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ASIATICK RESEARCHES::
OR,
TRANSACTIONS
OF THE
SOCIETY INSTITUTED IN BENGAL,
FOR INQUIRING INTO THE
HISTORY AND ANTIQUITIES.
THE
ARTS, SCIENCES, AND LITERATURE,
OF
ASIA.

VOLUME THE FIRST.

THE FIFTH EDITION.,

LONDON:

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LONGMAN, HURST, RELS, AND ORME R, FAULDER;
SCATCHERD AND LETTERMAN:
AND J. ASPIRNI.

1806.

THE INTRODUCTION,

IF this first Publication of the ASIATICK SOCIETY should not answer those expectations which may have been hastily formed by the learned in *Europe*, they will be candid enough to consider the disadvantages which must naturally have attended its institution, and retarded its progress. A mere man of letters, retired from the world, and allotting his whole time to philosophical or literary pursuits, is a character unknown among *Europeans* resident in India, where every individual is a man of business in the civil or military state, and constantly occupied either in the affairs of government, in the administration of justice, in some department of revenue or commerce, or in one of the liberal professions. Very few hours, therefore, in the day or night, can be reserved for any study, that has no immediate connection with business, even by those who are most habituated to mental application: and it is impossible to preserve health in *Bengal*, without regular exercise, and seasonable relaxation of mind: not to insist that, in the opinion of an illustrious *Roman*, "No one can be said to enjoy liberty, who has not sometimes the privilege of doing nothing." All employments, however, in all countries, afford some intervals of leisure; and there is an active spirit in *European* minds, which no climate, or situation in life, can wholly repress, which justifies the ancient notion, that *a change of toil is a species of repose*; and which seems to consider nothing done or learned, while any thing remains unperformed or unknown. Several *Englishmen*, therefore, who resided in a country, every part of which abounds in objects of curious and useful speculation, concurred in opinion, that a Society instituted at *Calcutta*, on the plan of those established in the principal cities of *Europe*, might possibly be the means of concentrating all the valuable knowledge which might occasionally be attained in *Asia*; or of preserving at least many little tracts and essays, the writers of which might

not think them of sufficient importance for separate publication. The ASIATICK SOCIETY was accordingly formed on the 15th of *January*, 1784, by those Gentlemen whose names are distinguished by asterisks in the List of Members at the end of this book ; and ample materials have already been collected for two large volumes, on a variety of new and interesting subjects. By this Publication the Institution may be considered as having taken root; but the plant will flourish or fade, according as the activity or remissions of the Members and their correspondents shall promote or obstruct its growth. It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the President or the Secretary at *Calcutta* ; it will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease: for it is morally impossible that a few men, whatever be their zeal, who have great public duties to discharge, and difficult private studies connected with those duties, can support such an establishment without the most assiduous and eager auxiliaries.

Before we proceed to give a short history of the institution, it may be proper to declare, that the Society will pass no decision, in their *collective* capacity, on any point of literature or philosophy; but that the writers of such dissertations, as they shall think worthy to be published from time to time, must hold themselves individually responsible for their own opinions; a declaration which is conformable, we believe, to the practice of similar Societies in *Europe*.

It having been resolved to follow, as nearly as possible, the plan of the *Royal Society at London*, of which the *King* is *Patron*, it was agreed, at the first regular meeting, that the following Letter should be sent to the Governor-General and Council, as the *Executive Power* in the Company's territories: and their answer, which is also subjoined, was received in the course of the next month.

THE ANSWER.

WE very touch approve and applaud your endearours to promote the extenfion of knowledge by the means which your local advantages afford you in a degree, perhaps, exceeding thofe of any part of the *Globe* ; and we derive great hopes of your attainment of to importaht an end, from our perfonal knowledge of the abilities and talents of the Gentlemen whofe names we read in the fubfcription to your addrefs.

We accept the title you have been defirous of conferring upon us of *Patrons* to your Society, and fhall be happy to avail ourfelves of any occafion that may occur of contributing to its fuccefs.

