


TRANSACTIONS
OF THE
ROYAL ASIATIC SOCIETY.

- I. *Letters of Sir WILLIAM JONES to the late SAMUEL DAVIS, Esq., F.R.S., &c. from 1785 to 1794, chiefly relating to the Literature and Science of India, and elucidatory of the early History of the Asiatic Society of Calcutta. Communicated by JOHN FRANCIS DAVIS, Esq., F.R.S., M.R.A.S., &c.*

Read June 19, 1830.

 THE following Collection of Letters was presented to the Royal Asiatic Society by John Francis Davis, Esq., son of the distinguished individual to whom they are addressed, and were read at several of the General Meetings of the Society, where they excited so much interest and attention, that the Council conceived they would prove acceptable to the members of the Society in general, as well as the public at large; and accordingly directed their insertion in the present volume of the Transactions. The letters themselves were evidently not intended for publication; but that circumstance only tends to render them more interesting to the general reader, inasmuch as the picture they draw of the ardent mind, indefatigable industry, and kindness of heart, of the talented and amiable writer, must be regarded as the genuine offspring of his immediate feelings; while the man of letters, and the critic, will be equally delighted with the information they contain on the wide topic of Eastern science, and the acuteness and talent they display in weighing and duly estimating the various subjects submitted to his comprehensive mind. Nor will the anecdotes scattered throughout the letters, of the early history of the Asiatic Society of Calcutta, form their least attractive recommendation, to those readers who may still remember, with the fondness of early friendship, the individuals so honourably

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recorded, or who continue to feel a lively interest in the proceedings of the earliest and most successful of our literary institutions devoted to oriental subjects.

I.

Russa pugla

12 May 1785

Dear Sir,

I request your acceptance of a Hindu poem, the fruit, such as it is, of some leisure during this vacation. Paterson's Odes to the Raags have given me great pleasure, and I am frequently exhorting him to complete his ingenious plan. I am, hoping that you continue in perfect health,

Dear Sir

Your faithful and

obedient Servant

W. JONES.

II.

Jáferabàd

2 March 1786

Dear Sir,

I know not what apology to make for my tardiness in requesting your acceptance of the annexed compositions; but at Calcutta I had scarce time to breathe, much less to write, for the last three months. This country, where I hope to escape the heats, is delightful, and, in parts, mountainous, and sublime enough to be worthy of your pencil. The proper name of the district is *Chátigram*, and I cannot help deriving it from the *Chátig*, a bird which is said to haunt these woods, and is famed in the Indian poetry.

I am, dear Sir,

Your very obed^t humble

Serv^t W. JONES.

III.

Crishna nagar

21 Sept. 1786.

Dear Sir,

I had the pleasure of receiving your very interesting and acceptable letter on my return to Calcutta, but have been prevented by a variety of business from taking up a pen till I had settled myself for the remainder of the vacation in this charming retirement.

Need I say what pleasure it would give me to visit Múti Jerna, which you have so graphically described? But I have been lately such a rambler, I hope not an idler, that I must be stationary at Calcutta for a twelve-month at least. I will not, however, abandon the hope of seeing *Bhágálpur* in its improved state, of admiring the bluish hills that terminate the vista, and tasting the fruit of its vines. In the mean time, I must insert a stanza on your waterfall in my Ode to the Ganges: at least if you draw the romantic scene, as I trust you have already drawn it, I will translate your picture into my feebler colouring. I shall soon send you an Ode to the Sun *à l'Indienne*; and if I should not be able to send a letter with it, you will know from whom it came. I really find poetry a relief to my mind after its severer employment in the discharge of my public duty.

A tree entirely charred in the fissure of a rock is certainly a curiosity, nor do I remember to have seen an account of such a phenomenon; but I should rather impute it to some phosphorick or pyrophorick substance (such as nitrous acid and phlogiston, or perhaps vitriolick acid mixed with a mineral), which took fire as soon as the air was admitted by the perforation of the rock, and formed a real charcoal of the oil and earth of the vegetable. I beg you will give my best remembrance to Mr. Adair: I have just written to my worthy friend his father. I am, dear Sir,

Your very faithful

& obed^t. Serv^t

W. JONES.

IV.

Calcutta: 10 Nov. 1788.

Dear Sir,

I beg your acceptance of an Ode to the Goddess of Abundance, and will trouble you to give the other copy to Mr. Saunders, with my best compliments.

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The first volume of our Transactions will soon, I trust, be published; and the second volume will, I hope, be enriched with your papers on Hindu Astronomy. On the 145th page of the first volume begins a paper by Mr. Chambers, on the Ruins at *Mavalipuram*, near *Sadras*; and the author, I recollect, informed me that you had a sketch of those ruins: now, if Mr. Daniell be with you, and would have the goodness to make an etching of your drawing, it might be printed here by Brittridge, and would greatly illustrate Mr. Chambers' paper, as well as embellish the book. Mr. Daniell knows the size of our volume. Give my best compliments to him, to Mr. Adair, and all our common friends; and believe me, dear Sir,

Your faithful humble serv^t

W. JONES.

V.

Calcutta: 8 Dec. 1788

Dear Sir,

I cannot delay thanking you, as I do most heartily, for your kind letter; but I must write very succinctly, as I have scarce a moment at this season, which I can call my own. Your researches into the Hindu astronomy are indeed highly interesting, and some papers of yours will, I trust, give value to the second volume of our Transactions, to which your sketch of *Mavalipuram* will, I hope, be prefixed. The first volume will be published next month; and though it will want the decoration of your drawing, will, I am sure, be found curious and useful.

My best compl^{ts} to my friends at *Bhagalpur*, and believe me

Dear Sir

Your faithful humble

serv^t W. JONES.

VI.

Gardens near Calcutta:

28 Febr. 1789.

Though I am not a practical astronomer, yet your valuable dissertation, my dear Sir, has given me great delight. I heartily rejoice that you have directed your studies to so important a subject; and agree with you in every point, except in thinking that your paper is too prolix to be printed, as it stands, in the second volume of the Transactions: in the first volume

(which, I hope, you have received) are several papers full as prolix and less interesting. I will readily correct the press; but as my eyes are weak, and my time always occupied, I must have assistance in correcting the figures and tables: the proof-sheets must be compared figure by figure with the manuscript, since the minutest error might be material. Some of our members would, I trust, assist me with their eyes and attention. The second volume will soon go to the press, all the materials being ready; and I will, if you please, keep the paper till I receive farther directions from you. Sir R. Chambers shall see it, as you desire; unless he prefer hearing me read it at a meeting of the Society. It gives me great pleasure, that you mean to write the Sanscrit words according to the component *letters*; for, as there are many provincial modes of *pronouncing* them (four of which I have been obliged to learn) we have no sure guide, but the letters themselves: thus पक्ष is pronounced here *pokyo*, in Behàr *puch'h*; you write it *puck*; but the word itself is *pacsha* (for क + ष = क्ष), and so it is pronounced in the west of *India*. I will, if you please, take care of the orthography when I correct the proofs; but, as I cannot from your spelling make out some words (as *jaw*, which I suppose to be ज्या *gyà*) I wish your Pandit would send me a list in *Nàgari* letters, of all the Sanscrit proper names and terms of science which occur in the Dissertation. The whole is wonderfully curious; and, though you intended at first to give only a computation of the Lunar Eclipse, yet, in its enlarged state it should have, I think, a more general title, as *On the Astronomical Computations of the Hindus*, or some such phrase. If you direct me to send it back before it goes to the press, I will assuredly obey; but I shall be loth to expose a tract of which you have no other copy, to the hazard of being lost by the post. Lady Jones presents you and all our friends at Bhàgalpur (for so I write the true name भागलपुर) with her kindest remembrance; and I beg you will give mine to Mr. Adair, and Mr. and Mrs. Saunders. By the way, tell Mr. Saunders that he will greatly oblige me by letting me know, whether he saw in Butan, or has seen any where else, the fresh plant and flowers of the *Jatámási* جتاماسي, or true Indian spikenard, which is said by Ptolemy to abound in the north and north-east of these provinces: if he has seen it, I shall be very glad to know what are its order and genus in the Linnæan system. I am with great regard, my dear Sir,

