vijayadasami day, Ayudhapuja was performed ( U. Parva ch. 160 and 161 ).

In the evening Duryodhana sent Uluka, son of Sakuni, to the Pandavas. His message and its delivery by Uluka are very interesting reading. He told Sri Krishna and the Pandavas that " Ayudha Pooja is over today, Kurukshetra is now dry and there is no reason for further delay in starting the War. " He demanded a straight reply from them. The Pandavas, on the advise of Sri Krishna, agreed to begin the war the next morning at sunrise. It was Sukla Ekadasi, Krittika Nakshatra of the month of Margasira, that the Bhagavad Gita was revealed by the Lord and Teacher of three worlds. The War started at 6.30 A. M. (or Friday). Hence the 19th morning was Krishna Chathurdasi Thithi with Sravana Nakshatra.

F) (i) It is seen from the positions of the planets that the Mahabharatha War was fought 38 years after the Astronomical Kali Era

(ii) The positions of the planets Sun, Moon and Rahu are now verified.

On the 10th Jan 3104 B. C. at about 5 P. M. the planets were as follows :

Sun	312 <sup>0</sup> 61'	Moon	312 <sup>0</sup> 61'	Mercury	298 <sup>0</sup> 58'
Venus	298 <sup>0</sup> 16'	Mars	299 <sup>0</sup> 25'	Jupiter	299 <sup>0</sup> 10'
Saturn	299 <sup>0</sup> 5'	and Rahu	230 <sup>0</sup> 13'		

	BC Date	Julian day	Week day	Sun	Rahu
New Moon	13.10.3105	587608	M 1-87	225-27	235-25
Full Moon	28.10.3105	587623	T 2-64	239-83	234-45
New Moon	12.11.3105	587638	W 3-40	254-39	233-64
New Moon	10. 1.3104	587697	S 6-46	312-61	230-22

13th October 3105 B.C. was Amavasya with Jyeshtha Nakshatra on Tuesday early morning. This is the then Ritualistic Kali Yugadhi Day, the beginning of the Civil year of those times. The combination of (Kettai, Mootai, Chevai) Jyestha, Amavasya on the early morning of Tuesday is considered very inauspicious, and it was with this that Kali Yuga began. On the next Full-Moon day there was lunar eclipse visible in the early part of the night. (At 5 a. m. on 10.1.3104 B. C. the Astronomical Kali Yugadhi, the five planets were seen clustered together with the crescent Moon at Mid Shravishta).

(iv) 38 years after the beginning of the astronomical Kali Era, i.e. at the time of the Maha Bharatha War, the positions of the planets were as follows :—

(a) *Saturn* :

$$\begin{aligned} 168 \text{ cycles of Saturn} &= 168 \times 10759.2198 = 1807642 \\ 4949 \text{ cycles of Sun} &= 4949 \times \text{day } 365.25 \times 689 \\ &= 1807656 \text{ days} \end{aligned}$$

∴ Saturn is behind Sun by  $0^{\circ}.47$

13th Oct. 3067 B. C. is 13023 Kaliday of L.N. Rao's Ephemeris (i. e. 18—2—3102 B. C.)

∴ The corresponding Kaliday =  $1807656 + 13023$   
= 1820679 i.e. Thurs 29 Nov. 1883 A. D.

Hence position of Saturn =  $44.4 + 0.5 = 44.9$  (Rohini)  
Since Saturn was in opposition, it was very bright.

(b) *Sun and Moon* :

$$\begin{aligned} 38 \text{ sidereal years} &= 38 \times 365.25689 = 13879.7584 \text{ days} \\ 470 \text{ lunations} &= 470 \times 29.5306 = 13879.3764 \text{ days} \\ \text{Difference} &= .382 \text{ day} = 0^{\circ}.377. \end{aligned}$$

∴ The position of Sun and Moon at New Moon was  
 $225.27 - 0.377 = 224^{\circ}.89$ .

Note : The difference between the Zodiac of the Vedanga Jyotisha and that of the present Indian Government =  $1^{\circ}46' = 1^{\circ}.77$ . Therefore the correct position of



the Amavasya was 226.66 i.e., the beginning point of Jyeshtha Nakshatra and also of the Yoga Tara, Antares of Scorpio.

The corresponding week day was  $1.87 \text{ plus } 5.38 = 0.26$ —Sunday.

The new moon thithi extended from the midday of Saturday to the midday of Sunday. Confusion was caused as to which day is Amavasya. This is revealed in the traditional story that Sri Krishna made Saturday, the Amavasya day, while Duryodhana thought Sunday, the Amavasya day. Many interesting religio-social and astronomical features are revealed by this story.

c) *Rahu*: Motion of Rahu in 38 years  $= 38 \times 19.35548 = 15^\circ.509$

Therefore position of Rahu  $= 235^\circ.25 - 15^\circ.51 = 219^\circ.74$

On the day when Sri Krishna conversed with Karna, the Sun was at  $218^\circ$ , Rahu at  $220^\circ$ , (approaching the Sun) and the Moon was coming from behind to overtake the Sun. Veda Vyasa's words are wonderfully true. It is also said to be a solar eclipse day on Jyeshtha Day.

Again, tradition is that this Amavasya was a long thithi and so the previous Poornima was a short thithi. On that day (28—9—3067 BC) full moon ended at  $0.25 \text{ plus } 14.74 = 0.99$  i.e., there were three thithis that Sunday. The day began with a Chaturdasi and ended with Krishna Prathama. This is the full moon before the Maha Bharatha war, referred to by Sri Krishna in the Mousala Parva.

d) On the Jyeshtha day (13—10—3067 BC) mentioned by Sri Krishna, in his conversation with Karna, the Sun and the Moon were at  $225^\circ$ . So, on the Uttara Phalguni day, the day of the conversation, the Sun was at  $218^\circ$  and Rahu at  $220^\circ$  was approaching the Sun, and the Moon was approaching the sun from behind.

e) Again during this time Mars was in Anuradha and Jyeshtha. Thus the cruel planets Saturn, Mars and Rahu were

aspecting the Sun and the Moon, indicating a great war (Bheeshma Parva).

f) Jupiter was at Rohini with Saturn-Bheeshma Parva.

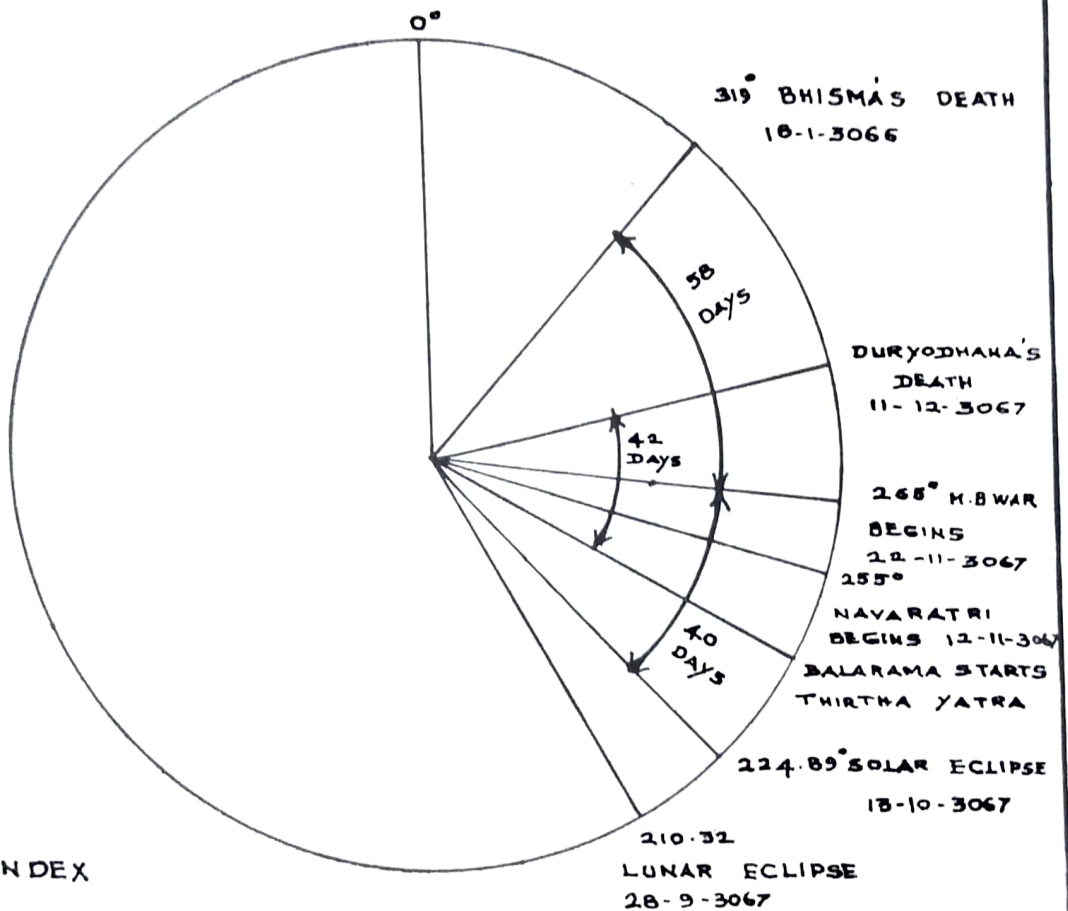
g) Solar eclipse is indicated on both the occasions just before the Mahabharatha War and before the Yadava civil war, 35 years after the Mahabharatha War. It is stated that both amavasyas came on the 13th day. Again, three thithis in a day is indicated by the words "Chaturdasi was made Poornima". These conditions are satisfied on the dates shown below. This proves the correctness of the statements of Sri Veda Vyasa and the correct date of the Mahabharatha War.

	Date B. C.	Julian Day	Week Day	Sun	Rahu
Full Moon	28.9.3067	601473	Sat 6-51	210-32	220-55
New Moon	13.10.3067	601488	Sun 0-25	224-89	219-74
Full Moon	27.10.3067	601502	Sun 0-99	239-16	218-93
New Moon	11.11.3067	601517	Mon 1-78	254-02	218-13
New Moon	11.12.3067	601547	Wed 3-31	283-15	216-52

*Special Note :* The day following the Amavasya of 11 November 3067 B. C. is the first Sukla Prathama of the year, at the beginning of Margasira month and Saradruthu (in Sri Krishna's time Margasira was the first month of the year). Therefore Durga Pooja or Navarathri started on Tuesday 12th November, 3067 B. C. The tenth day was Vijaya Dasami Day i. e. Ayudha Puja day. This is the day on which Duryodhana sent Uluka to the Pandavas asking them to start the war the next day. On the advice of Sri Krishna, the Pandavas agreed to it. Hence the Mahabharatha war was started on Friday, Margasira month Sukla Ekadasi Thithi, Krittika Nakshatra 22 Nov. 3067 B. C. 601528 Julian Day, Ekadasi ending at Fri. 5.60 and the Moon at 37.74 or Krittika on Friday morning. This is in complete accord with tradition.

Now having fixed the date of Mahabharatha war, we can easily fix the date of Bhishma's death. Just add 58 days to

## DETAILS OF MAHABHARATHA WAR



INDEX

14-10-3067  
BEGINING OF  
ĀDHIMĀSA upto  
11-11-3067

Krishna Left for Hastinapura in the month of real Kartika to make peace with Duryodhana but failed in his attempt. He returned back and with Pandavas went to Kurukshetra on 13-10-3067 B.C. It was Solar eclipse day. They had the field day on that date. They had War preparations for one month during Adhi Masa from 14-10-3067 to 11-11-3067. Navarathri commenced on 12-11-3067 and the war was started on Margasira Sukla Ekadasi, previous day being Vijayadasami, on that day Krishna gave Geeta to the whole world. The war went on for 18 days and on the 19th day Duryodhana was killed. Balarama also came there after making 42 days Thirthayatra. Bheeshma died on 18-1-3068 after Uttarayana. Bheeshma himself says that he slept for 58 days. These figures are clearly given in this chart.

the beginning of the Date of Mahabharatha War and we can easily see that the date works out to be Saturday 18 Jan 3066 B. C. Magha Sukla Ashtami, Rohini Nakshatra Julian Day 601585 Sun  $319^{\circ}$  moon  $49^{\circ}$ .

### **How to prove that Bishma died on Rohini day?**

Based on Ist Julian day or the Ist Kaliday we can prove that lunar eclipse took place on 28.9. 3067 B. C. and solar eclipse on 13. 10. 3067 B. C. It was adhimasa; Rajasuyayaga began on 25 Oct. 3082 B. C. Based on the above figures we can prove that Bhishma's death took place on Rohini day.

### **We may now consider certain Internal evidence in Vyasa Bharatha :**

The following useful data called from Vyasa Mahabharatha to consider the exact date of Bhishma's death will be helpful.

1. Yudhishtira celebrated the Raja Suya on the Amavasya day with Jyeshtha and Moola Nakshatra. Hence 15 years later at the time of the Mahabharatha war, the Amavasya was at the beginning of Jyeshtha i. e., with the Sun at  $224^{\circ}.75'$ .
2. In the Yudyoga Parva ch. 142. Sri Krishna Tells Karna just before leaving Hastinapura, that Amavasya comes on Jyeshtha day. Hence the Amavasya was with the Sun at  $224^{\circ}.75'$ .
3. Santi Parva ch. 46, Anusasana Parva ch. 272—274, it is stated that Bishma died at mid-day on Magha Sukla Ashtami, Rohini Nakshatra.
4. Again, it is stated that Bishma died on Sukla Ashtami day. This is in complete agreement with the statement that it was Rohini Nakshatra.

**Rajasuya day Son & Moon at**

I year	241.00		VIII year	253.21	
begins	10.74			20.64	
II year	230.26		IX year	242.47	
	10.74	Adhimasa		10.74	
	219.52				
	29.13		X year	231.73	Adhimasa
III year	248.65			10.74	
	10.74			220.99	
				29.13	
IV year	237.94		XI year	250.12	
	10.74			10.74	
	227.17	Adhimasa			
	29.33				
V year	256.30		XII year	238.38	
	10.74			10.74	
VI year	245.56		XIII year	228.64	Adhimasa
	10.74			10.74	
VII year	234.82			217.90	
	10.74	Adhimasa		29.13	
	224.08		XIV year	247.03	
	29.13				
14th year	Pandavas Hiding year			247.03	
	Year begins			10.74	
15th year	Battle for the cows			236.29	Adhimasa
				10.74	
				225.55	
				29.13	
16th year	Margasira begins			254.68	
	Year and Mahabharatha War.				
Amavasya day = + 2 months	Margasira				
	+ Pushya			58.26	
Beginning of Magha month				312.26	
6 Thithis				5.83	
Magha Sukla Saptami-Ratha Saptami					
	with Amavasya day			318.77	
Vernal equinox = +90 = 408.77-360 =				48.77	
Next day is Magha Sukla Ashtami day					

Sun at 319.77 and Moon at  $319.77 + 90 = 409.77-360-N$   
Rohini day Bishma Moksha day = 49.77

This is completely in accordance with the date of Mahabharatha War. The meaning and interpolation of Adhimasa was not recognised by all scholars and so they have misinterpreted Vyasa's words, and some have invented new theories and have abused Vyasa and concluded Vyasa, Krishna and Mahabharatha war are all myths.

14.10.3067 Adhimasa  
28. 9.3067 Lunar Eclipse  
13.10.3067 Solar Eclipse  
18th January 3065 B. C. Magha Sukla.  
12th November 3067 B. C. Navarathri  
22nd November 3067 B. C. Edadasi day—Gita.

Position of Sun and Moon on the Zodiac of the Government of India (corrected by  $1^{\circ}46'$ ) on the Amavasya day at the beginning of the Margasira month ( Luni-solar month ) about the time of the Mahabharatha War.

- NOTE :**
- 1) Vernal equinox was at  $48^{\circ} 6'$  and Autumnal equinox was at  $228^{\circ}$  ( 3067 B. C. )
  - 2) During 12 lunations the sun moves  $29.530 \times 12 = 354.3672$  days. Therefore Amavasya goes back every 12 lunations by  $365.2564 - 354.3672 = 10.89$  days = 10.74 degrees.
  - 3) The position of the Sun and Moon on Rajasuya day (Amavasya) was  $241^{\circ}$  of the Zodiac.
  - 4) All Adhimasas were Krittika, because the year begins with the first Sukla prathama following the autumnal equinox day, and the first month was always Margasir.
  - 5) First year begins with Rajasuya day.

To Mr. L. D. S. Pillai Mahabharatha was a myth, so he

did not attempt to find a date for it and hence he criticised every one of the statements as mere non-sense.

### Dewan Bahadur L. D. Swami Kannu Pillay's criticism of Mahabharatha date

The Dewan Bahadur, who was a reputed scholar and Chairman of the Calendar Reform Committee, did not verify his data with the correct facts of astronomy and he looked upon the epics as sources which lacked scientific astronomical details.

We, therefore, invite reference to Prof. K. Sreenivasa Raghavan's book "Chronology of Ancient Bharat, Part V (Date of Mahabharata War pages 24-32 where in an Appendix the learned author refers to the Dewan Bahadur's "Indian Ephemeris":—

		<i>Criticism</i>	
		<i>Prof. K. S. in</i>	
		<i>Page</i>	
Instances	i)	Vol.1 part 1 page 8	p. 24
	ii)	„ page 99	p. 25
	iii)	„ page 100, para 246	p. 26
	iv)	„ page 470—480	p. 26
	v)	„ page 481	pp. 26, 27
	vi)	„ Appx. v p. 479	pp. 28 to 32

i) As regards instance i, the short point appears to be that the statement in Bishma Parva points to 2 eclipses one solar and next lunar succeeding each other is a rare phenomenon occurring once in 1000 years. Mr. Pillay is disposed to say that it is not rare. Prof. K. S. Raghavan's view is that 13 days fortnight as also 2 eclipses in a month may not be rare taken separately. But can any one point out a 13 day fortnight with 2 eclipses in a month altogether. That is rare and happens only once in 1000 years, portending a very bad omen. Moreover, a month means a lunar month and Amavasya is the last day of the month. Hence the eclipse must be lunar followed by solar

and not the otherway as Mr. Pillai understands. Such a bad omen occurred just before the Mahabharatha War.

ii) Mr. Pillay feels that Indian's knowledge of the planets is after the Greek and Chaldean's astrology made its way into India at the time of Alexander's Invasion of India.

This cannot be accepted as the planets do find mention in the Rig-Veda 6000 B. C. Alexander's invasion is only in 326 B. C. Prof. K. S. Raghavan rightly points out that at the time of Mahabharata War ( 3067 B. C. ) the Greeks were a wild tribe. It is erroneous for Mr Pillay to think that Hindus classified the Sun and Moon as planets. Valmiki ( 4001 B. C. ) in Sundara Kanda refers to " Graha, Nakshatra, Chandra, Arika, Tara gana" i.e., "planets, lunar mansions, *Moon, Sun* and constellations. There are many references in the Rig Veda to this effect ( iii to v ) Mr. Pillay suggests that Mars, Jupiter and Saturn were retrograde near *visakha*. He then proceeds to give possible dates for this. Prof. K. S. Raghavan criticises this view " How is this possible in Margasira month well know as the month of Mahabharatha War. Mr. Pillay has not understood the basic approach of Vedanga Jyotisha which alone is the yardstick by which the Astronomical data in the epics can be rightly understood. " When Vedavyasa mention a ketu ( there are many ketus per Varaha Mihara ). We should know what he refers to. It should not be assumed that ketu is the 180° degree position of Rahu. This kind of ketu is not at all mentioned by Veda Vyasa anywhere in the Mahabharata. Mr. Pillay being a Christian does not understand the meaning of the words " *Peedyathe* " and ' *Vakra* '. When an eclipse occurs in the Rohini Nakshatra, the *Panchanga* clearly states that Peeda Parihara (ceremonies to avert peeda ) must be performed by those whose nakshatras are Rohini, Hasta, Sravana and the Nakshatra adjacent to those three nakshatras. The nakshatras were grouped in threes of Aswini, Magha, Moola,—Barani, Poorva Parguni,—Poorva Ashada ..... A malefic planet, or comet in any one of the nakshatras is said to have malefic aspect on the other two of the triad directly on one hand and retrogradely on the other. This retrograde malefic aspect is named ' *Vakra Peedyathe* .'



Prof. K. S. Raghavan further states that Mr. Pillay has not clearly understood the Kala Bali ( Field sacrifice before war commence ) effected on 13—10—3067 B. C. The planets were in the following positions :— Sun, Moon, Mars, Venus, Rahu and Autumnal equinox in Jyeshtha, Jupiter, Saturn and Vernal equinox in Rohini. *Doomadhi Paneha grahaa-Dooman* 358°20', *vyatheepathan-vakra*.

1°40' <i>Pari vesham</i>	181°40. ( Vakra )	}	Chitra and Swati.
Indra Dhanus	178°20		
<i>Dooma ketu</i>	195°		

These aspects were not at all clear to Mr. Pillay, nor was he fully aware of the planetary positions at the beginning of the Mahabharata War on 22—11—3067 B. C. Prof. K. S. Raghavan is clear when he asserts “ but so far as the astronomical details are concerned they are consistent and no one seems to have meddled with Vedavyasa’s verses. ”

vi) Mr. Pillay has misinterpreted the 16 verses cited by him in *Indian ephemeris* ‘ vol. 1 p. 1 Apex v p. 479. Prof. K. S. Raghavan refutes Mr. Pillai’s interpretations when he holds :

- 1) Mr. Pillay assumes that the lunar eclipse followed the solar eclipse in the month of Margasira. It is not so. It is the other way. The solar eclipse was in mid-day. The lunar eclipse started soon after the sun set.
- 2) Saturn was Rohini at the time of the Mahabharata war—very inauspicious for the whole country. Mr. Pillay thinks that the sign of the deer in the moon had shifted its position. The translation by Mr. Pillay is wrong. The sign of the deer in the Moon was always fixed. Vedavyasa knew this very well.
- 3) Mr. Pillay has again misunderstood the verse that Ketu, the whole planet, stops on passing beyond the

constellation Chitra. The word 'Sveta graha' cannot mean ketu. It is only 'Budhagraha'.

- 4) Mr. Pillay misinterprets by saying 'a fearful comet is rising and distressing pushya. Prof. K. S. Raghavan points out the actually the comet being close to the Sun (and slightly ahead of it) was in opposition to Pushya. It is a fearful Dhumaketu-Hally's comet.
- 5) Mr. Pillay does not understand the words 'vakra' and 'Peedayathe', Prof. K. S. Raghavan mentions the correct meaning thus "Angaraka (from moola) malefically aspects Magha in the retrograde aspect; Jupiter (from Rohini) malefically aspects Sravana in the retragrade aspect; Saturn (from Rohini) directly aspects Utharapalguni and Sukra-venus-was at the end of Anuradha.
- 6) Prof. K. Sreenivasaraghavan rightly points out that the word 'Dhruva' here only means 'stationary' referring to Mercury. The next line refers to Bhudha. On the other hand, Mr. Pillay confuses himself by stating that Dhruva was advancing right and that both Sun and Moon distress Rohini and that the terrible Rahu has taken up its position between Chitra and Swathi. Prof. K. S. Raghavan correctly point out *svetagraha* is Budha and not Ketu. It was in Jyesta.
- 7) Mr. Pillay should have understood that the Red planet-saturn was aspecting Sravana nakshatra-retrograde aspect Rohini. The same Sravana was also aspected by Brihaspathy (Jupiter) from Rohini.
- 8) Prof. K. S. Raghavan agrees with Mr. Pillay that Jupiter and Saturn would say together (at Rohini for a year). Further, he amplifies and states that Ragu at  $218^\circ$  directly aspects  $218-189 = 30$  i. e., Kritika which forbodes rough winds.

- 9) Mr. Pillay should understand Vedavyasa saying 'The 2 eclipses have occurred at an interval of 13 days in the course of the same month' which is a very rare phenomenon.
- 10) Mr. Pillay's translation of 'Full moon' cannot be accepted. Actually what was stated by Krishna to Karna was 'on the 7th day (Jyeshtha) Amavasya is coming.
- 11) Mr. Pillay is wrong in interpreting that Angaraka goes towards Anuradha as if in friendship. Actually Angaraka at Moola aspects jyeshtha in retrograde and so has his malefic influence of Anuradha.
- 12) Planets proceeding against chitra is certainly disastrous as 3 of the 5 *Doomadhi Pancha Grahas* were at Chitra.
- 13) On the day mentioned Rahu was moving towards the Sun and the Moon was moving from behind the Sun.
- 14) The motion of Budha in Chitra foreboded the total destruction of the Kurus.

## The Almanac of Bharath

**F**or over 50 years, the educated class of our Country has recognised that the many published Panchangas ( Calendar or Almanac) are wrong in principles and in details and felt the need for correct *Panhanga*. Many of our great men accepted this view. Now many desire and demand a new Panchanga suited to our culture and hoary tradition, based on practical observation of the stars. The important points to be noted are (i) The calender year of Bharat has all along been siderial. The siderial year is of constant duration, unlike the tropica year which is slowly decreasing. (ii) The initial point of the Vedic Zodiac ( or Nakshatras ) is still a disputed point, though the definition given by the Vedic Rishis is very clear. This is otherwise called the " Vexed question of Ayanamsa." This has a clear astronomical basis and does not give room for individual fancies. Dr. Lahri has fixed Chitra Nakshatra (spica) at  $180^{\circ}$  from Aswinyadi. Dr. B.V. Raman has fixed it at  $181^{\circ} 20'$ .

In the Book on "the Chronology of Ancient Bharath-"Chap on Nakshatras, Prof. K. Srinivasa Raghavan has clearly proved on Astronomical grounds that spica should be at  $181^{\circ} 46'$  from

the Aswinyadi of Vedanga Jyothisha. Hence the longitudes of Sun, Moon and the planets, as given by Dr. Lahri, should be increased by  $1^{\circ} 46'$ . (iii) The Ayanas, Vishus and Ruthus as given in the Panchangas are wrong by over 22 days. (iv) Again there should be a smooth blend of the 3 systems of time-reckoning as expounded by the Vedic Rishis and adopted by the people of our land till recent years (a) The sidereal year and sidereal day of constant duration (b) The luni-solar months of constant duration and the consequent year (c) The tropical or Yagna year of seasons.

When these rules are adopted the 5 Angas of the Panchanga (i) Vara (ii) Thithi, (iii) Nakshatra (iv) Yoga. (v) Karna, and the position of the planets in the Rasis completely change and show that all the *Panchangas* available in the market are unfit to be accepted for any social, religious or astrological purpose. Nakshatra will commence nearly 3 hours earlier and end 3 hours earlier every day. The Meshadi months commence  $1\frac{3}{4}$  days earlier and the lagnas accordingly rise earlier.

The Calendar, framed by our Rishis, is a beautiful blend of the three systems of time-reckoning sidereal, luni-solar and tropical.

1. The sun's path among the fixed stars is a fixed circle called ecliptic. The time taken by the Sun for one revolution is termed a sidereal year. It is of Constant Duration. This path is divided into 12 equal parts each of  $30^{\circ}$  and named Rasis Mesha, Vrishaba, Mithuna, etc. This path is also divided into 27 equal parts, each of  $13\frac{1}{3}$ , and named Nakshatras—Aswini, Bharani, Krithika, etc. Since the sun's motion along the ecliptic is not uniform, the duration it takes to cover a Nakshatra or a Rasi is not the same. This has to be worked out carefully. Again, the sidereal day is the time interval between two consecutive transits of any star across the meridian of a place. This is a constant factor.

2. The moon moves in a great circle, slightly inclined to be ecliptic. On the New Moon day, (Amavasya) the Sun and the moon are together (conjunction in longitude). Thereafter, they part. The Moon being faster, comes back and overtakes the Sun on the next new moon. The time taken by the moon to overtake the sun i. e., the interval in time between 2 successive Amavasyas is termed a luni-solar month (or a lunation). This period is also of constant duration. Moreover, the time taken by the moon to complete one revolution among the fixed stars is also of constant duration (siderial period of the moon).

3. The Sun moves among the fixed stars, from West to East and completes one revolution in one siderial year. The Sun has another apparent motion. Starting from the equator it goes South to a distance of  $23\frac{1}{2}^{\circ}$  and returns to the equator, and moves further North to the same distance of  $23\frac{1}{2}^{\circ}$ , and then returns to the equator. This motion of the Sun causes the seasons. Hence the time taken by the Sun to complete one revolution from the equator and back to the equator is termed a tropical year. The tropical year is not of constant duration. It is slightly less than the siderial year and is slowly decreasing. Since the Sun comes to the equator earlier, the 2 equinoxes, Autumnal equinox and Vernal Equinox, occur earlier on the fixed ecliptic. This is called precession of the equinoxes. It is a very small interval, but slowly accumulates. The present rate is  $1^{\circ}$  in 72 years nearly.

When the first calendar was instituted by the Sapta Rishis, during the reign of Vaivaswath Manu, the year began with the Autumnal equinox. The sun crossed the equator on his southward journey and the Sun and the Moon were at mid Shravishta, i. e., beginning of Kumba Rasi,  $300^{\circ}$  from Meshadi. This was on 21 Nov. 8576 B. C. On this day the Saptha Rishis instituted Vaivaswatha Manvanthara and the cycle of 100 siderial

years termed the Saptha Rishi era; 5475 siderial years later, the Sun and the Moon were again at mid Sharavishta and the Kaliyuga Era was instituted on 28th December 3101 B. C. True Kaliyuga is 10 Jan. 3104 B. C. The Rishis counted time only by siderial years (constant duration) and not by the changing tropical years (as is now adopted by the Government of India calendar). The Indian year has been a siderial year all along.

The tropical year is divided into 3 seasons (not four as in Modern Western Astronomy) termed the seasons of heat, rains and dew. These are sub divided each into 2. Thus we have 6 *ruthus* (seasons). They are *Vasantha Ruthu* (early summer), *Greeshma Ruthu* (late summer) *Varsha Ruthu* (rainy season) *Sarad Ruthu* (post rainy season) *Hemantha Ruthu* (season of early dew) and *Sisi Ruthu* (the season of late dew). Every one of these is again divided into 2 tropical months. They are Madhu, Madhava, Sukra, Suchi, Nabhas, Nabhasya, Isa, Urja, Sahas, Sahasya, Tapas, and Tapasya. These indicate the Sun's motion of  $30^\circ$  along the ecliptic, beginning from Vernal equinox. In the present Indian Panchanga, these names are changed and confusion is caused. At present the twelve luni-solar months, beginning with the first bright fortnight after autumnal equinox are Aswiaja, Kartika, Margasirha, Pushya, Magha, Phalguna, Chaitra, Vaisakha, Jyeshtha, Ashada, Sravana and Bhadrapada. If there is a 13th month, it should be dropped out as an Athi-masa (extra month). The fixed siderial months on the ecliptic are Mesha, Vrishaba, Mithuna, Kataka, Simha, Kanya, Thula, Vrichika, Dhanus, Makara, Kumba and Meena.

The Saptha Rishis blended the siderial year and the luni-solar year by an ingenious method. They introduced the Yuga of five siderial year = 62 lunation = 67 siderial periods of the moon. Taking 12 lunation per year, the 2 extra lunations were added at the end of the 3rd year and the 5th year. The Yuga began with the Sun and the Moon in Sravishta Nakshatra. When the small differences accumulated to one lunation in about 35 years, it was dropped out and the Yuga had only 61 lunations. This was done after close practical observation of the conjunction of the full Moon with Magha Nakshatra.