We are, GENTLEMEN,

Your moft obedient humble Servants,

WARREN HASTINGS,
EDWARD WHEELER,
JOHN MACPHERSON,
JOHN STABLES.

*To the Honourable WARREN HASTINGS, ESQ.
Governor-General, Prefident ;*

EDWARD WHEELER, JOHN MACPHERSON,
*And JOHN STABLES, ESQUIRES,
Members of the Council of Fort William, in Bengal.*

Honourable SIR and GENTLEMEN,

A SOCIETY, of which we are Members, having been intituted for the Purpofe of enquiring into the Hiftory, Civil and Natural, the Antiquities, Arts, Sciences, and Literature of *Afia*, we are defirous that you"will honour us with accepting the Title of our *Patrons*, and requeft you to confider this Application as a Token of the great Refpect wiith which we arc,

Honourable SIR and GENTLEMEN,

Your moft obedient and mofl humble Servants,

JOHN HYDE,
WILLIAM {ONES,
JOHN CARNAC,
DAVID ANDERSON,
WILLIAM CHAMBERS,
FRANCIS GLADWIN,
JONATHAN DUNCAN,
THOMAS LAW,-
CHARLES WILKINS,
JOHN DAVID PATERSON,
CHARLES CHAPMAN,
CHARLES HAMILTON,
GEORGE HILARO BARLOW.

Calcutta, January 22, 1784.

MR HASTINGS *therefore appeared, as Governor-General, among the Patrons of the new Society; but he seemed, in his private station, as the first liberal promoter of useful knowledge in Bengal, and, especially as the great encourager of Persian and Sanscrit literature, to deserve a particular mark of distinction ; and he was accordingly requested, in a short letter, to accept the title of President. It was, indeed, much doubted whether he would accept any office, the duties of which he could not have leisure to fulfil; but an offer of the honorary title was intended as a tribute of respect, which the occasion seemed to demand, and which could not have been omitted without an appearance of inattention to his distinguished merit. His answer is also annexed.*

GENTLEMEN,

I AM highly sensible of the honour which you have been pleased to confer upon me, in nominating me to be the President of your Society; and I hope you will both admit and approve the motives which impel me to decline it.

From an early conviction of the utility of the Institution^ it was my anxious wish that I might be, by whatever means, instrumental in promoting the success of it; but not in the mode which you have proposed, which, I fear, would rather prove, if of any effect, an incumbrance on it

I have not the leisure requisite to discharge the functions of such a station : nor, if I did possess it, would it be consistent with the principle which every man may be
allowed

allowed to avow in the purfuit or fupport of the objects of his perfonal credit, to accept the firft ftation in a department, in which the fuperior talents of my immediate followers in it would fhine with a luftre, from which mine muft fuffer much in the comparifon; and to ftand in fo confpicuous a point of view, the only ineffective member of a body which is yet in its infancy, and composed of members with whole abilities I am, and have long been, in the habits of intimate communication, and know them to be all eminently qualified to fill their refpective parts in it.

On thefe grounds I request your permiffion to decline the offer which you have done me the honour to make to me, and to yield my pretentions to the Gentleman whole genius planned the Inftitution, and is mod capable of conducting it to the attainment of the great and fplendid purpofes of its formation.

I at the fame time carneftly follicit your acceptance of fervices in any way in which they can be, and I hope that they may be, rendered ufeful to your Refcarches.

I have the honour to be, GENTLEMEN,

Your moft obedient and moft humble Servant,

WARREN HASTINGS.

*Fort William,
January 30, 1781.*

On the receipt of this Letter, SIRI WILLIAM JONES was nominated Prefident of the Society ; and, at their next Meeting, he delivered the following Difcourfe.

A
DISCOURSE
ON THE
INSTITUTION OF A SOCIETY
FOR INQUIRING INTO THE
HISTORY, CIVIL AND NATURAL,
THE
ANTIQUITIES, ARTS, SCIENCES,
AND LITERATURE,
OF
ASIA.
BY THE PRESIDENT.