Your faithful &
obed^t Serv^t

W. JONES.

VII.

'Aárif-nagar :

5 April 1789

Dear Sir

Mr. Harington has taken your dissertation to have it copied, and when the copy is finished I will send it to you, that you may give it the last stroke of your accurate pen. Your observations on the work of *Brahmagupta*, compared with the *Súrya Siddhánta*, are curious and important. I wish to know on what authority you assert that BHÁSCAR ACHÁRYA wrote 1710 years ago: the Persian translator of his *Líláwati* says, " This book " has no date; but the *Carnacutríhal*, or *Delight of Ears*, another work of " BHÁSCARA, is dated in the 1105th year from king SACA, or SÁLIVÁHAN;" if that be true, the *Indian* philosopher must have flourished about 606 years ago, since we are now in the 1711th year of *Saca*. When you read the *Siddhánta Siromani* (mentioned in your Pandit's useful list of names and terms of science), you will meet with some very curious passages concerning the ancient Geography of India.

The second volume of the Transactions is in the press, and by way of frontispiece to it, we shall all be much obliged to you for your sketch of the ruins at *Mavalipuram*, which Mr. Daniell will etch, when he returns from his excursion up the country. I am greatly obliged to Mr. Saunders for his information concerning the *Jatámási* or spikenard: pray ask him (with my best compl^{ts}) whether the curled locks of it, which the druggists sell dry, are the roots of the *Baccharis*, or only bundles of fibres shooting from the bottom of the stem. The Europeans, I find, who never saw the fresh plant, are divided in opinion as to this question. Linnæus makes the spikenard an *Andropogon*; and I am glad to be set right by such an authority as that of Mr. Saunders. We will summon the Society to read your paper, as soon as it has been correctly copied.

I am, dear Sir,

Your faithful and
obed^t: Serv^t:

W. JONES.

VIII.

Gardens near Fort William :

17 April 1789.

I am commissioned, my dear Sir, by our Society, to give you their hearty thanks for your very interesting dissertation, which I had the pleasure of reading last night at a full meeting. I had read it twice before; and the oftener I read it, the more I am pleased with it. A copy of it has been taken, but it would require more time than I can spare to correct the mistakes of the transcriber: I keep it therefore here, and send you the original, requesting you to return it by the post when you have revised it to your satisfaction, and I will then send it to the press, and correct the proof-sheets myself with great attention. We are advancing pretty fast in the second volume of our Transactions, of which your paper will be a principal ornament. I mean to print the index of *Sanscrit* astronomical terms at the end of your paper, with an explanation of them. I shall therefore be much obliged to you, if you will desire your *Pandit* to write in *Dévanágari* the words which he has omitted in his first list, and which I have scribbled in the last page of your paper. I am very glad that you adopt the method of writing *Sanscrit* words according to the *letters*, which are *constant*, instead of the *pronunciation*, which is always *variable*: the Cashmirian Pandits, indeed, *pronounce* all the *letters* as I write them; so that my method has every advantage. Thus *urgun* is pronounced in Cashmir *ahargana*, and so it is written अहर्गण, literally, *day-number*.

Sir R^t Chambers said last night that he had a commentary on the *Varasamhitá*, which, as he heard at *Banáres*, is an incomparable work, and which he would lend you if he could convey it to you with safety. As to the figures in your paper, I dare say Mr. Daniell will be so kind as to etch them for us under your direction, when he returns towards Calcutta through *Bhágalpur*. I am, dear Sir,

Your ever faithful &
affect^s serv^t:

W. JONES.

Be so good as to let me know whether you receive this packet, as I shall be anxious for its safety.

IX.

^Aárif-nagar : 4 May 1789.

My dear Sir,

Having set myself a long task for my summer vacation, I will answer your two agreeable letters with all possible conciseness. I anxiously hope that the work of BHÁSCARA may prove a treatise on universal arithmetic : the rule, which you translate from it, goes no farther than *signs* placed over *numbers* : but, as a point is a symbol of *sound*, when it stands over a letter, it would be rather an inconvenient negative sign, if the Hindus have a *specious* or universal notation. I have met, in the *Lettres Edifiantes*, a curious passage on Indian science, which you will soon be able to disprove or to confirm : “ The *Hindu* logicians,” says Father *Du Pons*, “ admit four “ principles of knowledge; 1. *prátyacsha* or intuition. 2. infallible or “ divine authority. 3. *anumána*, which means syllogism or enthymema. “ 4. *upamána*, or *equation*, which is the application of a definite *known* “ quantity to the definition of another quantity *till then* unknown.” Now a clearer description of algebra than this could hardly be given; and if there be treatises on specious arithmetic in *Sanscrit*, we shall possibly find rules and methods, which may be substantially useful. The list of astronomical books is in my study at Calcutta; and I will not fail to send it to you. Mr. Chambers is, I know, desirous that the sketch of *Mavalipuram* should appear in our second volume, with a reference to his paper in the first; and I hope Mr. Daniell will return in time to etch both that drawing, and the figures which will be necessary to illustrate your own valuable paper. I now come to your second letter. The Sanscrit stanza is literally this :

“ Fruitless *are* other Shástràs : in them *is* contention only :

“ Fruitful *is* the Jyótish Shástra ; where the sun *and* moon *are* two witnesses.”

or, more literally still in Latin :

“ Inutiles aliæ scientiæ : lis in istis tantum :

“ Utilis astronomia ; in quâ Sol Luna testes duo.”

Your translation of it, therefore, is accurate ; and I only took the liberty of altering it, because the fastidiousness of my ear made me think one of the rhymes imperfect. Your spirited paraphrase of the stanza I have read more than once with great pleasure. And now, my dear Sir, permit me to

conclude (though I could write to you for hours without being tired) with assuring you, that I am with great regard

Your faithful and affect^e

Serv^t W. JONES.

Lady J. begs to be kindly remembered to you, and joins with me in hearty good wishes to all our friends at Bhágalpur.

X.

Gardens: 12 July 1789.