Nearly 1500 years after the Saptha Rishis the Autumnal equinox moved over to the beginning of Sravana Nakshatra. Then it was found that the tropical year did not agree with the other two. Maha Rishi Viswamitra solved the problem by making the Yagna year (Civil year or tropical year) began with the first bright fortnight following the autumnal equinox (The jews reckon time by observing the first full moon after vernal equinox. The jews and the christians adjust their feasts and fasts from this day). The 13th month, in any year, was dropped out as an athimasa. Thus the 3 systems were nicely inter-related and the Yuga measured time correctly (Bishma's speech to Duryodhana in Virata Parva, Mahabharata). Long after i. e., about 1500 B. C. Garga changed the beginning of the year from Autumnal equinox to Vernal equinox. Aryabhatta and Varaha Mihara followed the same scheme. The dark fortnight proceeding the Autumnal Equinox is termed the Mahalaya Paksha and is exclusively reserved for the Pitrus. The first bright fortnight following the Autumnal equinox began the Yagna year and the first 10 days constituted the Dasara or (Navarathri). All the other feasts and fasts are related to them.

Saptarishi era was instituted by Saptarishis in 8576 B.C., when Saptarishi was in Magha Nakshatra. They started it actually when Autumnal Equinox was at  $300^{\circ}$ . For chronological purposes we calculate this Saptarishi era like Magha, Purvaphalguni etc. These periods of 100 years in one Nakshatra were named after the Nakshatra. 20 yugas=100 years as per Vedangajyotisha calendar. Once in 2700 years, this comes back to its original position and then again once in 2700 years, it starts again from Magha Nakshatra. Here, however one must clearly distinguish between its actual movement and its use for chronological purposes. For eg., we are now in 10551st year of the Saptarishi era. 51st year of the Punarvasu cycle of 100 years. Actually however the Saptarishi mandala is in Swati Hasta range. It occupies nearly  $1\frac{1}{2}$  rasis. Thus for Chronological purposes we must call it as Punarvasu cycle and for movement purposes we say it as Hasta cycle.



Hence the correct Indian Almanac should adopt the following :

- 1) The year should be a sidereal year.
- 2) The year should begin with the entry of the sun into Mesha Rashi ( as corrected ). The sidereal months should begin when the longitudes of the sun are  $0^{\circ}$ ,  $30^{\circ}$   $60^{\circ}$ ..... from the correct Meshadi, and they should be named Mesha, Vri-shabha, Mithuna, etc.
- 3) The beginning of the luni-solar months (i.e. ending moments of the Amavasya ) and their names should be given proper place.
- 4) The beginning moments of the tropical months, Madhu, Madhava, etc., should be given in the proper place ( Pitru Tarppanas should be performed on the first day of the luni-solar and Yagna months and not on the first day of the sidereal month ).
- 5) The international ephemeris gives the longitudes of the Sun and the Moon and the Planets at Greenwich Midnight i.e. at 5.30 A. M. I. S. T. from rivernal equinox. They should therefore be reduced to the correct Meshadi.
- 6) The week day and the dates in the sidereal months and Christian calendar months should be given.
- 7) The Thithi, Nakshatra, Yoga and Karana should be based on the corrected values of the longitudes of the Sun and the Moon.
- 8) The corrected longitudes of the planets should be given for every day at 5.30 A. M. I. S. T.
- 9) The sun-rise time for important places should be given in I. S. T.
- 10) The details of the eclipses should be given on the corresponding days.

One should understand the following points very clearly.

a) Sidereal solar segments are permanent and fixed ones. They are Mesha, Vrishabha, Mithuna, Kataka, Simha, Kanya, Tula, Vrichika, Dhanus, Makara, Kumbha and Meena.

b) Sidereal Luni-solar months are also permanent, subject to the adding of Adhi Masa, once in 3 years, and then 2 years, as per vedic calendar. Now a days it can be once in four years. They are Chaitra, Vaishaka, Jeshta, Ashada, Sravana, Bhadrapada, Aswija, Kartika, Margasira, Pushya, Magha, Phalguna.

c) Tropical Solar months are subject to variation as Vernal Equinox moves back. It takes about 70 to 75 years per degree. They are Isa ( Sept. 22-autumnal equinox ), Arja, Sahas, Sahasya, Tapas, Tapasya, Madhu ( March 21st-Vernal Equinox) Madhava, Sukra, Subha, Nabhas, Nabhasya.

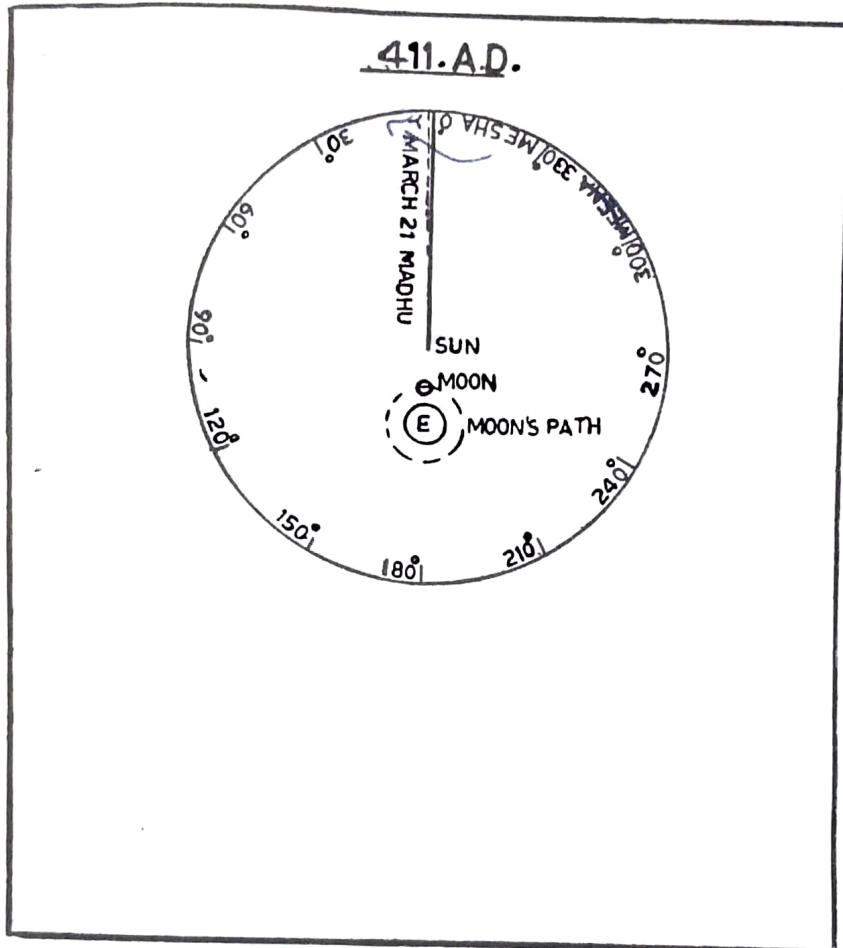
d) Since we have to do *devathakarya* as per the tropical year, we must adjust the beginning of luni-solar months nearest to the beginning of the tropical year. For example during Rama's days vernal equinox was at 68 degrees and Pushya masa was the beginning of autumnal equinox. During Krishna's days Vernal Equinox was at 48 degrees and Margasira masa became the Autumnal Equinox and now the Vernal Equinox is at 23 degrees and Chaitra masa continues to be the beginning of *vasantha ruthu* for another 500 to 600 years.

## XIII

### Fixing up of the Equinoxes

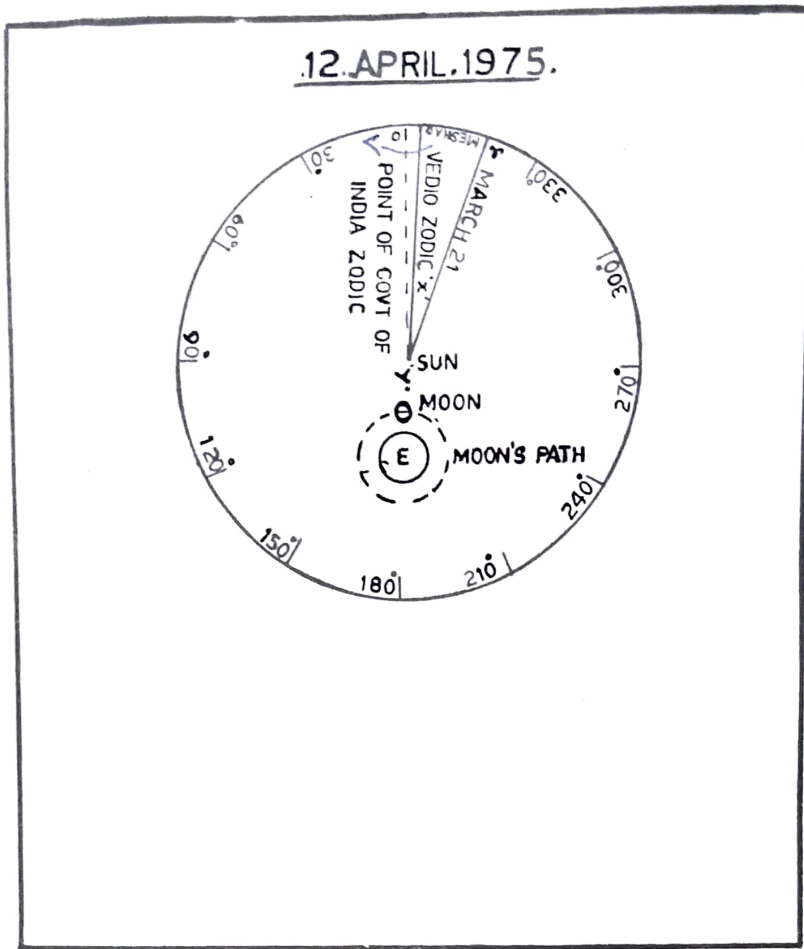
**T**he ecliptic is divided into four equal parts at the following points :—

- i) The point where the Sun crosses the celestial equator from south to north called Vernal Equinox, represented by the symbol, Y. Please note it as Y, the celestial equator is the imaginary great circle in the sky, at  $90^\circ$  from the pole, and passing through the East and West points of the horizon.
- ii) The point where the Sun crosses the celestial Equator from north to south is called the Autumnal Equinox represented by the symbol N.
- iii) The point on the ecliptic farthest from the equator ( $23\text{-}1/2^\circ$ ) on the northern side of the equator is called Dakshinayana position or summer *solstice*.
- (iv) The point on the ecliptic farthest from the equator ( $23\text{-}1/2^\circ$ ) on the southern side of the equator is called Uttarayana position or winter *solstice*.



In 411 A. D. tropical Solar Madhu coincided with Sidereal Solar Mesha on March 21st i. e., Sun used to enter Mesha Aswini on March 21st. For Calculation purpose sidereal Solar Kumbha was changed over from Aut. Mesha Rasi 0°. Hence Civil year also was changed over from Aut. equinox to vernal equinox and so Chitra Mesha Prathama became the starting point of civil year.

They used to start civil year after autumnal equinox. Thus in 8576 Magha Masa was the civil year. In Krishna's days it was Margashira. But during Varahamihira days civil year was changed to Vernal Equinox and so Chitra Masa Prathama became the civil year.



Clocks on 12th Saturday April 1975 A.D.

1. a. B = Sidereal Solar year begins on Saturday at a hours 4 minutes A. M. on 12th April 1975 A. D. by the entry of Sun into beginning point of Aswini, Mesha Segment 1st day.
- b. B = Chitra Masa Luni-Solar begins on Saturday 12th April 1975 A.D. Amavasya ending at 10-10 P. M. the previous day.
2. a. C = Tropical solar year begins on first day of Madhu—Friday 21st March 1975 A. D. at 10.30 a. m. Uttarabhadra Pada Nakshatra, 2nd Pada Meena Segment at  $338^{\circ} 23'$  Ayanamasa being  $21^{\circ} 37'$ .
- b. B = Civil year begins on Chitra Sukla 12th April 1975 A. D. Vasantarutu Uttarayana (in ancient days civil year was after Autumnal equinox).

These four points are associated with the seasons. But they move slowly backwards along the ecliptic at about  $1^\circ$  for 72 years. The vedic Rishis of old desired to have a fixed point on the ecliptic as the zero position for measuring the stars and planets. So they divided the ecliptic into 27 equal parts or Nakshatras. The space of each Nakshatra is  $13\frac{1}{3}^\circ$  along the zodiac. The name of the day is also that of the Nakshatra, as the Moon stays a full day in each Nakshatra.

When the first calendar was instituted by the Sapta Rishis on 21-11-8576 B. C. during the reign of Vaivasvatha Manu, the year began with the Autumnal equinox. The Sun then crossed the equator on his southward journey and both the Sun and Moon were at Mid Shravista (Avittam, the first nakshatra as per Vedic Jyotisha) i. e. beginning of Kumbha Rasi  $300^\circ$  from Meshadi.

The Rishis took the mid point of Sravishta, as the initial point got the zodiac divided into 12 equal parts each of  $30^\circ$ . Thus we have the 12 Rasis.

There are 3 kinds of years (i) The Astronomical year beginning with Amavasya in Sravishta. (ii) The Ritualistic year beginning with the New Moon very closely associated with y or n. (iii) The civil year or solar year with the Sun entering y or n.

On 21.11.8576 B. C. the Saptha Rishis instituted the Vaivasvatha Manvanthara and the cycle of 100 sidereal years termed the Saptha Rishi Era. 5475 Sidereal years later the Sun and the Moon were again at Mid Shravista. This was the beginning of Kaliyuga and the date December 3101 B. C. The Rishis counted time only by sidereal years (constant duration) and not by the changing tropical years (as is now adopted by the Government of India calendar). The Indian year has been a sidereal year all along.

The time taken by the Sun moving from west to East are round along the ecliptic is a fixed period termed siderial year.

The other motion of the Sun is north to south and *vice versa*. He crosses the east part thrice ( $23\frac{1}{2}^{\circ}$  to south of east and  $23\frac{1}{2}^{\circ}$  north of east) similar to that of western zenith. The period between the two crossings of each point (from south to north) is not constant. The Sun does not cross the equator at the same point. The difference between the sidereal year and the tropical year is termed the precession of the equinoxes. This period is called a tropical year. The moon and other planets move on a wide path about  $8^{\circ}$  on either side of the ecliptic. This is called the zodiac. The period of Revolution of planets among the fixed stars are : i) Moon = 27.32 days; ii) Mercury = 87.97 days; iii) Venus = 224.70; iv) Sun = 365.23 days; v) Mars = 686.98 days; vi) Jupiter = 4332.58 days; vii) Saturn = 10759.22 days. The vernal equinox (T) was the beginning of the Magha Nakshatra i. e.  $120^{\circ}$  of the zodiac. During the days of Viswamitra (Astronomer Rishi), it was at the mid point of Pushya Nakshatra; it was at the mid point of Rohini i. e., at  $46.6^{\circ}$  of the zodiac during Vyasa's time. In 1975 A. D. it was at ( $-23.4$ ) of the zodiac.

Having understood the Vedic Calendar we shall now analyse some of the statements from Mahabharatha and Ramayana.

- 1) Position of Dhanista : Vanaparva  
is given
- 2) Position of Uttarayana : Anushasana Parva—sloka  
is given 26, 27 and 28, page 609.
- 3) Position of Sashira : Uttara Ramayana.  
Ruthu is given
- 4) Position of Saptarishi : In Yuddha Kanda.  
(movement) is given
- 5) Position of Saptarishi in : As Saptarishi Magha  
Mahabharatha is given Nakshatra 76th year  
(Chronological).

- 6) Position of Planets on the Astronomical Kaliyuga is given : Five planets were hanging together on Maghasukla prathama at 300° of the Present zodiac which was the 0 point of the Vedic calendar.
- 7) Ist month of Sharad-rutu is given : In Geetha by Krishna

Since we know the position of vernal equinox and autumnal equinox, we can conclude that the position of ritualistic months should be as follows :

<i>Date</i>	<i>Ritualistic months autumnal equinox</i>	<i>Uttarayana Ritualistic month</i>
About 1500 B.C.	Kartika, Margasira, Pushya.	Magha, Phalguna, Chaitra
About 411 A.D.	Aswija, Kartika, Margasira.	Pushya, Magha, Phalguna.
About 2600 A.D.	Bhadrapada, Aswija, Kartika	Margasira, Pushya, Magha.
About 3000 B.C.	Margasira, Pushya, Magha	Phalguna, Chaitra, Vaishaka.
About 4000 B.C.	Pushya, Magha & Phalguna	Chaitra, Vaishaka & Jyeshtha
About 8500 B.C.	Magha, Phalguna & Chaitra	Vaishaka, Jyeshtha & Ashada

As per Vyasa, Uttarayana point is on *Magha Sukla Saptami*. He says further that he (Bheeshma) has not slept for 50 days. Since from Sharadrutu point to Uttarayana point it is about 90 days, we can safely conclude that Kartika was the Adhikamasa as per Viswamitras method. This means to say the Uttarayana point was somewhere between 300 and 320 degrees. We can thus conclude that for Ritualistic purposes Phalguna was the Luni-solar months yet the Uttarayana point was



on Maghasukla Saptami in the year when Bishma dies and further as per the following calculations, he died on Rohini day which coincides very well with his statements made by Bhishma himself.

**Position of r and Autumnal Equinox :—**

8576 B.C.	120° r Magha	300° Aut. Dhanistha.
4439 B.C.	68° Aridra	248° Moola
3112 B.C.	48° Rohini	228° Jyestha
411 A.D.	0° Aswani	180° Chaitra.
1975 A.D.	21°37' i. e.	338° 23' or 158° 23'
	23°23' (Ved. Jy. Point)	
	Uttarabhadra	U. Phalguni

Historicity of Ramayana and Mahabharatha can be proved if we understand the Vedic calendar correctly. Two important statements from Rig Veda may be examined in this context.

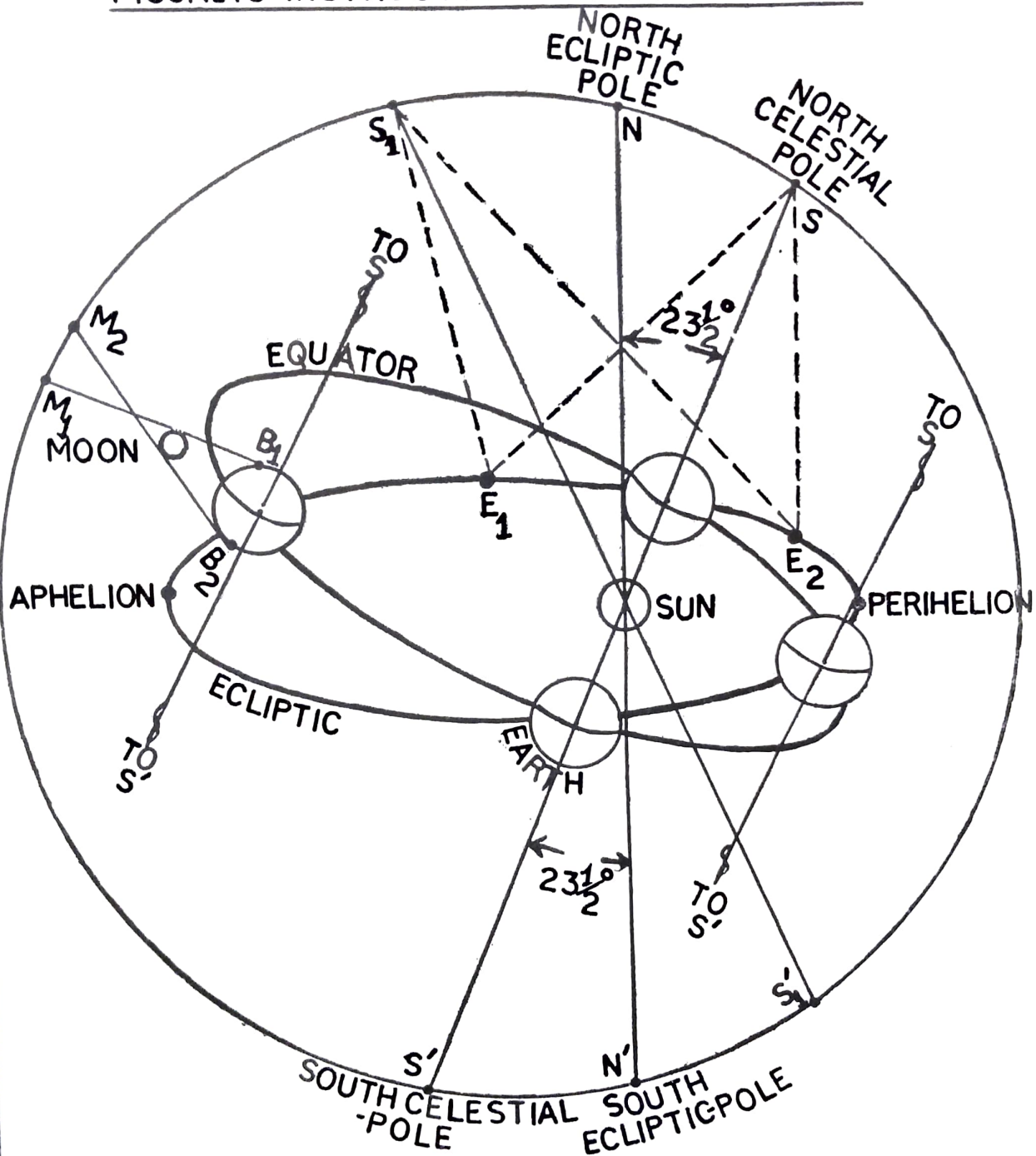
“ Vibindhu knowledge, thou hast given me,  
Four, eight times, four ten thousand, thousand ”.

A Kalpa is equal to 43,20,000,000 years or removes through six hundred right angles in 43,20,000 years or  $3,00,000 \times 20$  right angles in a Kalpa of 4,320,000,000 years. Divide this by  $30000 \times 20$  right angles and multiply by 4

Saptarishi to stay for 100 years and precession to stay for 1000 years in each fixed nakshatra and Moon to travel in each nakshatra a day and Sun to move in ecliptic.

Prof. Lahri of Calcutta University produced a book on the date of the Mahabharata War. However, he was not able to put together nor even understand most of the statements made by Vedavyasa. He took only one point as very important i.e., relation of analysis he got confused, got wild and said that Vyasa and Mahabharatha are un-understandable myth, with no reality about them. But he wanted to give a date for the Maha-

FIGURE IS INSTRUCTIONAL & APPROXIMATE.



bharatha War. So he assumed a date and tried to alter the text of the Mahabharatha but failed.

Some blunders committed during the last 3000 years are as follows :—

*Blunder—No. 1*

Garga in 1500 B. C. changed the 1st month of the year from Sharad Ritu to Vasanta Ritu and he named the Nakshatras from Kritika. Vernal equinox was at that point of Kritika nakshatra and why he changed from Sharadrutu to Vasanta Ritu, the reasons are not known.

*Blunder No. 2 :--*

Varahamihara, some where about 500 A. D., changed the Nakshatra Zodiac to Rasi Chakra Zodiac. Rasis are purely artificial segment and for astrological purposes, it is all right. Infact the ancients also know this and they were using it only for Astrological purposes. But for calendar purposes Nakshatra Zodiac is better; because it has 108 divisions.

*Blunder No. 3 :—*

Varahamihara changed the Zero point of the Vedic Calendar to the present beginning of Aswini Nakshatra or the end point of Meena Rasi. This is not correct.

## XIV

# Kali Yugadi and Kali Era

**H**aving understood the position of equinoxes we shall now arrive at the correct figures of the *Astronomical Kali Ugadi* and also the Kali Yugadi as per five-year Uga Panchanga. We shall adopt the following methods :

1. Take a known figure.
2. Take an Internationally known figure.
3. From these two find out the position of 5 planets hanging on Magha Sukla Prathama.

### 1. Take a known figure

Apparent position of the sun, moon and planets at Greenwich on Monday 0 Jan. 1968 A. D. at midnight—2439857 Julian day—1851392 Kaliday, on the Indian Zodiac.

Sun	256° 12' 13''
Moon	267° 32' 18''
Mars	300° 01' 45''
Mercury	257° 59' 50''
Jupiter	132° 17' 00''
Venus	215° 27' 50''

Saturn	342° 41' 56''
Rahu	0° 35' 10''
Ayanamasa	23° 24' 29''

2. Take an Internationally known figure

All Astronomers agree that 17/18th February 3102 B. C. is Chaitra Sukla Prathama.

3. From these two find out the position of 5 planets hanging on Magha Sukla Prathama

Detailed method of the calculations of the position of Rahu and the planets are as follows :

1. *Rahu* : (i) Position of Rahu on 1st Kaliday i. e., at mid-night of Th/Fri. 17/18 Feb. 3102 B. C.

(a) No. of Kalidays to 1st Jan. 1968 = 1851391  
 Position of Rahu on 1st Jan. 1968 = 0° 35' 10''  
 ∴ Position of Rahu on 1st Kaliday.

$$= \frac{1851391}{6793.4664} \times 360^\circ = 35' 10''$$

$$= 189^\circ 4' 59'' + 0^\circ 35' 10''$$

$$= 189^\circ 40' 09'' = 189^\circ 40'$$

Aliter : Re-perpetual Ephemeris - Epoch position of Rahu on 1809755 days

$$= 360^\circ \times \frac{1809755}{6793.47} = 142^\circ 39' 11''$$

∴ Position on Kali-day 1st = 189° 39' 50''      189° 40'

ii) Position of Rahu on—768 Kaliday at midnight on Sunday 11th January 3104 B. C.

Motion for 768 days = 40° 41' 53''

∴ Position = 189° 40' 09'' = 40° 41' 53''  
 = 230° 22' 02'' = 230° 22''

*II Saturn*

b i) Position of Saturn on 1st Kali day at midnight 17/18th February 3102 B. C.

169 sidereal periods of Saturn = 1818308.149073 days.

4978 .....Sun = 1818248.838244 days.

= 59.310829 days.

i. e. Saturn is behind the Sun by

$$\frac{50.310839}{10759.319817} \times 360^\circ$$

$$= 1^\circ 58' 59''$$

Key date for perpetual

Ephemeris = 1811248.84th

Kaliday = Wednesday, 4th April 1877 A. D.

Position of Saturn that day =  $322^\circ 36' 58''$

∴ Position on 1st Kali day =  $322^\circ 36' 58'' = 1^\circ 58' 59''$

=  $324^\circ 36'$ .

ii) Position of Saturn at midnight on -768 Kaliday i. e. Sunday 11th January 3104 B. C.

= Key date = 1818249 - 768 = 1817481 Kali day

= Friday 26th February 1875 A. D.

Position of Saturn that day =  $297^\circ 5' 30''$

Hence ... 11th January 3104 B. C. =  $297^\circ 5' 30'' =$

$$1^\circ 58' 58'' = 299^\circ 5'$$

*III Jupiter*

c i) Position of Jupiter on the midnight of 17/19 February 3102 B. C. 420 Sidereal periods of Jupiter

= 1824017.6248 days

4964 .....Sun = 1824092.9507

Difference = 75.3259 days

i. e. Jupiter is in advance of the sun

by  $\frac{75.3259}{4332.58482} \times 360^\circ = 6^\circ 15' 32''$

Key date = 1824093 Kali day = Tuesday, 4th April 1893 A. D.

Positions of Jupiter that day =  $90^\circ 58' 15''$

♃ Position of Jupiter on 18th February 3102 B. C.  
 $= 9^{\circ} 58' = 15'' - 6^{\circ} 15' 32'' = 3^{\circ} 42' 43''$   
 $= 3^{\circ} 43'$

- ii) Position of Jupiter on-768 Kali day i. e. 11th January 3104 B. C.  
 Key date  $= 1824093 - 768 = 1823325$  Kali day  
 $=$  Thursday 26th February 1891 A. D.  
 Position of Jupiter on that day  $= 305^{\circ} 25' 26''$   
 i.e. Position on 11th January 3104 B.C.  $= 305^{\circ} 25' 26'' - 6^{\circ} 15' 32'' = 299^{\circ} 09' 54'' = 299^{\circ} 10'$

*IV Mars*

- d i) Position of Mars on 18th February 3102 B. C.  
 2643 sidereal periods of Mars  $= 1815687.201735$  days  
 4971 .....Sun  $= 1815691.5528$  days  
 Difference  $= 4.3311$  days  
 i. e. Mars is in advance of Sun  
 by 4.3311 days  $= \frac{4.3311}{686.979655} \times 360^{\circ} = 2^{\circ} 16'$   
 Key date  $= 1815691.55$  Kali day  $=$  Monday 4th April 1870 A. D.  
 Position of Mars that day  $= 347^{\circ} 53'$   
 ♃ ..... on 18th February 3102 B. C.  $= 347^{\circ} 53' - 2^{\circ} 16'$   
 $= 345^{\circ} 37'$

- ii) Position of Mars on 11th January 3104 B. C.  
 Key date  $= 1815691.55 - 768 = 1814923.55$  Kali day  
 $=$  Wednesday, 26th February 1868 A. D.  
 Position of Mars on that day  $= 302^{\circ} 41'$   
 ♃ ..... 11th January 3104 B. C.  $= 302^{\circ} 41' - 2^{\circ} 16'$   
 $= 300^{\circ} 25' - 1^{\circ}$  for correction  $= 299^{\circ} 25'$

*V. Venus*

- e i) Position of Venus on 18 Feb. 3102 B. C.  
 8061 sidereal periods of Venus  $= 1811321.096946$  days

4959... .. Sun = 1811308.957082 days  
 Difference = 12.1398 days  
 i.e. Venus is behind the Sun by  $\frac{12.1398 \times 360^\circ}{224.701786} = 19^\circ 27'$

Key date = 1811309 Kali day = Sunday, 4th April 1858 A. D.

Position of Venus on that day =  $1^\circ 20' 6''$

☽ ..... 18 Feb 3102 B. C. =  $1^\circ 20' 5'' + 19^\circ 27' = 20^\circ 47'$

ii) Position of Venus on 11 Jan 3104 B. C.

Key date = 1811309—768 = 1810541 Kali day

= Tuesday, 26th Feb. 1856 A. D.

Position of Venus on that day =  $278^\circ 49' + 19^\circ 27'$

=  $298^\circ 16'$

### VI Mercury :

g i) Position of Mercury on 18 Feb 3102 B. C.

20628 sidereal periods of Mercury = 1814595.8586 days

2968 ..... Sun = 1814596.2712512 days

Difference = .41256 days.

i.e., Mercury is ahead of the sun by  $1^\circ 35'$ .

Key date = 1814596.25 Kali day Friday 5th April 1867 A. D.

Position of Mercury that day =  $337^\circ 33'' - 1^\circ 35' = 335^\circ 33'$

ii) Position of Mercury on 11th Jan 3104 B. C.

Key date = 1814596.27—768 = 1813828 Kali day

i.e. Tuesday 26th Feb. 1865 A. D.

Position of Mercury that day =  $300^\circ 33' 25''$

☿ ..... 11th Jan 3104 B. C. =  $300^\circ 33' 25'' - 1^\circ 35' = 298^\circ 58'$

Thus we can safely prove that the five planets were at the same position on 10/11th Jan 3104 B. C. Correct apparent position of the planets on the midnight of Sat/Sun, 10/11 Jan. 3104 B. C. were:

Mercury	...	$298^\circ 58'$
Venus	...	$298^\circ 16'$
Mars	...	$299^\circ 25'$
Jupiter	...	$299^\circ 10'$
Saturn	...	$299^\circ 5'$
Rahu	...	$230^\circ 22'$



i. e. at 5 P. M. on the 10th Jan 3104 B. C. the planets were seen rising clustered together at Mid—Sravishta with the crescent Moon. (The difference in longitude between the planets and the sun is about  $15^\circ$  or one hour). Hence Sunday 11th Jan 3104 B. C. the Magha Sukla Prathma of Veda Vyasa is the beginning of the Astronomical Kali Yuga Era.