Gentlemen,

WHEN I was at sea last August, on my voyage to this country, which I had long and ardently desired to visit, I found one evening, on inspecting the observations of the day, that *India* lay before us, and *Perfia* on our left, whilst a breeze from *Arabia* blew nearly on our stern. A situation so pleasing in itself, and to me so new, could not fail to awaken a train of reflections in a mind which had early been accustomed to contemplate with delight, the eventful histories and agreeable fictions of this eastern world. It gave me" inexpressible pleasure to find myself in the midst of so noble an amphitheatre, almost encircled by the vast regions of *Afia*, which has ever
been

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been esteemed the nurse of sciences, the inventress of delightful and useful arts, the scene of glorious actions, fertile in the productions of human genius, abounding in natural wonders, and infinitely diversified in the forms of religion and government, in the laws, manners, customs, and languages, as well as in the features and complexions of men. I could not help remarking how important and extensive a field was yet unexplored, and how many solid advantages unimproved: and when I considered, with pain, that, in this fluctuating, imperfect, and limited condition of life, such inquiries and improvements could only be made by the united efforts of many, who are not easily brought, without some pleasing inducement, or strong impulse, to converge in a common point, I comforted myself with a hope, founded on opinions, which it might have the appearance of flattery to mention, that, if in any country, or community, such an union could be effected, it was among my countrymen in *Bengal*; with some of whom I already had, and with most was desirous of having, the pleasure of being intimately acquainted.

You have realized that hope, Gentlemen, and even anticipated a declaration of my wishes, by your alacrity in laying the foundation of a Society for inquiring into the History and Antiquities, the Natural Productions, Arts, Sciences, and Literature, of *Asia*. I may confidently tell, that an institution so likely to afford entertainment, and convey knowledge, to mankind, will advance to maturity by flow, yet certain, degrees; as the Royal Society, which, at first, was only a meeting

of a few literary friends at *Oxford*, rose gradually to that splendid zenith, at which a *Halley* was their secretary, and a *Newton* their president.

Although it is my humble opinion, that, in order to ensure our success and permanence, we must keep a middle course, between a languid remissness and an over zealous activity, and that the tree, which you have auspiciously planted, will produce fairer blossoms, and more exquisite fruit, if it be not at first exposed to too great a glare of sunshine, yet I take the liberty of submitting to your confederation, a few general ideas on the plan of your Society; assuring you, that, whether you reject or approve them, your correction will give me both pleasure and instruction, as your flattering attentions have already conferred on me the highest honour.

It is your design, I conceive, to take an ample space for your learned investigations, bounding them only by the geographical limits of *Asia*; so that considering *Hindustan* as a centre, and turning your eyes in idea to the north, you have on your right many important kingdoms in the eastern peninsula: the ancient and wonderful empire of *China*, with all her *Tartarian* dependencies; and that of *Japan*, with the cluster of precious islands, in which many singular curiosities have too long been concealed. Before you lies that prodigious chain of mountains which formerly, perhaps, were a barrier against the violence of the sea; and beyond them the very interesting country of *Tibet*, and the vast regions of *Tartary*, from, which, as
front

from the *Trojan* horde of the poets, have issued to many consummate warriors, whose domain has extended at least from the banks of the *Iliffus* to the mouths of the *Ganges*. On your left are the beautiful and celebrated provinces of *Iran*, or *Perfia*; the unmeasured, and, perhaps, unmeasurable, deserts of *Arabia*; and the once flourishing kingdom of *Yemen*, with the pleasant isles that the *Arabs* have subdued or colonized: and farther westward, the *Asiatick* dominions of the *Turkish* sultans, whose moon seems approaching rapidly to its wane. By this great circumference the field of your useful researches will be inclosed: but, since *Egypt* had unquestionably an old connexion with this country, if not with *China*; since the language and literature of the *Abyssinians* a manifest affinity to those of *Asia*; since the *Arabian* arms prevailed along the *African* coast. of the *Mediterranean*, and even erected a powerful dynasty on the continent of *Europe*; you may not be displeased occasionally to follow the streams of *Asiatick* learning a little beyond its natural boundary. And if it be necessary, or convenient, that a short name or epithet be given to our Society, in order to distinguish it in the world, that of *Asiatick* appears both classical and proper, whether we consider the place or the object of the institution; and preferable to *Oriental*, which is, in truth, a word merely relative, and though commonly used in *Europe*, conveys no very distinct idea.