My dear Sir,

I was in hope of being able to send you my complete list of Sanscrit books on Astronomy, but have mislaid it; you shall have it however soon, as it must be among my papers. I will not trouble you with a long letter, and only snatch a moment of leisure to inform you, that 200 pages of our Transactions are printed, and that I wish to print your valuable paper soon, that it may be corrected in the press with the most scrupulous attention. Mr. Burrow or myself, or both of us, will revise the proofs; and when you have made the alterations which you proposed (though to me it seemed perfect, and none but yourself would have thought it needed alteration), you will be so good as to send it to me. L^{dy} Jones (who is recovering from her affliction on the death of her father) desires her best remembrance, and I am, dear Sir, your faithful and affect^e

W. JONES.

XI.

Calcutta: 16 Aug. -89.

My dear Sir,

We set out for our hermitage on the 22d, and hope to stay there two months: in that interval I shall resign the Transactions to Harington, to whom you will have the goodness to send your excellent Dissertation, if you have leisure to make the alterations which you proposed. Neither Burrow nor I can find the long list of astronomical books; but I enclose a general list, with the names of 45 or 46 books on astronomy: when your Pandit has copied it, you may devote it to the Ganges, as I have another

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copy. I scribbled on it some years ago, when I scarce knew the Nagari letters. I am obliged to conclude, and am, dear Sir,

Your ever faithful
Serv^t W. JONES.

XII.

Calcutta, 8 Nov. 1789.

I had the pleasure this morning, my dear Sir, of revising the first sheet of your very interesting Dissertation, and my pleasure will increase as I go on with the revision: it is the 15th paper of the second volume, which, I hope, will be finished this season. I will take care of the press-work, punctuation, and orthography; but when we come to the calculations, I must desire Harington or Morris, or both, to assist my weak eyes with their good eyes; for, if a single figure be misplaced, a great difference will be made, and the compositors in this country are shamefully inaccurate. If you catch Daniell at Bhágalpur, you will not forget the ruins of Mavalipuram, which, if etched by him from your drawing, will be a handsome frontispiece to our second volume, with a reference to Mr. Chambers's paper in the first. You will remember, also, the etching of your astronomical figure to illustrate your paper now in the press, which cannot be done here so well as under your own eyes. Since the appointment of Mr. Seton, you will have, I trust, more leisure for your important inquiries into Indian astronomy. M. Bailly has lately published a fifth volume of his history of that science, and entitles it *L'Astronomie Indienne et Orientale*. I received it by the last ship, but shall not be able to look at it till next September or October. I lent my copy to R^d Johnson, and, after him, Jon. Duncan is to have it: he will have an opportunity, at any time, of sending it to you; but, if you wish to read it sooner, Mr. Chapman desires me to tell you, that he will send you his copy. Burrow is sick, and cannot at present assist us with his eyes or his mind. I have written four papers for the Society, one of which, *On the Hindu Zodiac*, was read last Thursday: the others are on Music and Botany; but I shall be condemned for ten months to dry law. Adieu, my dear Sir, and believe me

Your ever faithful
obed^t Serv^t

W. JONES.

XIII.

^A'rif-nagar : 21 Febr. 1790.

My dear Sir,

Yesterday afternoon I sent Mr. Morris and Mr. Tucker the last proof of your paper on Indian Astronomy, and the whole will be completely printed and struck off in a few days. Want of leisure and weak eyes obliged me to resign to them the correction of the press, reserving only to myself the punctuation and the spelling of Sanscrit words. Mr. Morris will send you a perfect copy, and if you will have the goodness to make a list of errata, I will insert it in the general table at the end of the volume. There must be copper-plates of the figures: if Mr. Daniell could have etched them under your eye, it would have been better; but should he be detained up the country, either *Alefounder* or *Brittridge* shall etch or engrave them, when they can or will; but Brittridge is extremely dilatory, and has not yet finished your drawing of the medals found on the coast. I anticipate your triumph over M. Bailly, whose late work, I presume, you have read. His materials are full of errors to my knowledge, and you have, I doubt not, discovered many which escaped me. I beg leave to enclose a list of the 27 *yóga* stars in the order of the lunar mansions: the words are written in the form of the *crude nouns*, not in the nominative case, as *A'yushmá* for *A'yushmán*, &c. If you have leisure to send me a table of their longitudes, latitudes, and right ascensions according to the Hindus, it will be very useful to me. Excuse the dryness and brevity of this letter; but I have much on my hands, and no time to perform it, except what I snatch at intervals, when I have no public business; and those intervals are rare. I am, dear Sir, with great regard, your ever faithful Serv^t

W. JONES.

XIV.

Pray how is *Dheber deda* written in *Sanscrit*?

Arifnagar 21 March 1790.

I am infinitely obliged to you, my dear Sir, for your kind letter, for the table of the *yóga* stars, and for a very elegant drawing of the Indian eclip- tic, which I will study when I am released from business, whenever that may be. The passage in the *Varáhasanhitá* is not only curious, but of the

greatest importance in settling the antiquity of the Indian laws and literature; for *Parásera*, the Muni cited in it, wrote a *Dhermasanhitá*, which I have, and his son *Vyása* was contemporary with *Crishna*. I rely implicitly on your calculation, that the equinox had gone back about $3^{\circ} 40'$ between that Muni and the Argonauts, which would place *Parásera* 1201 years before *Christ*. But what shall we say of *Garga*, whose stanza also is quoted, and who, to my knowledge, is mentioned in the *Véda* itself? And after this, what becomes of the vaunted Indian antiquity? I am so young in astronomy (having only read the first book of Newton's *Principia*, and gone through the ordinary course of the *Elements*, *Conick Sections*, and *Fluxions*) that you must not be surprized at my errors; but I cannot, with Harris's chart before me, understand how the *tenth* degree of *Bharani* could only be $3^{\circ} 40'$ eastward of the equinoctial colure in the time of the Argonauts, which colure (*Newt. Chron.* p. 89) did in the end of 1689, cut the ecliptic in $8^{\circ} 6' 29' 15''$. Now, if α *Arietis*, with ten degrees of north latitude, be the *yóga* star of *Aswini* in the eighth degree of longitude, according to the table, the first degree of *Mésha*, and consequently the first degree of *Aswini* must appear in the chart about $\nu 25^{\circ}$, from which the $18^{\circ} 20'$ of *Aswini* and the 10 degrees of *Bharani* would carry us to $8^{\circ} 18' 20'$. But I am probably carried by haste and ignorance far beyond my sphere, and, as I said before, I rely implicitly on your calculation. How I wish you had leisure to translate the *Súrya Siddhánta* verbally, and to seal your triumph over M. *Bailly*, who supposes that no *European* will ever decypher that book? I am translating the divine *MENU*, the most sacred book next to the *VÉDA*: to *Menu* and the new *Digest* I allot all my leisure; but I am resolved to devote a whole morning in the next vacation to the *yóga* stars, all of which I hope to find in Harris's chart; but I am puzzled at the outset for want of knowing exactly the first degree of *Mésha*, and the *yóga* star of *Révatí*, for, on a transient view, I see only ζ *Piscium*, which can be said to have no latitude, and even that is in Harris a little to the south of the ecliptic. I also wish you had leisure to write a short paper for our second volume, explaining your drawing of the Hindu ecliptic (which I would have engraved), and comparing it with the present state of the heavens and with the primitive sphere. But in the present state of your district, I fear you have no leisure. Say from me to *Radhácheren* आद्युष्मानभवसौम्य. I would answer his Sanscrit letter, if I were

not oppressed with business. L^d Jones presents you with her best compliments and I am with great esteem, dear Sir,

Your ever faithful

W. JONES.

XV.