Thus this date 18-2-3102 B. C. is Anuvatsara. The 4th year of the 5 year yuga of Vedangajyotisha, so 28th Dec. 3101 B. C., is the correct Kali Yugadi.

The errors committed by Westerners :—

Now a reference to Indian Panchanga (Almanac) shows Kali Yugadhi marked on Magha Sukla Prathama day (the first day of the bright half of the lunar month, Magha). This is corroborated by the Vedanga Jyotisha verses which state that the Vedic Yuga of 5 years should always begin with the year Samvatsara on Magha Sukla Prathama (vide B. G. Tilak and others). But Western chronologists took Meshadi as the beginning of the then Indian sidereal year, and therefore of Kali Yugadhi, not knowing that this was fixed by the Siddhanta Astronomers of the early A. D. years.

2. Again, the first year of the present Kali series (beginning on 18-2-3102 B. C.) is seen to be Anuvatsara, the 4th year of the 5-year Yuga of Vedanta Jyotisha. Therefore, the Yuga began three years earlier with the *Magha Sukla Prathama* on Sunday 23 Dec. 3106 B. C.

3. Moreover, it was at the next *Magha Sukla Prathama*, the astronomical Kali Yuga began, on Sunday 11 Jan 3104 B. C. (26 lunations before 18-2-3102 B. C.), because at 5 p. m on Saturday 10 Jan 3104 B. C., the five planets Mercury, Venus, Mars, Jupiter and Saturn were at  $300^\circ$  (Mid-Shravishta—the initial point of the Zodiac of Vedanga Jyotisha), with the Sun and Moon at  $314^\circ$ .

Mr. Bentley, who laboriously worked out the position of the planets from 18-2-3102 B. C. to 1800 A. D. to prove that

Indian Tradition was false, failed to go back by 26 lunations. Had he done so, he would have recognised the truth and correctness of the traditional statement.

### Fixing up astronomical Kali Yuga: the basic mistake of Bentley

Bentley fixed the date of Kali Yugadi on 18-2-3102 B. C. He then worked out the position of the planets on that day by modern astronomical methods. According to Indian Tradition Astronomical Kali Yuga began with the five planets together at the initial point of the zodiac. But Bentley showed that they were disposed as follows:—

Sun  $351^{\circ}$ , Moon  $355^{\circ}$ , Mercury  $318^{\circ}$ , Venus  $24^{\circ}$ , Mars  $340^{\circ}$ , Jupiter  $8^{\circ}$  and Saturn  $332^{\circ}$ , (The zero point of the Zodiac is at  $180^{\circ}$  from spica, Chitra Nakshatra). He also showed that the error decreased from 3102. B C. to 500 A. D. This erroneous method appears to have blinded the vision of Western scholars who at once decried the Indian astronomical methodology as spurious and unreliable.

Both Bentley and Lahri took only the mean position of the Sun and the Moon on the relevant date (17th-18th Feb. 3102 B. C.) The correct position is as given by Prof. K. Srinivasa Raghavan.

	<i>Mid Night 17/18 Feb. Sun</i>	<i>Th/Fri 3102 B.C. Moon</i>	<i>Movement of New Moon on Th.17 Feb.3102 B.C.</i>	<i>Position of Sun and Moon at New Moon</i>
Bentley	$349^{\circ}10'18''$	$355^{\circ}28'15''$	11 h 35'31'' a.m.	$348^{\circ}39'34''$
Lahri	$348^{\circ}14'44''$	$352^{\circ}12'49''$	4 h 11'11'' p.m.	$347^{\circ}55'29''$
Prof. K.S.	$349^{\circ}31'01''$	$351^{\circ} 6'11''$	12 h 14'24'' mid-day	$349^{\circ}23'24''$

It was seen that Saturday 13th Dec. 3105 B.C. and Sunday 11 Jan. 3104 B.C. are both Sukla Prathama Thithi with the Sun and Moon at 283°52 and 312°61. Prof. K. Srinivasaraghavan accepted the concensus of experienced living astronomers that 11th Jan. 3104 is the real *Magha Sukla Prathama*. So, Vyasa's Astronomical Kali Yuga began only on Sunday 11th Jan. 3104 B.C.

There is a continuity of errors if once Bentley's notion of means position is taken *visa—vis* the planets on 17/18 Feb. 3102 B.C. :—

	<i>Mean position</i>		<i>Correct position as per Prof K. S.</i>
Mercury	315° 58' 30''	314° 58' 37''	335° 33'
Venus	22° 0' 55''	21° 19' 25''	20° 47'
Mars	337° 42' 30''	316° 37' 30''	345° 37'
Jupiter	5° 38' 32''	5° 14' 21''	3° 43'
Saturn	329° 0' 43''	328° 58' 50''	324° 36'
Rahu	194° 2' 0''	193° 54' 50''	189° 40'

According to Bentley and Lahri, Mercury is about 35° from the Sun. This is not astronomically correct. The mistake is due to taking mean positions which usually give very erroneous conclusions. It is the same *visa vis VENUS* and other planets.

#### Mr. L. D. Swami Kannu Pillay's Error

Mr. L. D. Swami Kannu Pillai preferred to follow the Bentley school and not the *Aharghana* of Indian astronomers. The cause of the difference is due to the different values of the *sidereal* year taken by them. Starting with Vernal Equinox at 6 a. m. on 21st March 499 A.D. and the *Aharghana* of the day, 1314932, they used the following values for the length or the *sidereal* years :—

1. Surya Sidhanta	365 days 15h 26 k
2. Vakya Sidhanta	365 days 15h 31k 15¼ VK
3. Swami Kannu Pillai's	365.258756484 days
4. Bentley (used Lalande's value)	365 days 6 hours 12' 9''
5. Nautical Almanac	365 25636242 days.
6. Newcomb	365.2568984 days.

### Checking the error between Bentley and Varaha Mihira

Difference in the length of the sidereal year .0023182 days. So, difference in 3600 years :  $8^{\circ} 23'$ . This is Bentley's figure on the Varaha Mihira's zodiac of 499 A.D. This is  $-18^{\circ} 21'$  on the zodiac of 285 A.D. adopted by the Government of India. This error accumulates negatively before 499 A. D. and positively after 499 A. D., This error according to the Government of India is  $-9^{\circ} 40'$  on the Zodiac of 285 A.D. This error according to S.K. Pillai is plus  $2^{\circ} 10'$  on the zodiac of 499 A.D. or  $-0^{\circ} 48'$  on zodiac of 285 A.D.

This confusion in S.K. Pillai and Bentley is because of their taking the mean position of the Sun and the Moon, and not the actual apparent position.

Working the same position—New moon nearest to (0 Jan 1854 A.D. or 0. Jan. 1900 A.D.) or 0. Jan 1968 A.D., Prof. K. Srinivasa Raghavan has obtained the correct value as  $-10^{\circ} 38'$  on the zodiac of 285 A.D.:—

	Zodiac of 499 A.D.	Zodiac of 285 A.D.
Bentley	— $8^{\circ} 23'$	— $11^{\circ} 21'$
Lahri	— $9^{\circ} 40'$	— $12^{\circ} 38'$
S.K. Pillai	plus $2^{\circ} 10'$	— $0^{\circ} 48'$
Prof. K.S.	— $7^{\circ} 39'$	— $10^{\circ} 37'$

## The Sapta Rishi Era

**W**e shall now discuss Saptarishi Era and try to fix it up. Daily we do Vaivaswatha Manvantaradi Sankalpa . What does that mean? Statement from Rig-Veda: 1.24.9 says that Saptarishi stays in each nakshatra for 100 years and the point precession stays in each Nakshatra :- 1000 years with Chandra moving in each Nakshatra daily and the Sun moving about this Zodiac in a year.

Vishnu Purana says that Saptarishi Era was in 76th year Magha Nakshatra i. e. for Chronological purposes, the old Rishis used to have an era not in the name of the king but as per Varunas natural Laws i. e , while Saptarishi Mandala goes back as per precession they had a system of era known as Sapta Rishi era which used to count nakshatra continuously like Magha, Poorva Phalguni, Uttara Phalguni etc.

The names of the 100th king from Vaivaswath Manu to Brihatbala is given in Vishnupurana. This Brihatbala was killed

by Abhimanyu—(*Drona Parva*). So, the total number of years from Vaivaswata Manu to Brihatbala may be about 5000 years on an average basis of 50 years per King.

Now we shall proceed to calculate the Saptarishi Era as follows : Chronologically, the Saptarishi Era for Kali Yugadhi is 3101 B. C. And so this Saptarishi must be at Magha Nakshatra about 5000 years back, but it can only be about 5400 years back because it can make only one revolution of 2700 years to come to Magha Nakshatra. So, if we add 5400 years + 3104 + 76 years, it could only be 8576 B. C. i. e., in 8576 B.C. Chronologically, it is the 1st year of Magha Nakshatra and from the point of movement of Saptarishi in the first year from Magha Nakshatra in the reverse order.

Astronomically also this is correct because at the end of 5475 years sidereally, the sidereal month and the lunation exactly agree with a difference of 45 minutes.

Having fixed Kali Yugadi (according to Vedanga Jyotisha) on Friday, 28th December 3101 B. C. it is now proposed to determine the beginning of the Saptha Rishi Era. The two are related as follows :-

- i) They began with Magha Sukla Prathama, with the Sun and the Moon at Mid-Shravishta ( $300^\circ$  of the present Indian Zodiac).
- ii) At the beginning of Kali Yuga, the Sapta Rishis were at the beginning of the 76th year of the Magha Nakshatra cycle of 100 years.
- iii) The year was counted by the expiry of Varsharuthu, or Rainy season, as the name Varsha for the year shows, and the first ruthu of the year was Sarad (Autumnal Equinox) Hence the S. R. Era began with Sarad and therefore the Vernal Equinox was at the beginning of Magha Nakshatra ( $120^\circ$  of the Zodiac).

- iv) At the beginning of Kali Yuga, the Meshadi longitude of Vernal Equinox was  $46^{\circ}34'$ .

It will be seen that at the beginning of the S. R. Era, on 21st Nov. 8576 B. C., it was the beginning of the Sarad Ruthu, the first year was Samvatsara, the first of the Vedanga Jyotisha five year cycle, and also Akshaya (the first of the 60 year cycle, though it is now placed as the last). It was the first date of the month of Kumbha (Rasi), the Solar month Isa, and the Luni-Solar month Magha. The day was Friday, *Magha Sukla Prathama* Shravishta Nakshatra, with the Sun and the Moon at Mid-Shravishta. (The Kali Yuga began on the 1,000,7822nd day of the S. R. Era.)

### **Saptha Rishi era and the related eras of Indian Chronology**

There are six related eras in Indian Chronology.

- i) The Vedanga Jyotisha Yuga of five sidereal years where the years are named Samvatsara etc.
- ii) The Saptha Rishi Era, reckoned in cycles of 100 years, each cycle named after a Nakshatra beginning with Magha, the Nakshatra of Pitris or Saptha Rishis.
- iii) The Loukita Era of Kashmir, the same as the Sapta Rishi Era, but in which the centuries are dropped out.
- iv) The Prabhavati cycle of 60 years where the 60 years are named. Akshaya is now counted as the last of the 60 years. But as its name implies, it must have been the first year of the cycle of 60 years. Even now, it is customary to start counting with Akshaya and then count two, three etc.
- v) Kali Yugadhi Era of Friday, the 28th December 3101 B. C.
- vi) Kollam Andu of Kerala of 826 A. D.

- vii) The forgotten Era of the Pataliputra Empire of Satavahanas 555 B. C.
- viii) The Vikram Era of Ujjain, Avanti Rashtra of Vikramaditya Empire 55 B. C.

Note : When true Kali Yugadhi of 28th December 3101 B. C. was shifted to 17/18 February 3102 B. C., the English Historians fixed these two eras at 557 B. C. and 57 B. C. respectively.

- ix) The cycle of 7 days week where the days are named after the planets according to the law of Horas.

It must be noted that all India Eras begin with the year *Samvatsara*, the first of the Vedanga Jyotisha cycle of five years. Nos. i, ii, iii, iv, and ix were instituted on the same day by the Saptha Rishis, on the Magha Sukla Prathama Day at the beginning of Saradruthu, on the day Vaivaswatha Manu performed the Aswamedha Yaga. The other cycles and eras were fixed in relation to the S. R. cycle of 100 years and the Vedanga Jyotisha cycle of 5 years.

The five planets were together at 5 p. m. on Saturday 10th January 3104 B. C. *Magha Sukla Prathama* beginning. But this was not the beginning of the year *Samvatsara*. the first year of the cycle of 5 years. Hence at the very next *Samvatsara* beginning the reckoning of Kali Yuga Era was instituted. It was on *Magha Snkla prathama* day, Friday 28th December 3101 B. C. as Amavasya ended on Thursday (4.65) 27th December 3101 B. C. with the Sun and Moon on  $299^\circ$  of the Zodiac.

The Saptha Rishi Era was instituted 5475 sidereal years before Kali Yugadi on the Magha Sukla Prathama Day, Friday 21st November 8576 B. C.

### Verification

Now consider the Kali year 5068, Prabhava, reckoned from 17/18th February 3102 B. C. (a date fixed by Bentley and adopted by all English and Indian chronologists, even though



there was opposition from a few English and many European chronologists). Prabhava is the 40th year of the Prabhavati cycle of 60 years. This year 5068 current Kali begins with the month of Mesha, April 1966 (to April 1967). Therefore true Kali year number for this year is  $5068 - 2 = 5066$  beginning with the Magha Sukla Prathama of February 1966, and ending with Powsha Krishna Amavasya of February 1967.

- i) Therefore the S. R. year of this year from February 1966 to February 1967 is  $5066 + 5475 = 10541$  i. e. the Saptha Rishis were in the 41st year of Ardra.
- ii) Dividing 10541 by 5, remainder is 1, The name of the year is Samvatsara of the Vedanga Jyotisha cycle of 5 years.
- iii) Dropping out multiples of 100, the remainder is 41-corresponding to the Loukika Era of Kashmir.
- iv) Again dividing 10541 by 60, remainder is 41. Hence this year is the 41st year of 60 years beginning from Akshaya-as is easily seen from reference to Panchang.
- v) The Kollam Andu of 826 A. D. The corresponding S. R. year  $5475 + 3100 + 826 = 9401$ . Dividing this by 100, remainder 1. Hence it was the first year of the Loukika Era of Kashmir and also Samvatsara of the Vedanga Jyotisha Yuga. The Quilon Gazetteer gives a short history of the determination of this Era.
- vi) The week cycle is very important for astronomers and astrologers to rectify the calculations. It is as old as the institution of the S. R. era. The first day of the S. R. era was named as Friday-Brighu Vara, since Brighu the greatest of the Saptha Rishis was responsible for the institution of the Era. The interval between S. R. era and Kali Yuga Era is 1999781.58 days and hence both Eras began on Friday.

The week day is very important for Jews, Christians and Moslems.

Note : According to European scholars, the chinese cycle of 60 years was instituted more than 4500 years ago. The current chinese year corresponding to 1966—67 is the 41st year of their cycle. This is a very important coincidence that should be noted by chronologists.

vii) *The Forgotten Era of 555 B. C.* (currently recognised by some scholars as that of 557 B. C.).

Udhishtra performed Raja Suya and was crowned Samrat in 3082 B. C. The Magha cycle of the Saptha Rishis extended from December 3176 B. C. to 3075 B. C. Therefore when Udhishtira was crowned in New 3082 B. C., the Saptha Rishis were in Magha, as clearly stated by Varaha Mihira and others. Again, according to him it was 2526 years before the Saka Era current in his time. Hence the beginning of the Saka Era is  $3081 - 2526 = 555$  B. C. at the beginning of the Sarad Ruthu (Autumnal Equinox) This is seen to be correct—Samvatsara.

viii) *Vikrama Era of 55 B. C.*

The Vikrama-Saka was established at the beginning of the Saradruthu in 55 B. C. The corresponding S. R. Era is 8521-Samvatsara and the first year of the 60 year cycle (Akashaya).

ix) The Salivahana Saka (currently fixed at 78 A. D.) must have been instituted in 76 A. D. corresponding to 8651 of the S. R. years and Samvatsara of the Vedanga Jyotisha.

We can also fix up the age of Ramayana because Lakshmana sees Saptha Rishi with Dhanista i. e. moving backward, it comes to 13 or 14th Nakshatra which works out to be 1300 years. If we add this 1300 to 3101 B. C., we can roughly conclude that the age of the Ramayana was about 4400 B. C.

Thus we may conclude that Saptarishi Era was started in 8576 B C when Vaivaswatha Manu changed the tropical year from Rohini to Dhanista. This does not mean that there were no era before that. But this Saptarishi Era has got some thing common with Kali Yuga Era. From that point of view, this Era has been worked out. Because it was started during Vaivaswatha Manu, we call it as Vaivaswatha Manmataradi-Sankalpa.

#### Additional matter

It may be seen that at the beginning of the Sapta Rishi Era on 21st Nov. 8576 B. C. it was the beginning of the Sarad Ruthu, the first year was *Samvatsara* (the first of the Vedanga Jyotisha five year cycle and also akshaya (the first of the 60 year cycle, though it is now placed as the last). It was the first day of the month of the Kumbha (Rasi), the solar month *Isa*, and the Luni-Solar month Magha. The day was Friday *Magha Sukla Prathama*, Shravishta Nakshatra, both the Sun and the Moon at Mid-Shravishta. The Kali Yuga began on the 1,999782nd day of the Sapta Rishi Era.

It should be noted that our ancient Rishis measured time in Yugas of 5 sidereal years = 62 lunations = 67 sidereal periods of the Moon. Twenty yugas = 100 years were taken as a measure of time (Note Vedic Prayers mentioned this as the normal healthy span of human life). These periods of 100 years were named after the Nakshatras from Magha in order. The first cycle was the Magha cycle of 100 years. That is why Magha is called Pitir Daivatham in the Vedanga Jyotisha. The years of a cycle were named as the 42nd year of Chitra cycle and so on. The Magha cycle was followed by the Poorva Phalguni cycle and so on. It is mentioned in all the Puranas that Kali Yuga began with the 76th year of a Magha cycle with the Sun and the Moon at the beginning of Magha Sukla Prathama.

As stated already, the Vedanga Jyotisha yuga = 67 sidereal periods of the Moon = five sidereal years (neatly); for 62 lunations = 1830 8565 days and 67 sidereal periods of

Moon = 1830.5512 days and 5 sidereal years = 1826.282 days. Hence the yuga is the interval in time between consecutive conjunctions of the Sun and Moon in the month of Magha. The day after the conjunction (Amavasya) begins the yuga on Magha Sukla Prathama. The names of 5 years of the Yuga are: Samvatsara (Agni): Anuvatsara (Prajapathy or creator) and Udavatsara (Rudra). As was said earlier the Sapta Rishi Era, began with the Magha Shukla Prathama. The names of 5 years of the Yuga are:—

Samvatsara (Agni) Parivatsara (Sun);  
 Idovatsara (moon); Anuvatsara (Prajapathy or creator);  
 and Udavatsara (Rudra).

As was said earlier the Sapta Rishi Era began with the Magha Sukla Prathama, with the Sun and Moon at Mid Shra-  
 vishta, in the first year of the Magha Cycle of 100 years. There-  
 fore, the interval in time brings back the Sun and the Moon to  
 the initial point of the Zodiac and it is a multiple of 2700 years  
 + 75 years. This Problem has only one solution =  $2 \times 2700 +$   
 $75 = 5475$  years. For 5475 sidereal years =  $5475 \times 365.256898 =$   
 $1,999,781.52$  days. 67719 lunations =  $67719 \times 29.530588 =$   
 $1,999,781.89$  days and 73194 sidereal periods of Moon =  
 $73194 \times 27.321662 = 1,999,781.73$  days. Therefore Saptha Rishi  
 Era began on the Magha Sukla Prathama day 5475 years before  
 Kali Yugadi i. e., 1,999,781.99 days before Kali Yugadi, i. e.,  
 on Magha Sukla Prathama day in 8576 B. C, Friday 21st  
 November 8576 B. C.

At the time of Sri Krishna, and Vedavyasa (Explicitly so  
 stated in the Mahabharatha) Jyeshtha was the first nakshatra.  
 This shows that from the days of the Sapta Rishis to those of  
 Sri Krishna, the Autumnal equinox moved back from Mid  
 Sravishta to the beginning of Jyeshtha i. e. over a segment of  
 $5\frac{1}{2}$  nakshatras or  $11/2 \times 40/3 = 220^\circ/3 = 73\frac{1}{3}$  degrees.  
 The corresponding period = 5,475 sidereal years. Thus it is

seen that the Saptha Rishis framed the Vedanga Jyotisha in the year 8576 B. C.

It may be appropriate to tabulate the probable dates when the beginning of the Luni-Solar ritualistic year was changed :

1)	Autumnal equinox at Shravista—3.	Age of Sapta Rishis 8600 B. C.	Vide B. G. Tilak and others
2)	Autumnal equinox at Sravana—1.	Age of Viswamitra 7000 B. C.	Vide Mahabharatha
3)	Autumnal equinox at Moola—1.	Age of Parasara 4100 B. C.	Vide Gita, Vide Mahabharatha
4)	Autumnal equinox at Jyeshtha—1.	Age of Veda Vyasa 3100 B. C.	Vide Mahabharatha
5)	Autumnal equinox at Vishakaha—2.	Age of Vridha Garga 1400 B. C.	Vridha Garga
6)	Vernal equinox at Aswini—1.	Age of Surya Siddhanta 300 A. D.	Surya Siddhanta

It is necessary to cite the Vedanga Jyotisha verse :

“ Magha Sukla Prapannasya pousha krishna  
Samapthia yugasya pancha varshasya kala  
granam prachakshathae ”.

62 Lunations	= 1830.8965 days
62 sidereal periods of the Moon	= 1830.5512 days
5 sidereal years	= 1826,284 days

At the end of 1830.8965 days, Amavasya comes back. The Yuga of 62 lunations is 461 days longer than 5 sidereal years. *The Vedanga Jyotisha years is therefore  $1830 \div 5 = 366$  days exactly.*

The number of accumulated excess days at the end of 7 yugas = 32.3 days. Hence the seventh yuga was allotted only 61 lunations.

The Vedanga Jyotisha year was repeatedly rectified by observation of the conjunction of the Full Moon with the Yoga tara of Magha Nakshatra (Regulus).

The original Vedanga Jyotisha of Mahatma Lagada, was thus modified and altered first by Rishi Suchi and then by Vridha Garga (1600 B.C.) according to Bhatotpala the commentator of Varaha Mihira to suit the climatic condition of their times.

The Vedanga Jyotisha is the only yardstick to be applied for dates fixing the correct chronological date of our vedic or epic dates.

National Method of Historical Research  
Envisaged by Swami Vivekananda

\* SWAMY SAKHYANANDA

1. Beneficial Knowledge of History

**H**istory, in the context of Indian Wisdom, is known as 'Itihāsa-Purānam' or 'Panchama Veda', as we say in Sanskrit:- "Ithihāsa—Purānah Panchamō Vedānām Vedah" (Chhandogya Upanishad 7-4) "Ithihāsa—Puranam cha Panchamo Veda uchyate" (Bhagavatam I—4-20).

"Ithihasa Puranam," generally called 'Puravrittam' (History), is one of the eighteen branches of Indian wisdom (Apara Vidya), developed by the Ancient Rishis of Bharat for the enlightenment of humanity. Indian civilisation is built up on the strength of these eighteen *Vidyas* – (Branches of true knowledge, beneficial to humanity). According to those great Rishis who built up our civilisation, History (Purāvrittam) means reliable account of the past experiences relating to the socio-political, educational and cultural life of an enlightened (civilised) society or nation, as handed down by traditions through generations in the march of time. These traditions are recorded in the *Panchama Vedic* literature by our Rishis

\* *Vivekananda Vijnana Bhavanam, Sri Ramakrishna Ashrama, Punkunnam, Trichur-2*

for the light and guidance of future generations. Hence these literary records are considered to be the most valid source of Historical knowledge.

“Vidyayā Vindate Amritam,” says Kena Upanishad (2-4). That is, we attain immortality by ‘*Vidya*’—true beneficial knowledge gained by ‘*Pramanas*’ (Valid means). Immortality is the highest good we aspire to attain by our life on earth. What is the benefit of studying Itihasa—Puravrittam? Swami Vivekananda, the great Rishi of our age, gives the answer in his edifying address to modern India :—

“It is out of the past that the future has to be moulded ; it is the past that becomes the future. Therefore, the more the Hindus study their past, the more glorious will be their future, and whoever tries to bring the past to the door of every one is a benefactor to his nation” (Complete works : Vol. IV-page 324).

Value of historical knowledge is clear from these words of Śwamiji : it is beneficial to humanity in as much as it dispels our ignorance, the root-cause of all weakness, and gives us strength to build up a glorious future ; it gives us light to see the dangers on the way and helps us avoid them.

Professor Arnold Toynbee, the celebrated historian of this century, emphasises the benefit of historical study in his memorable words, “A civilisation rather than the traditional nation-State, ought to be the unit for study of history”. By the term ‘civilisation’ we have to understand the edifying classical literature of the nation which symbolically represents its civilization by reflecting the nation’s age-old tradition and culture. In the context of Bharat, it is the *Panchama Vedic* literature that is symbolic of our nation’s culture and civilisation. Hence that literature ought to be the unit for the beneficial study of our nation’s history. Knowledge gained by such study will enlighten our minds and strengthen our being to build up a glorious future. Historical knowledge gained otherwise, i. e., by using foreign methods against Indian



traditions and Itihasa literature, cannot and will not prove beneficial to us. Such knowledge is sure to prove a failure in our life by hindering our national progress and welfare ; it will drive us on to degradation and enslavement.

A knowledge that brings national degradation and enslavement is surely not *Vidya*, not true knowledge beneficial to human welfare, however scientific or 'objective' it may be. Any knowledge that is inimical to our progress and welfare, is called '*Avidya*' in Sanskrit, meaning thereby perverted, false knowledge. Unfortunately, the modern trend of historical study is directed towards that end to acquire knowledge detrimental to our national progress and welfare. Our scholars of today are following certain methods which are anti-national, and diametrically opposed to Indian tradition and culture. What are their methods of historical research ?

## 2. Defective Methods of Modern Historical Research

Two are the methods of historical research and education adopted by the scholars of modern India, namely, (1) Dependence on contemporary foreign records and (2) archaeological studies. They are the legacy of the European Indologists of the nineteenth century who started the work of rewriting India's history in their own fashion, using their own standards of historical knowledge. What are they ?

The most valid source of Indian history, in the Western view is the contemporary record by which they mean the scraps of diary notes said to have been written by foreign travellers like Megasthenes, Ptolemy, Pliny, Huen-tsang, Alberuni and others who had visited India between third century B. C. and thirteenth century, A. C. Granted that the so-called diary-notes are reliable and valid, we may ask, what about the history of other periods before and in between the visits of these foreign travellers ? Their professional answer is that those periods are pre-historic, dark, gloomy and hence unknowable. This is, in a

way, virtual negation of the fact that India had a civilisation and history prior to the visits of Megasthenes or Alexander.

Here it must be noted that the European scholars of the nineteenth century alone are not responsible for this distortion and mutilation of India's ancient history and civilisation. They were but mercenaries of the British rulers whose aim it was to establish by false propaganda that India became civilised for the first time in history by contact with the West, and that this country should ever remain under the Western (British) domination, if at all the Indians should become civilised again. Thus, at the behest of the British masters, these mercenaries introduced a negative system of education advancing all sorts of false assumptions, pseudo-historical theories and methods of research suited to their purpose. Unfortunately this system has become 'Scientific' and 'up-to-date' for our modern Indian historians. The text-books of history we have been studying for the last 150 years are the products of this Western method of research and speculation.

Men of pure, unbiased understanding know that human civilisation had its dawn here in India, the land of enlightened Rishis; it is from here that knowledge and culture flowed to different parts of the world. India's glorious history really belongs to those remote periods before third century B. C.; we have our valuable Panchama Vedic records to prove the same. But alas, they are not acceptable to scholars of Western School; they deny the validity of those records on the plea that the Ithihasa-Puranas are mythical legends and fictions clothed in poetical imageries.

In fact, all the ancient historic records, not only of India but of Egypt, Greece and all other old nations, are clothed in poetical flourish. So what should be done? We have to analyse those myths and legends on logical grounds and sift the historical facts underlying the poetical imageries, if we want to know their true spirit. This sort of analytical study requires earnest effort on right lines which, of course, is not in the habit of modern scholars. Hence the tragedy of their adherence to the

negative methods of speculation taught by their Western masters, who have not imbibed India's cultural heritage and who, purposely or otherwise, have brought down or reduced the antiquity of our history and civilisation to the times of Alexander.

The other valid source of Indian history, in the modern view, is the study of archaeological findings unearthed from different parts of the country. They include pieces of bones, potteries, stone implements, coins, epigraphs and such other materials capable of indicating the antiquity of human life on earth to some extent. They are, no doubt, valid; we admit them. But, it must be remembered that these materials, by themselves, could not yield any valuable information regarding their origin and historical evolution, unless studied in the light of the traditional literature which keeps in record their history. We have to probe deep into that literature (Ithihasa) carefully in order to have a satisfactory explanation about their relation to national life. Unfortunately such deep and careful study of our national Ithihasa literature is beyond the purview of modern Indian archaeologists and historians. Like the blind following the blind, they are following the foot-steps of their Western masters, sticking to the foreign methods of speculation they are accustomed to, and advancing ridiculous queer theories, which have no relevance to Indian national life and culture.

In our view all these various historical speculations and theories advanced by the modern scholars are defective and hence, we cannot accept them as valid sources for acquiring a true beneficial knowledge of our ancient history and civilisation, however 'scientific' or 'objective' they may be. Many of our enlightened teachers and eminent scholars have raised their note of warning against these corrupt forms of modern historical speculation and anti-national methods of education, even at the dawn of this century. The first and foremost among these great souls who realised the dangers of modern historical speculations and writings was Swami Vivekananda, the great apostle of Sri Ramakrishna Paramahansa. With the true insight and farsight of a Rishi, he has envisioned a new method of histo-

rical research and education suited to the progress and welfare of our nation, which may be learnt from his enlightening words quoted below :—

3. Exhortations of Swami Vivekananda on Indian History, Education and Culture.

( Extracts from the complete works )

i) Amongst all the races of the world, from the earliest time of history, India has been called the land of wisdom. History itself bears testimony to this fact. All the soul-elevating ideas and different branches of knowledge that exist in the world are found on proper investigation to have their roots in India.

(C. W. Vol IV, page 197)

ii) When the real history of India will be unearthed, it will be proved that, as in matters of religion, so in fine-arts and sciences too, India is the Primal Guru of the whole world.

(Vol. V. Pp. 421)

iii) India has for thousands of years been peacefully existing. Here civilisation and activity prevailed when even Greece did not exist, when Rome was not thought of, when the very fathers of modern Europeans, painted themselves blue and lived in forests. Even earlier, when history has no record, and tradition dares not peer into the gloom of that intense past, even from then until now, ideas after ideas have marched from here, but every word was spoken with a blessing behind it and peace before it.

(Complete works : Vol. III p. 106)

iv) Those of you who think that the Hindus have always been confined within the four walls of their country, are entirely mistaken that you have not studied the old books, you have not studied the history of the race if you think so. Each nation must give in order to live. When you give life, you will have life ..... and what we have been living for so many thousands of years is a fact that stares us in face, and the solu-

tion that remains is that we have always been giving to the outside world, whatever the ignorant may think.