If now it be asked, what are the intended objects of our inquiries within these spacious limits, we answer, MAN and NATURE; whatever is performed

Formed by the one, or produced by the other. Human knowledge has been elegantly analysed according to the three great faculties of the mind, *memory*, *reason*, and *imagination*, which we constantly find employed in arranging and retaining, comparing and distinguishing, combining and diversifying...the ideas which we receive through our senses, or acquire by reflection; hence the three main branches of learning are *history*, *science*, and *art*. The first comprehends either an account of natural productions, or the genuine records of empires and states; the second embraces the whole circle of pure and mixed mathematics, together with ethics and law, as far as they depend on the reasoning faculty; and the third includes all the beauties of imagery, and the charms of invention, displayed in modulated language, or represented by colour, figure, or sound.

Agreeably to this analysis, you will inveigle whatever is rare in the stupendous fabric of nature; will correct the geography of *Africa* by new observations and discoveries; will trace the annals, and even traditions, of those nations, who, from time to time, have peopled or desolated it; and will bring to light their various forms of government, with their institutions civil and religious. You will examine their improvements and methods in arithmetick and geometry, in trigonometry, mensuration, mechanics, optics, astronomy, and general physics; their systems of morality, grammar, rhetoric, and dialectick; their skill in surgery and medicine; and their advancement, whatever it may be, in anatomy and chemistry. To this you will add researches into their agriculture.

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ture, manufactures, trade; and whilst you inquire with pleasure into their music, architecture, painting, and poetry, will not neglect those inferior arts by which the comforts, and even elegancies, of social life are supplied or improved. You may observe that I have omitted their languages, the diversity and difficulty of which are a total obstacle to the progress of useful knowledge; but I have ever considered languages as the mere instruments of real learning, and think them improperly confounded with learning itself; the attainment of them is, however, indispensably necessary; and if to the *Persian, Armenian, Turkish, and Arabick*, could be added not only the *Sanskrit*, the treasures of which we may now hope to see unlocked, but even the *Chinese, Tartarian, Japanese*, and the various provincial dialects, an immense mine would then be open, in which we might labour with equal delight and advantage.

Having submitted to you these imperfect thoughts on the *limits* and *objects* of our future Society, I request your permission to add a few hints on the *conduct* of it in its present immature state.

LUCIAN begins one of his satirical pieces against historians with declaring, that the only true proposition in his work was, that it would contain nothing true; and, perhaps, it may be advisable at first, in order to prevent any difference of sentiment on particular points not immediately before us, to establish but one rule, namely, to have no rules at all. This only I mean, that in the infancy of any society, there ought to be no confinement,

finement, no trouble, no expence. no unnecessary formality. Let us, if you please, for the present, have weekly evening meetings in this hall, for the purpose of hearing original papers read on such subjects as fall within the circle of our inquiries. Let all curious and learned men be invited to send their tracts to our secretary, for which they ought immediately to receive our thanks: and if, towards the end of each year, we should be supplied with a sufficiency of valuable materials to fill a volume, let us present our *Asiatick miscellany* to the literary world, who have derived so much pleasure and information from the agreeable work of *Kaempfer*, than which we can scarce propose a better model, that they will accept with eagerness any fresh entertainment of the same kind. You will not, perhaps, be disposed to admit mere translations of considerable length, except of such unpublished essays or treatises as may be transmitted to us by native authors; but whether you will enrol, as members, any number of learned natives, you will hereafter decide, with many other questions as they happen to arise: and you will think, I presume, that all questions should be decided, on a ballot, by a majority of two thirds; and that nine members should be requisite to constitute a board for such decisions. These points, however, and all others, I submit entirely, Gentlemen, to your determination, having neither wish nor pretension to claim any more than my single right of suffrage. One thing only, as essential to your dignity, I recommend with earnestness, on no account to admit a new member, who has not expressed a voluntary desire to become so; and in that case you will not require, I suppose, any other qualification.

qualification than I love of knowledge, and a zeal for the promotion of it.