Gardens near Calcutta,

4 April 1790

My dear Sir,

Allow me to intrude on your present important engagements with a second letter on the Extract from the *Varáhasanhita*, with which you lately favoured me: the passage is of the utmost consequence to me, as it will fix the age of the Hindu laws. I am very sorry that your copy of the book is so incorrect: I can assure you, that not a line in it was free from error. By knowing the metre, however, I have restored the whole to the entire satisfaction of the Pandit who attends me; and I annex a copy of the six stanzas, on which the rest of the paper is a comment. The stanzas seem introduced as a quotation, but the author of them being called *A'charya*, I suppose the whole *Varáhasanhita* is written in the metre, called *A'rya*: I have a fine tract on Music in the same measure. The stanza consists of four cesural pauses, of which the first and third contain 12 syllabic moments (*mátrás*), the second 18, and the fourth 15; so that the couplet resembles the long and short verses of the Greeks and Romans. Pray ask *Rádhácheren*, whether the whole *Sanhita* is in verse, or whether the six stanzas in question are quoted from a book entitled *Panchasiddhánticá*. The comment on them has three quotations; one in verse, from *Garga*; and two in prose from *Parásara*, both very curious. Now the question, which you alone can answer, is, how many years have elapsed between the time, when the equinoctial colure cut the *Hindu* ecliptic in the *tenth* of *Bharani*, and the first of January 1790. I shall be infinitely obliged to you if you will answer it, and without attending to the observation ascribed to Chiron, which a passage in Pindar makes me think of very doubtful authority. If the first degree of *Mésa* were coincident with the first degree of *Aries* in the European sphere, the question would be easy; because we know, by demonstration and observation, that the equinox goes back about 50' 0'' 12^v in a year, and 50' will answer our purpose, as *Parásara's*

observation was probably *coarse*, as Newton says of *Chiron's*: but the difficulty to me is to fix precisely the last degree of *Révati*, or the first of *Aswinì*, in the *Hindu* sphere. Could I depend on the *Sástras*, which unanimously place the *yóga* star of *Aswinì* in the 8th deg. of longitude, and the 10th of northern latitude, I should pronounce that star to be α *Arietis*, the longitude of which in our sphere was, I believe, on 1st Jan. 1790, $\approx 4^{\circ} 43' 20''$, whence the origin of the *Hindu* Zodiac would be $\approx 26^{\circ} 43' 20''$ —but where then shall we find the *yóga* star of *Révati*, to which all the tables give no latitude, and most of them no longitude? It cannot be ζ *Piscium*, which is more than 17 degrees from α *Arietis*. In short, I am so puzzled by this same *yóga* star of *Révati*, that I could not travel with comfort round the Zodiac with your table in my hand, and Harris's chart before me. I wish I were at Bhágálpur to take that celestial journey with you; but I must, after this day, abandon the stars, and attend for a month longer to squabbles in court about gold mohrs and star—pagodas.

I am, dear Sir,

Your ever faithful

& affect^d Serv^t:

W. JONES.

The following Note by Mr. Davis is appended to the preceding Letter.

The beginning of *Aswinì* must be distant in longitude from the *present* place of the vernal equinox $19^{\circ} 21'$ nearly. I say *nearly*, because there seems to be an error in the *aynansa* of almost a degree. The sun enters Aries by our account (which I suppose to be correct) near a day later than his arrival at the equinox by the *Hindu* computation; and this disagreement should be considered in determining the beginning of *Aswinì* on Harris's chart. Of the few *yóga* stars I have had leisure to compare with our Tables, that of *Chitra* corresponds the nearest: it should be found in long. $(180^{\circ} + 19^{\circ} 21' =) 199^{\circ} 21'$ and lat. 2° S., and in the *Britannic* Catalogue, Spica has long. $\approx 19^{\circ} 31' 21''$ or $199^{\circ} 31' 21''$, and lat. $2^{\circ} 1' 59''$ S. I am assured by my Pandit that *Cretica's* *yóga* is one of the Pleiades, the brightest of which has in the *Britannic* Catalogue, long. $\approx 25^{\circ} 40' 8''$, lat. $4^{\circ} 0' 37''$ N.: here there is a greater difference, for the long. of *Cretica's* *yóga* is $(37^{\circ} 30' + 19^{\circ} 21' =) \approx 26^{\circ} 51'$, and its lat. 5° N., α *Arietis* cannot be the *yóga* of *Bharani*, because its long. in our Catalogue is $33^{\circ} 19' 18''$,

from which deduct $19^{\circ} 21'$ for its longitude in the Hindu sphere = $13^{\circ} 58' 18''$, whereas the longitude of *Bharani's yóga* is 8° .

I place the *Argonautic* colure in the Hindu ecliptic on the following grounds:—admitting that colure in 1689 or 1690 to have cut the ecliptic in $8^{\circ} 6' 29' 15''$, its place must now be $36^{\circ} 29' 15'' + 1^{\circ} 23' 20'' = 37^{\circ} 52' 35''$ from the beginning of Aries, from which subtract the *Aynansa* $19^{\circ} 21'$, the remainder $18^{\circ} 31' 35''$ is the longitude of the *Argonautic* colure in the Hindu ecliptic, which falls in *Bharani* $5^{\circ} 11' 35''$, and is $4^{\circ} 48' 25''$ distant from the 10th degree of *Bharani*.

If I have laid it down nearer it is an error.

XVI.

Gardens 11 April 1790

My dear Sir,

Another holiday has enabled me to solve (unless I am deceived) the problem with which I troubled you, and which highly interests me in my inquiry concerning *Indian* jurisprudence.

Vardháchárya lived, as all agree, in the *Caliyug*; but, by his own account, the place of the vernal equinox in his time was the 1st of *Mésa*: he lived therefore at the end of the libratory period, or in the 3600th year of the *Caliyug*; that is, 1290 years before A.D. 1789, or A.D. 499; and from the *ayanánsa* of the *Hindus*, at $54''$ a year, or $19^{\circ} 21'$, we find 1290 years to have elapsed, though in truth the precession in that period, at $50''$ a year, was but $17^{\circ} 55'$ at the beginning of 1789. But the equinox had gone back $23^{\circ} 20'$ between *Parásar* and *Vardha*, which precession at $50''$ a year, gives us 1680 years: so that *Parásar* flourished 1181 years before *Christ* = $1680 + 1290 = 2970$ from A.D. 1789.

I know you to be so busy that I will not trouble you with more: I only request that you will critically examine my reasoning, and, if it be erroneous, correct it. When Mr. Grant is arrived, and you have more leisure, you will have more trouble from

Dear Sir,

Your faithful
& affectionate
W. JONES.

* Precession in 100 years.

XVII.