(Vol. II. p. 273)

v) The gift of India is the gift of religion and philosophy, of wisdom and of spirituality. Like the gentle dew that falls unseen and unheard and yet brings into blossom the fairest of roses, has been the contribution of India to the thought of the world. Silent, unperceived, yet omnipotent in its effect, it has revolutionised the thought of the world; yet, nobody knows when it did so..... There are evidences accumulating every day to show that Indian thought penetrated the world before Buddhists were born ... Before Buddhism, Vedanta had penetrated into China, into Persia, and the Islands of Eastern Archipelago.

(C. W. Vol. III p. 274, 275)

vi) A nation that has no history of its own has nothing in this world. Do you believe that one who has such faith and pride as to feel, 'I come of noble descent', can ever turn to be bad? How could that be? That faith in himself could curb his actions and feelings, so much so that he would rather die than commit wrong. So, a national history keeps a nation well-restrained and does not allow it to sink so low. Oh, I know you will say, "But we have not such a history". No, there is not any, according to those who think like you. Neither is there any, according to your university scholars; and so also to those who after having travelled through the West in great rush, come back dressed in European style and assert, "We have nothing, we are barbarians". But, with all that, we have our own history exactly as it ought to have been for us. Will that history be made extinct by shutting our eyes? Those who have eyes to see will find a luminous history there, and on the strength of that history, they know that the nation is alive. **BUT THAT HISTORY HAS TO BE REWRITTEN.** It should be restated, suited to the understanding and ways of thinking which our men have acquired in the present age through Western Education.

vii) Study Sanskrit, and along with it study Western Sciences as well. Learn accuracy, my boys! Study and labour, so that time will come when you can put your history on a scientific basis. For, now Indian history is disorganised. The histories of our country written by English writers cannot but be weakening to our minds, for, they talk only of our downfall. How can foreigners, who understand very little of our manners and customs, or of our religion and philosophy, write faithful and unbiased histories of India? Naturally, many false notions and wrong inferences have found their way into them. Nevertheless they have shown us the way how to proceed making researches into our ancient history. *Now it is for us to strike out an independent path of historical research for ourselves, to study the Vedas and Puranas and the ancient Annals (Ithihasas) of India, and from them make it your life's SADHANA (Tapasya : disciplined endeavour) to write accurate, sympathetic and soul-inspiring histories of the land. IT IS FOR INDIANS TO WRITE INDIAN HISTORY.* Therefore set yourselves to the task of rescuing our lost and hidden treasures from oblivion. Even as one's child has been lost does not rest until one has found it, so do you never cease to labour until you have revived the glorious past of India in the consciousness of the people. That will be true *national education* and with its advancement, a true national spirit will be awakened.

#### 4) A New range of Vision

Swami Vivekananda gives us here a new range of vision, a new method of historical research, in order to bring into clear perspective the vistas of our glorious past. First of all, we have to study the Vedas, the sublime literature embodying the most ancient refined (Sanskrita) form of human speech, handed down by tradition through generations of Rishi-teachers and disciples. Next comes the study of Panchama Veda or Ithihasa Puravrittam, the highly enlightening literary record of our nations history and civilisation. No doubt, our ancient history as recorded in the Puranic literature is mixed up with poetical flourish and rhetoric. It is but natural; the

historical literature of all ancient nations are abundant and extract the truth by application of *Anveekshiki Vidya*, the wisdom of Indian logic. This process of sifting truth by the wisdom of logic is imperative in the study of Scriptures, especially of Panchama Veda. Our great Rishis like Manu, Dattathreya, Kapila and Vyasa are the masters of this original method of sifting truth by *Anveekshiki Vidya*.

Then, the historical facts thus collected, have to be arranged in time-scale in order to get a chronological account of the events in the past. This can be achieved to some extent with the aid of *Astronomical Science* and ancient Indian Vedanga Calendars developed by our Vedic Rishis. They furnish us with the principles of time-reckoning and necessary astronomical data to help us determine the dates of ancient historical epochs referred to by them. Our Brahmana and Panchama Vedic scriptures contain ever so many astronomical date with regard to events recorded in them. With the aid of these data and astronomical methods of calculations we can work out the dates of events to some extent, without much error.

This method of ascertaining dates of events by astronomical principles, is known by the term 'Aryan', since it belongs to the line of enlightened, cultured Rishi-teachers of ancient Bharat. In course of time this science concerning the motion of astral bodies, has undergone great developments through repeated experiments and observations by sages both in the East and West. It is in vogue among the wise men in all civilised nations. As such we can safely apply this method for the purpose of ascertaining the dates of past events wherever found relevant. To ignore and dismiss it as primitive or out-dated is a sure sign of *Avidya* (Nonscience) on the part of modern professional historians.

This is in short the national method of historical research bequeathed to us by Swami Vivekananda for acquiring beneficial, worthy knowledge of our past for the regeneration and welfare of future India. It is indeed an arduous and uphill

task to follow this original path of research. Still we have to do it for the good of the nation.

## 5) **Aarshabharatha Paramparyam and Bharata Charitra Darsanam**

Following this National method of Research given by Swami Vivekananda, the author of this paper has prepared two thesis in Malayalam, the regional language of Kerala. They are:- (1) *Aarsha-Bharata-Paramparyam* and (2) *Bharata-Charitra-Darsanam*, on the traditional history and culture of Bharat.

The first book, '*Aarshabharata Paramparyam*' deals with the traditional line of those great Rishi-teachers who built up our Aryan system of Education and culture in chronological order. The line starts from Sadasiva-Mahadeva, the Teacher of Rishi-teachers. Passing through the Aarsha channels of Brahma, Manu, Saptarshis, Vyasa, Parswanatha, Mahavira, Buddha, Gorakshanatha, Suka, Govinda, Sankaran, and other great sages in the march of time, it has come down to Sri Ramakrishna and Swami Vivekananda of the present age.

The second thesis, '*Bharatachritradarsanam*' is comparatively bigger than the first. It deals with the timely changes effected in the racial, socio-political and religio-philosophical life of the nation through ages, more or less in chronological order. Historical validity is given to the geneologies of traditional Manukula kings (Rajarshis) in this elaborate thesis. Astronomical principles and all available data have been made use of in ascertaining the dates of important epochs in the history of ancient Bharat. A diagram (KALACHAKRAM), illustrative of the chronology of different epochs in the march of time, has been prepared and attached to both the books. A copy of that diagram is attached to this paper also, in the second part dealing with the application of astronomical data in histroical research.



**Note : 1. Explanatory notes of Aryans, Aryanisation, and Dravidians**

The term 'ARYA' is applied to mean men of high attainments in knowledge and wisdom, in culture and civilisation. The word 'AARSHA' also has the same sense as it refers to the line of enlightened, cultured rishis. Both the words are derived from the same Sanskrit root which means "to go, to attain, to know". Hence they are used more or less synonymously in Scriptural contexts. In olden days, such men of high attainments in knowledge and culture were only in India, the land of Rishis. So the people of India came to be known as Aryans.

In course of time, the meaning of the word 'Arya' became confined to the higher classes of teachers and rulers (Brahmanas and Kshatriyas) who were naturally superior to the common subjects-people who were inferior in wisdom and strength. The inferior or junior classes, the Vaisyas and Sudras, who formed the bulk of the society, were then considered as 'Sishyas' meaning thereby the people under training to become 'aryained' by the higher classes of teachers and rulers.

Apart from these Brahmana and Kshatriya people in India, no Aryan race has ever entered this country from anywhere outside at any time. Nowhere in the vast lore of ancient Sanskrit literature could we find the mention of such an Aryan Invasion. On the contrary, it was from India that the Arya-Kshatriyas and Brahmanas moved to distant lands for Aryanisation.

Different from the Aryan Community of Rishi-teachers, Kings, and the people who followed different professions of agriculture, trade, cattle breeding, horse-breeding, navigation, arts, crafts and physical labour-the Vaisyas and Sudras-there was never a non-aryan race of 'Dravidians', existing anywhere at any time in India's history. It is a myth, deliberately coined by the mischievous foreign scholars who came here to distort and discolour our history in the 19th century. If at all the

word 'Dravida' has any historical or racial significance, it is with reference to the local name of a particular tribe of Somakula Kshatriyas (Panchajanas) who colonised South India, long before Kaliyugadi. They were Aryans of a high order. (Reference : Complete Works of Swami Vivekananda—Vols. V, P. 534 ; III pp. 293 ; iv. 301).

**Note : 2. Aryanisation of the world by Manukula Kshatriyas**

According to traditional chronological accounts of the Rajatarangini\* (1) and Vedic Astronomical Calendar, Sraddhadeva Vaivaswata was crowned MANU † (2), the first king of human society of this age (Manwantara-Mahayuga) by the Saptarishis in the year 8576 B. C., Magha Sukla Prathama, when the Vernal equinox was in the first quarter of the Magha Nakshatra, 120° on the Indian standard Ecliptic = (3). The race of illustrious rulers descended from Manu is known by the name Manu-Kula Kshatriyas, or Arya Kshatriyas. They were a class of men of the highest order, the cream of mankind, endowed with supreme wisdom (Rajarishis), prowess and adventurous spirit (Parakrama). These Manukula Kshatriyas branched off with and flourished by two great lines : The Suryakula and Somakula. They, in course of time, multiplied by thousands of subclans and tribes, and spread over the earth for the Aryanisation of the world. "*Krinwanto Viswam Aryan*" was the title given to them by Rig Veda.

Aryanisation means the process of educating and civilizing the world of men by MANAVA DHARMA—the law of righteous life enjoined by Manu. Impelled by this great motive of Aryansing the Earth, these illustrious Kshatriyas, assisted by their Brahmarishi-teachers, moved to different parts of the world by land and sea, mixed with the common people of those parts, imparted to them their blood, lineage, of 'Aryas'—Kshatriyas and Brahmanas. This process of Aryanisation of the world under the Manukala-Kshatriyas and Brahmarishis, continued for nearly 5400 years that followed the age of Manu, during which they reached every nook and corner of the globe and established the traditions of Manu and the Aryan way of

life, thought and culture everywhere..... Otherwise how should we account for the imprints of Indian traditions and culture, some of which are six to seven thousand years old, found even now in far off lands like Indo-China, Indonesia, Mexico, Central America, Peru, Scandinavia, England and other places outside Bharat ? There is no civilisation on earth, ancient or modern, without having the traditions of Manu, the forefather of Aryan civilisation. Names of Brahmashis and Rajarshis like Viswamitra, Agastya, Turvasus, Yadu, Sagara, Rama etc. are still remembered in these far off lands, though in corrupt forms @ (4) There are references in the Mahabharata and Hariyamsa to show how and when some of these Rajarshi descendants of Manu went to distant lands for Aryanisation of the world.

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- Ref : \* (1) Rajatarangini : The chronology of Kashmiri Kings descended from Vaivaswatha Manu, written by KALHANA.
- † (2) Mahabharata (Manu is said to have had his seat on the bank of River Saraswati which dried up in course of time. The city of Ayodhya is said to have been built up by Manu, and given to IKSHWAKU, his eldest son, from whom descended the Suryakula Kshatriyas )
- = (3) 'Saptarishi Era' Prof. by K. Srinivasaraghavan, Madras, Pub. in 1974.
- @ (4) 'Hindu America' by Chaman Lal.

## Part II

# Application of Astronomical Data in Indian Historical Research

### Prologue

Astronomy is an exact science, i. e. accurate knowledge obtained by correct perception and inference with mathematical precision, about the motion of heavenly bodies revolving in the universe of space, governed by laws of time, or *Kala-niyati* as they say in Sanskrit. This science of time-reckoning was developed in ancient India as a *Vedanga* (part of the Vedas) to form the *pramana* (correct means of knowledge) for measuring time. For in the vision of the Rishis who developed this science, time was the governing principle of life. We come into being in time, live in time and die in time. All our actions, good and bad, proceed from time-consciousness. Our aim of life is to attain the highest good by eschewing all bad actions that bring misery as their inevitable result. In order to achieve this end, the ancient sages wanted to control and regulate all human activities, religious and civil in accordance with the law of time (*Kala-niyati* or Dharma), and so developed this science of Astronomy in Bharat. Calendars were set up for guidance in all walks of civil and religious life in order to control and regulate them by law of time (*Kalanियati*).

A nation, or a race of people is said to be civilised when it becomes enlightened enough to be guided by laws of time. And that time is indicated by astronomical calendars. So, in a way, calendars may be said to be the symbol of civilisation. All civilised nations, ancient and modern, have developed the

science of astronomy and have set up calendars for guidance in all their civil and religious walks of life. Ancient nations like India, China, Persia, Chaldea, Syria, Egypt and Greece had their own Calendars, which now speak of the standard of life lived, and the height of civilisation attained by those nations in olden days. They are our astronomical records of ancient historical epochs through which the nation had passed in the March of time. Ancient Indian Calendars, in this respect, especially furnish the necessary astronomical data with regard to the positions of the stars, planets and equinoxes at the particular epochs, enabling us to work out the dates of those historical events of the past. Dates of ancient historical events thus ascertained with the help of reliable astronomical data are far more valid than the fantastic theoretical evidences produced by speculation in the so-called humanities like anthropology, archaeology, ethnology and comparative philology. (They are full of mutually contradicting un-scientific theories, and it is a pity that modern historical research is leaning more and more towards these pseudo-sciences for support of their speculations).

### **Astronomical Data in Support of Ancient Indian History**

India is the oldest of all civilised nations on earth. Knowledge and culture had their dawn on mankind first here, in this ancient land of Bharat, and it is from here that civilised human races migrated to other lands for the diffusion of education and culture. Swami Vivekananda says, "when the real history of India will be unearthed, it will be proved that, as in matters of religion, so in fine arts and sciences, India is the primal Guru of the whole world". India has the oldest of all well-developed human languages, preserved in her Vedic lore. Here alone is kept in record, though in poetical flowery language of the Itihasa-Puranas, the traditional historical accounts, not only of this nation, but of the whole world as well. It is again this ancient land of Bharat that preserves the oldest system of astronomical science and national calendar in her Vedanga Jyotisha. This first calendar of the world is said to have been introduced by Saptarashis, the great seven Vedic sages, during

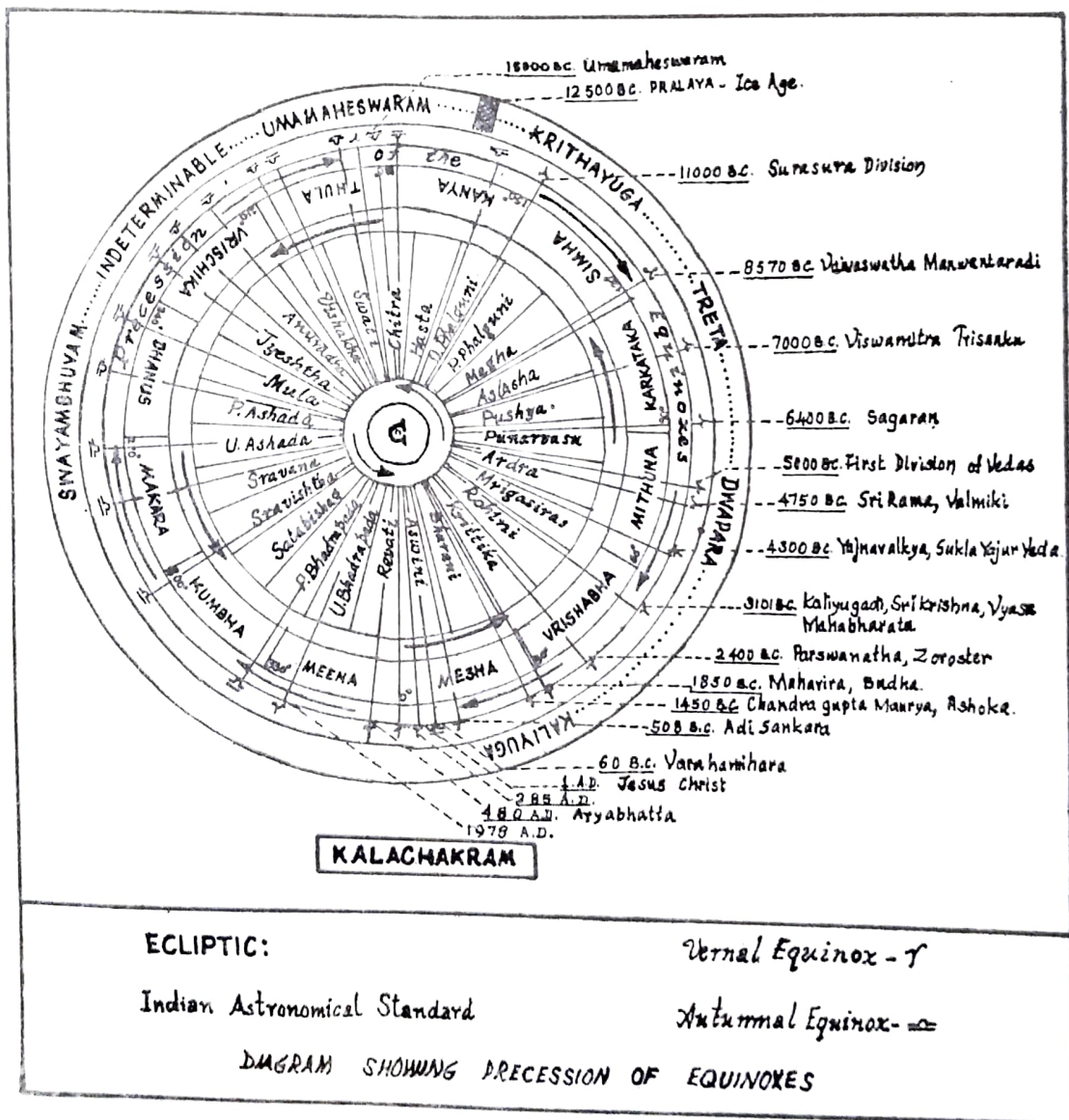
the days of Vaivaswat Manu (B. C. 8576) the first king of the world. In this Calendar, which has been revised and modified from time to time, and in the Samhitas and Brahmanas of Vedic lore, we find reliable astronomical data of many important historical events of those remote ages following the advent of Vaivaswata Manu. Mahabharata, the great Itihasa (Epic) of India, gives chronological accounts of ancient India with valuable astronomical data relating to the Dwapara Kali Yuga Sandhi—between B. C. 3200 and 2800. Memorable events of this period like the birth of the Pandava brothers, Yudhis-tira's Rajasuya, exile of the Pandavas, the Mahabharata War, Bishma's death, accession of Parikshit, Kaliyugadi and Sri Krishna's departure are truly historical, being corroborated by astronomical evidence. Puranas like Vishnu Purana also give detailed chronological accounts with astronomical references relating to the early centuries of Kaliyuga—between B. C. 3067 and A. D. 300. Apart from the accounts given in the Itihisas and Puranas of Vedic origin, we have valuable references in the recorded traditions preserved by the non-vedic Jains and Buddhists. When we have so much valuable material for historical research, it is but intellectual slavery on the part of our modern research students to neglect them and hold on to the spurious theories advanced by the European indologists, whose only aim it was to distort our history and the glorious cultural heritage and depict our nation as a primitive race of people wanting to be dominated and civilised by the West.

In this context let us remember with gratitude the earnest and sincere efforts of Indian scholars like B. G. Tilak and T. S. Narayana Sastri, whose vast and deep researches on astronomical grounds into the Vedic lore have brought to light some historical facts of Vedic India, which were once declared by the European scholars as mythical and unhistorical. The researches of those Indian scholars like B. G. Tilak were done during the British rule, between A. D. 1860 and 1920. There was nobody after them for some time to continue the work they started. It is, however, gratifying to note that recently a learned Professor, K. Srinivasaraghavan, of the Aurobindo

study Circle, Madras—5, has come forward to undertake the research work, on the national lines envisioned by Swami Vivekanda and B. G. Tilak, and has brought to light further historical facts of ancient India. His valuable thesis, entitled 'The chronology of Ancient Bharat', published from Madras in 1974, is worthy of being studied by students of Indian National history. The following observations are culled mainly from the Astronomical works, 'The First Almanac' and Tilak's 'Vedic Calendar'.

### Kalachakram, or Cyclic Motion of Time

Time is rolling in cycles of days and nights, months and



*Note:* This Diagram was drawn by the author for the special purpose of illustrating his views on the subject. — Editor

years. Hence this phenomenon is called **Kalachakram** and it is represented by a circle, called the ecliptic, or '*Kranti Chakram*' in Sanskrit. Ecliptic is a technical term applied to mean the path of the Sun among the fixed stars in the celestial sphere (Jyotis-Chakram). Here the earth is supposed to be stationery at the centre (C) and the Sun moving round it in cycles, according to the geocentric system of astronomical calculations. (See the diagram attached). The term '**Chakram**' suggests that the ecliptic is a circle of 360 degrees (**Bhagas** in Sanskrit) in geo-metrical terms. It is divided into 27 equal parts called Nakshatra, or segments of star-groups, each segment occupying 13.33 degrees of the ecliptic. It is again divided into 12 Rishis Mesha, Rishabha etc. This division into Rasis and degrees make the calculations easier, by counting  $2\frac{1}{4}$  Nakshatra segments as one Rasi. It can be explained by the following table.

<i>Rasis</i>	<i>Nakshatras</i>		<i>Starting point in the Ecliptic</i>
1. Mesha	Aswani	1	0°
	Bharani	1	
	Krittika	$\frac{1}{4}$	
2. Vrishabha	Krittika	$\frac{3}{4}$	30°
	Rohini	1	
	Mrigasiras	$\frac{1}{2}$	
3. Mithunam	Mrigasiras	$\frac{1}{2}$	60°
	Ardra	1	
	Punarvasu	$\frac{3}{4}$	
4. Karkata	Punarvasu	$\frac{1}{4}$	90°
	Pushya	1	
	Aslesha	1	
5. Simha	Magha	1	120°
	Purva Phalguni	1	
	Uttara Phalguni	$\frac{1}{4}$	
6. Kanya	Uttara Phalguni	$\frac{3}{4}$	150°
	Hasta	1	
	Chitra	$\frac{1}{2}$	



<i>Rasis</i>	<i>Nakshatras</i>		<i>Starting point in the Ecliptic</i>
7. Thula	Chitra	$\frac{1}{2}$	180°
	Swati	1	
	Visakha	$\frac{3}{4}$	
8. Vrischika	Visakha	$\frac{1}{4}$	210°
	Anuradha	1	
	Jyeshtha	1	
9. Danus	Mula	1	240°
	Purvashadha	1	
	Uttara-Ashadha	$\frac{1}{4}$	
10. Makara	Uttara-Ashadha	$\frac{3}{4}$	270°
	Sravana	1	
	Sravishtha	$\frac{1}{2}$	
11. Kumba	Sravishtha	$\frac{1}{2}$	300°
	Satha-Bhishag	1	
	Purva Bhadrapada	$\frac{3}{4}$	
12. Meena	Purva Bhadrapada	$\frac{1}{4}$	330° to 360°
	Uttara Bhadrapada	1	
	Revati	1	

### **Note on time-Reckoning with reference to the diagram of the Ecliptic**

The diagram of the ecliptic is drawn here in accordance with standard adopted by the Government of India Calendar reform Committee in 1957. According to this calendar, the zero point (0°) of the ecliptic is at the beginning Aswini Nakshatra and Meha Rasi. Starting from this zero point, the Sun moves in the right-hand direction on the ecliptic and completes one round (cycle) in one year. This annual revolution of the Sun from 0° to 0° = 360° is called a sidereal year with reference to the round of 27 Nakshatras on the ecliptic of 360°. It is equal to 365.25 days. This period is divided into 27 'Surya Velas' (Sidereal periods of the sun) of 13.5 days each,

and named after the Nakshatra Segments : Aswini-Surya Vela, Bharani-Surya Vela etc. This division is specially made for the guidance of agriculturists.

Year is again divided into 12 months for civil purposes in general, and they are named and counted differently in different system of calendars. In the Kerala system, Calendar months are named and counted according to the Rasis : Simha, Kanya etc. They are called solar months in view of the Sun's movement through the 12 Rasis. But in the ancient systems of Indian Calendars, months are reckoned and named in terms of luni-solar cycles. That means, the period of sun's movement from one conjunction of the Sun and Moon (amavasya = New Moon) to the next Amavasya is counted as one lunation, or a Luni-Solar month. It is a constant period of 29.53 days and is divided into 2 fortnights (Pakshas): Sukla and Krishna. Each fortnight has 15 days, called tithis : Prathama, Dwiteeya, etc. There are 12 such Luni-solar months in a year, each beginning with the first day of Sukla Paksha and ending with the last day of Krishna Paksha i. e. amavasya. The 12 months are named after the Nakshatras in which the full moon of the month occurs. They are (1) Chaitra (2) Vaisakha (3) Jyeshtha (4) Ashadha (5) Sravana (6) Bhadrapada (7) Aswina (8) Kartika (9) Margaseersha (10) Poushya (11) Magha (12) Phalguna.

This order is not constant : it was subject to variation at different periods, in accordance with the beginning of the New Year. During Manu's time, New Year and the first month used to be counted from Magha. After some millennia, the first month of the New Year began to be counted from Sravana. For some millennia before and after the Mahabharata period, the first month of the year was Margasisha. Then, it was shifted to Kartika and then to Chaitra as we see in the extant calendar which was fixed some 2000 years ago during the time of Varahamihira.

## Change of Rithus and Ayanas

Year is again divided into six rithus (seasons) each extending for two months :

<i>Ruthus</i>	<i>Months</i>
1. Vasantha (Spring)	Chaitra and Visakha
2. Greeshma (Hot)	Jyeshtha and Ashadha
3. Varsha (Rainy)	Sravana—Bhadrapada
4. Sarad (Clear sky)	Aswina and Kartika
5. Hemanta (Cold)	Margasirsha and Poushya
6. Sisira (Extreme cold)	Magha and Phalguna.

This division is subject to variation in accordance with the change of seasons at different periods, caused by change of Ayanas,

During the annual round of the Sun two different *ayanas* or courses are being noticed : one, Northward course, called *Uttarayana* and the other, Southward course called *Dakshinayana*. In the Northward course, Sun reaches the extreme solstitial point in summer, and hence it is called *summer solstice*. Now-a-days it occurs some time about June 21 (Mithunam 7 of Kerala calendar). In the Southward course, Sun reaches the extreme solstitial point in winter. Hence it is called *Winter Solstice* which now-a days occurs some time about December 21 (Dhanu 6, K.C.). *Uttarayana* begins with the end of *Dakshinayana* and *Dakshinayana* begins with the end of *Uttarayana* solstitial points.

Now, during each of these two *ayanas*, there comes a time when the Sun enters the celestial equator, making day and night equal. (At other times either the day is longer than the night or the night is longer than the day). This particular day, when day and night become equal, is called Equinox or *Vishuvam* in Sanskrit. According to ancient calendars, the equinox of *Uttarayana* used to occur in Vasantha Rithu. Hence it is called *Vasana Vishuvam* or *Vernal Equinox* (Y). The equinox of *Dakshinayana* used to occur in Sarad Rithu, and

hence it is called *Sarad Vishuavam* or *Autumnal Equinox*. Vernal equinox now - a-days occurs on 21st March, corresponding to Meenam 7 (K. C.) and Autumnal Equinox occurs now-days on 23rd September corresponding to Kanni 7 (K. C.). It is quite clear from this account that the positions of the two equinoctial points are always at  $180^\circ$  on the ecliptic. For example, when V. E. is on  $0^\circ$ , Aswini Nakshatra, A. E. is at  $180^\circ$  Chitra Nakshatra; when V. E. is at  $120^\circ$  Magha Nakshatra, A. E. is at  $300^\circ$  Sravishtha Nakshatra. Same is the case with solstitial points. When summer solstice is in Mrigasiras,  $56^\circ$ , winter solstice will be in Jyeshtha  $236^\circ$ — (It may be noted that in ancient calendars, the equinoctial points and solstitial points are mentioned with reference to their position in the Nakshatra-padas and not in terms of degrees). The Ayanas and seasons change in course of time, due to precession of the equinoxes, and this change necessitates revision and readjustments in calendars. Indian Vedanga Jyotisha Panchanga (calendar), first instituted by the Saptarshis, has subject to not less than six revisions and adjustments during the last 10,000 years, as we know from tradition, i e., *Guru—Sishya parampara* by which the knowledge is transmitted through ages.

### **Ayana-chalanam or precession of the Equinoxes**

‘Precession’ is a technical term applied to mean the unique phenomenon of the retrograde motion, or falling back of the equinoxes and solstices in the march of time, creating changes in the seasons and conduct of life on earth. It is a subject which requires careful study.

We have seen that the equinoxes occur now-a-days on March 21 (Vernal) and September 23 (Autumnal), and that the solstices occur on June 21 (Summer) and December 21 (Winter). But this was not the situation, in by-gone ages, and will not be the same in future. It has been ever changing, the cause of which stands un-explained even now. During the Vedic age of Manu and Saptarshis (B. C. 8576) Vernal equinox was in Magha Nakshatra,  $120^\circ$  and used to occur some time in

the middle of August, instead of March 21 as per modern Western calendar. Summer solstice was then in Visakha,  $210^\circ$  and used to occur sometime in November instead of June, as per Western calendar. After a lapse of 5475 years, in B. C. 3101, during the age of Mahabharata and Kali-Yugadi, vernal equinox was in the 3rd quarter of Rohini Nakshatra,  $46^\circ$  and summer solstice was in Purva Phalguni  $136^\circ$ . From this it is clear that, from the days of Manu to Kaliyugadi, through a passage of 5475 years, the equinoxes and solstices have fallen back by about 74 degrees on the ecliptic. That means, the Precession was at an average rate of 74 years per degree, during these five and half millennia.

Since 3101 B. C. Kaliyugadi, 5078 years have rolled on to reach the present times of 1979 A. D. Now the Vernal equinox is in Uttara Bhadrpada,  $336^\circ$ , i. e. 24 degrees behind the zero point. That means, the equinoxes and solstices have been preceding at an average rate of 72.5 years per degree during these five millennia. Modern astronomers, with the aid of scientifically developed instruments, have observed that nowadays, the Sun is crossing the celestial equator 51 seconds earlier every year. In other words, the equinoxes are preceding at the rate of 70 years per degree at present.

From the above observations, it is quite evident that the rate of precession is not a fixed one; it has been constantly changing. And this change is due to the advancement, or earlier occurrence, of the equinoctial points every year by a few seconds—say 40 to 50 seconds. Our ancient Rishi-astronomers have minutely observed this unique phenomenon of precession of the solstices and equinoxes—they call it 'Ayana Chalanam'—and have come to certain conclusions regarding the march of time. The Rishis, who studied the phenomenon during the precessional motion of the equinoxes through Punarvasu—Ardra and Mrigasira Nakshatras (roughly between B. C. 6350 and 3350) found the rate of precession to be 75 years per degree. At this rate 1000 years will be required for precession through a Nakshatra of  $13.33^\circ$ , 2250 years for a rasi of 30 degrees, and 27,000 years for one cycle of precession on the ecliptic of  $360^\circ$ .

We have clear references to these facts in the Agama Sastras.