Your institution, I am persuaded, will ripen of itself; and your meetings will be amply supplied with interesting and amusing papers, as soon as the object of your inquiries shall be generally known. There are (it may not be delicate to name them, but there are) many from whose important studies I cannot but conceive high expectations. And, as far as mere labour will avail, I sincerely promise, that, if, in my allotted sphere of jurisprudence, or in any intellectual excursion that I may have leisure to make, I should be so fortunate as to collect, by accident, either fruits or flowers, which may seem valuable or pleasing, I shall offer my humble *Nezr* to your Society with as much respectful zeal as to the greatest potentate on earth.

INDIAN ARABIAN and PERSIAN

LETTERS

Soft and hard Breathings

	a	e	ha	hha	
<i>Vowels</i>	<i>Diphthongs and Semivowels</i>				
ā ā	aã	e	è	ya	
ī ī	ī̃	o	ò	wa	
u u	ū̃	ai	au	ra	
ri ri	rī̃	lrĩ	lrī̃	la	
ā ā	ē ē	ī ī	ū ū	ā ā	

Consonants

ca	c'ha		gha	na
ka	kha	ga	gha	
sa	sha	za	zha	śa
ta	tha	da	dha	na
			dha	
ta	tha	da	dha	na
	tha		dha	
pa	pha	ba	pha	ma
	fa		va	

Compounds

cha	chha	ja	jha	nya
za	zha	za	csha	jnya

TRANSACTIONS
OF THE
ASIATICK SOCIETY,



I.

A DISSERTATION

ON THE

ORTHOGRAPHY OF ASIATICK WORDS IN
ROMAN LETTERS.

BY THE

PRESIDENT.

EVERY man, who has occasion to compose tracts on *Asiatick* literature, or to translate from the *Asiatick* languages, must always find it convenient, and sometimes necessary, to express *Arabian*, *Indian* and *Persian* words, or sentences, in the characters generally used among *Europeans*; and almost every writer in those circumstances, has a method of notation peculiar to himself: but none has yet appeared in the form of a complete system, so that each original found may be rendered invariably by one appropriated symbol, conformably to the natural order of articulation,

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lation, and with a due regard to the primitive power of the *Roman* alphabet, which modern *Europe* has in general adopted. A want of attention to this object has occasioned great confusion in history and geography. The ancient *Greeks*, who made a voluntary sacrifice of truth to the delicacy of their ears, appear to have altered, by design, almost all the oriental names which they introduced into their elegant, but romantic, histories; and even their more modern geographers, who were too vain, perhaps, of their own language to learn any other, have so strangely disguised the proper appellations of countries, cities, and rivers, in *Asia*, that, without the guidance of the sagacious and indefatigable Monsieur D'ANVILLE, it would have been as troublesome to follow ALEXANDER through the *Panjab* on the Ptolemaick map of AGATHOOSMON, as actually to travel over the same country in its present state of rudeness and disorder. They had an unwarrantable method of moulding foreign names to a *Grecian* form, and giving them a resemblance to some derivative word in their own tongue*. Thus they changed the *Gogra* into *Agoranis*, or a river of the assembly; *Uchab* into *Oxydracæ*, or sharp-fighted; and *Renas* into *Aornos*, or a rock inaccessible to birds; whence their poets, who delighted in wonders, embellished their works with new images, distinguishing regions and fortresses by properties which existed only in imagination. If we have less liveliness of fancy than the ancients, we have more accuracy, more love of truth, and, perhaps, more solidity of judgment: and if our works shall afford less delight to those in respect of whom we shall be ancients, it may be said, without presumption, that we shall give them more correct information on the history and geography of this Eastern World; since no man can perfectly describe a country who is unacquainted with the language of it. The learned and entertaining work of M. D'HÉRBELOT, which professes to interpret and elucidate the names of persons and places, and the titles of books, abounds also in citations from the best writers of *Arabia*