Calcutta : 19 April 1790

My dear Sir,

That I may not miss to-night's post, I write from the bench, in the middle of a very difficult cause, a short answer to your acceptable and interesting letter of the 16th. Brittridge has long been employed, or pretending to be employed, in engraving your drawing of the Roman coins found at Nelore, and one or two other drawings; but I kept your astronomical figures, that they might be finished (if possible) under your own eye. For fear of accident I do not annex them; but if you have no copy I will send them on the first intimation. They are absolutely necessary for the illustration of your important paper: the ruins of Mavalipuram would make an elegant frontispiece, with a reference to Chambers's paper in Vol. I.; but such a decoration is not essentially necessary. Your Hindu ecliptic would also greatly illustrate your paper; but if our friend Mr. Daniell (to whom my best compl^{ts} and thanks) had leisure to undertake it, you might rely on my care here in superintending the plate. Alefounder is etching Sanscrit for me, but he is a tyro in that branch of art. You have irradiated my mind on the subject of the Hindu Zodiac: no doubt by the reckoning of the Hindus the 1st degree of *Mésa* should be $19^{\circ} 21'$ nearly from the vernal eq^r. On a hasty computation from the Spike or *chitra* $6^{\circ} 40'$ I should make it $19^{\circ} 31' 21''$, but a precession of $19^{\circ} 21'$ would give us 1290 years, in which period the precession, at $50''$ annually, would be, $17^{\circ} 55' 0''$. Perhaps M. *le Gentil* is right in saying that the Hindus compute from two points of their Ecliptic, one of which is γ of the Ram. In no other way can I bring within compass the stars which appear delineated, though rudely, in the Indian drawing engraved by Shepherd. Adieu, my dear Sir. I must attend to a witness, and leave you for a time. At all times I shall ever be

Yours faithfully

W. JONES.

XVIII.

Calcutta : 27 Oct. 1790

The packet of the Foulis, my dear Sir, is just arrived, and I have not read half my letters; but as one of them (from Mr. Shore) encloses a

tract on Hindu Astronomy, I send it off instantly to you. Mr. Shore desires me to send it Mr. Burrow; but I think you more worthy than any man of its *pucelage*. When you have done with it you will return it; but keep it as long as you please. I have also a gracious message from the King, to whom I desired, that a copy of the Transactions might be delivered. *Nared* is ready for you: his book contains 56 leaves. Shall I send it by the post? Adieu! you perceive I am in great haste. Remember the *errata* and the *plates*, and believe me dear Sir

Your faithful and affect^e

W. JONES.

XIX.

Calcutta 21 Nov. 1790.

My dear Sir,

Though it is late in the day, yet that I may not lose to-night's post I scribble a few lines to thank you for your letter of the 13th and to send *Nared*. Your plates we shall eagerly expect, the whole work being finished: you do not mention the *errata* for your paper, which are, I hope, with the *plates*. *L^y* Jones desires me to say, that she will not *yet* trouble you with commissions for the hills, but that if I could pack her up with *Nared*, she should be happy to enjoy in this season the comforts of your *fire-side*. Adieu, and assure yourself that I am, dear Sir,

Your ever faithful

and affect^e

W. JONES.

XX.

Calcutta: 6 Jan^y 1791.

My dear Sir,

The corrections are all printed, and the book was to be published to-day, if a number of copies could be stitched in time. Our third volume will go to the press immediately; and will, I hope, be embellished by your dissertations. Duncan has finished an essay, which I expect every day; and Wilford promises much on Indian Geography. Something, I hope, may be collected from *Nared*; but I am told by a well-informed Brahmen, that *Va-*

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rdha and his commentator display a treasure of learning in astronomy, geography, and science in general. It is from you alone (not from Bailly or Playfair) that we must expect accurate information on those subjects; but I am very anxious, that (if you do not already read Sanscrit with ease) you will learn enough of it to be in great measure independent of the Pandits: half an hour a day spent in reading the Sanscrit grammar would carry you far enough for that purpose in two or three months. I say this, because I have the first part of a short and easy grammar, which I will beg you to accept if you chuse it; and will send it, if you give the word. I have received the inscriptions at Mavalipuram, mentioned by Mr. Chambers, with four curious drawings; your sketch of the ruins will therefore be a great ornament to our third volume. Farewel, my dear Sir: to-morrow begins our term, and I have no hope of an hour's leisure for the next four months. Remember me kindly to Mr. Daniell and Mr. Glas.

I am, with great regard

L^d Jones is pretty well, and sends her best remembrance.

Your faithful serv^t

W. JONES.

XXI.

Gardens: 30 Jan. 1791.

My dear Sir,

We have been sitting nine hours a day for a whole week on a trial, which will last a week longer, and I am so fatigued this morning with copying my eighth anniversary discourse, that I can only thank you shortly, though heartily, for your letter. I send the *Sáreswatá* (which you will oblige me by accepting) in two parts; the chapter on participles is wanting; but those on nouns and verbs are complete. Do not mind the Brahmens, who affect to despise this grammar, because it is easy: it is so, but it is perspicuous and elegant, and will fully answer your purpose. I would not advise you to get the rules by heart, but merely to read the book with your Pandit. L^d Jones sends her best compl^s and, as some of her sick friends have asked for honey, she will be much obliged to you if you will send a bottle or two, when the season of honey comes, and when a boat is coming to Calcutta.

I am, dear Sir,

Ever affect^{ly} yours,

W. JONES.

XXII.

Crishna-nagar :

16 Sept. 1791.

My dear Sir,

I have the pleasure to send you a little tract, which I have just received, and which may perhaps afford you some amusement: After a most severe campaign in the wordy war of our court, I am reposing myself in my cottage, and paying, as fast as I can, my annual tribute of letters to Europe. By this time I imagine you have finished your *Súrya Siddhánta*, and completed your triumph over Le Gentil and Bailly: the third volume of the *Researches* is far advanced, 150 pages being printed, and 5 or 6 plates etched. I should like to see it embellished by a dissertation from your accurate pen *On the Indian Ecliptick*, to illustrate the drawing with which you favoured me last year. Wilford has sent us a chart of the Nile and the countries near it, from the *Scanda-purán*, in which he thinks he has found (and I hope he is not deceived) a treasure of ancient geography. L. Jones presents you with her best compliments, and we both beg to be kindly remembered to Mr. Glas and to Mr. Daniell, if he be still with you. I am, my dear Sir,

Your ever faithful

Serv^t W. JONES.

XXIII.

Crishna-nagar :

11 Oct. 1791.

My dear Sir,

Marsden's paper is wholly at your service, and it is the promised accompaniment only that will make me wish to see it again. No doubt your *Indian Ecliptick* may be etched at Calcutta, and shall be; but as the drawing is too large for the quarto page, it must be contracted a little; and a smaller drawing, with an explanation of it, will greatly embellish our third volume. Of Wilford's discoveries I must suspend my opinion till I see his proofs: I hope he is advancing in Sanscrit. I have an elaborate Hindu chart of the Universe, and was struck with the four rivers of Paradise. Do they mean the colures? or is it all fancy? By translating the *Súrya Siddhánta* from the original with the assistance of Brahmens, you will have a great advantage over Le Gentil, and all other writers on Indian astronomy: I long to see the work separately printed in a handsome quarto volume.

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Nine books of Menu's Laws are ready for the press : they are wonderfully curious. L^y. Jones thanks you heartily for the honey : we shall be in town towards the end of the month. I am, dear Sir,

Your ever faithful
and obed^t. W. JONES.