During the periods of equinoctial precession through Magha, Aslesha and Pushya Nakshatras (roughly between B. C. 9350 and 6350) the race might have been 75 to 80 years per degree. There is a passage in Rig Veda (8—2—41) giving some hints about Ayana Chalanam. It reveals that a quarter of the ecliptic (right angle of  $90^\circ$ ) is equal to 72 'Satakas' (7200 years); that means, one full cyclic precession would require 28,800 years at a rate of 80 years per degree. From this hint we may infer that this particular Mantra was revealed at a time when the rate was 80 years per degree—probably between B. C. 8500 and 8000. This does not, however, mean that all the Mantras of the Rig Veda were revealed during this period. They have come down to us as handed down by tradition, transmitted through a continuous line of teacher-disciples from time immemorial. In this process of transmission through ages, many new mantras might have been revealed at different periods and many might have been lost. That is the real history of the Vedas, and not as modern philological historians tell us. (They say that Vedas were 'Written' between 1000 and 500 B. C. )

These findings based on Astronomical data, though empirical, reveal at least one fact with certainty: the world was not dark and dead before the advent of Christ or the dawn of Grecian civilisation, as the European indologists want to teach us through their spurious historical theories; our human world was actively moving with life, and civilised human society was there in India millennia before the rise of the Greeks. It is the thought and culture of Aarshabharata that have gone forth to enlighten and civilise the rest of the world in the remote past where the modern European scholars dare not peep into.

### **Kalachakram Explained**

Chronology of important historical epochs known through Panchama Vedic records and Astronomical data noted in the diagram 'KALACHAKRAM', may be explained in the following manner:—

<i>Important epochs</i>	<i>Nakshatra position of the vernal Equinox</i>	<i>Approximate date in B.C.</i>
1. Advent of Vaivaswata Srathadeva Manu	Magha	8576 B. C.
2. Yayati, 6th in decent from Manu (Somakula)	Aslesha	8300 B. C.
3. Origin of the Panchajanas (Yadus, Turvasus, Druhyus, Anudruhyus and Pauravas).	Aslesha	8300 B. C.
4. Trisanku of Suryakula and Viswamitra*	Aslesha—Pushya	7000 B. C.
5. Sagara of Suryakula * *	Pushya	6400 B. C.
6. First division of the Vedic literature into four books- Rik, Yajus, Sama and Atharva by earlier Vyasas	Punarvasu	5000 B. C.
7. Advent of Sri Rama, Valmiki Muni	Ardra 4th pada	4750 B. C.
8. Rise of Yadu-Haihaya power in Aryavarttha and their occupation of lands in South, Central and Western regions of India	Mrigasiras	Between B. C. 4350 and 3350
9. Rise of the Varuna— Bhargava (Naval) power in Bhrigu Kachha and the occupation of the West Coast of South India by Panchajanas under the Bhrigus.	Mrigasiras	Between B. C. 4350 and 3350

\* *Navigation of the south seas began during this period.*

\*\* *Sakas, Yavanas, Kambojas and other clans of Somakula-Kshatriyas started migration from Aryavarttha to distant Western regions of Jambudvipa during this period.*

<i>Impartant epochs</i>	<i>Nakshatra positton of the vernal Equinox</i>	<i>Approximate date in B.C.</i>
10. Occupation of Dakhina Khanda by Yadu-Haihayas under the leadership of Agastya Muni	Mrigasiras	Between B. C. 4350 and 3350
11. Rishi Yajna Valkya and the discovery of Sukla Yajurveda	Mrigasiras 4th pada	About 4300 B. C.
12. Rise of Parasurama causing the fall of Bhargava power in Kachha	Rohini 4th pada	Between B. C. 3300 and 3150
13. Advent of Sri Krishna Bhishma, Yudhishtira and Vyasa	Rohini 4th pada	Between B. C. 3200 and 3050
14. Mahabharatha War and destruction of Manu Kula Kshatriyas	Rohini 4th pada	About 3067 B. C.
15. Destruction of the Indus Vally Civilisation built up by Panchajanas due to internecine war and cataclysms	Rohini 3rd pada	Between 3100 B. C. 2850 B. C.
16. Domination over the Aryan Society by Vaidika brahmanas and revival of Vedic sastras	Rohini 1st pada	Between B. C. 2850 and 2400
17. Advent of Parswantha Tirthankara in Aryavarttha and Zara Twashtra in Aryana	Karthika 1st pada	About B. C. 2400
18. Emanation of Nakulisa Siva Yogins from Madhyadesa	Karthika 3rd pada	Between B. C. 2400 and 2100



<i>Important epochs</i>	<i>Nakshatra position of the vernal Equinox</i>	<i>Approximate date in B.C.</i>
19. Advent of Mahavira Jina and Goutama Buddha and establishment of Arya Rajarishi Dharma	Karthika 3rd pada	Between B. C. 1900 and 1800
20. Rise of Kshatriya power in Magadha under Mahapadma-Nanda	Karthika 1st pada	Between B. C. 1600 and 1480
21. Rise of Imperial Magadha power under Chandragupta Maurya and his Successors	Bharani 4th pada	Between B. C. 1480 and 1160
22. Ashoka in Magadha and spread of Buddhism all over the world	Bharani 4th pada	Between B. C. 1400 and 1350
23. Brahma-Kshatriya power in Magadha under Sungas and Kanwas	Bharani 3rd pada	Between B. C. 1160 and 800
24. Andhra-Kshatriya power in Magadha	Bharani 2nd and 1st pada	Between B. C. 800 and 325
25. Rise of Agnikula—Kshatriya power under Vikramaditya Rajarishi of Chandrapura	Aswini 4th pada	B. C. 556
26. Advent of Aadi Sankara (Dravida muni) Bhashyakara	Aswani 4th pada	B. C. 508
27. Gupta Empire in Magadha founded by Chandragupta and Alexander's invasion	Aswini I 3rdpada	B. C. 326

<i>Important epochs</i>	<i>Nakshatra position of the vernal Equinox</i>	<i>Approximate date in B.C.</i>
28. Decline of Gupta Empire of Magadha and rise of Agnikula (Sakari) power in Ujjain, under Vikramaditya the Great	Aswini 3rd pada	By about B. C. 80 Vikrama Era 57 B. C.
29. Rise of Salivahana after Vikrama Vamsa	Aswini 4th pada	Saka Era 78 A. C.
30. Buddhistic movement on the decline	Aswini 4th pada	A. C. Beginning
31. Invasion of Hunas, Turushkas, Kshitipas and chaos in Aryavarta	Revati 1st pada	Between 280 A. C and 450 A. C.
32. Visit of Fahien the Chinese pilgrim	Revati 4th pada	A. C. 410
33. Rise of Renaissance Agnikula Kshatriya power under Harsha of Kanyakubja	Revati 3rd pada	A. C. 606 646
34. Pratihara Rajaputras in power	Revati 2nd pada	Between A. C. 720 and 950
35. Abhinava Sankara and Kaladi Sankara-Acharyas in South India	Revati 2nd pada	Between A. C. 780 and 840
36. Absorption of non-voidik Buddhistic and Jain sects to form the present day Hindu society	Revati 1st pada	Between A. C. 840 and 1200
37. Mohammedan invasion and decline of Agnikula Rajaput power	Revati 1st pada	1000 A. C.

## The Destruction of Indus Valley Civilisation

Following the departure of Sri Krishna in 3031 B.C. Dwaraka and other Islands of the Southern ( Arabian ) sea were submerged, and the great civilisations that grew in previous ages all over Western and South-western regions of India were destroyed by violent earthquakes, huge tidal waves, sand-storms and hot winds that ravaged the land for over a century. The South Sea which, in ancient ages, extended far into the interior and helped the growth of port-cities on either side, was dried up by seismic upheavels ; the cities were washed away by tidal floods and buried underground by sand-storms and hot winds. The whole area was turned into a desert, now known under the names of Rann of Kutch, Sind desert and Thar desert. They are called ' Vinasanam ' in our Puranas. River Saraswati which, in ancient days, was flowing into the sea ( mentioned in Rig-Veda ) dried up and disappeared in the newly formed desert of ' Vinasanam .'

Ruins of some of those ancient cities have been recently unearthed. The excavated sites are now known by the names of Mohanjodaro and Harappa ( in Pakistan at present ). It is a mystery to the modern historians and archaeologists as to who built up these civilisations and, when and how they were destroyed. Vain speculations are still going on to solve the mystery. Some scholarly interpretations also have been given by archaeological experts and modern historians on the subject. They are, to speak the truth, puerile, funny and more often fallacious. Then, what is the real history of these ancient civilisations ?

As we know from our traditional history, these civilisations were built up by the different branches of Somakula Kshatriyas, called *PANCHAJANAS*, the heroic people descended from Yayati, the sixth king in the line of Manu. They are known to us by their Puranic names of Haihayas, Yadavas, Saindhavas, Souviras, Salwas, Turvasus, Anus, Drukyus etc. They were a mixed race speaking different dialects of *Paisachi language*, the Prakrit form of Vedic Sanskrit ; and the script,

now found on seals and tablets, was some old form or Brahma which also has become obsolete. The civilisation of Mohenjodaro belonged to Saindhavas and that of Harappa (Harayupia) to Salwas. They were all destroyed by the almighty destroyer, Time (Kala-Sakti) whose inscrutable workings were the Mahabharata War and the subsequent catastrophe of this memorable period, Dwapara-Kali Yuga Sandhi (B.C. 3100—2900). When so much can be definitely known about these ancient civilisations from our traditional records, why not these modern excavators look into them and find a satisfactory solution? But they will never do it, being trained in the art of pseudo-scientific speculations and false findings!

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\* **Note :** *Paisachi* was the language of the people not only of West India, but also of the whole of India and West Asia. All later languages like Prakrita-Pali, Magadhi, Maharashtri, Suraseni, Gandhari, Pahlavi etc. have developed from the different forms of Paisachi (Ref: Prakrit's Grammar by Pischel and Mahabhasya of Patanjali).

In this connection we may note that these civilisations which grew in those days on the Persian-Gulf coast and Euphrates—Tigris valley were also of the same race of Soma-kula Kshatriyas as of those who built up the civilisations of Sindhu Desa. And they too shared the same fate of destruction as their kindreds in India at the same time. As we read in the world History, it was after a thousand years that civilized life began to pulsate in these devastated regions. It is in this context that we see the emergence of new races of people like Sumerians, Akads, and Phoenicians and Hebrews in these West Asian regions and rising of new nations. They were none but the descendants of ancient Soma-kula Kshatriyas, newly emerged from the ashes of the dead, like the legendary Phoenix. No doubt, their language and culture have changed very much in course of time. But still we can discern their Indian origin and kinship from the surviving remains. Investigation on right lines will reveal the truth.

## Paper II

# Indus Script in the Indian Historical Tradition

IRAVATHAM MAHADEVAN, I.A.S.

1. Any serious study of the Indus Script must begin with a formal or structural analysis of the texts. Such a study will include compilation of sign-lists and concordances, tabulation of sign frequencies and statistical-positional analyses to determine the nature of the script and the typology of the underlying language. It is at this level that the use of the computer has been most productive.<sup>1</sup> It is also at this level that some measurable progress has been achieved in matters like determination of the direction of writing, word division, and delineation of the broad syntactical features of the texts. These studies seem to indicate broadly that the typology of the Harappan language is non-Indo-European and resembles Dravidian languages closely. One has, however, to leave the computer behind at this stage when one proceeds further to look for clues to find the meaning of the texts or the phonetic values of the signs.

2. In some of my earlier papers, I have been advocating the use of the method of parallelisms to acquire a broad comprehension of the context and the contents of the Harappan inscriptions even before reaching the stage of actual linguistic decipherment.<sup>2</sup> I propose in the present paper to recapitulate my arguments briefly and to illustrate the method with a few examples and with the addition of some fresh evidence.

3. Emil Forrer pointed out that it was possible to acquire an objective comprehension of the contents of an inscription in an undeciphered script by the observation of parallel phenomena.<sup>3</sup> Parallels can occur between a symbolical representation and a text associated with it (e. g. a text inscribed near the figure of a deity), between the written object and its designation (e. g. a text with numerals engraved on a bronze implement) or between the written symbol itself and its meaning (e. g. an ideogram whose pictographic origin is obvious). Parallels can also be set up by observing the similarities in the standard formulae employed in ancient inscriptions (e. g. the opening of royal decrees). Forrer was able to show that such comparisons revealed the basic features of the grammar of writing system even before its linguistic decipherment.

4. The applicability of the method of parallels for a study of the Indus Script is suggested by the astonishing continuity and vitality of the Indian historical tradition. It is probable that even when the Indus Script ceased to be current as a writing system, some of the more important ideograms of the script survived and evolved into traditional symbols of various kinds. Such survivals may consist of iconographic elements and other religious symbols royal insignia, emblems on coins and seals, heraldic signs of the nobility, corporate symbols, totem signs of clans and tribes etc. It should thus be possible to undertake a comparison of such traditional symbols resembling the signs of the Indus Script and the names and concepts associated with them in the Indian historical tradition in an attempt to establish the original ideographic meanings of the signs.

5. I shall now proceed to illustrate the method with reference to two frequent signs of the Indus Script (referred to here conventionally as the 'Jar' and the 'Bearer' signs) which appear to have been employed as ideograms in the script and to have survived in the symbolism of the later Indian historical tradition.

The JAR sign



6. This is the most frequently used sign of the Indus Script. It appears to be a pictogram depicting some kind of a vessel with long handles or pronounced rim or lip and with a tapering bottom. The vessel-form of the sign is clearly indicated in the naturalistic representation of the sign in two graffiti on potsherds excavated from an early level at Kalibangan and recently published by B. B. Lal. <sup>4</sup>

7. It can be established from purely formal analysis that the 'jar' sign occurs as a post-fix, suffix or determinative at the end of what are most probably names and titles. My earlier attempt to treat the sign as a grammatical suffix and to establish its phonetic value through homophones of 'vessel' words has not been successful. I now consider that the sign is most probably used in an ideographic sense to indicate the class of persons to whose names it is found suffixed.

8. The symbolism of the 'jar' is closely associated in the later Indian religious tradition with priestly ritual. The legend of the 'jar-born' sages is very ancient and is even found in the Rig Veda (VII : 33) where it is said that Vasishta and Agastya were generated by Mitra and Varuna from a Jar. Consequently these sages, especially Agastya, were known as Kumbhayoni, Kumbhasambhava, Kundina and by other synonymous names. A very similar story is found in the Mahabharatha in respect of Drona ('the vessel').

9. The myth of the miraculous birth from a jar was shared by priestly as well as royal families. According to the Mahabharata, the Kauravas were born from a hundred jars (in which portions of Gandhari's foetus were stored). Agastya, the jar-born sage, was the reputed leader of the southern migration of the Tamil Vēḷir clan (said to have arisen from a vessel). The Chalukyas, the Hoysalas, the Pallavas,

the Vishnukundins ( 'vessel of Vishnu' ) and other southern royal dynasties, all claimed to have originated from various kinds of vessels.

10. In Vedic literature and ritual treatises, *Sata* is mentioned as some kind of a sacrificial vessel used in ritual (*Śatapatha Brāhmaṇa*, *Vājasaneyi Samhitā* and *Kātyāyana Srāuta Sutra* ). Sabaraswamin ( *Mīmāṃsa Sūtra Bhāshya* 1.3.10 ) mentions *Sata* as an example of loan-words without etymology in Sanskrit, and which were used by the Mlechchas. *Sata* is described as a wooden vessel round in shape with a hundred holes. The number of holes appears to be merely conventional and was probably suggested by the phonetic similarity of the words *Sata* ( 'vessel' ) and *Śata* ( 'one hundred' ). It is however important to note that *Sata* was regarded in later Indian tradition (i) as a sacrificial vessel used in ritual ; (ii) as a perforated jar and (iii) its name as a loan-word in Sanskrit from the language of the Mlecchas. I would invite attention here to the numerous finds of perforated jars, some of them very large, from various Harappan sites. It is not unlikely that these perforated jars had a ritual purpose.

11. The use of names similar to *Sata* in the 'jar-born' families merits attention. The Kauravas were born from a hundred jars and were a hundred in number. It is likely that in this case also, as in the attribution of a hundred holes in the perforated-jar with the name *Sata*, the number of one hundred Kauravas was conventional and was suggested by the similarity of the words *Sata* and *Śata*. The Andhra Kings were also known as *Sāta*, *Sātavāhana* or *Sātakarni*. My suggestion that these are 'jar' names derived from *Sata* will be corroborated when I consider the symbolism of the 'bearer' names in the next section of this paper. It may be noted that the name *Satakarni* was translated in ancient Tamil literatuae as '*Nūṛṇṇar* *Kaṇṇar*' ( The hundred Kannar ), again attesting to the tradition of mixing up *Sata* with *Śata*. The Tamil Chera kings were related to the Velir ( by marital ties ) and were thus part of the 'jar-born' clans. It is significant that one of the commonest Chera names was *Ātaṇ*, probably derived from *Sāta* by the



dropping of the initial palatal ( a linguistic phenomenon well known in old Tamil ).

12. To sum up, it appears likely that the 'jar' sign of the Indus Script is a pictogram depicting a sacrificial vessel used in priestly ritual and was employed as an ideogram or determinative, to denote by association of ideas, the concept of a priest. Even after the Indus Script became extinct, the jar symbolism continued to be associated with priestly and ruling classes and gave rise to the myth of the miraculous birth from jar. I now consider that since the 'jar' sign was probably used ideographically to denote a priest, it is not necessary that the words for 'priest' and 'jar' were homophonous in the Harappan language, and hence the phonetic value of the 'jar' sign cannot be determined by employing the technique of homophony ( homonymy )

The 'Bearer' Sign



13. The pictogram depicts a person carrying a yoke across his shoulder with loads suspended from either end. The positional and functional characteristics of this sign are very similar to those of the 'jar' sign. Thus the 'bearer' sign also appears to be an ideogram occurring as a suffixed element in name formations.

14. It appears possible to interpret the ideographic meaning of this sign with reference to the 'bearer' motif occurring in later Indian tradition. The term 'bearer' is applied idiomatically in the Indian languages to a person who 'shoulders' any responsibility of 'bears' the 'burden' of any office : Thus the Sanskrit word '*bhartr*', 'husband' ( lit., one who sustains or maintains ) is from the root *bhṛ*, 'to bear'. We have similar expressions derived from the root *vah*, 'to bear', as in *Kārya-vāhaka* 'office-bearer.' One may also refer to the 'yoke' words like *dhuramdharma* or *yugamdharma* ( lit., 'yoke bearers' ) used as honorifics or names. On the basis of this evidence, we can interpret the 'bearer' sign in the Indus






Script as an ideogram or determinative with the approximate meaning of 'Officer' or 'functionary.'

15. A common tendency in the Indian tradition is for honorifics and titles to lose their original significance and become proper names. If a similar development had taken place in respect of the 'bearer' symbolism, we should find such names among the princely or priestly families in later times. This reasoning leads us straight to the earliest and the most famous of the 'bearer' clans in ancient India namely the Bharatas (lit. 'bearers'). It is significant that the Bharatas were both priests and rulers and occupied the Indus region during the vedic period. Andhras were another famous dynasty with royal names derived from the 'bearer' motif, viz., Satavahana and Salivahana. In the Tamil country, the Cheras were also called Poñaiyar (lit., 'bearers' from the Tamil root *poru* 'to bear'). Important evidence to corroborate this association comes from medieval copper coins of Kerala portraying the 'bearer' motif, which is pictorially practically identical with the ideogram of the Indus Script. (cf. Elliot, *Coins of Southern India* No. 197).

16. It is interesting to observe the connection between the 'jar' and the 'bearer' signs in the Indus Script as well as in the later Indian tradition. As mentioned earlier, both the signs occur in similar environment in the inscriptions indicating that they belong to the same category. Dales has found in his recent excavations at Mohenjodaro a large storage jar with the 'bearer' motif moulded in relief on the side of the vessel<sup>5</sup>. Another interesting feature is that these two signs of the Indus Script are often found ligatured. In fact, the compound sign ('jar-bearer') occurs oftener than the 'bearer' sign. When we turn to the later Indian tradition we find names or myths connected with the 'jar' and 'bearer' motifs occurring in the same groups. As mentioned earlier, the Kurus were born in jars and were also called the Bhāratas ('bearers'). The Andhras had 'Jar-names (sata, Satavahana) as well as 'bearer' names (Satavahana, Salivahana). The names of the Cheras (Ātañ, Poñai) also show both the associations. The Pallavas






who claimed to arise from a vessel (pāttra-skhalita-vrittinām<sup>6</sup>) belonged to the Bharadvaja gotra, another name with the 'bearer' motif.

17. Finally, I come to what I consider as the most interesting evidence connecting the pictograms of the Indus Script with later Indian names. A search for royal names based on the 'bearer' motif led me to the famous Andhra dynasty whose kings called themselves Satavahanas or Salivahanas. The suffix- *vāhana* is connected with the 'bearer' theme *Vahana*: bearing, carrying). Since however the second element-*vāhana* never occurs separately in these names, it struck me as probable that the preceding elements *sāta*—and *sāli*—might also be derived from the Harappan substratum. The 'bearer' ideogram in the Indus Script often appears ligatured or compounded with one of two other signs, viz., the 'jar' sign or the 'lance' sign. These compound ideograms can be considered in the light of the following interesting parallelisms :

Sign	Pictographic value	Sanskrit Equivalent	Meaning
	JAR	<i>Sata</i>	A kind of sacrificial Vessel used in ritual
	LANCE	<i>Śalya</i>	Lance
	BEARER	<i>Vahana</i>	Bearing, carrying
	JAR + BEARER	<i>Sata. vahana</i> (lit., 'jar-bearing') <i>Sāta-vāhana</i> (n.pr. of Andhra dynasty)	
	LANCE + BEARER	<i>Śalya-vahana</i> (lit., 'lance-bearing') <i>Sāli-vāhana</i> (n.pr. of Andhra dynasty)	

The very close parallelism between the compound ideograms of the Indus Script and the compound names in the later Indian tradition provides good confirmation of the correctness of the interpretation proposed by me.

18. To sum up, I would tentatively suggest the following revised interpretation of the ideograms in the Indus Script :

<i>Ideogram</i>	<i>Pictographic value</i>	<i>Associated meaning</i>
	Sacrificial vessel used in ritual	Priest
	Lance	Warrior
	bearer	Officer of functionar
	Jar + bearer	Officer with priestly functions
	Lance + bearer	Officer with military functions.

#### Notes and References

1. For computer studies of the Indus Script the following works may be consulted :
  - i) Yu. V. Knorozov et al, *Preliminary Report on the Investigation of the Proto-Indian texts* (1965) ;

*Proto-Indica* (1968); tr. and ed. by Kami Zvelebil and Arlene Zide, Mouton (1976).

- ii) Asko Parpola, et al, *Decipherment of the Proto Dravidian inscriptions of the Indus civilization. A First Announcement*, Copenhagen (1969); *Materials for the study of the Indus Script: I: A Concordance to the Indus Inscriptions*, Helsinki (1973).
- iii) Iravatham Mahadevan, *The Indus Script: Texts, Concordance and Tables*, Memoirs of the Archaeological Survey of India, No. 77, New Delhi (1977)
2. Iravatham Mahadevan, (i) *Dravidian Parallels in Proto-Indian Script*, Journal of Tamil Studies, Vol. II, No. 1, (May 1970). p. 157; (ii) *Method of Parallels in the interpretation of the Proto-Indian Script*, Proceeding of the III International Conference Seminar on Tamil Studies, Paris, 1970 (1973), p.44; (iii) *Study of the Indus Script through bi-lingual parallels*, Proceedings of the II All-India Conference of Dravidian Linguists, 1972 (1975), p. 240
3. Emil Forrer, *The Hittite Ideographic writing*, Chicago (1932) Summarised in *Voices in stone—the decipherment of ancient scripts and writings*, E. Doblhofer, tr. by M. Savill, London (1961).
4. B. B. Lal, Some Aspects of the Archaeological evidence relating to the Indus Script, *Puratattva*, No. 7 (1974), p. 20, Pl. VI.B.
5. George Dales, *Expedition*, 9:4 (1967), p. 37.
6. From the inscription on the seal of the Pallankōyil Plates ed. by T. N. Subramaniyan in the *Transections of the Archaeological Survey of South India* (1958-59), p. 41, Pl XII.

## Paper III

# Astronomical Data in the early Inscription of Northern India

K. G. KRISHNAN

Early inscriptions of Northern India are the first among the Indian Inscriptions to quote dates of specified eras such as Parthian (248 B. C.), Vikrama or Mālava (57 B. C.) and Saka-Kushāna (78 A. D.). Kali era is now here mentioned. The names of the eras are not mentioned in the inscriptions except in the case of *Krita* i. e. Vikrama or Mālava era. The era fixes the year while the details of date fix the actual date in the year. The Kushāna inscriptions begin this exercise of citing the details in a manner not so well known at this distance of time, in the order of *riṭu* by name as Grishma, Varshā and Hēmanta, the *māsa* by numerical order 1 to 4 but not by name, and the *divasa* upto 30. The next stage in the progress of delineation of astronomical data is reached in the records dated in the Kalachuri era of 248 A. D. The earliest known record introduces only the *Paksha*. The inscriptions of the Guptas and their times also give these details only. Strangely enough we come across an inscription of the Vākāṭakas of Vatsagulma from Hisse Borala in Maharashtra which is an important landmark in epigraphical history in so far as astronomical studies are concerned. The relevant portion bearing on the subject reads :

Siddham ... tasyavi (vri)ttasya 3000  
 20 Sapta = Rshaya Uttarāḥu Phalgunishu  
 Sakānām 300 80 (*Ep. Ind.*, XXXVII, p.6)

The reference to the movement of the Sapta-rishis (-the seven sages) across the constellation Uttara-Phalguni prompts us to evaluate it on the basis of the verse in Bṛihatsaṁhitā of Varāhamihira :

Āsan = Maghāsu Munayaḥ Sāsatu  
 Pṛithvīm Yudhishṭhirē nṛipatau  
 Shad = dvika — pañcha — dvi — yutaḥ  
 Saka — kālas = tasya rājñas = cha  
 EK = aik — asmin = ṛikshe satam tē  
 charanti varshānām.

(Chapter XIII)

In accordance with the dictum of Varahamihira, the passage in the inscription may be restored as ' Dharmasutasya ' in which case the era of year 3020 will have to be related to the location of the Saptarishis in Uttara—Phalguni. I find that inspite of my best efforts, the two do not tally. Therefore, I place the problem before the galaxy of astronomers assembled here.

The next stage when the astronomical data have anything to do with chronology for purposes of historical research is seen in the inscriptions of the times of Gupta rule. The feudatories belonging to the Parivrājakas quote in their records the Gupta years 156, 167, 177, 189, 191 and 201 and also cite alongside the names of the years as Mahā-Vaisākha, Māha-Asvayuja, Mahā-Chaitra Mahā-Mākha Mahā-Chaitra and Mahā-Āsvayuja respectively. It is significant that these dates are given only in the records of the Mālvā region apparently influenced by the famous Ujjaini School of Astronomers with whom Varāhamihira is associated. But it is strange that these

dates have ceased to be quoted in any inscriptions subsequent to this period, i. e. 520—A. D.

The details of the date given in inscription go a long way to fix the actual dates of the events recorded in them. But here also we find that earliest inscriptions in North India do not give all the details. They have the year (Saka-Kushāṇa etc), the *Rītu*, *Māsa*, then, *divasa* (*ētasyām samvatsara-māsa-pivisa-pūrvāyām*).

The week days were given regularly from about the tenth or eleventh century A. D. The inscriptions rarely quote the *nakshatra* and much less the *Yōga* and *Kaṛana* which are no less part of the *pañchāṅga*.

This is the matter-of-fact situation as obtained in the inscriptions of North India in so far as astronomical details are concerned. We now offer our comments on how far astronomy can serve as an aid to History. We are placed in a paradoxical situation where on the one hand great claims are made on behalf of the epics regarding the highly advanced stage of astronomical lore from Vedic times through the *Rāmāyana* and *Mahābhāratha* to the details set out in the *Bhaviṣhya Purana* pertaining to the *Nandas*, the *Mauryas* and the *Guptas*, as on the other, the epigraphs of the last mentioned dynasties give astronomical details very sparingly. The yawning gap between the two, leaves us to gape with wonder at this disparity. We are forced to look upon with caution the attempts to date the events of the epics to a period when we cannot get unfortunately contemporary evidence in Epigraphy. The evidence from the excavations by the archaeologists and from the contemporary history of the related Dynasties outside India must be also taken into consideration before we utilise the astronomical evidence afforded by the recensions of the epics now made available to us



## Editorial Comment

Sri K. G. Krishnan writes " Strangely enough, we come across the inscription of the Vakatakas of Vatsagulma from Hisse Borala in Maharashtra. It is an important landmark in epigraphical history in so far as astronomical studies are concerned. The reference to the movement of the Saptharishis across the constellation of Uttara-phalguni prompts us to evaluate it on the basis of the verses in Brihatasamhita by Varahamihira—in which case the era of the year 3020 will have to be related to the location of the Saptharishis in Uttarapalguni. I find that in spite of my best efforts, the two do not tally. Therefore, I place the problem before the galaxy of astronomers assembled here."

It is determined in the book " Chronology of Ancient Bharat " that the Saptharishis were in Magha during 3175—3075 B. C. and Yudhistira performed the Rajasuya and was crowned Samrat in 3082 B. C. Therefore, when Yudhistira was ruling, the Saptharishis were in Magha (Varahamihira). Again, it is well known that Saptharishis were at the beginning of the 76th year of Magha, at the beginning of Kali era—3101 B. C. Now, Uttarapalguni cycle began two hundred years later and repeated after five thousand and four hundred years i. e. Saptharishis were again in Uttarapalguni during (2425/2225 A. D.). The given year is 3020 from the beginning of an era to be determined. Therefore, the era must have been inaugurated sometime between 595 to 495 B. C. Hence, the era is the Pataliputhra era of 556 B. C. ( fixed by Aryabatta's father ). This era is recognised by all chronologists, European and Indian, from 1700 to 1900 A. D. ( some scholars term it the forgotten era ). But it is a very important date for fixing the dates of many other events ). Again, Varahamihira has stated that the interval between the Rajasuya and the Saka era 556 B. C. is 2526 years. This is an excellent proof of the correctness of the era 556 B. C. ( 556 B. C. to 3082 B. C. )

— Professor Srinivasa Raghavan

## Paper IV

# Rig Vedic Mythology and Cultural History

M. SUNDER RAJ

This Paper is essentially concerned with examining the Rig Vedic Mythology and with attempting a solution therefore from a new angle. In addition various connected matters of ancient history which have a close bearing on the subject are also discussed.

The subject-matter, therefore, is arranged in the following order :—

i) PART— I : Explication of the Rig Vedic Mythology

The method adopted is to look for a key for the myths in the Vedas themselves. On the basis of internal evidence it is shown that the myths are generally concerned with describing certain astronomical phenomena. This excludes a small number of the myths which are found to refer to certain non-Vedic rituals and festivities, and which are discussed later (in PART IV).

ii) PART— II : Etymology

The names and attributes of the Rig Vedic gods are shown to be derived from Dravidian etyma better than from Indo-European, if the rule that etymology and mythology must be in perfect correspondence is observed. The conclusion drawn

is that, at least as far as the evidence of semantics goes, Rig Vedic Sanskrit is not pure Indo-European, but is a hybrid language in which Dravidian elements have penetrated due to cultural absorption.

iii) PART—III : Archaeological Evidence

An attempt is made to trace a relationship between the Rig Vedic Mythology, as now explicated, with certain archaeological date of the Indus Valley and the Mesopotamian Civilisations.

iv) PART—IV : Festivals, Rituals and Iconography

It is found that some of the so-called myths ( of the Rig Veda ) are really veiled descriptions of certain Festivals and Rituals (non-Vedic) which are celebrated even today in Tamil Nadu principally amongst the Dravidian communities.

v) PART—V : Cultural History

Speculations on the origins of the Rig Vedic cultural elements.

vi) PART—VI : Notes and Bibliography

PART—I RIG VEDIC MYTHOLOGY

The interest taken currently by sociologists and anthropologists in the study of mythologies has resulted in various theories which explain them as symbolising patterns of social structure. Whatever the validity of such theories, it should not be forgotten that in the case of the Rig Veda at least, if not elsewhere also, they fail to provide a completely satisfactory solution when applied to the innumerable little stories that are scattered throughout the corpus. We still have, therefore, to look for a religious symbolism for these, as has been stressed by various scholars, for example, Prof. Clark in his "Myth".