and

and *Perfia* : yet, though his orthography will be **found** less defective than that of other writers on similar subjects, without excepting the illustrious Prince K A N - TEMIR, still it requires more than a moderate knowledge of *Persian*, *Arabick*, and *Turkish*, to comprehend all the characters quoted by him in *European* characters; one instance of which I cannot forbear giving. In the account of *Ibnu Zaidun*, a celebrated *Andalusian* poet, the first couplet of an elegy in *Arabick* is praised for its elegance, and expressed thus in *Roman* letters:

Iekad bein tenagikom dhamairna;
Iacdhā alaina alaffa laula taffina.

" The time," adds the translator, " will soon come, " when you will deliver us from all our cares: the remedy is assured, provided we have a little patience" When Dr. HUNT, of *Oxford*, whom I am bound to name with gratitude and veneration, together with two or three others, attempted, at my request, to write the same distich in *Arabian* characters, they all wrote it differently, and all, in my present opinion, erroneously. I was then a very young student, and could not easily have procured *Ibnu Zaidun's* works, which are, no doubt, preferred in the *Bodley Library*, but which have not since fallen in my way. This admired couplet, therefore, I have never *seen* in the original characters, and confess myself at a loss to render them with certainty. Both verses are written by *D'Herbelot* without attention to the grammatical points: that is, in a form which no learned *Arab* would give them in recitation. **But**, although the French version be palpably erroneous, it is by no means easy to correct the error. If *alasa*, or a *remedy*, be the true reading, the negative particle must be absurd; since *taaffaina* signifies *we are patient*, and not *we de/pair* : but if *alafay*, or *affliction*, be the proper word, some obscurity must arise from the

ON THE ORTHOGRAPHY

verb, with which it agrees. On the whole, I guefs, that the diftich mould thus be written :

يَكَادُ حِينَ تَنْاجِيكُمْ ضَائِرُنَا
يَقْضِي عَلَيْنَا الْأُسَى لَوْلَا تَأْسِينَا

Yecadu hhina tundjicum d'emairuna
Yakdi alaina 'Iafay lau Ia taaffina.

" When our bofoms impart their fecrets to you, an-
" guifh would almoft fix our doom, if we were not
" mutually to confole ourfelyes."

The principal verbs may have a future fenfe, and the laft word may admit of a different interpretation, Dr. HUNT, I remember, had found in GIGGEIUS the word *dhemayer*, which he conceived to be in the original. After all, the rhyme feems imperfect, and the meafure irregular. Now I afk whether fuch perplexities could have arifen, if *D'Herbelot*, or his editor, had formed a regular fyftem of exprefling *Arabic* in *Raman* characters, and had apprized his readers of it in his introductory difertation ?

If a further proof be required, that fuch a fyftem will be useful to the learned, and effential to the ftudent, let me remark, that a learner of *Perfian*, who fhould read in our beft hiftories, the life of Sultan Azim, and wifh to write his name in *Arabick* letters, might exprefs it *thirty-nine* different ways, and be wrong at laft. The word fhould be written *Adzem* with three points on the firft confonant.