XXIV.

Arifnagar : 27 Dec. 1791.

My dear Sir,

I hasten to answer your acceptable letter. No doubt there is an inaccuracy (which I beg you will find an opportunity of correcting) in my use of the word *solstice* : I felt it at the time, but wished to avoid the foreign word *ayana*, to which we must I believe have recourse ; as I do not think *road* or *path* will do, unless we say it *began*, instead of it *was*. *Solstice* implies *motum in loco*, and *ayana* (literally *going*) seems to imply *motum a loco ad locum* ; while *road* or *path* imply *continuity of motion*. I thought the phrase *dacshindayana*, literally *motus ad meridiem*, might be translated, *according to the Indian expression*, more concisely by *southern solstice*, than by *the beginning of the sun's motion or road to the south* ; for had I said *northern solstice*, it would have looked as if *dacshina* meant *northern* ; and so, *mutatis mutandis*, of the *uttarayana*, or *ad septentrionem itio*. I would propose (and I thought of saying this in a note, but had not time) to write either the sun's southern *ayana*, &c. or *the beginning of the sun's southern path* ; and so of the northern. On the whole, the puzzle is purely grammatical ; and I was led to it by a desire of translating as verbally as possible, but with all possible brevity. I cannot understand the account of *Saca*, and have no work by *Calidas* on astrology ; but *Agastya* puzzles me more than any thing, one Pandit insisting it is *Sirius*, and another *Canopus* : pray desire your Pandit to point at *Agastya* some clear evening : I have reasons for wishing to know him, having seen a curious quotation from his *Samhita*. I shall long for your paper on the Cycle, and hope you will find leisure to add another in illustration of your Hindu Ecliptick, especially if your Pandit can point out the zodiacal stars in the firmament. I shall never find them in Harris's Chart for 1690, when, by Flamstead's observation, the first of *Aswini* should have been $\approx 19^{\circ} 31' 22''$, which I cannot reconcile with the *Hindu ayandnsa* for

that year. Lady Jones presents you and Mr. Glas (to whom my best remembrance) with the compl^{ts} of this season; and I am, dear Sir,

Your ever faithful

W. JONES.

XXV.

Gardens near Calcutta :

12 Febr. 1792.

My dear Sir,

I am desired by the Society, to whom I read your interesting paper last Thursday, to give you their hearty thanks, and I beg you will accept mine in particular; for, independently of my pleasure, as a lover of truth, to see errors corrected, I am so much of an Englishman, that I cannot bear the thought of our being surpassed by the French in any thing: and you will have the honour of being the first European who drew a knowledge of Indian Astronomy from the fountain-head. I have almost blinded myself this morning with botany; and can only add (with Lady Jones's best compliments) that I am, dear Sir,

The drawing shall be neatly engraved, and the letter-press carefully corrected.

Your faithful and
obed^t Serv^t

W. JONES.

XXVI.

Gardens near Calcutta :

9 May 1792.

My dear Sir,

No man but yourself deserves an Indian astrolabe, and our friend Chapman will send it you by his servant: it was found at Agra, and I beg you will accept it. I believe it very modern, as I think it has two corrupt Arabick words on it.

Your interesting paper on the Cycle of Sixty is printed, and, I hope, correctly, as I had the aid of better eyes than my own: Morris will send it to you; and I beg you will have the goodness to set down the errata.

Wilford has procured a very precious book in Sanscrit on the Hindu

Sphere, with drawings of the constellations *out* of the ecliptick : he has sent me Cassiopeia, Cepheus, Andromeda, Perseus, Pegasus, Equleus, Orion, Sirius, with the old Sanscrit names and descriptive *ślokas*, mentioning all the *yogas*. I have requested Duncan to have the book copied : it would enable you to draw a complete Hindu planisphere. I have finished the Institutes of Hindu Law, and am so busy in copying them, that I can only add (with Lady Jones's best compl^{ts}) that I am, dear Sir,

ever truly your's

W. JONES.

XXVII.

Calcutta 12 June 1792.

My dear Sir,

I thank you sincerely for your account of the Astrolabe ; and am persuaded that your idea of its age and use is perfectly just : if Chaucer's treatise be in town, you shall have it as soon as possible. My summer campaign is begun and allows me no time for literature, which I shall resume in the autumn. At present I must conclude with thanking you for the finest grapes I ever saw, and with assuring you, that I am, dear Sir,

Your ever faithful

& affect. Serv^t

S. Davis, Esq.

W. JONES.

XXVIII.

Crishna-nagar 7 Oct. 1792.

My dear Sir,

Though I shall be anxious till I know that you have received this packet safe, yet I cannot postpone the pleasure of sending it to you, because I know it will give *you* pleasure : it is, I think, the greatest curiosity I have seen in India ; for the asterisms differ too much from those of Greece to be borrowed (even if the Brahmens had not been too proud to borrow) yet are like enough to shew a common origin. The third volume of our Transactions is nearly finished ; and I ardently hope you will embellish the *fourth* volume with a dissertation from your accurate pen On the Ancient Sphere of the Hindus ; if you will draw an outline of the Indian

constellations on separate pages to illustrate your paper I will have them all engraved, and you will have the honour of a triumph over Le Gentil, Bailly, and all the oriental Astronomers of France. The story of Cepheus, Cassiopeia, Andromeda, and Perseus, is in the *Puráns*: that of *Subdhaca* &c. I have read. I am so busy with my Digest of Law, that I could only run hastily over the papers, which I annex, and may have made more mistakes than I have detected. Mistakes there certainly are in the manuscript. It is singular that Spica should be placed in $\approx 19^\circ$. Does not this look as if the Sanscrit verses were modern? I long to know what you and your Pandit say to the whole. The fourth volume of the Transactions will be the last I shall see printed, while I stay in India. Lady Jones will embark for Europe next February: this time twelvemonth I shall set out on a pilgrimage to *Mat'hurá*, and hope to see you in my way; and, in March 1795 (if I live) I shall embark for Madras, whence I shall go to China, and, returning to Bombay, shall travel, through part of Persia and Arabia, to Constantinople, Greece, and Italy, where Lady Jones intends to meet me. She presents you with her best remembrance, and I am, dear Sir,

Your faithful and affect^o

Serv^t W. JONES.

XXIX.

Off Champal Gaut, Calcutta.