Again, it is significant that, even while accepting Prof.

Dumuezil's theory of the myths as signifying a three-fold structure of the Vedic society, both Professor Zaehner ("Hinduism") and Prof. Louis Renou ("Religions of Ancient India") find it necessary to accept "the natural forces" explanation for the myths.

The fact, however, is that even the currently accepted non-sociological theories which seek a religious meaning for the myths in the R̥g Veda do not at all provide a satisfactory explanation. Keith's "Religion and Philosophy of the Vedas and the Upanishads," Macdonell's "Vedic Mythology," and Prof. Renou's various writings may perhaps be chosen as the works which furnish the most complete description of all important theories put forward to explain the Vedic myths. As is evident from them there are various unsatisfactory features in the current exegesis, some of which are as follows :—

i) There is no common agreement amongst the scholars on the nature of the symbolism ; on the basis of the same basic data different conclusions are reached, and there is no objective reason for preferring one to the other ;

ii) the picture that emerges is not an integrated one. It is a bewildering array in which there is no combination of the parts to form a single over-all pattern. Each god goes his own way :

iii) they represent the stories as simple and childish not infused with any deep symbolical thought. Considering the elaborate and polished nature of the languages of the hymns this does not give sufficient credit for the intellectual capabilities of the myth-makers ;

iv) there are many stories, such as, for example, that of the bag of the Asvins being full of 'madhu,' for which no explanation of any kind can be found.

These unsatisfactory features are in part due to the fact

that there is no central plan or key in tackling the various myths, which are all dealt with individually and separately. No internal evidence ( in the Vedas ) is found to support the conclusion.

Clearly all these could be rectified if a central key could be found in the Vedas themselves which could be used as a formula for unravelling the meaning of the myths. None of the extant exegetics, however, have—whatever be the reason—adopted such a procedure, nor have they explored the possibility of utilising any Vedic verse as a key to the myths.

### Key

When a general survey is made of the Vedic literature as a whole in search of such a key, we come upon Verse IV. 4.10 of the *Taittiriya Samhita* ( p.349 of “ The Veda of the Black Yajus ” translated by Keith in the Harvard Oriental Series ), which connects the lunar asterisms with certain Ṛg Vedic deities as presiding lords. Similar lists with slight differences are also to be found in other Yajur Veda and Brāhmaṇa texts, and noted by Keith. Obviously the purport of these passages is to relate in some way the deities with the corresponding nakṣatras, but it is remarkable that Keith and Macdonell who in their “ Vedic Index ” ( p. 413, Vol. I, “ Nakṣatras ” ), have subjected these verses to an exhaustive examination have completely ignored the need for examining what this relation could be. This lacuna has not been noticed so far, and the question of what possible relationship could have been intended in relating the deities to the nakṣatras has not been examined by other scholars also. It is this question which will be examined now. For this purpose it is necessary first of all to collate the various lists which calls for a slight correction in the *Taittiriya* enumeration.

The Calendar Reform Committee ( Report of the Indian Calendar Reform Committee, 1955 ) presided over by the eminent Physicist, Dr. Meghnad Saha have made a comprehen-

sive survey of the knowledge of astronomy in ancient times and have cited the Vedic verses which are at present recognised as referring to astronomical phenomena. The Report has drawn up a comprehensive list of the nakṣatras and the presiding deities as found in the Yajur Veda texts, and have indentified their astronomical positions. In this list the zodiacal constellations in which these nakṣatras appear as well as the stars or group of stars with which the nakṣatras have been identified in astronomy are also shown.

To start with, it should be clear that some symbolical concepts have inspired the lists, and most obviously some connection is sought to be established between the nakṣatras as they appear to the human eye and the appearance, bearing, accouchement, exploits etc., of the corresponding deities. Whether this is so could readily be tested by examining the mythology of the gods.

### **Indra and Tvaṣṭṛ**

We may begin with a myth which brings Tvaṣṭṛ and Indra together in the Ṛg Veda. Indra, it is said, went into the house of Tvaṣṭṛ his father-in-law to drink Soma with him, and then the two quarrelled, whereupon Indra cut off the head of Tvaṣṭṛ ( IV. 18.3, 12, etc ). The key-term here is "house" and we find from item 12 of the List that Chitra is the "house" of both Indra and Tvaṣṭṛ. This provides the clue when it is remembered that in the Ṛg Veda, Indra's importance was a later development attained by supplanting other gods, such as Varuna and Tvaṣṭṛ, which can metaphorically be referred to as the head being cut off. ( In the Taittiriya Samhita verse only Indra is shown as the presiding deity, thus confirming this conclusion ). The myth may, therefore, be taken as merely referring to these facts in symbolical language.

### **Asvins**

To take another simple example, in a very intriguing

myth, the car of the Asvins is said to have three wheels (I 118.1 & 2). Item 26 in the list attached, will show that the Asvins are said to be the lords of Asvayuja which is identified as the group of the stars known as Beta-Arietis in the constellation Arieties (or the Ram). This is a group consisting of three stars, arranged in triangular form, and it is this fact which is intended to be conveyed in symbolical language in the myth of the three wheels of the car of the Asvins. By saying that it has three seats, three wheels etc., the R̥g Veda merely further emphasises this fact.

### Agni

Again, Agni, says the R̥g Veda, has three heads, ( and six eyes ?) (I. 146.1). Agni, is the lord of Kṛittikā which is identified as the Pleiades, a group of seven stars of which six only are easily observable, the seventh being faint and seen only with great difficulty. The six appear arranged in pairs, and there are three such pairs (excluding the faint seventh). If each star is looked upon as an eye, the six together would constitute three heads which answers the myth. ( Attention may be drawn to the fact that the Tattiriya Samhita Verse refers to the Kṛitiikās as ‘ ye are the radiance of Agni, of Prajāpati, of the Creator, of Soma ’).

It may be mentioned in this connection that elsewhere the R̥g Veda refers to Agni as being one and the same though he appears as scattered in many places (III. 55.4). Obviously this refers to the many stars (seven) appearing as scattered in the Pleiades.

The myth that Agni has seven sisters (X. 164.3) is obviously intended to mean that the Pleiades does, when fully seen, consist of seven stars.

### Constellations

The astronomical facts covered in the discussion so far are simple and cannot escape notice of even the most casual

observer. A slightly more regular and careful observer cannot escape noting that some stars are so arranged that they appear in the shape of some familiar objects. I would like in this connection to refer to the discussion on the subject in the "Vedic Index". After an exhaustive survey of the relevant facts in regard to the origin of the lunar zodiac, Keith and Macdonell comment as follows :

"It is thus impossible, *a priori*, to deny that the Vedic Indians could have invented for themselves a lunar Zodiac".

### Agni

An arrangement of stars which emerges as the head of the bull in the Taurus constellation is such as to present itself readily to the imagination of any star-gazer. With this as the starting point and extending the outline of the bull to include the Pleiades or Agni, the primitive observer in his symbolic language would be tempted to refer to Agni as a Bull with "pointed horns" which exactly describes the appearance of the constellation.

### Prajāpati

About Prajāpati who is the lord of the Rohini nakṣatra (item 2,) quite a number of interesting stories are told, some of an unsavory character. Macdonell (p. 119 "Vedic Mythology") refers to an incestuous activity of the god. "A myth is told in the *Maitrāyani Samhita* of Prajāpati being enamoured of his daughter Usas. She transformed herself into a gazelle; whereupon he transformed himself into the corresponding male. Rudra incensed at this aimed his arrow at him, when Prajāpati promised to make him lord of beasts if he did not shoot (cp. Ṛg. Veda X 61.7.) The story is several times referred to in the Brāhmanas (*Aitraeya Brāhmaṇa* III.33 *Satapatha Brāhmaṇa* I.7.4.1; *Pancaviṅṣa Brāhmaṇa* VIII 2.10). The basis of this myth seems to be two passages of the Ṛg Veda (I.71.5; X.61.5-7) in which the incest of a father with his daughter is referred to and an archer is mentioned".



The true explanation is to be found in Prajāpati as the lord of Rohini, is said to have a daughter (symbolically) with whom he is “in intercourse”. (Uṣas here obviously is substituted for Rohini in the myth). The animal transformation of both is explained by Rohini’s position in the Taurus (Bull) Constellation, Rudra the lord of the nakṣatra “Arḍra” (Betelgeuse) being seen as aiming a missile (arrow) at Prajāpati etc.

### **The Eagle**

A remarkable myth is that of the eagle’s flight heavenwards to bring Soma which grows on the mountains there. The eagle, it is said, was shot at by Kṛṣṇānu the black archer, whereupon a feather fell to the ground. To solve this myth we should look for an asterism lying on the wing-tip of a group of stars shaped as an eagle. The nakṣatra, Sronā (the Yajur Veda name, which in later Sanskrit is called “Sraavan”) fills the bill.

### **Indra**

Another interesting reference about Indra, (p. 57 Macdonnell’s “Vedic Mythology”) finds a similar explanation. The story goes that Indra was enticed by a Danavi (Asura), named Vilistinga, and he went to live amongst (in the house of) Asuras as a man amongst men, and a woman amongst women. To explicate this we must look for an “evil” or “Asura” nakṣatra or house, in which Indra is to be found. Indra can be seen to preside over five different nakṣatras, and we have first of all to decide which of these is to be considered as an “evil” or “Asura” nakṣatra. That the Vedic people classified the asterisms into Asura and Dēva nakṣatras has been made clear by Tilak in his “Orion”, however, was not in a position to clearly demonstrate which are Asura and which Dēva nakṣatras. Rohini Jyeṣṭhā (the star Antares) which appears in the body of the Scorpio constellation would seem definitely to be one of the Asura nakṣatras, for the arrangement of the stars in that constellation is such that it does not call for much imagination to notice the shape of the scorpion.

To ascribe malefic propensities of the scorpion to the constellation and its 'nakṣatras' is the most natural thing. In fact we know that the ancient Sumerians had a similar attitude to this constellation.

Hence the myth under consideration, namely, Indra's enticement by the Danavi, and his subsequent activities ought to be looked upon as a reference to the fact that he is the lord of the nakṣatra Rohini Jyeṣṭhā (Antares). That explains why he is said to have become a woman, for Rohini is a common female name.

Incidentally this explains why Nṛtti (Death) is said to be the lord of Mula, for the latter is located in the stinging—fatal—tail of the Scorpion in the constellation.

### **Varuna**

Out of the many myths concerning Varuna, two may be observed here. He is a dark god, clad with the blue sky clearly meaning that he was naked. He is closely connected with the waters "which flow as from a vessel with a wide mouth." These myths also find a satisfactory explanation when the nakṣatra, of which Varuna is the lord. This is Satabhiṣak which is part of the constellation Aquarius the picture of a naked man holding a pot from which water flows out.

### **Indra**

Indra is "a father". He was the friend of the fathers in olden times. He is Meghavan, and bestows goods and wealth. His weapon, the thunder bolt (Vajra) lies enveloped in the water. He possesses also a bow and arrow, and an 'ankusa' a hook used as an elephant-goad. The nakṣatra 'Maga' of which the presiding deity is 'Pṛit' (fathers) falls in this constellation.

The nakṣatras are the "houses" of the moon, and, therefore, these and similar other myths which describe symbolically these houses and their positions may be termed "Lunar Myths." They clearly point to an interest in astronomy, and give rise to the expectation that there would be some "Solar myths" also. One such which can be readily recognised is that of Viṣṇu's three steps.

## Solar Myths

### Viṣṇu

Viṣṇu, says the Ṛg Veda, took three steps, one of which is longer than the others, and took him to the highest heaven. This myth has, in later Hindu religious literature, played a very important part, and has given rise to a more developed myth in the Puranas, known as that of "Trivikramanaryan," the central feature of which is the same three steps; in the popular myth of "Bali Chakravarty" this feature is linked with a fertility myth, obviously of even more ancient vintage.

From the days of Yāska of the 8th century B. C. (approx.), Viṣṇu of this myth has been accepted as a manifestation of the sun. Yāska explained the three steps as denoting the solar diurnal movement, namely the rising, the meridian and the setting positions. For want of anything better, this has gained general currency. But it will be readily seen that this does not provide a satisfactory explanation, in this scheme there are three *stations*, but not three *steps*, there being only *two* of the latter. Also both the steps are of equal length only.

The correct explanation would be found on examining the annual passage of the sun in the sky. Starting with the autumnal equinoctial position (AE), the Sun moves in three stages before returning to the same position, namely (i) from the Autumnal Equinox (AE) to the Winter Solstice (WS), (ii) from the Winter Solstice (WS) to the Summer Solstice (SS) and (iii) from the Summer Solstice (SS) to the Vernal Equinox (VE).

## Adityas

That the Vedic people had adopted a year of 360 days divided into 12 months of 30 days each, and that they had worked out a scheme of six seasons, generally,—though on various occasions, the number was deemed to be three or four,—and that they had encountered the problem of inter-calculation of the lunar and the solar years are matters which have already been demonstrated clearly by various scholars.

However, to these established data, it is possible to add some more by a correct interpretation of the myths, that is according to the principles adopted in this paper. It is seen that the month was further divided into two periods of *Krṣṇa* and *Sukla Pakṣa* ( the two lunar phases ) of 15 days each which are further sub-divided each into two periods of 7 and 8 days. This is the meaning to be drawn from the myth of the *Adityas* whose number is variously, 6, 7 or 8 and who are said to be born of *Aditi*.

It is necessary to refer at this point to the list of days in the *Zend Avesta*. It will be seen that in this arrangement the scheme of division of the 30 days of the month is 7, 8, 7, 8, and that the god *Ḍatusho* appearing and re-appearing in this sequence occupies the same place in the *Avestan* that *Mārtānd* does in the *Ṛg Veda*. Obviously the two phases of the moon have been further subdivided into 7 and 8 days respectively in the two cultures. It appears then that the *Ṛg Veda* also had a similar scheme in the myth of the *Ādityas*, which are the names of the days. In this scheme *Mārtānd* would be the eighth day which occurs in the alternate periods. *Mārtānd* is, therefore, the odd day which is thrown out in the alternate periods. It will be further shown in the later section under “*Etymology*” that the terms *Aditi* and *Ādityas* have a close association with the “*thithis*” of contemporary Hindu religion which is the basis for division of the period covered by the lunar phases. At one time an attempt was made unsuccessfully to make the *thithi* and the natural day to coincide.

Aditi then represents one aspect of the lunar phase, the other being Diti.

Many other myths can also be explained similarly as describing the luni-solar astronomy. But it is not the case, however, that all the myths are so. There are some which refer to an earlier fertility cult, and can be easily recognised as such. There are some others which will be discussed later in Part V and which are undoubtedly descriptions of festivities, rituals and other associated cult practices. The myths of Pusan, for example, belong to this class.

The general conclusions that are to be derived from this section of the study are as follows :—

1) The Ṛg Vedic myths are symbolic expressions of astronomical phenomena, both of lunar asterisms and of solar movements ;

2) The Ṛg Vedic calendar was essentially a luni-solar one, the lunar aspects being considered as important for religious purposes, as in the case of modern Hinduism, but the solar movements, which determined the seasons, were also of importance to the Ṛg Vedic people ;

3) The Ṛg Veda has already adopted a system of grouping together the stars in the lunar zodiac in a pictorial form, such as that of a bull, scorpion, eagle, etc. The origin of the concept of constellational groupings in pictorial forms can be traced in the Ṛg Veda ; and

4) Some of the so-called “myths” are really descriptions of ritual practices.

*I would like to emphasise here that this procedure, being based essentially on the application of a key in the Vedas to the Rig Vedic mythology, which involves no external assumptions etc., is thoroughly rational and stands by itself without appealing to other arguments which follow.*

## PART II—ETYMOLOGY

The etymology of the names of the gods has so far been considered by all exegetes to be the sole key to R̥g Vedic myths as they were not able to find any other. This Paper, however, has based the exegesies on a more objective and rational key, which has furthermore the authority of the Vedas themselves, as will be seen from Part I. While therefore, it is not considered essential for the purposes of explicating the myths, nevertheless an etymological examination will be conducted with a view to see (a) how far it substantiates the results demonstrated in Part I, and (b) what further information may become available thereby. The discussion will, however, not be limited to mere word-derivation, or etymology in its limited sense, but will be extended to cultural aspects also, that is to say to philology, thus validating the conclusions by relating the meaning of the individual myth to the general cultural context of the R̥g Veda.

*To be considered satisfactory, an etymological derivation of a word in a myth, whether it be the name of a god or something else, should rigidly accord with the myth in which it occurs.* This condition which is not fulfilled in current Indo-European etymologies will be shown to be operative in the Dravidian Etymology to be discussed now.

Yaska sought to derive the meaning from the Sanskrit words as used at his time. Western scholars have gone one step further, through comparative linguistics, to search for etymological derivations from the Indo-European languages as a whole. Such techniques have not produced any useful results, for example, the etymology of the word Viṣṇu, or of Srona, has not yet been traced, and there is no likelihood of their being traced by such means. The name Vṛ̥tra for instance is derived from the Sanskrit root “vṛ̥” meaning ‘to cover’. How little of use this etymology is in mythological exegesies can be seen by reference to the discussion on the subject in the words already cited, such as Macdonell’s “Vedic Mythology.”

The present position, therefore, is that we either accept that the names of the gods have nothing to do with the myths about them and that etymology is not a useful technique for our purpose, or that we examine the possibility of finding etymologies outside the Indo-European group. The latter alternative raises the question of the correctness of the current theory of the origin of the Ṛg Vedic Sanskrit which, according to Prof. Burrow ("Sanskrit"), is, for all practical purposes, to be considered as a pure Indo-European language with a trace of a very few words ( being mainly names of plants and natural objects found only in the Indian sub-continent ) which are of Dravidian provenance. I shall show later that this observation itself requires modification, but even if it be accepted without question, it cannot be used as a sufficient argument for not searching for a Dravidian etymology, for it is difficult to see why the names and words for which Indo-European etymology does not provide a satisfactory meaning should not be attempted to be traced in the next plausible language group, namely Dravidian. If it is conceded that Ṛg Veda has borrowed a few Dravidian words, why should the possibility of more extensive borrowings be excluded *ab initio* ?

Fortunately, we have in the Dravidian Etymological Dictionary (DED) of Professor Burrow and Emeneau, a great work by itself, a powerful aid, which, however, has to be applied with caution, since as observed by Prof. Burrow on various occasions, not all the words can be definitively not derived from Indo-Aryan sources.

I would like to make it clear that the Indo-European character of Sanskrit which is established by its morphological features is not being questioned here. What is suggested is the possibility of there being some loan words from the Dravidian group in the Ṛg Veda. As elsewhere, the process of absorption of loan words is not determined by any specific law ; the alteration the borrowed word undergoes is dependent in each case upon the need to fit it into the phonological pattern of the borrowing tongue, and on little else. It may also

be pointed out that the R̥g Veda itself frequently claims that it has been “constructed as a carpenter constructs a chariot,” clearly implying that there has been a large amount of effort in its composition, which is not, therefore, to be treated as a natural outpouring. In the names of the gods we would be justified in looking for a *deliberately constructed etymology*.

### Viṣṇu

The etymology for the word ‘Viṣṇu’, for example, may be found in the DED. “Vṛ̥ṣṇu” (vizhunnu) (DED 4457) in Malayalam means ‘falling’ and in Tamil “vīṣu” (vizhu) means ‘to fall’ and these are very apt words to describe the myth of the three steps of Viṣṇu. The pedigree of this word in the Dravidian family is unquestionable. Now, as already pointed out Viṣṇu is the sun in the autumnal equinoctial position when he is passing the downward or southern direction, that is when he is “falling”. It is also interesting to note that ‘vīṣi’ in Tamil means sight, an apt metaphor for the Sun, and that ‘visuvan’ in Sanskrit means the equinoctial position of the Sun.

### Vṛ̥tra

As for Vṛ̥tra, it may be derived from the Tamil word “Viriāṇ” (DED 4440) which according to DED means a viper, but more commonly among the Tamil people it means a black scorpion. The name Vṛ̥tra may, therefore, be split up as vr + ratra, the former being unquestionably a Tamil word meaning scorpion, and the latter meaning dark whether in the Dravidian languages or in Sanskrit. Considering therefore, that, as explained earlier Vṛ̥tra refers to the Scropio constellation, the Dravidian etymology (actually Tamil) is very satisfactory.

### Aditi

Again the etymology of the word ‘Aditi’ can be traced satisfactorily in Dravidian, but not in Indo-European languages. Scholars at present find the Sanskrit etymology of ‘Aditi’ from ‘diti’ meaning ‘to bind’; ‘Aditi’ is therefore taken to



mean 'one who releases'. This, however, has, at the best, a very tenuous connection with the myths of Aditi. In Dravidian etymology, however, 'Aditi' can be derived from the main syllable, 'Ti' of "tinkal" (thingal) (DED 2626) meaning 'Moon' and therefore, and Adityas which, as already mentioned are the names of the days of the month, (or the moon) are the sons of the Moon. Moreover, 'titis' (thithis) in Hindu religious practices even today are connected with the movements of the Moon in its various stations.

### Aṣvin

The etymology of the name "Aṣvin" has been a subject of debate since Yāska. The relationship of this word to the word aṣva, meaning 'Chorse' in Indo-European etymology has intrigued scholars till now, and the most ingenious methods have been adopted to establish a connection between horse and the myths of these gods. It goes without saying that these attempts have met with no success whatsoever. Far from being connected with the horse, the Ṛg Veda goes to the extent of referring to the chariots of these gods as being drawn by birds, especially the Garuda, or Brahmany kite. The failure of Indo-European etymology is in marked contrast with the Dravidian, which is found from the root "ār" (āzh) (DED 338). This gives rise to a number of words with various meanings in the Tamil language. It gives, on the one hand, the word "aṣvar" (āzhvar) which in common Tamil parlance means the Brāhmany kite, or the Garuda (DED does not mention this). Again, "aṣ" means (vide DED 338) 'to sink, plunge, dive etc.' all of which have significance in connection with the innumerable Ṛg Vedic myths of the 'Aṣvins' coming to the aid of people when about to be drowned. Again, the role of 'Aṣvins' as saviours, almost as messengers from another world, is reflected in the word 'āṣvār' which also means a canonized saint in Vaiṣnavism, Jainism, and Buddhism (DED 338). Still more, interestingly the Ṛg Veda mentions the 'Aṣvins' coming to partake of the sacrificial food, especially at the morning rite. Now, in

Hinduism, the offering of food to the birds is a special 'punya' act ; in Tamil Nadu, the Garuda is preferred to all other birds. (At the temple of Tirukalikunram, in Chingleput District, the mid-day offering to two Brāhmany kites is an event of great importance even today). Attention may be drawn to the word, " pakal " (DED 3151, ' daytime, morning sun ' etc. in Tamil) which is homophonic with the Sanskrit " pakshi ", meaning bird. (It may be noted that " bird " and " food " can be derived from Sanskrit etymology, ' vi ' from ' vigah ' meaning bird and ' aah ' meaning ' to eat '). In short the Dravidian etymology provides a perfect explanation for the names of the gods. Most of the words are those which are prevalent in the Tamil language even today, and are to be found as such in the DED.

Dravidian etymology provides some more useful information. It can be applied to the names of the asterisms as appearing in the Yajur Veda and it can be shown that these names are related etymologically (Dravidian) also to the myths of the deities who are said to preside over the asterisms.

### Sroṇa

Etymologically the name " Sroṇa " may be shown in Dravidian language to mean the tip of a feather'. " Sr " is from ' ciru ', meaning ' small ' (DED 1326 Ta) and ' ciraku ' meaning ' feather ' (DED 2733 Ta) " ona " is from ' konai ' meaning ' tip, end etc '. (DED 1807 Ta), and it also means the ' crest of a bird ' (DED 1733 Ta). (It is interesting to note here the process by which Dravidian words became assimilated into the Sanskrit phonetic sound system. Sroṇa is the first stage—in the Ṛg Veda of the assimilation of " cirai-konam ". Later it becomes " Shravan " whereby all signs of borrowing are completely obliterated). Now the nakṣatra Sroṇa appears in the Aquila constellation as a set of three stars in a line and interestingly the neighbouring constellation is Sagittarius or the Archer. Aquila means in Greek the eagle and the eagle is the vahana of Viṣṇu.

### Kṛttika

Again, Kṛttika is the Sanskritised form of Kārthikeya which has been identified with the Pleiades and which has a Dravidian etymology in the words, Kār + Thi + Keya (or

Cheya) meaning black, fire, child, respectively (DED 1073, 2672 and Sangam). This explains why Agni is said to be the presiding deity of this asterism. It also explains why Karthikeya is said to be a child, and why Agni is said to be fondled by the mother in the Ṛg Veda.

### **Satabiṣak**

Satabiṣak would correspond in Dravidian to ‘Satti or Chatti, or Jatti’ and ‘bhisaj.’ DED 2016 shows ‘Jātti’ to mean ‘a whip’; DED 1899 shows ‘sattan’ to mean ‘order model plan’; DED 191 shows ‘chatti’ to mean an ‘earthen vessel’ or ‘pot’ etc. Again from DED 3440 we understand ‘bhisaj’ or ‘phizhi’ to mean ‘exude’ (water). All these, and even more, are significant for the myths of Varuna.

### **Jyestha Rohini**

Similarly ‘Jyestha Rohini’ is not to be derived from Sanskrit meaning ‘elder Rohini,’ but the first word is the Dravidian ‘Kēttai’ (meaning ‘bad’) transformed by the Sanskrit phonological system. (In fact at the first in Vedic literature it is simply called Jyēṣṭha, and only later ‘Rohini’ has been added to the name, vide the Vedic Index). It is perfectly logical to designate an asterism in Scorpio as ‘bad’ or ‘Kēttai.’

### **Mūla**

Similarly ‘Mūla’ or ‘Vicṛtau’ being at the tail end of Scorpio finds a perfect etymology in the Tamil ‘mūlam’, and ‘mūla’ (DED 4139 and 4140) meaning ‘prolapsus ani, posteriors’ etc. and ‘corner’, respectively. It may be noted that ‘mūla’ also means a ‘root’.

In regard to other words—being not god’s names—it can be showed that many of them are used in the Ṛg Veda in a double sense, that is both Indo-European and Dravidian (Tamil). One such case, was already noted in the words ‘pakal’ (Ta) and ‘pakṣi’ (Skt)

### **Madhu**

The word ‘madu’ while apparently meaning ‘honey’ derives an alternate meaning from the homophone ‘mati’ (pronounced ‘madhi’) meaning ‘moon’ in Tamil (DED 3839).

Now 'mā' in Tamil (DED 3917) means, among other things, 'beast' in general, and in common parlance cow specially (from mātu, or mādu). The second syllable 'thi' or 'ti' as already shown above stands for the 'moon' in Tamil. Thus in this complicated symbolic, 'double-entendre,' language, 'madhu', honey means 'the milk of the heavenly cow,' i. e., 'of the moon' which explains why the bag of the Asvins is said to be full of honey, as they (the birds) come from the moon, which is the residence of the Fathers, the Pitr. Hence when the Ṛg Veda talks of "a cow", we may take it that it often means the moon.

### Indra—Vṛtra Myth

This explains the meaning of the most important of the Ṛg Vedic myths, namely the Indra-Vṛtra war. The most important elements of the myth may first be listed : (1) Vṛtra is a snake that lies on the waters ; (2) Indra releases the "cows" imprisoned by Vṛtra ; and (3) the combat is an eternally recurring one (VMM p.59). The meaning of the word "cows" has been a matter of much debate, and for various reasons, which cannot be gone into here, the interpretation that it stands for "clouds" is not quite satisfactory. If, however, it is interpreted as "moon," the symbolism is very clear. Vṛtra, as already explained is the evil scorpion, or viper, the Scorpio constellation who holds in prison the cows reference to the moon's periodical waning) which Indra releases by striking at the body (the Rohini Jyeṣṭa Nakṣatra of which Indra is lord )

### Triambika

Still another example is the word 'Triambika' applied to Rudra ( VMM p. 74 ) in the Ṛg Vedic verse, VII. 59.12 and has been interpreted to mean he who has three mothers' which does not at all tally with the myths where there is no mention whatsoever of Rudra having a mother, let alone three. The correct etymology is to be found in a combination of Sanskrit and the Dravidian tongues. 'Tri' of course is 'three' from Indo-European. 'Ambika', however, is from 'ambu' (DED

150 ) meaning ' arrow ' or ' arrow-head ' in Tamil. Broadly then ' tri-ambika ' would, on this analysis, mean ' one with a three-pointed weapon. ' This tallies with the fact that Rudra is the presiding deity of the asterism ' Ardra ' in the constellation ' Orionis ' which, as is well-known has, amongst other things, three stars in a line, appearing as ' sword ' or pointed weapon in the constellation picture.

I am led to conclude, therefore, that the Ṛg Vedic philology is bi-lingual.

I have given, due to space considerations, only a few examples, out of the vast number that is available.

### PART III — ARCHAEOLOGICAL EVIDENCE

In order to explain how Dravidian cultural elements could have entered on such a massive scale into the Ṛg Vedic literature it would be necessary to discuss some interesting features of the archaeological finds in Mesopotamia and the ancient history in that region and in the Indus Valley.

#### **Sumeria**

There are certain well-established facts about the Sumerian civilisation which will be referred to in the first instance. It is established, for example, that the Sumerians of 2500 to 2000 B. C. had an astronomy which in many respects, for example, that of the lunar movements was similar to what is now revealed, in researches of the author, as depicted in the Ṛg Vedic mythology. From the archaeological finds of the region we have a fairly wide knowledge of the myths of the Sumerians especially that of Gilgamesh.

#### **Ancient Art**

An important feature of the archaeological finds is the vast amount of art objects in the Mesopotamian and neighbouring regions from about 2500 B. C. onwards. The interpretation of these art motifs is, however, not agreed upon, some scholars holding that this is a naturalistic art, meaning that no symbolism underlies the various motifs, and others feeling that this is symbolic art, but being unable to explain the nature of

the symbolism. In this state of affairs it is not surprising that no connection has been established between mythology and art.

### **Varuna in Ancient Art**

If we interpret the art motifs on the basis of an astronomical symbolism we find a ready explanation for all of them. The terracotta plaque of a naked god from whose hands water flows out can easily be identified as Varuna. The frequently occurring motif of a man holding a pot from which water is thought to flow out is also nothing more than Varuna who in this symbolism is the asterism Satabiṣak with which it may be compared.

### **Indus Valley**

Again, the famous stone vessel of the Indus Valley found in the Mesopotomian region carrying on it carvings depicting a bull, a viper flowing water, a man with a whip etc., can now be shown to be nothing other than symbolic representations of the asterisms, the system of symbolism being the same as in the Ṛg Vedic mythology. Here are to be seen the bull, the Snake, the water-carrier, etc., that is the various constellation figures.

### **Luristan Plaque**

Even more convincing is the plaque of Luristan (c. 2000 B C.) the astronomical symbolism of which can be understood without any great difficulty.

### **Sumerian Mythology**

Similarly it appears that the same symbolism underlies also the Sumerian mythology. The story of a man wanting to have progeny, and on the advice of the sun-god mounting an eagle to go up to the heaven to bring the plant of life therefrom, and on the way becoming frightened and falling off the eagle on to the ground is almost identical with the myth found in the Ṛg Veda of the eagle going up to fetch Soma from the high heavens and being shot at, on the way, by Kṛṣṇanu, the black archer, with the result that a feather fell off the eagle (which represents the asterism Tiruvonam

or Srona ). There are other incidents in Sumerian mythology which can also be shown as corresponding to similar myths in the R̥g Veda of an astronomical character.