There are two general modes of exhibiting *Afiatick* words in our own letters: they are founded on principles nearly oppofite; but each of them has its advantages.
and

and each has been recommended by respectable authorities. The first professes to regard chiefly the *pronunciation* of the words intended to be expressed; and this method, as far as it can be pursued, is unquestionably useful: but new sounds are very inadequately presented to a sense not formed to receive them; and the reader must, to the end, be left to pronounce many letters and syllables precariously; besides, that by this mode of 'orthography, all grammatical analogy is destroyed, simple sounds are represented by double characters, vowels of one denomination stand for those of another; and possibly, with all our labour, we perpetuate a provincial or inelegant pronunciation. All these objections may be made to the usual way of writing *Kummerbund*, in which neither the letters, nor the true sound of them, are preserved; while *Kemberbend*, or *Cemberbend*, as an ancient *Briton* would write it, clearly exhibits both the original characters, and the *Persian* pronunciation of them. To set this point in a strong light, we need only suppose that the *French* had adopted a system of letters wholly different from ours, and of which we had no types in our printing-houses: let us conceive an *Englishman*, acquainted with their language, to be pleased "with MALHERBE'S well-known imitation of *Horace*, and desirous of quoting it in some piece of criticism: he would read it thus:

' La mort a'des rigueurs a nulle autre pareilles;
 ' On a beau la prier :
 ' La cruelle qu'elle est se bouche les oreilles,
 ' Et nous laisse crier,

' Le pauvre en fait cabane, ou le chaume le couvre,
 ' Est sujet à ses loix,
 ' Et la garde, qui veille aux barrières du *Louvre*,
 ' N'en défend pas nos rois !'

Would he the exprefs thefe eight vetfes, in *Roman* characters, exactly as the *French* themfelves in fad exprefs them; or would he decorate his compofition with a paffage more refembling the dialect of lavages, than that of a polifhed nation? His pronounciation, good or bad, would, perhaps, be thus reprefented:

' Law more aw day reegywrs aw nool otruh parellyuh,
 ' Opne aw bo law preeay :
 ' Law crooellyuh kellay fuh boofhuh lays oreellyuh,
 ' Ay noo layfuh creeay.

' Luh povre ong faw cawbawn oo luh chomuh luh
 ' coovruh,
 ' Ay foozyet aw fay lwaw,
 ' Aylaw gawrduh kee velly o bawryayruhdyoo *Loovruh*,
 ' Nong dayfong paw no rwaw !'

The fecond fyftem of *Afiatick* orthography confifts in fcrupuloufly rendering letter for letter, without any particular care to preferve the pronounciation; and, as long as this mode proceeds by unvaried rules, it feems clearly entitled to the preference.

For the firft method of writing *Perfian* words, the warmeft advocate, among my acquaintance, was the late Major DAVY, a member of our Society, and a man of parts, whom the world loft prematurely, at a time when he was meditating a literary retirement, and hoping to pafs the remainder of his life in domeftick happinefs, and in the cultivation of his very ufeul talents. He valued himfelf particularly on his pronounciation of the *Perfian* language, and of his new way of exhibiting it in our characters, which he inftructed the learned and amiable editor of his *Inftitutes of Timour*, at Oxford,
 to

to retain with minute attention throughout his Work; Where he had acquired his refined articulation of the *Perfian* I never was informed; but it is evident that he spells rood proper names in a manner which a native of *Perfia*, who could read our letters, would be unable to comprehend. For instance; that the capital of *Azarbaijan* is now called *Tabriz*, I know from the mouth of a person born in that city, as well as from other *Iranians*; and that it was so called sixteen hundred years ago, we all know from the Geography of *Ptolemy*; yet Major DAVY always wrote it *Tubburaze*, and infilled that it should thus be pronounced. Whether the natives of *Semer kand*, or *Samarkand*, who probably speak the dialect of *Soghd* with a *Turanian* pronunciation, call their birth-place, as DAVY spelled it, *Summurkund*, I have yet to learn; but I cannot believe it; and am convinced, that the former mode of writing the word, expresses both the letters, and the sound of them, better than any other combination of characters. His method, therefore, has every defect; since it renders neither the original elements of words, nor the sounds represented by them in *Perfia*, where alone we must seek for genuine *Perfian*, as for *French* in *France*, and for *Italian* in *Italy*.

The second method has found two able supporters in Mr. HALHED and Mr. WILKINS; to the first of whom the public is indebted for a perspicuous and ample grammar of the *Bengal* language; and to the second for more advantages in *Indian* literature, than *Europe* or *India* can ever sufficiently acknowledge.