20 Oct. 1792.

We are just arrived, my dear Sir, at the town of *Cali*, or *contention*, (which is the proper name, and a *very proper one*, of Calcutta); here I had the pleasure of finding your acceptable letter; and though we are in the midst of confusion, yet I will not delay acknowledging the receipt of it, as I cannot tell when I shall again be able to hold a pen for so agreeable a purpose. Should Wilford be able, before he goes to *Nepal*, to send me the *whole* astrological book, from which he extracted the chapter in your possession, I will take the first good opportunity of transmitting it to you: I have nothing to add on that chapter, except that *Mucura* means a *mirror*, and not a *lamp*, as I guessed. Will you allow me to suggest an idea as to your globe and drawings? D'Anville, in a manner very pleasing to me, and in a book which I always read with delight, has exhibited a correct map of India according to the best modern observations, but with

all the Greek and Roman names as far as he had been able to ascertain them. Would it not therefore be better to exhibit the asterisms *according to the true places* of the stars, but with the old Hindu figures of the constellations and the Sanscrit names? There can be no relying on the Indian draughtsman: but you will find, in the Sanscrit verses, a short account of the parts of each constellation, in which there are distinguished stars, besides the *yóga*. I have requested Wilford to send me all the legends concerning the Hindu asterisms and their *yógas*; and I expect to find much curious matter in them. By the way, his Essay on *Egypt* and the *Nile* from the *Puráns*, &c. will appear at full length with this curious map, in the 3^d Vol. of our Transactions, which will be published, I hope, next January; but I hope you will find some other motive for visiting Calcutta before next autumn, when I shall see you, I trust, in my way to *Mat'hura*. Lady Jones thanks you heartily for your kind wishes, and would be most happy if she could accompany me next year to *Bhagalpur*; but I am really apprehensive, that another hot season in Bengal would weaken her delicate constitution irrecoverably. India agrees with me so well, that if it were not for her sake, I would not leave it even in 1795; but I cannot persuade myself that a dissolution of our Asiatick Society will be the consequence of my departure, while you are constantly making discoveries in astronomy, Wilford in geography, and others in different branches of natural history. In the rural retirement, which I meditate on my return to England, I shall always be able to contribute something; and perhaps more effectually than here, because better engravers may be found in London than in Calcutta: I hope, in short, to see the 4th volume printed before I leave India, and the 14th at least, before I leave this world.

I am, dear Sir,

Your ever faithful
and obed^t Serv^t

W. JONES.

XXX.

Gardens near Calcutta.

24 Dec. 1792.

My dear Sir,

Having but this instant discovered that a printed copy of your valuable paper has not been sent to you, I enclose it in great haste, requesting you

to return it, when you have written the *errata* in the margin. There will not be time this season to print any large *additions* to it, as the whole volume of 500 pages is ready for publication: your Hindu Ecliptick is engraved, but I have no impression of it here, or would annex it. I had the pleasure of sending by Mr. Glass a Hindu drawing of the Ecliptick, &c. Wilford's paper fills 168 pages; he and you are the pillars of our Society. Farewell, my dear Sir, and continue to esteem me

Your ever faithful
W. JONES.

XXXI.

Gardens 14 May [1793?]

My dear Sir,

Lest you should hear of my illness, and we should lose the pleasure of your company, I write a few lines to say, that my tooth-ach was caused by a slight fever, which was so good as to leave me this morning, and Dr. Hare has prescribed the bark: I am therefore well enough to enjoy your conversation, and hope, as the weather is now fine, that you will take a family dinner with us any day you please: we dine at three, but shall be happy in seeing you earlier.

L^y Jones unites with me in hoping for the pleasure of your company; and we beg you will present our kindest remembrance to our friends Mr. and Mrs. Chapman. I am, dear Sir,

Ever truly yours

W. JONES.

XXXII.

Bandell 14 Sept. 1793.

My dear Sir,

I am recovering slowly from a rheumatick fever, and cannot write without pain. The annexed paper (which you need not trouble yourself to return) I have just received and hastily read: it shows how curious they are in England on every subject relating to Indian Astronomy. We have abundance of materials for our fourth volume; but I hope it will be embellished by some paper of yours. An account of the *Yantra-rāja*, or

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Hindu Astrolabe, would be interesting. I hope soon to send you drawings of *all* the Indian Constellations; to the number, says Wilford, of 150.

Lady Jones presents you with her best compliments and I am, dear Sir,

Your faithful

& affect^e Serv^t:

W. JONES.

XXXIII.

Bandell 19 Oct. 1793

My dear Sir,

As I am every day obliged to press my weak eyes almost beyond their strength, and as you promise us the pleasure of seeing you some time in November, I will only trouble you at present with a little botanical commission. One of the most famous Indian trees is named *Tamála तमालः*; but, in all this province, there is only a single Tamála-tree, growing at *Gwálabhúm*, or *Gwálapúr* (I think the former pronounced *Gwarwla boom*), about two days' journey from the town of *Burdwan*: now, if this rare tree should lie in your way to the south, and if it should be in blossom, I shall thank you heartily for some of the flowers; if not, for some of its leaves on a small branch; the leaves are said to be almost black, and rather fragrant: all the Pandit Bráhmens know it. A model of the observatory at Benares will, no doubt, be a great ornament to the room where the Society meet, or to any room on earth. I forget whether I asked your opinion on the question: "Are the Hindu astronomers able to make a retrospective calculation of the places of the heavenly bodies at the beginning of the Caliyug, *with that extreme accuracy* which is ascribed to their tables?"—but these matters we will talk over, when we meet.

Lady Jones will embark in the Princess Amelia, and I hope to follow her in two years at farthest: she presents you with her best remembrance; and I am, dear Sir,

Your ever faithful

W. JONES.

XXXIV.

7 Febr. 1794

My dear Sir,

You gave us hopes, when you left us, of seeing you soon at Calcutta; and, if you should be here on the 20th of this month, I shall be happy in

your company at dinner with the Asiatick Society, whose anniversary meeting is fixed for that day. Whenever you come, have the goodness to remember the *flowers* of the *Tamála*, and to bring with you the Hindu constellations, which I sent you from *Crishn-nagar*, as I have received another Sanscrit work with 84 drawings, &c. by which I shall be able to correct the errors in the former. I am too busy to add more than that I am, my dear Sir, yours ever truly

W. JONES.

XXXV.

15 Febr.

My dear Sir,

Your letter and its accompaniments (the most precious of which is your own MS.) arrive at sunset, when I can hardly see what I write. Tomorrow I will examine your book with great attention: I have rec^d all the *Constellations from Benares*, in number 104, including some single stars; but, as I find among them not only Antinous but even the twelve asterisms of Americus Vespucius, it is clear that that part of the Sanscrit is very modern, and was drawn up probably by order of *Jayasinh*, from some European planisphere. I will propose your health on Thursday in a bumper of Shiraz: when you come to Calcutta, pray bring the *Tamála* flowers; but yourself will be the most welcome object to, my dear Sir,

Your ever faithful

W. JONES.

In the Sanscrit book which I have received from Wilford's Bráhmén, the longitude of Spica is $\simeq 19^\circ$, which looks as if a copy of Harris's Chart had been shown by missionaries or other Europeans to very modern Pandits.

XXXVI.

