

THE TRAINING OF INDIAN ALMANAC MAKERS AND THEIR OBSERVATIONAL EQUIPMENT.

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EVEN in respectable and cultured quarters it is not sufficiently recognised that an accurately constructed almanac is one of the essential requisites for a civilized man. I have heard it said with a certain imperious indifference, that a clock and a wall calendar satisfy all the requirements of a busy man and the niceties of *tithis*, *nakshatras*, *yogas* and *karanas* of an Indian almanac are superfluous utilities and any errors that occur in the reckoning of these, are of no importance. It does not in the least concern our welfare what *Panchanga* we follow for superficially observing the ceremonials just to please the women and the orthodox elders at home or the orthodox society of which some of us deem ourselves a part. But just imagine the great confusion and inconvenience that will arise if our ordinary calendars differ from one another and different clocks indicate different hours at the same time. If to-day be asserted to be a Wednesday in some calendars and Friday in some others and one clock indicates now 9 A.M. and another 10 A.M. and so on, will it be possible for any one to keep one's engagements, even the simplest? It is evident that, under these circumstances, tourists will miss their trains and buses, trains will collide against one another, masters will miss their servants, doctors will give wrong directions to their patients, merchants will quarrel with their customers and *vice versa* for not being prompt and there will be such a terrible confusion that this week-day and clock civilization will apparently come to a stand still. But in this confusion, only one class of God's creation will be safe, *vis.*, the beasts and the birds whose movements are not regulated by the artificial machinery of a calendar or a clock but by the natural units of

time, the day and the night and the year and the seasons. If we can reduce ourselves to their level we can certainly dispense with the calendar and the clock as superfluous utilities. But since we surpass the birds and beasts in civilization and culture to such an extent as to require a calendar and a clock to guide our daily life, even so, if we are still more advanced in civilization and culture, the calendar and the clock will no longer suffice for our purposes and indeed for guiding a ship in the seas, these are hopelessly insufficient and nothing short of a Nautical Almanac is the desideratum.

We in India were long ago sufficiently civilized to feel the need for an almanac far surpassing the elementary week-day calendar and invented the five-fold specification of the *Panchanga*. Mathematically, it suggests that we are living in a five-dimensional world and we require five co-ordinates to specify our place-time, a blended entity of four dimensions according to Einstein. It is certainly pitiable to find the busy man of our first para imperiously content with two co-ordinates, the clock and the calendar, which are mere empty fictions having no counterparts in nature, not recognising that he is something superior to the two-dimensional creature which his equipment suggests; he possesses in fact five dimensions all of which he should know to get his correct bearings with respect to the surrounding universe.

A reliable *Panchanga* which gives these five co-ordinates as accurately as possible, is therefore an important desideratum in our land, especially when we have a conflicting set of astronomical systems handed down from ancient times and followed by different sections of people with a blind and uncritical devotion to the letter of the texts. The

object of the Astronomical Conference is to bring some harmony amidst this discord, and this can only be secured by proper knowledge and a comparative study of Indian and European astronomy. Indian astronomers who have confined themselves purely to the ancient Sanskrit texts and have not studied first-hand the modern European astronomical literature should be considered as blind in one eye. In the same way, our Indian friends who have studied only European astronomy and have little or no conception of the achievements of the ancient indigenous astronomy, are also similarly blind in one eye. It is our duty to supply the other eye to each of these classes of people and only when the binocular vision is secured will the prejudices of either of these classes of people against the other disappear. Urgent need, therefore, exists for teaching in our Universities Hindu astronomy in English as one of the compulsory subjects for all mathematics students and for teaching in our Sanskrit Colleges European astronomy in the vernacular. Within a decade of this two-fold provision, I am sure mutual prejudices will go and true perspective will begin to appear and acrimonious controversies between the orthodox and the heterodox schools will become a matter of ancient history. Our orthodox men will cease to cling to their ancient science with an unreasonable pertinacity and our heterodox men will pay due respect to their ancient culture. Side by side, the old and the new will develop, the one trying to lead and be led by the other as the need arises.

A reliable book on Hindu astronomy should be immediately published, incorporating all the worthy results in our classical *siddhantas*. This is our first and primary need.

It is a pity that the fascinating study of Indian chronology is pursued by extremely few persons in our Indian Universities. Though a proper grasp of this subject is essential for

all researches in Indian History, there is no provision for it in the Mysore University. Indian astronomy goes with Indian chronology. For the whole of Mysore perhaps, there is only one solitary scholar, Dr. A. Venkatasubbiah, M.A., Ph.D., who is well-versed in Indian chronology and we want more such scholars. If a University is so minded, there must be found scope for including Hindu astronomy and chronology both in the history and the mathematics courses for the Arts Degrees of B.A. and M.A.

The corresponding need for a text-book of European astronomy in the vernacular has been already supplied, so far as Kannada goes, by the text-books of S. N. Naraharayya and N. Venkatesa Ayyangar; I hope these books will become popular and be studied by our friends in Sanskrit Colleges.

Further, astronomy should be considered not merely as an academic subject but as a practical one. Practical training in observation and computation should be provided for the students of astronomy. After about 75 years of existence, our Indian Universities are just now opening their eyes to this need, and soon, I hope, astronomy will be taught not simply by word of mouth but by the practical use of the hand and the eye. For our friends who have specialised in the orthodox schools, vacation or even regular courses may be arranged to train them in such simple observations as can be managed with the help of the gnomon, sextant and the astronomical telescope, as well as in computation with such aids as the slide-rule and the calculating machine and modern tables. As our President, Sir Vepa Ramesam, has suggested, our almanac makers should know how to adapt the Nautical Almanac and other similar modern publications to their needs. I am sorry to say that they are now doing it in a secretive and amateurist manner and what I suggest is that they may do it boldly with

understanding and intelligence. We ought not to think that it is beneath our dignity and against our Sastras to consult such tables. If some of us really think so, we should also think that it is beneath our dignity to live in this civilized world accepting all its amenities. Just as we accept the railway, the post and the telegraph as part of our present life, even so we should utilise the modern tables which are calculated with the utmost degree of precision possible at the present day. At the same time, research may be carried on in ancient astronomy and attempts made to understand the old texts correctly and see whether with some small modifications in the *Bhaganas*, etc., a fair first approximation can be secured, say to the nearest minute of arc or time, which is sufficient for our social and religious purposes. I strongly believe that such a correction is possible and the results can be true for about a century. Research is also possible in the construction of cheap astronomical instruments, such as those which our ancient people have been using. I suggest this as a first measure, for India is a

poor country and cannot afford, for another century perhaps, the use of the costly instruments of the European Observatories. Further, it is also not necessary, for we are well-protected by the British Navy and there is no need for one of our own.

Another point I wish to suggest is to discourage the production of a multiplicity of Panchangas. One reliable Panchanga published under the auspices of an expert committee as suggested by His Highness the Yuvaraja of Mysore, in the Opening Speech at the Second Mysore Astronomical Conference, ought to be enough for the whole of Mysore. Mere duplication is a waste of money, energy and time.

In this connection, I am glad to mention that one Indian State has made bold to place the construction of the State Almanac in the hands of an astronomer trained in the West. Dr. H. Subramanyam who has honoured us to-day with his presence is the State Astronomer of Travancore and is willing to help us in our post-Conference deliberations.