### **Sumerian Religion**

In this connection it is necessary to recall the similarities in temple construction and worship between ancient Sumeria and Tamil Nadu of the past thousand years. In the two regions temple towers were designed on similar designs with tall towers ( or 'sikaras', the same word in both places ); as may be seen, for example, by a study of the ancient "Eridu" temple of Sumeria. Temple practices, such as tonsure and offering of hair, ( which prevails throughout the region in all religions including Islam ), prostitution, and votive offerings of articles made of terra-cotta or metal ( especially silver ) in the shape of various human anatomical parts, ( the eye, the leg, the arm, etc ) are common to both.

### **Summary**

Though there is much more research that can be carried out on these lines, the evidence already available clearly reveals the following.

1) that the Indus Valley which is known to have been in close commercial and cultural contact with contemporary Sumeria possessed a knowledge of astronomy somewhat similar to that of the latter ;

2) that the astronomy was of a luni-solar kind, and that not only was the principle of constructing the zodiacal constellation known, but that the pictures of these latter had already assumed the shape accepted today ; and

3) that the basic concepts underlying the art and religion of these areas were astronomical in nature.

The evidence seems to confirm the view held by many scholars that the Sumerian and Indus Valley civilisation were of Dravidian culture.

### **PART IV—FESTIVALS, RITUALS AND ICONOGRAPHY**

Some of the R̥g Vedic myths point to non-Vedic religious

practices. This is the case with the descriptions of god Pūṣan (“ Vedic Mythology ”, p. 35 et. seq)

Pūṣan, the Ṛg Veda says, has for steed goats (IV. 55.4); he is the conductor of the dead (X. 17.3 & 5). He is liberal and bountiful (II.31 4). He is fond of chariot-racing (VI. 56.2 & 3). He is a ‘ vimocana ’ or ‘ the deliverer ’. He protects cattle and leads them to good pasture (I.42.7-8) Pusan is identified with the Sun by all exegesis.

These and similar other myths of Pūṣan may be compared with the festival of ‘Pongal’ celebrated in Tamil Nadu especially by the Dravidian sections on three successive days. On the first day gruel, called ‘Pongal’ is prepared in the open Sun at mid-day and offered to the Sun-god, along with various other things including the sugar-cane, called ‘karumbu.’ On the second day, goat’s meat is the offering, and on the third, cattle are cleaned, bedecked and worshipped in the morning, and in the afternoon cattle and cattle-chariots races are held. This festival is held to celebrate the change of direction from the southern to the northern, that is, correctly when the Sun passes the Winter Solstice. (Hindu religious calendars make an error in calculation of the day).

Thus Pūṣan may be identified with the Sun in Winter Solstice, and these myths may be seen as describing the celebration of Dravidian festivals.

The Muruga cult appears in the Ṛg Veda as being in opposition to the Indra-Agni cult, the latter supplanting the former, whose importance is assigned to ancient times and to the opposite camp. The myth of the two cults of Agni, the old and the new (X.124) clearly demonstrates this. The numerous stories where friends become opponents, such as Indra and the Maruts, Indra and Agni, etc. confirm this. The fact that Arura is a term applied even to Devas ; for example, Indra, seems also to be due to this. The first Agni is clearly Kṛittika, who is identifiable with Muruga or Kārthikeya or Kumara. The Sangam literature of the Tamils is full of wars between the plains people, whose deity is Indra, and the hills people whose deity is Muruga. These wars are over the pos-



session of cattle and in this and other deities they are very similar to the wars of Indra and Vṛtra. Over the asterism Jyēṣṭha Rohini, Indra and Agni are joint presiding deities, and this asterism is in the constellation Scorpio which has already been identified with Vṛtra. We know that in the north the Kumara cult gradually got suppressed, in historic Hinduism. Kumara, being another designation for Muruga, we can thus trace the conflict between the deities in historic times in the north, the final outcome being the destruction of the Kumara cult there, whereas the Muruga cult has continued to flourish in the south co-existing with other cults. Again, the peculiar institutions of the Āṛvas (Azhwars) and the Nayanmars of Tamilnadu can be traced in the Ṛg Veda. The fact there are no similar concepts in the northern Hinduism indicates that the origins of these concepts in Tamil Nadu are to be traced directly to the Indus Valley, which raises a number of speculations in regard to the origin of Tamils.

The origin of much of later Hindu iconographic concepts can be traced in the Ṛg Veda. That Siva's vahana should be "the Bull" is a natural outcome of the juxta-position of the constellations Orion (Rudra or Siva) and Taurus (the Bull).

That the eagle or Garuda should be the vahana of Viṣṇu follows naturally from the fact that this god is the presiding deity of the nakṣatra Srona in the constellation, Aquila.

The reason for the elephant being the vahana of Indra is obvious which also seems to form the base of the later Puranic myth of 'Gajendra-moksam' (the attainment of Liberation by Gajendra, the elephant-form of Indra) in which a crocodile is said to have caught and dragged Gajendra by his leg when he went into a river.

The iconographic representation ( and Puranic myth ) of Siva and Parvati seated on the mountains with their child Kārthikeya playing around them is merely a symbolical expression of the relative positions of the nakṣatras Ardra ( Rudra or Siva ), Rohini ( Parvathi ) and Kṛttika ( Kārthikeya ).

The Ṛg Veda also provides a key to the problem of the

origin of the two religions, Zoroastrianism and Jainism. There are a number of references both in the Ṛg Veda and in the Avesta which point to the existence of religious practices and cults differing from, and even sometimes opposed to the fire-cult of the “ establishment ” or “ the orthodox. ”

Reference has been made earlier to the two Agni cults mentioned by the Ṛg Veda ( X. 124, ) and to the probability that the earlier Agni cult is that of Kārthikeya practised by mountain-tribes. It seems likely that Zoroastrianism was a later development of an off-shoot of this cult. It is a significant fact that the symbol of Ahura-Mazda is a human-faced flying Bull, for Kārthikeya is in Taurus the Bull. Various other problems of inversion of the role of Devas and Asuras in Vedism and Zoroastrianism become intelligible now.

As for Jainism, the emphasis which is placed in that religion on renunciation of everything and the discarding of clothes seems to be but a continuation of concepts which once prevailed in Sumeria and the Indus Valley. The term “ siṣṇa-devāh ” which occurs in Ṛg Veda VII 21.5 obviously refers to naked priests of a proto-Jainic cult. Jainism, Zoroastrianism, the Muruga cult and Tamil Saivism ( “ Veera-ṣaivism, ” as it is called ) are all streams flowing from the same source. There are many Ṛg Vedic verses, which read separately do not appear to have any deep significance, but which if brought together point to this. Some of them have already been quoted. One more ( Ṛg Veda X. 99. 3 ) may be referred to, where “ Indra is said to have slain the *sisnadevah*, when he won the treasure of the hundred gated fort ” ( VMM p. 155 ).

## PART V — CULTURAL HISTORY

For a proper appreciation of the facts discussed in the earlier parts, the cultural context in which the Ṛg Veda was composed must be described. Though this may be somewhat speculative, nevertheless such of it has already been accepted by sound scholarship as highly probable.

First of all there is the fact that the two urban agrarian civilisations of Sumeria and Indus Valley ( 2500 B. C. onwards ) were contemporary, the people having come from the same area in Elam, and that cultural exchanges occurred between the two. That Sumeria had a highly developed luni-solar astronomy, which coloured its religion, is accepted, and it appears from the discussion in this paper that this was the case with the Indus Valley also. This religion may perhaps aptly be termed "Astric Religion," and it seems to have emerged from a previous fertility cult on account of the needs of the people who required a calendar for the forecasting of the seasons for their agricultural operations.

It appears that when the Aryan people invaded the north-western areas in India ( c. 1800 – 1600 B. C. ) they took over the culture of the local subjugated Dravidian people, and apparently following the traditions of the latter developed a literature in which the Dravidian culture elements were absorbed along with the native words. Thus R̥g Vedic Sanskrit was born as a hybrid language.

It seems likely that even before the coming of the Aryans the Indus Vally people had established an outpost in the far south, at the mouth of the Tamaraparani river, for the sake of the pearls to be got there. When the mother-state collapsed perhaps a larger scale migration to that region occurred. In any case, archaeological excavations at Ādichanallur establish the presence of these people from 1200 B. C. onwards at least ( K. A. N. Sastri ). These people of the present Tamil Nadu preserved certain of the elements of the ancient culture and traditions of the Indus Valley as seen from the Sangam literature.

The Aryan invaders in the north, being nomands, found little use for the cultural tradition of the Indus Valley even though they had apparently, in admiration, absorbed them into their literature, for their utility was primarily for an agricultural people. The R̥g Veda became then a mystery even for the conquerors themselves, more especially because of the rapid

decay of the Dravidian languages which held the key to the myths.

While the Aryans and their mixed descendants tried to develop a Vedic religion distinct from the indigenous ones, their attempt proved a failure and they had ultimately to adopt the practices which had continued the Indus Valley tradition outside their fold.

This brief discussion should serve to dispel the air of mystery that hangs over the origin and historical development of the Hindu religion.

## PART VI--NOTES AND BIBLIOGRAPHY

Inescapably only a few of the myths can be referred to here and even of the gods selected, it is found possible to cover only limited aspects of powers and appearances. A detailed and extensive discussion of individual divinities, such as the Ṛbhus, or the Asvins would each call for as much space as the whole of this Paper. The same considerations have imposed a restriction on the references to the authorities. The bibliography that follows is brief and selected; a full one would run to over 200 works, even when restricted to authors of highest authority in the field.

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**Names of Nakshatras in the Yajurveda with their Presiding Edities**

**Table I**

<i>No.</i>	<i>Name of Naksatra</i>	<i>Presiding Deity</i>	<i>Constellation of Principal Star</i>
1.	Kṛttikā	Soma Agni, Prajāpati	Tauri
2.	Rohini	Prajāpati	Tauri
3.	Mṛgasirṣa Invakā	Soma	Orionis
4.	Ārdṛā Bāhū	Rudra	Orionis
5.	Punarvasu	” Aditi	Geminorum
6.	Tiṣya	Brhaspati	Canceri
7.	Āsresa	Sarpa	Hydrae
8.	Maghā	Pitr (Indra)	Leonis
9.	Phalguni Pūrva Phalguni	Aryamā	Leonis
10.	Phalguni Uttara Phalguni	Bhaga	Leonis
11.	Hasta	Savitā	Corvi
12.	Citrā	Indra, Tvaṣṭā	Virginis
13.	Svāti Niṣṭyā	Vayu	Bootis
14.	Viśākhā	Indrāgni	Librae
15.	Anurādhā	Mitra	Scorpii
16.	Rohiṇi Jyeṣṭhā	Indra	Scorpii
17.	Vicratau Mulabarhani, Mula Nirrti	Pitr Prajāpati	Scorpii

<i>No.</i>	<i>Names of Naksatra</i>	<i>Presiding Deity</i>	<i>Constellation of Principal Star</i>
18.	Aṣādhā Pūrvāsādhā	Āpah	Sagittarii
19.	Asādhā Uttarāṣādhā Abhijit	Visvedeva	Sagittarii
20.	Sroṇa	Brahma	Lyrae
21.	Sraviṣṭhā	Viṣṇu	Acquillae
22.	Satabhiṣak	Vasu	Delphini
23.	Proṣṭhapada	Indra, Varuṇa	Aquarii
24.	Proṣṭhapada Uttara Proṣṭhapada	Ajaekapād	Pegasi
25.	Revati	Ahirbudhniya	Pegasi
26.	Asvayuja	Pūsā	Piscium
27.	Apabharaṇi	Asvin	Arietis
		Yama	Arietis

(P 220 of the Report of the Calendar Reform Committee, 1955, Government of India)

## Paper V

# Astronomy as Aid to History

Dr. R. NAGASWAMY

### History

It is almost 125 years ago, in (1850), a dedicated band of Western Scholars like, Wilson, Max Muller, Winternitz, and Fleet, made a monumental study of ancient Indian literature, and Culture. Any discerning scholar would be struck by their critical acumen, and their thirst for the proper understanding of the real import and possible date of the compositions. F. E. Pargiter, wrote his thought provoking work "*Ancient Indian Historical Tradition*" in 1922, a very valuable contribution, though it is not absolutely free from prejudices. In the field of Ephigraphy, Fleet, Kielhorn, Hultsch and other eminent scholars tried to give a factual framework of Indian history. One of the most outstanding scholars, to concentrate solely on astronomy as aid to history and epigraphy, was L. D. Swamikkannu Pillai whose "*Indian Ephemeris*", is a work of dedication and which is indispensable for Historians and Ephigraphists of India. Swamikkannu Pillai deserves the greatest tribute for his boldness of conception and originality of approach, to make Indian astronomy the most acceptable scientific aid to reconstruct Indian Chronology. He was at the same time conscious of its short-comings and put forward his conclusions with abundant caution. He worked out all possible solutions for each problem before suggesting

any date and his work is undoubtedly a model of scientific enquiry.

### **Epics and Puranas**

In recent years, lively dialogue is being witnessed on the authenticity of the two great epics Ramayana and Mahabharata and their dates as computed from the astronomical data furnished by the epics themselves. Eminent scholars like H. D. Shankalia, and Prof. D. C. Sircar have raised certain doubts about the historicity of some of the data furnished by the epics.

### **Indus Script**

The claim that the Indus script has been deciphered, adds new dimensions to the study of our antiquity. The Finnish, Russian and Iravatham Mahadevan's analysis of the Indus script, suggest, judging from the grouping of the signs and the possible structure of the language, that the language of the Indus script, is Dravidian. The Computer analysis seems to rule out the possibility of the Language being Indo-Aryan. The Finnish and Russian scholars consider that the Religion of the Indus people has an astral basis, which should be taken into account in discussing Indian astronomy.

### **Need for reconsideration**

The question now arises whether there is any basis for a reconsideration of the dates already suggested by eminent scholars earlier. I think that a few points taken for granted are modified by recent discoveries and needs a re-examination. The following may be cited as an example. Sri L. D. Swamikkannu Pillai holds the view that week days were not known in Tamil country before 8th Century A. D. The Vinna Guravaypalem Copper plate grant of Paramesvaravarman (689 A. D) refers to *Aditya dina*, (Sunday) *tradyodasi*, *Sukla paksha*, in the month of *Poushya* (Tai). This dated epigraph shows that week days were known in South India, definitely earlier to 8th A. D.



The need to re-examine the dates on the basis of astronomical data in ancient literature is thus quite obvious, but this re-examination could also benefit by recent Scientific aids like electronic Computers. An influential Committee under the Chairmanship of Sri. N. Mahalingam, at Madras, has already drawn a plan to feed the astronomical data furnished by ancient literature like the epics, *Puranas*, and early Sangam literature into the Computer, and examine scientifically whether the dates are verifiable and accurate (within reasonable limits of errors).

It would therefore be interesting to know the concept of ancient astronomy as found in (a) the earliest body of Indian literature namely the Vedas (the epics and Puranas being decidedly later). (b) the earliest body of Tamil Literature and (c) the earliest inscriptions of the Country that could be read.

### **Vedic Astronomy**

The concept of 360 days in a year, the twelve month cycle and the thirteenth intervallary month of the Luni-Solar year are known to the Rig Veda.

*“ Veda Masa dhrtavato dvadasa ajayatah  
Veda ya upa jayati ”*

“ He, who, accepting the rites dedicated to him knows the twelve months and their productions and that which is supplimentarily engendered ”.

Wilson notes : *Veda ya upajayate*, who knows what is *upa* additionally or subordinately produced. The expression is obscure but in connection with the preceeding *Veda Masa dvadasa*, who knows the twelve months, we cannot doubt the correctness of Scholiast's conclusion that the thirteenth, the supplimentary or intercalary month of the Hindu Luni-Solar month is alluded to “ that the thirteenth or additional month which is produced of itself in connection with the year, “ *yas*

*trayodasi dhika masa upajayate Samvatsara Samipe Swayam evodpadyate.* The passage is important as indicative of the concurrent use of the lunar and solar year at this period and the method of adjusting one to the other". Wilson also holds that "the Sabeism of the Hindus if it may be so termed differs entirely from that of Chaldeans in omitting the worship of the planets. The constellations are never named as objects of Venerations or worship".

With Vedic sacrifices assuming greater proportions in the time of Yajur Veda, the science of astronomy also advanced to a greater height as the sacrifices were intimately associated with the various cycles of the year. The Yajur Veda refers to the twelve months, 24 half months (*Chaturvimsati Ardhumassa*) the 27 nakshatras, the bright and dark fortnights (paksha), the new moon, (amavasi), the full moon (Purnimasi) the six seasons etc. The full moon-days of the months of Palguni and Chitra are also explicitly mentioned (*Phalguni Purnamase diksheran; Chitra Purnamase diksheran* etc). The equinoxes are also mentioned. These ideas are found mentioned in Atharvaveda as well. A point of interest is that except Sun, Moon and Rahu, other planets were unknown to the Vedic seers. The planetary astronomy based on the positions of various *grahas*, which play an important role in the epic and puranic period, seems to be a later development.

### **Early Tamil Astronomy**

In the body of early Tamil literature, one verse is of historic interest as it refers to almost all the planets by name, their respective position at the time of a lunar eclipse which occurred just before dawn. It is the eleventh verse, in the *Pari-padal* group, referring to the floods in the river Vaigai at Madurai. Basing his calculations, on the commentary of the ancient commentator Parimelalagar, Swamikkannu Pillai calculated the date of occurrence. According to the verse, the lunar eclipse took place, just before dawn, when all the planets were

in their respective houses and *angi* was at its height. Swamikannu Pillai gave two possible dates namely 17 A. D. and 634 A. D. and concluded the latter to be the most probable date. Recently this date is being re-examined. This is probably a very good instance, which could be examined with the help of a Computer.

In the Purananuru collections, there are many references to astronomical details among which one is of great interest. Puram 229, sung by Kudalur Kilar, on the death of Chera ruler *Yanaikat Cey Mandaran Ceral Irumporai*, refers to a meteor which fell in the dead of night of a *Panguni Uthiram* day, when *Krittika* was in *Mesha rasi*. It also gives the eighth *nakshatra* before *Uttara*, and the eighth *nakshatra* after *Uttara* the verse also refers to the form of *Anusha*, which is referred a *mudappanai*, (Palm tree) and that of *Punarpusam* *nakshatra*, resembling a tank. On seeking this meteor, it has predicted that a great calamity would fall on the ruler. On the seventh day of the occurrence, the royal elephant fell dead; the royal drum was torn to pieces; the King's parasol fell from its stands; the horses remained motionless and the great ruler attained heaven as predicted. It is quite clear from the verse that by the time of Purananuru, the Zodiac, the months, the *nakshatras*, their forms and calculating the eighth star, before and after the one at height, were all known to Tamil poets.

The art of prediction based on astronomy was well-known. Two other verses Purananuru (117 and 388) refer to the Planet Venus. There was a belief that if Venus appeared in the Southern horizon, the country will face drought. The poet who refers to this belief, is none other than the celebrated Kapilar, one of the earliest poets of Sangam works. The same poet and Palai Gautama, singing the greatness of the Chera rulers, in the Pathirru Patthu Poems (Pad—Path-Va-69 ;24) make a pointed reference to the belief that if the Planet Venus remained in its houses it will cause abundance of rains and fertility.

Another poet of the Patthu Pattu group, Kumattur Kannanar by name, states that if Venus and Mars came together, they will cause drought. Nakkirar, Nattattanar, Rudrankannanar, and Mangudi Marudanar, among the poets of Patthu Pattu Poems refer to the Venus. That the sun is in association with the planets is referred to by Nattattanar in Sirupanarupadai (242-4). That the moon moves amidst the stars is referred to by Nakkirar. The word *min* is used both in the sense of stars and planets. The Planetary astronomy, the Luni-solar nature of the Calendar and the influence of the Planetary positions over human life and environment are well developed in the Sangam age. A point of interest is that the Sangam works doesn't seem refer to week days. It has now been established with the help of inscriptions from Meenakshipuram, Pugalur, and Thirupparankuram, that the Sangam works date around the beginning of the Christian era.

### Early Epigraphical Notes

So far as inscriptions are concerned, the earliest inscriptions of India are that of Asoka. Asokan edicts, assigned to 3rd Century B. C., clearly indicate the place of astronomy in Indian life. The name of *thithis* like *Ashtami caturdasi*, *Pancadasi*, *Paurnameasi* and the two *pakshas*, and the names of months like *Tishya* are recorded. For example, Asoka orders that "on the eighth day (*ashtami*) of every fortnight, on the fourteenth and fifteenth, on the *Tishya Punarvasu* days, on the full moon days of the three seasons and at festivals Bulls should not be castrated". The importance being attached to the natal star of the ruler, has already taken deep-root in the time of Asoka, whose natal star was *Punarvasu* in the month of *Tishya (Tai)*.

The Jupiter's sixty year cycle appears in epigraph for the first time in Nagarjunakonda inscriptions of Tkshvaku rulers in 3rd Century A. D.

The copper plate charters of the early Pallava rulers of Kanchipuram give astronomical details, but mainly they mention the regional year of the ruler, month (*masa*) the fortnight (*paksha*) and the day (*thithi*). The months referred to are *Chaitra*, *Vaisakka*, *Jyeshtha*, *Sravana*, *Asvayuj*, *Kartika*, *Paushya* and *Magha*. Three records mention the seasons (*rithu*) without mentioning the months. These relate to the period between 3rd century A. D. to the 6th century A. D. A point of interest is that none of them refer to the week days. Mention has been made earlier that the week day is mentioned in an inscription of Paramesvaraman in 7th Century A. D. Two inscriptions of Pandyas of 8th Century A. D., coming from Anamalai and Thirupparamkunram near Madurai refer to the Kali year 3871 and 3874 respectively besides giving the name of the week days. Later, Tamil inscriptions are full of astronomical references. It seems to us that there is a need to compile the history of Indian astronomy on a rational footing to understand one of the important branches of Indian Science.

#### Foot Notes

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## Paper VI

# Astronomy : Ancient and Modern

G. S. SHESHAGIRI

### Definition

“ The moon is in precession of a Nakshatra, a day and 7 kalas more ; the Sun is in precession of a Nakshatra for 13 days and  $\frac{5}{3}$  parts of a day ; a Kashta is the time taken to pronounce five long syllables.”

— *Ved. Jy.*

Definitions and units are the basic hurdles to codify and understand a phenomena. Any natural phenomena is defined first, then, units are formed to get the mathematical model out of it. Vedanga Jyotisha or astronomy contains such definitions, units and formula about this universe. The verse from Ved-Jy given above shows the ingenuity of our ancients in doing so.

The solar system means, a system pertaining to Sun. Sun is a gaseous globe in flames having a diameter of 86,40,000 miles. Its main constituents are hydrogen and helium. Around this huge, hot globe the comparatively tiny planets and their satellites are revolving, having different periods of revolution. The planes of revolution of these are at different small angles to the plane of revolution of the earth, our mother planet. Added to their movement round the Sun, planets move on their own oblique axis, the obliquity being different to distinct pla-

planets. While the planets revolve round the Sun, they do so with some irregularity. This is because the Sun is not exactly at the centre but is slightly away from the centre of the orbit. This is called the eccentricity of the orbit, defined by  $c/a$  where  $c$  is the Sun's distance from the centre of the orbit,  $a$  is the Semi major axis (= the planet's maximum mean distance from the Sun). Because of this, in the planetorial orbits, two minimum and maximum points occur during each revolution of a planet.

“ As a Ratha rests firm on a linch pin ( or axle ) similarly the planets and stars moving, resting firmly on Sun.”

— *Rig Veda*

Having explained how a solar system looks like, we shall study the different centres that can be considered in theory and observation. The solar system as it is, explains the heliocentric system, i. e. an imaginary person in the sun sees the true planetary system. A man on the earth with the superior ( outside the orbit of the earth ) and inferior ( inside the orbit of the earth ) planets and Sun, views the solar system in a relative aspect. Unlike the helio-centric system, the plane or the centre of observation and the centre of solar system do not overlap in the topo centric system. In otherwords the topo centre is a moving one at a defined distance from the centre of the solar system. This relative aspect can be well said by the retrograde motion ( Vakragathi in Sanskrita ) of planets, Saturn taken as an eg like this there are four more important observational centres that we can make use of—they are 1. Geo-centric ; 2. Bany-centric ; 3. Luna-centric.

Planet-centric. Except Bany-centric others are self explanatory. Bany centre is that where the centre of inertia of the solar system exists. This falls within the sun's disc. One of these centres will be chosen at convenience either for calculation or observation. Though for observation on the earth topo-centric system holds good, for calculation purposes we have to go through the basic systems i. e., the helio-centric and geo-centric systems.

The path of the earth round the Sun or relatively *vice-versa* is called the ecliptic (Kranti Vrita). To the plane of the ecliptic, the equator ( a great circle parallel to the daily rotation of the earth ) is inclined at an angle of  $23\frac{1}{2}$ , which makes the rays of sun light fall on the earth at different angles at distinct points of revolution of the earth, causing seasons. Though the equinotical points (nodes) are invisible, they get manifested as the points of equal day and night. The node that comes after winter solstice (Uttarayana) is called Vernal Equinox (Vasanta Routhu). The node coming after summer solstice (deshinary) and is called autumnal equinox ( Sharad Rutu ). The time taken for the earth to orbit from Vernal—Vernal equinox (in the ancient times, Sharad Rutu to Sharad Rutu ) is called the tropical year ( period = 365.2422 days ). Sidereal year is the duration for the earth to go round ( $360^\circ$ ) the sun once ( period = 365.256 days ). This difference in period between tropical year and sidereal year is due to the precession of equinoxes. The precession is the result of changing of the equatorial direction in the space with respect to the celestial sphere i. e., the axis of the earth perpendicular to the equatorial plane makes a conical movement around the ecliptic pole axis once in about 27000 years. This can be compared to a spinning top. The precession rate is about 50'' per year. A year is again divided into 12 parts on the concept of the Moon going round the earth in a year. That is about 12 revolutions. Every day has been divided into 24 equal parts each part called by hour, an hour into 60 minutes, a minute into 60 seconds. A 'second' is the unit of time. A day can be defined basically in three ways. They are 1. Sidereal day ; 2. apparent solar day ; 3. Mean solar day. Sidereal day is the duration of the rotation of the earth on its own axis by  $360^\circ$ . Consider a topo-centre, join this to the star at Vernal Equinox. This line for all our imaginative purposes can be taken as in parallel with the same line of the next day i. e., after the shift of the earth in its orbit round the Sun in one day ( $1^\circ$ ). Apparent solar day is the duration from midnight to midnight ( or mid-noon to midnoon or Sun-rise to sun-rise or sun-set to sun-set ). Clearly the sidereal day is shorter by about a degree = 4 minutes than the apparent solar day.



“ Like a young man follows the maiden so doth the Sun to Ushe ” (morning).

— *Rig Veda*

The mean solar day is the interval between two successive transits of the mean Sun. Mean Sun is an imaginary point with an uniform angular velocity completing-a year synchronising with the Sun.

After all these, to point out a planet, equinotical points etc., a reference is necessary. For this a band of 27 fixed star (Nakshatras) defined by the ecliptic are considered. Each nakshatra is then divided into 4 equal parts called Padas, making present 360 degrees = 108 padas. In each star, a bright star nearer to the ecliptic is considered (yogatara) for reference. This band of  $16^\circ$ , called zodaic having stars acts as a circular scale for an observer to tell the position of planets, Moon etc. For astrological purposes they had then 12 equal divisions of 27 nakshatras called Rasis. Unlike the modern division of stars as constellations, Rasies are mathematical and observable.

Some of the other definitions to be told are Dakshinayana, Uttarayana, Rahu, Ketu, Thithi, Vara, Karna, Yoga, Nakshatra, Grahana (eclipse). Because of the obliquity of the earth, the Sun relatively oscillates or progresses North to South and Vice-versa to a maximum of the obliquity =  $23\frac{1}{2}$  per year. This is a latitudinal movement. These two maximum points of sun's latitudinal progress are called Uttarayana and Dakshinayana. When Sun reaches the maximum point =  $23\frac{1}{2}$  south it is having full ayana towards northern progress, for it is called Uttarayana (DEC). Similarly Dakshinayana is defined (June). Rahu and Ketu are the two shadow planets or the nodes, where the moon's oblique orbit cuts the ecliptic. If on the full moon's day Rahu or Ketu is present, it is the day of lunar eclipse. Depending on the position of Rahu or Ketu partial or total lunar eclipse occurs. On the other hand, if Rahu or Ketu falls

in collinear with the new moon a solar eclipse occurs. Depending on the tangential point on the earth and the solid angle in the line with the new moon solar eclipse appears as partial total or annular eclipse. Rahu and Ketu points have a regressive motion round the ecliptic with a period = 18.6 years.

Some of the terms used to scan the space are :

1. Longitude (ecliptical or equatorial or polar)
2. Latitude (ecliptical or equatorial or polar).

Depending on the reference, there are two more divisions in directing a space point. They are Nirayana and Sayana—system of coordinates. In the Nirayana system a fixed point (Point without movement or ayana) or a star (in the vedic period mid point of Dhanishta nakshatra) is chosen as a reference. In the Sayana system vernal equinox a moving point (in the olden days autumnal equinox) is taken as the reference. Again, a celestial object's latitude or longitude can be produced on to either ecliptic or equator. Accordingly, it is called ecliptical longitude and latitude or equatorial longitude or latitude with the two references said before. Polar longitude and latitude are the blend of both ecliptical and equatorial systems. The stars are grouped as nakshatras on the ecliptical basis. A man on the earth who views the sky equatorially, to get the correct entry of planets, moon etc., into a star, this polar longitude (Dhruvaleyā) and latitude (vikshepa) with respect to vernal equinox were and have to be used. From the point where the hour circle through the planet to be observed cuts the ecliptic to the vernal equinox is polar longitude. Polar latitude is the angle from the same cutting point to the planet on the hour circle.

To end this discussion this solar system with fixed stars can be compared to an ordinary clock having three moving arms for seconds, minutes and hours. The earth round the Sun for year, Moon round the earth for month and earth rotating on its own axis for a day acts as different arms of a clock.

## Paper VII

### குமரி நாட்டு வான நூலறிஞரும் தலைக்கழக (முதற்றமிழ்ச் சங்க) காலமும்

பேராசிரியர் இரா. மதிவாணன்

தமிழிலக்கியங்களில் காணப்படும் வானநூற் செய்திகளைக் கொண்டு சிலப்பதிகாரத்தின் காலத்தை எல். டி. சாமிக்கண்ணுப் பிள்ளையும், பரிபாடலின் காலத்தை சோமசுந்தர தேசிகரும் வரையறுத்துள்ளனர். வானநூல் வரலாறு (History of Astronomy) எழுதப்பட்டிருப்பின் எந்தெந்த கோள் நிலைகளின்போது அல்லது மீன் நிலைகளின்போது மண்ணுலகில் வெள்ள ஊழிகள், கண்டப் பெயர்ச்சிகள் (Continental objects) நிலமாற்றங்கள் ஆகியவை ஏற்பட்டன என்றறிந்து தொல்பழங்கால வரலாற்றைக் கணித்தறிய முடியும். அவ்வாறில்லாததால் வெள்ள ஊழிகளின் காலத்தைக் குறிக்கும் நூல்களிலிருந்து தொல்பழங்கால வரலாற்றை அறியவேண்டியிருக்கிறது.