Calcutta 1 March 1794

I have had leisure, my dear Sir, during a very short vacation to peruse your book on the Indian constellations, and I perused it with great delight. Your drawings are excellent, and shall be well engraved, if you can find

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leisure to add those which are *certainly* ancient and of Hindu origin. To save you trouble, I will translate word for word all the Sanscrit verses, and write the translation in a separate book, which I will deliver to you together with the original. Do you know when the Jayasinha, or Jysingh, lived, who patronized science and ordered the Brahmans to compile books on Mathematicks and Astronomy? I am told, not above sixty years ago; if so, he probably had European globes or planispheres; and I suspect, that the works procured by Wilford were compiled by his order. You will be surprized to see the Great Bear (as complete a bear as that which attacked you at Pandua*) with a *very short tail* and with the seven *Rishis* and little *Arundhati* on his back. The single stars, with the names of gods and sages, as Agastya, Garga, Prajapati, Indradyumna and his wife, &c. are, I conceive, to be found in the oldest Hindu books: then follow the asterisms, concerning which there are legends in the *Brahmánda Purán* and others: but most of the southern constellations must have been named in very modern times. That the haughty Brahmans should have borrowed any of our names and configurations is a very curious fact, and may incline us to doubt their unwillingness in ancient times to borrow any thing of their neighbours: I also think it a fact of some consequence, that their longitudes and latitudes are so variously and inaccurately laid down, as it may enable us to appreciate the correctness of their boasted observations. I am very glad that the numbers of degrees are expressed in words at length (*mountains, oceans, fires, arrows, suns, &c.*), and in verse, since errors are less likely to have been introduced by transcribers than if they had only written tables in figures. On these and other topics I hope to converse, when I have the pleasure of seeing you in the course of this month: I trust you will give me a day at my pleasant farm, and will come, like Crishna, decked with holy *Tamála* blossoms. We had a very good meeting on the 20th, and I drank your health in a full glass of liquid rubies from Shiraz. Believe me to be ever, my dear Sir,

Your faithful and
obed^t Serv^t
W. JONES.

* Mr. Davis, while exploring some ruins near Gaur, was attacked and wounded in the leg by a bear, who had taken up his abode in a dark recess. As soon as Mr. Davis had recovered from his wounds, he returned to the spot, sought out the bear, and shot him. The wound Mr. Davis received was so severe, as to render him lame for life.

XXXVII.

My dear Sir,

24 March* [1794] Calcutta.

As a week only of March remains, I am not without hopes that you will pass next Sunday with me at my farm; and we will then talk of *Jayasinh* and his achievements: I will only say now, that the result of my inquiries corresponds exactly with your account of his death. I have given you a great deal of trouble about the *Tamála*; but the leaves, flowers, and fruit, which you so obligingly sent, are those of the *Dép'hal*, a very different plant, resembling the *Tamála* only in the form and colour of the leaves: I am equally thankful for the specimen, as it is a new species of *Hypericum*.

I am, dear Sir,

Your faithful and aff^{te}

W. JONES.

The following Letter, with its accompaniment, is attached to the preceding series; and as it relates to the principal subject therein referred to, viz. the Astronomy of the Hindus, it will doubtless not be considered improper to annex it here.

*From the Right Hon^{ble} Sir Joseph Banks, K.C.B., P.R.S.,
to Samuel Davis, Esq.*

Soho Square,

March 18, 1790.

Sir,

The paper you did me the honor to enclose to me was received with much interest by the Fellows of the Royal Society to whom I communicated it, which were those whose studies had been more particularly directed to the History of Astronomy. I enclose to you, Sir, the Remarks made upon it by Mr. Cavendish, who we here consider among the most able men we have. He expressed, as indeed all who saw it did, the strongest wish that you would continue to direct your application towards a study, in which you have the opportunity of illustrating so very essentially the ancient history of a science, possibly the most interesting of any in the whole number: and in case any thing should happen which prevented you from publishing it in the Asiatic Transactions, it seemed the wish of every one that it might be published in the Philosophical Transactions of the Royal Society here; where, Sir, I am confident you would be received a member, if your ambition led you to wish for that distinction.

* Sir William Jones's death occurred April 27, 1794.

I have taken the liberty, Sir, to send under your address, by the ship Princess Amelia, a copy of M. Baillie's Indian Astronomy, which I hope you will do me honor to accept, as a testimony of my regard. You will find, Sir, the subject of his Book so similar to that of your present pursuit, that I have little doubt you will be able to correct many errors in it; and I hope, also, you may be able to derive some benefit from the perusal of those parts which are correct.

I beg, sir, that you will believe me, with unfeigned regard & respect,

Your obedient
& most hble servant,

JOS: BANKS.

Remarks by Mr. Cavendish, referred to in the preceding Letter.

I hope you will inform Mr. Davis of the pleasure his paper has given to those to whom it has been shewn, and encourage him to go on with it. Though he has given us the most material parts of their astronomy, yet there are many others which very well deserve to be communicated, and I suppose must be treated on in his author, particularly their manner of computing the apparent places of the planets. Their manner also of computing eclipses of the sun, and determining the longitudes and latitudes of stars at a distance from the ecliptic, with the time of their rising, will be well worth communicating, were it only for shewing the extent of their knowledge in spherical trigonometry. I have added also a few queries, which I shall be glad if you will recommend to his consideration.

Mr. D. says the astronomical months begin at the instant the sun is supposed to enter the respective constellations of the Zodiac; but the civil month begins at sun-rise. Quere whether the sun-rise after, or the sun-rise in the same day? and as the same month will not always consist of the same number of days, Quere whether they are obliged to have recourse to the almanack of that year, or whether they have any constant rule for determining it? If it is determined only by their almanack, it will sometimes happen that one almanack will make it begin on one day of the week, and another on the next to it, owing to a difference in the latitude and longitude of the place, &c. Quere therefore, whether in dating any event they take any method to avoid this ambiguity?

Quere. Are there any Hindu maps of the constellations?

Besides the general curiosity of seeing whether their constellations agree

with ours, I have another reason for the question. At present the sun at the beginning of the Hindu year precedes the first star of our constellation Aries by $7^{\circ} 18'$, and 4000 years ago it preceded it by $16^{\circ} 51'$, and therefore it is natural to suppose that, at the time when their constellations were formed, the first star of the constellation Aries coincided with the sun's place at the commencement of their year. It should seem that our Zodiacal constellations, though they bear the same names as theirs, consist of different stars. Perhaps if such maps are found, it might afford a means of giving a rough estimate of the date of their astronomy.

A catalogue of the fixed stars, with the longitudes and latitudes, would in some measure answer the same purpose, but not so well.

Quere, Have they preserved any ancient astronomical observations; and if so, how ancient?

Quere, Is there any account of the manner in which they used to make their observations, and in particular in what manner they measured time, and whether they still continue to make observations.

On computing the places of the heavenly bodies from the data given in Mr. D.'s paper, for the beginning of the *Calì Yug*, and for 4320 years after, I observed that in general they agreed much better with our tables at the last-mentioned time, than they did at the *Calì Yug* or than they do at present; which seems to shew either that the *Súrya Sidáhnta* must have been written about that time, or that the numbers in it were then altered, so as to make them agree with observation.

Quere, Whether there is any tradition of a reformation having been made at that time in their astronomy?

I think Mr. D. must have made a mistake in his computation of the precession of the Equinoxes. Unless I am much mistaken, he ought to have made it $73^{\circ} 21'$. If so, the precession found by their rule differs from the truth at present by $52^{\circ} 17'$, and formerly was still more wrong; so that I imagine the text of his author must be corrupted at that place.

. *The accompanying Plate appears to have been intended by the late Mr. DAVIS to illustrate the Astronomical Remarks contained in the preceding Letters, and is published principally on account of its representation of the Hindu Zodiac and the Lunar Mansions, differing considerably from those that are engraved in the second volume of the Asiatic Researches.*