மகாவம்சம் என்னும் நூலில் கி. மு. 2350 இல் பெரிய கடல் கோள் ஏற்பட்டதாகவும் அப்பொழுது இலங்கை தமிழகத்திலிருந்து தனித்தீவாகப் பிரிந்து விட்டது என்றும் கூறப்பட்டுள்ளது. கடல் கொண்ட குமரி நாட்டின் ஒரு பகுதியாகிய தென்பாலி அல்லது தில்முன் என்னும் பழந்தமிழ் நாட்டிலிருந்து மன்னன் ஒருவன் வானநூல், சோடக்கலைகளில் தேர்ந்திருந்தான். எகிப்திலிருந்து திசை தவறி வந்த கப்பலொன்று இவன் நாட்டருகில் புயலால் முழுகியபோது அதிலிருந்து தப்பி வந்த இளைஞனொருவனை ஆதரித்து அவனுக்கு வேண்டுவன தந்து, இந்த நாடு இன்னும் சில காலத்திற்குள் கடலில் முழுகிவிடும் என்று கூறி அவனைப் பாதுகாப்பாக மற்றொரு கப்பலில் ஏற்றி எகிப்துக்கு அனுப்பினான். இச்

செய்தி எகிப்தில் கிடைத்த பாபிரசுச் சுருளேட்டில் ' கலங்கனிழ்ந்த இளைஞன் கதையாக ' க் ( Ship wrecked Sailor Story ) கூறப் பட்டிருப்பதாக ' The Riddles of three Oceans ' என்னும் நூலில் எடுத்துக்காட்டப்பட்டுள்ளது. வான நூலிலும் சோதிடக்கலையிலும் வல்ல தமிழ் மன்னன் கடல்கொண்ட தென்னாட்டில் வாழ்ந்த காலம் கி. மு. 6000 ஆண்டுகளுக்கு முற்பட்டதாக இருக்க வேண்டும். மகாவம்சம் கூறும் செய்தியையும் தென்பாலி நாட்டுத் தமிழ் மன்னனின் கதையையும் மூன்று தமிழ்ச்சங்கங்களின் காலத் தோடு ஒப்பிட்டு ஆராய்ந்தால் பழந்தமிழ் மன்னர்களின் காலத் தைப் பின்வருமாறு கணிக்கலாம்.

முதல் தமிழ்ச் சங்கம் 89 மன்னர்களின் காலத்தில் 4440 ஆண்டுகள் நடைபெற்றது. முதல் மன்னன் காய்சின வழுதி. கடைசி மன்னன் கடுங்கோன். இரண்டாம் தமிழ்ச்சங்கம் 59 மன்னர்களின் காலத்தில் 3700 ஆண்டுகள் நடைபெற்றது. இரண்டாம் தமிழ்ச் சங்கம் கபாடபுரத்திலிருந்த (கதவபுரம்) போது இலங்கை தமிழகத்தோடு ஒட்டியிருந்தது. மகாவம்சத்தின் கூற்றுப்படி இரண்டாம் தமிழ்ச்சங்கம் முடிந்த காலம் கி. மு. 2350. இரண்டாம் தமிழ்ச் சங்கத்தின் தொடக்கம் கி. மு. 2350 + 3700 = கி. மு. 6050. எனவே, வெண்தேர்ச்செழியன் கி. மு. 6050 இல் இரண்டாம் தமிழ்ச் சங்கத்தைத் தோற்றுவித்தான் என்றும் அது முடத்திரு மாறன் காலத்தில் ( கி. மு. 2350 ) அழிந்தது என்றும் அறிகிறோம்.

இரண்டாம் தமிழ்ச் சங்கத்திற்கு 4440 ஆண்டுகளுக்கு முன்பு முதல் தமிழ்ச் சங்கம் ( தலைக்கழகம் ) கடல்கொண்ட குமரி நாட்டில் பஃறுளியாற்றங்கரையிலிருந்த தென்மதுரையில் நடைபெற்றது. அதன் காலம் கி. மு. 6050—4440—10490. எனவே, முதல் தமிழ்ச் சங்கத்தைத் தோற்றுவித்த காய்சின வழுதியின் காலம் கி. மு. 10490 என்று ஐயமறத் துணியலாம். முதல் தமிழ்ச்சங்க காலத்தில் 89 மன்னர்கள் வாழ்ந்திருப்பதால் ஒவ்வொருவர் ஆட்சிக் காலமும் சராசரி 48 ஆண்டுகள் ஆகிறது. இதில் கற்பனையோ புதுமையோ இருக்க முடியாது. இரண்டாம் தமிழ்ச்சங்க காலத்தில் ஒவ்வொரு மன்னரின் ஆட்சிக்காலமும் சராசரி 61 ஆண்டாகிறது. முதல் தமிழ்ச்சங்கத்தின் கடைசி அரசனான கடுங்கோனின் காலம் கி. மு. 6050.

கடல்கொண்ட குமரி நாடு ஏழேழ் நாற்பத்தொன்பது நாடு

களாகப் பிரிந்திருந்தது. முதல் தமிழ்ச்சங்க காலத்தில் பெருவள நாட்டு மன்னனாகிய செங்கோன் அலெக்சாந்தரைப்போல தரை வழிச்செலவு மேற்கொண்டு பல நாடுகளை வென்றவனாகக் கூறப்படுகிறான். இவன்மீது இயற்றப்பட்ட 'செங்கோன் தரைச்செலவு' என்னும் பாடல் தாப்புலிப்பா வகையைச் சேர்ந்தது. தாப்புலிப்பா எவ்வகையைச் சார்ந்தது என்று யாருக்கும் தெரியாது. தொல்காப்பியத்தில் கூட அப்பெயர் இல்லை. இதிலிருந்தே அது முதல் தமிழ்ச்சங்க நூல் என்று தெரிகிறது. வடிம்பலம்ப நின்ற நெடியோன் என்னும் முதல் தமிழ்ச்சங்க காலமன்னன் கடல்வழிச் சென்று பல நாடுகளை வென்று அந்நாட்டுக் கடலைகள் தன் கால்பாதம் அலம்புமாறு நின்றவன் என்று கூறப்படுகிறான். எகிப்து பாபிரசு ஓலைச் சுருளில் கூறப்படும் மன்னனும் முதல் தமிழ்ச்சங்க காலத்து வளையாதல் வேண்டும். அவன் முதல் தமிழ்ச்சங்க கடைசி மன்னனாகிய கடுங்கோனாக இருத்தல் வேண்டும்.

செங்கோன் மன்னனின் பெயரில் இன்றும் மடகாசுகர் தீவில் செங்கோதரா என்னும் ஊர் கடற்புறத்தில் உள்ளது. செங்கோனில் காலம் கி. மு. 9000 என்றும் வடிம்பலம்ப நின்ற நெடியோனின் காலம் கி. மு. 8000 என்றும் கணிக்கலாம். எனவே தமிழரின் கடல் வாணிகமும் வானநூற் கலையும் தோன்றி வளர்ந்த காலம் கி. மு. 8000 ஆண்டுகளுக்கு முற்பட்டது என்பது தெளிவாகிறது. அதன் படி மூன்று தமிழ்ச்சங்க மன்னர்களின் காலத்தைப் பின்வருமாறு கணிக்கலாம்.

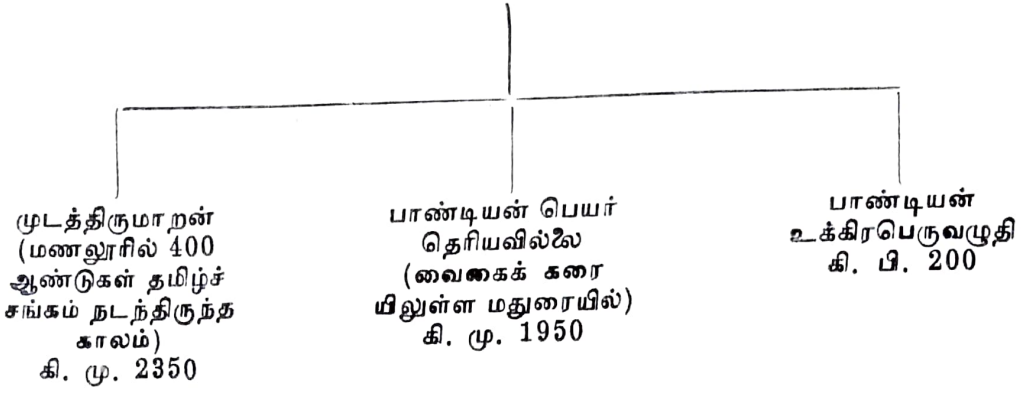
1. முதல் தமிழ்ச்சங்கம் — கி. மு. 10490 — கி. மு. — 6050.

காய்சின வழி கி. மு. 10490	செங்கோன் கி. மு. 9000	வடிம்பலம்ப நின்ற நெடியோன் கி. மு. 8000	கடுங்கோன் கி. மு. 6051
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2. இரண்டாம் தமிழ்ச்சங்கம் — கி. மு. 6050 — கி. மு. 2351

வெண்தேர்ச் செழியன் கி. மு. 6050	வாரணன் அல்லது வாரணன் கி. மு. 4000	நிலந்தரு திருவிற் பாண்டியன் தெல்காப்பியம் அரங்கேற்றம் கி. மு. 2500	முடத்திருமூரன் கி. மு. 2351
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### 3. மூன்றும் தமிழ்ச் சங்கம்



வைகைக் கரையில் மூன்றும் தமிழ்ச்சங்கம் நடைபெற்ற காலம் 1850 ஆண்டுகள் என்று இறையனார் களவியல் கூறுகிறது. ஆனால் கடல் கொள்ளப்பட்டுப் போந்திருந்த முடத்திருமாறன் மணலூரில் சங்கம் வைத்திருந்த இடைக்காலம் 400 ஆண்டுகள் கூறப்படவில்லை. மணலூர் கடல் கொண்டபின் மூன்றும் தமிழ்ச்சங்கம் மதுரையில் நிறுவப்பட்டது.



**Dr. R. Nagaswamy, Director of Archaeology, Govt. of Tamil Nadu, presenting the report of the working group on Epigraphy**



**Sri. N. Mahalingam, Chairman, Seminar Committee being honoured with a Ponnadai by Dr. V. C. Kulandaiswamy**



Sri. V. P. V. Rajan, Editor, The Mail, honoured with a Ponnadai by Dr. V. C. Kulandaiswamy, Vice-Chancellor, Madurai Kamaraj University



Members of the Seminar Committee with Dr. V. C. Kulandaiswamy



## Valedictory Address

Dr. V. C. KULANDAISWAMY \*

**E**steemed Thiru Mahalingam, Distinguished scholars on the dias, distinguished delegates, Ladies and Gentlemen,

I am extremely thankful to the organisers of this function for having given me an opportunity to be with you this evening and participate in the final session of this Seminar. Though I have formally thanked the organisers, I must confess that I stand before you with a certain amount of hesitation and a sense of diffidence. I am ignorant of Astronomy—equally ignorant of history. When Mr. Mahalingam asked me over the phone to deliver the valedictory address, I accepted his invitation because of the fact that for the last twenty five years, I have been a Government servant and I have been accustomed to say “Yes” whenever a call came from a senior member. It is not so much by consent, but more by force of habit that I stand before you as the Chief Guest on this occasion. I congratulate the organisers of this Seminar most sincerely for trying to develop an important tool. *Astronomical data*, for historical forecasts. You may possibly excuse me if I try to digress on the importance of a tool in the progress of human civilisation. Two things that contribute to the progress, either to the society

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\* Vice-Chancellor, Madurai Kamaraj University

or to the nation, are the system and tools that we make use of. You may have one political party replacing the other; one individual replacing another. As long as you make use of the same system or same tool, nothing worthwhile would take place. Radical changes, significant improvements in the society, are brought about, not by the change of individuals, but either by a change in the system or the tool. Every contribution in the past which is today worth remembering are due to a change either in the system or in the tool. I would like to illustrate this with reference to both terms-concrete tools and conceptual tools. A tool is not necessarily be made up of a material. A concept is a tool, so too is a method. Two important events in human progress support this contention. The Agricultural civilisation was brought into existence by the invention of a small tool namely the plough invented by an unknown genius around 8000 years ago. All the great empires and the glorious histories of the past we had have been the contribution of the agricultural civilisation and you cannot think of this civilisation without the invention of the plough. The transition of man, as a hunter to the man as a civilised being, was the contribution of this simple tool. Agricultural civilisation continued with varying degrees of improvements till the steam engine was invented. It brought into existence what we call today as Industrial civilisation.

You may possibly wonder as to what is so important about the steam engine. Till the invention of the steam engine, whatever be our progress and achievements in the area of philosophy, literature, religions and the various intellectual fields, man depended only on the muscle power-either the muscle power of the human being or the muscle power of the animal for doing work. For the first time in Human history, it was the invention of the steam engine which made it possible for man to derive energy from nature and make use of the energy from nature for doing work, thus enlarging the capacity of the human beings to do work. From then on, we continued till about the beginning of the 1950 or the period close to 1950 when nothing more was achieved in the field to develop a tool.

In 1949-50 came what we now call the computer. You may possibly wonder why I should place this as the third important development. All the tools before the invention of computer helped only to multiply the muscle power of man. Man was not able to delegate any of the functions of his brain to any machine. For the first time in human history, an information processing machine—a machine that can take the functions of the human brain and human intellect was invented. Without computer, whatever we see today could not have been achieved, without the computer, we will go back to the pre-second World War period. Therefore, we can easily see that every significant development, every development that create a new era or epoch in human civilisation, is associated with the development of a new tool.

As I have stated earlier, even a concept could be a tool. Let us go back to the days when India and later the Greeks and the Romans, where the philosophers contributed to the progress of the human civilisation. The established tool of that time was logic. If you can take logic, the method is simple. You try to establish an axiom. The axiom need not be questioned and on the basis of the axiom you try at effective logic and arrive at conclusions. These conclusions are inevitable ones. In the days of Socrates or Plato or Aristotle or for the great Indian philosophers of the past, the only tool used was logic. Then, as time passed on the scientific method was introduced. You may possibly wonder as to what is the difference between the logic and scientific method. In logic once an axiom is established, everything must follow without any possible alternative. It was Galileo who made available the benefits of scientific method. Great thinkers such as Newton, Einstein and others were not less great but they could have a tool which was made available by Galileo to the advantage of later men.

As a matter of fact Alwin Wallace, the co-discoveror of the evolution theory thought that among many of the living beings, the human being is the only one who can develop a tool. Darwin, who was also doing research in this theory for a number of years, has also the same point of view as Wallace.

When Wallace knew that many of the conclusions arrived at by him concurred with that of Darwin, he thought that the theory should go not as Wallace Theory but as Darwin—Wallace theory. Darwin, who had gone through the research work of Wallace, thought that he had something more to do in this field. Wallace found that the foundations of Darwin were far more superior and much deeper.

We are more interested in qualitative approach to a problem rather than quantifying the information available. As a matter of fact, I am reminded of an anecdote concerning a Chinese philosopher. The Chinese philosopher was maintaining that his heart is on his right. A Western-trained Chinese doctor was really astonished that a person of his calibre should believe like this. He argued with him, persuaded and demonstrated to him that his heart was on the left. The philosopher agreed. The doctor was very happy. He left. The next time when the doctor met him he was maintaining the same view that his heart was on the right. The doctor was a little perturbed and asked him “ We discussed it before. You agreed that your heart is on the (right left again) ”. The philosopher replied. “Far and near are relative. Big and small are comparative. Right and left are arbitrary. What is your right may be my left. So I cannot agree with your view point.”

Our approach has been more philosophical. We should pay more attention to quantification of information. This seems to be an area in which the approach may possibly change and also improve. Secondly our approach should be objective-oriented. Our ability to approach a problem objectively is rather limited. We should look for correct information if we are doing any research in any field. Unless you have correct information and findings the research becomes meaningless. This is not true in the areas of science and technology; but this is true in the areas of philosophy. Even to a casual reader of our history and our literature, it seems obvious that any understanding of the tradition of this country, any understanding of the culture of this country, or the history of the nation, may not be complete unless you have all the infor-

mation. The data that are available in Tholkappiam and Sangam literature were not sufficient. As a matter of fact our approach to an understanding of this country is almost segment.

Indians neglect their past history. I would like to give a few illustrations. If you bear with me I shall narrate an anecdote again when I happened to be with four of my friends in Berlin. An old lady asked "What is Thirumoorthi?". One of my friends explained. The second explained in a way totally different from the first. The third one gave a different idea. When it came to me I pleaded my ignorance in order that I don't to give a fourth version of the same. The lady was so curious that she again asked "Have you got any work of Bagavandas?" My friends did not know about Bagavandas. One of my friends asked "Do you mean Bhagat Singh?" Then, I replied to her, not because I was more curious, but as Sri Prakasa, Governor, a little earlier, had been introduced as the son of the great philosopher, Bhagavandas whom I knew, saved me on that situation. Indians are not worried about their past, and they are really ignorant of their own past. "Whatever be the limited traditions of the German, he is worthy of it. Whatever be the glories of tradition, Indian has neither a knowledge of it nor is he worthy of it."

I would like to refer to Silappathikaram one of the epics we have. In any epic the main theme is that of a prince and princess and the prince through war or in some way succeed in his attempt. But in Silappathikaram, the hero and heroine are commoners. They are also confronted with a king. But here, not the king who succeeds; the commoner succeeds. Again, the two important characters in Silappathikaram are women namely, Kannaki and Madhavi. Another important aspect of this is Kannaki, a commoner becomes a Goddess at the end. Through this we should be able to know about the condition of the society 2,000 years ago. Have we approached the problem in this way? Am I exaggerating the situation? Three things in which our past citizens were very predominant are town

planning ; another is the development of irrigation structures and the third one is shipping and fishing. Talking about the irrigation structures in Tamil Nadu, Pliny not a Historian, but an irrigation engineer from Germany, whose book I read not for reading history but for reading engineering with which I am associated, says that today in South Africa remains a number of irrigation structures constructed on the mountain slopes remains unused as the Negroes who occupy this area don't know the method of cultivation. He says that mountain paddy was cultivated in the past in these mountain slopes. It was thought in the past that these structures were the contributions of the Egyptian civilisation. But later it was proved that these are the contributions of the South Indians who in those days travelled to South Africa and developed these irrigation structures. Nearer, I would like to cite the Grand Anicut which was built on sand by Karikala Cholan. I would go a little into engineering if you bear with me. Whenever water is stored on sand foundation the water has a way to seep through the foundation and also to flow over the structure. Even today after thirty two years of independence we are not able to build such structures, which can withstand floods. But this anicut withstood several floods and I am sure it will withstand many more of them! This Anicut which was constructed across the river Cauvery, as many as 2,000 years back, withstood many floods during this period and I am sure that it will withstand many more of them. We are ill-informed about our past. There should have been some science which made it possible to construct such structures. The construction could not have been done by a mere mason and a carpenter. I would like to refer to a poem from Paripadal,

‘Noolvazhippizhaiyar nunangu nool therchi our kappalar’

which speaks about watchman in a city. It states that a watchman has not only learnt his job but stood according to what is learnt, which in these days, is very hard to find. If the existing tools are not adequate, we have to develop new tools. We may have many tools. One such tool and a powerful tool is Astronomy which will cater to the need for

knowing about our past earlier than the Christian Era in the 3,000 or 4,000 or 5,000 B. C. as the case may be.

India is a land of mystery, its politics is a mystery ; its administration is a greater mystery though I have been associated with it for the last twenty five years. Europeans dig every inch of Egypt, every inch of the Sumarian region and the Babylonian region, but they have not done anything regarding this country. There might be many monuments under the ground. But economic conditions might have prevented us from doing excavations. It is also due to want of experts and more than anything else, because of the will to do, we were not able to embark upon them. I am sure that a seminar of this nature would give an impetus in this direction.

My address will not be complete unless I add a word of compliment to Thiru Mahalingam. There are three characteristics that I consider very important in him. One is his modernity, the second is his versatality and the third his mind of comprehensive approach that he always made whenever he takes up a problem. It is said that if you do today's job with yesterday's tool, you will be out of business tomorrow. Government perhaps is the only organisation which can do today's job with yesterday's tool and continue to exist. Mahalingam is one of those persons who does today's job either with today's tool or even with tomorrows tool as the case may be. This is a kind of modernity which is predominant in his character. He is interested in education, religious activity, and in problems of the nature that this Seminar has been concerned and the quality of kindness which nature might possibly be generous to confer. Nature may be generous to a nation, but rarely to individuals, but Mahalingam is one of those persons to whom nature is very generous to confer the great qualities. You might know that Thomas Jefferson came to France as the American Ambassador succeeding Benjamin Franklin. During a debate, an old lady approached Thomas Jefferson and raised a question as many

ladies often do. "Well Mr. Jefferson! Are you the person who replaced Benjamin Franklin? ". Thomas Jefferson replied " I am the person who succeeded Benjamin Franklin. Nobody can replace Benjamin Franklin ". Thiru Mahalingam is one of those persons and in whatever position he occupies, there may be others who can only succeed, but can never be replaced.

Thank you.



## Reports of the Committees

### I. EPIGRAPHY

**I** have very great pleasure in presenting before you the discussion held in the Committee on Epigraphy and Archaeology which went into the question of the dates of Agasthiya, Krishna, Rama and Vaivasvatha Manu. We were assisted by three young brilliant girl students of this College, Miss. Indra Padmini, Miss. Yasvanthi and Miss. K. Meenakshi. We record our great appreciation for their great work and the summary they have presented. We discussed first the limitations of our science, namely Epigraphy. That was our first effort. How far we can go back and rely on Epigraphy for cross-checking the dates furnished by the Epics, Mahabaratha and Ramayana. We found the earliest inscriptions in India that we can read of or that of Ashoka dated around third century B. C. We don't have any inscriptions before Ashoka. We have of course the Harappan Inscriptions, which have not yet been deciphered. Therefore, we left them out from our discussion. In the intermediate period between Harappa and Ashoka, there is a long gap, which we can fill up only with the help of Vedic literature and perhaps Epics and other Puranic literature and we have now found adequate facts have not been placed before us for revising the dates of Ashoka, i.e. 1467 B. C. It must be admitted

that as early as 7th century A. D. that we have definite epigraphical evidences to show that ancient Indians associated the Kali era with Mahabaratha war which comes from the Iholay inscription which say that 3101 or 2 is associated with Mahabaratha war and it also gives the Sakha day, and we are able to cross check and come to the conclusion that as early as 7th century A, D. that the Kali Yuga started with the Mahabaratha War. This is the evidence furnished by Epigraphy. There is another interesting system which is found in the Kerala region, which dates the Kaliyuga era in terms of dates and not in terms of years. Another interesting inscription of the Ayi ruler which referred to the Kaliyuga :

Kaliyugathunal pathinalu nooryirathu narpathu  
onpathinayirathu muppathu nangu.

We have many such instances from the Kerala region which gives the Kali era not in years but in days. This is a very interesting phenomena which the astronomers could go into. As we discussed, the Agasthiar appearing in early period of the Pallavan and Pandian appear to be legendary. One more point discussed was that of the inter-disciplinary approach that is absolutely essential for coming to any conclusion. We are glad that the Chairman has thought of constituting a committee, an expert committee to go into the various datas available in Epigraphy, Archaeology and other related disciplines and see whether there is any base for the dates arrived at.

— Dr. R. Nagaswamy

## 2. HERITAGE OF THE TAMILS

It was my pleasure and privilege to Chair the Committee on "Heritage of the Tamils" and as the Chairman, I place before the assembled scholars, the following. The date of Emperor Vaivasvatha Manu as 8576 B. C. Secondly, the date of Rig Veda as 6000 B. C. Thirdly, the date of Ramayana as 4400 B. C. and fourthly the date of the Mahabharatha War as 3067 B. C. The scholars agreed on the issue that both Sanskrit and Tamil are very ancient languages going back to holy antiquity. With regard to the period before written documents were available, namely, the pre-literate period, we have to depend mostly on the literary sources, such as Vedas, Epics and Sangam Classics, which had been handed down from mouth to mouth. Based on these sources, astronomers have fixed the above dates. Since none of the scholars here assembled were good astronomers, they were not in a position to say 'Yes' or 'No' with regard to the issues. Therefore, they were referred to the Committee on 'Astronomy' for final conclusion. However, the Committee identified the following probabilities: Tamil and Sanskrit cultures are indigenous. They could have spread from India to the other parts of the world such as the Mediterranean region and even Africa. Indian culture, whether it is Sanskrit or Tamil, North or South, were one integrated whole. But only in the South, it is found in its pristine purity; because it was not subjected to so many foreign invasions as in the case of the North. From the Tamil literary traditions it can be inferred that the great Tamil Civilisation existed in the pre-literate times in a country beyond Cape Comorin, which has since submerged under the sea. It was suggested that sea-bed excavations might be conducted

and the Russian explorations already made, might be examined to find out whether there was a continent, whether there was civilisation and whether there were cities as described in Tamil literature. The literary sources on which we mainly rely are full of facts and fiction. Historians have to sift the kernel of truth from a mass of unreasonable and unbelievable narrations. Facts must be corroborated by evidences as far as possible. It was suggested that the findings of Prof. K. Srinivasa Raghavan should be further tested by evidences from foreign accounts and indigenous epigraphical and archaeological sources for cross-checking purposes.

— **Dr. K. R. Hanumanthan**

### 3. ASTRONOMY

As the Vice-Chairman of the Committee on Astronomy, I have great pleasure in presenting a brief report of the discussions which took place in yesterday's session. Working on the basis of the information about the number of days that have elapsed, technically called "Agargana" since the beginning of the Kaliyuga which we have calculated as the commencement of 18th February, 3102 B.C. On this date, however, five planets mentioned in our literature were not together in the initial point of the zodiac. Prof. Srinivasa Raghavan who worked 26 lunations backwards was able to check up and found that at the beginning of Kali Era the planets were together at Mid Shravishta, which was also the initial point of the Vedanga Jyotisha zodiac. K. Srinivasa Raghavan, therefore, fixed the commencement of the Kaliyuga era as 10-1-3104 B. C. To fix the Sixth Saptha Rishi Era, the age of Vaivasvatha Manu, Prof. Srinivasa Raghavan took as the starting point, the information provided in the Vedanga Jyotisha, Mahabaratha, namely Kaliyuga began on the Maga Sukla Prathma Day of the 'Samavatsara' beginning of the 76th year of the Magha Nakshatra cycle of 100 years. He calculated backwards and demonstrated that the Saptha Rishi Era commenced on 21st November, 8576 B.C. Having fixed the Kaliyuga, the related dates of the Mahabharatha war and birth of Lord Krishna and several other astronomical data were also mentioned and in this connection, Mahabaratha and Ramayana, the two great Ithihasas or epics, in which definite information about the births of the heroes of these two epics, Lord Krishna and Sri Rama were mentioned. Prof. Srinivasa Raghavan has a mechanism by which he can fix up the birth dates of these two great heroes.

All these are mentioned in working papers. In the meeting of the working group lively discussions on several questions relating to the cross-checking on Astronomical data which were furnished by Epigraphy and History took place. It was felt that these questions may be discussed further in depth in an expert committee to be set up as suggested by Chairman, Sri. Mahalingam.

— Prof K. Subramaniam

## RESOLUTIONS

1. This Seminar has, in its three Committee sittings, discussed the various facets of the topic "Astronomical Data and Puranic Geneology as aids to History". As per the consensus of the House, it is decided that the Seminar Committee consisting of experts in Indology, Astronomy, History, Epigraphy and Archaeology to go further into the determination of

- i) the date of Vaivasvatha Manu (Saptha Rishi Era)
- ii) the date of Rig Veda
- iii) the date of Ramayana
- iv) the date of Mahabaratha.

2. The Chairman of the Executive Committee on the report of the said Expert Committee shall have it duly examined by the Executive Committee. The recommendatory decisions of the latter committee on the need for rewriting Indian History may be duly communicated to the Government of India to consider the same at a High Level National Committee so as to help their implementation.

3. This Seminar requests the Government of India:

(a) In the context of Man's footprints on the moon and man-made space probes investigating the outer reaches of the Solar System, it is resolved that a Planetarium should be established in Madras as early as possible, as there is no better instrument for the education of the masses in the wonders of Astronomy and Space Age, for the young and old, for teachers and students, auditorium and a hobby shop where our boys and girls may develop their native skills and enlarge their minds.

(b) To direct an Oceanic Expedition and a Satellite depth photograph taking and any other scientific method in the Indian Ocean from Ceylon to Madagascar and also particularly in the regions of our Gulf of Manner with a view to examine the existence of and features of the lands submerged in the ocean in days of yore, so as to assess the historicity of the submerged Kumarikandam, the ancient Home of the Tamils.

4. This Seminar authorises the Seminar Executive Committee to apoint a Special sub-committee to examine the desirability and feasibility of constituting an autonomous body like the Indian Institute of Indological Studies and Research and recommend to the Executive Committee for consideration and implementation of the said scheme.

5. The Seminar recommends that the Indian Universities must have a special Chair for Indology and also include in the syllabus of the University Ancient Hindu Astronomy.





**LEAD US TO THE LIGHT DIVINE**

**“ From unreal lead us to the Real  
From darkness lead us to the Light  
From death lead us to Immortality  
O Rudra! protect me always  
With your auspicious face!”**

— Rig. Veda 1. 3, 28.



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## SO SAID THE LORD

“ Fire, light, day-time, the bright fortnight, the six months of the northern solstice,—then departing, men who know Brahman reach Brahman. ”

“ Smoke, night-time and the dark fortnight, the six months of the southern solstice, - attaining by these to the lunar light, the Yogin returns. ”

“ These bright and dark Paths of the world are verily deemed eternal; by the one a man goes to return not, by the other he returns again. ”

— Bagavath Gita : 8th Discourse



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## WORDS OF WISDOM

*“ If the splendour of a thousand suns were ever to present itself at once in the sky, that would be like the splendour of that mighty Being. ”*

*“ I see Thee without beginning, middle or end, infinite in power, of manifold arms; the sun and the moon being Thy eyes, the burning fire Thy face; heating the whole Universe with Thy radiance. ”*

— Bagvad Gita : 11th Discourse



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## HOPE DIVINE

“ Hope is the source of good fortune  
Hope causes the highest happiness  
Indeed, hope impels one always in all quests ”

— Valmiki Ramayana : Sundarakanda



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## *About this book ...*

**T**his compilation comprises the papers presented at the Seminar on "Astronomy As Aid to History", conducted under the joint auspices of the Ethiraj College and Varalathru Peravai in February 1979. Of the papers presented at the Seminar mention may be made of "Tamil 8000 years ago", "Hanumantha's Journey from Kishkinda to Lanka", "Date of birth of Sri Krishna", "Date of birth of Sri Rama", "Date of Mahabharatha War", "The Almanac of Bharat", "The Equinoxes", "The Sapta Rishi Era", "The Kaliyugadi" and "Kali Eras", "National Method of Research", "Astronomy as Aid to History", "The Indus Script", "Astronomical Data and early Inscriptions", "Rig Vedic Mythology and Cultural History", "Astronomy: Ancient and Modern" and "Kumari Nattu Vana Nool Arignarum Thalaikkazhaka Kalamum". The working papers were drafted under the leadership of such eminent men as Prof. K. Srinivasa Ragavan, V. G. Ramachandran, G. S. Sampath Iyengar, Dr. R. Nagaswamy, Dr. K. R. Hanumantan and G. S. Seshagiri who were brought together on this great cultural mission by Sri N. Mahalingam, a leading Indologist and Industrialist. Besides, the volume contains the inaugural address of Prof. G. R. Damodaran, Introductory talk of Prof. K. Srinivasaragavan, Valedictory address by Dr. V. C. Kulandaiswamy and the reports of the various working groups and resolutions adopted at the Seminar.

— K.S.