Mr. HALHED having justly remarked, ' that the two greatest defects in the orthography of any language, are the application of the same letter to several different sounds, and of different letters to the same sound,' truly pronounces them both to be ' so common in *English*, that he was exceedingly embarrassed ' ill the choice of letters to express the sound of the

' *Bengal* vowels, and was at last by no means satisfied ' with his own selection.' If any thing dissatisfies me, in his clear and accurate system, it is the use of *double* letters for the long, vowels, "(which might, however, be justified,) and the frequent intermixture of *Italick* with *Roman* letters in the same word; which, both in writing and printing, must be Very inconvenient. Perhaps it may be added, that his diphthongs are not expressed analogously to the sounds of which they are composed.

The system of Mr. WILKINS has been equally well considered; and Mr. HALHED himself has, indeed, adopted it in his preface to the *Compilation of Hindu Laws*. It principally consists of double letters, to signify our third and fifth vowels; and of the common prosodial marks, to ascertain their brevity or their length: but those marks are so generally appropriated to books of prosody, that they never fail to convey an idea of metre. Nor, if *either* prosodial sign were adopted, would *both* be necessary; since the omission of a long mark would evidently denote the shortness of the unmarked vowel, or conversely. On the whole, I cannot but approve this notation for *Sanskrit* words, yet require something more universally expressive of *Afatick* letters. As it is perfect, however, in its kind, and will appear in the works of its learned inventor, I shall annex, among the examples, four distichs from the *Bhagawat*, expressed both in his method and mine*. A translation of them will be produced on another occasion. But, in order to render this treatise as complete as possible, a fuller specimen of *Sanskrit* will be subjoined with the original, printed in the characters *Bengal*, into which the '*Brahmans* of that province transfer all their books, few of them being able to read the *Devanagari* letters; so far has their indolences prevailed over their piety !

Let me now proceed, not prescribing rules for others, but explaining those which I have prescribed for myself, to unfold my own system, the convenience of which has been proved by careful observation and long experience,

It would be superfluous to discourse on the organs of speech, which have been a thousand times dissected, and as often described, by musicians or anatomists; and the several powers of which every man may perceive, either by the touch or by light, if he will attentively observe another person pronouncing the different classes of letters, or pronounce them himself distinctly before a mirror; but a short analysis of articulate sounds may be proper to introduce an examination of every separate symbol.

All things abound with error, as the old teachers for truth remarked with dependence: but it is really deplorable that our first step from total ignorance should be into gross inaccuracy; and that we should begin our education in *England* with learning to read *the five vowels*, two of which, as we are taught to pronounce them, are clearly diphthongs. There are, indeed, five simple vocal sounds in our language, as in that of *Rome*, which occur in the words *an innocent bull*, though not precisely in their natural order; for we have retained the true arrangement of the letters, while we capriciously disarrange them in pronunciation; so that our eyes are satisfied, and our ears disappointed. The primary elements of articulation are *the soft* and *hard breathings*, the *spiritus lenis* and *spiritus asper* of the *Latin* grammarians. If the lips be opened ever so little, the breath suffered gently to pass through them, and the feeblest utterance attempted, a sound is formed of so simple a nature, that, when lengthened, It continues" nearly the same, except that, by the least acuteness in the voice, it becomes a cry, and is probably the first; round uttered by infants; but if, while this element is articulated,

articulated, the breath be forced with an effort through the lips, we form an *aspirate*, more or less harsh in proportion to the force exerted. When, in pronouncing the simple vowel, we open our lips wider, we express a sound completely articulated, which most nations have agreed to place the *first* in their symbolical systems: by opening them wider still, with the corners of them a little drawn back, we give birth to the *second* of the *Roman* vowels; and by a large aperture, with a farther inflexion of the lips, and a higher elevation of the tongue, we utter the *third* of them. By purring up our lips in the least degree, we convert the simple element into another sound, of the same nature with the *first* vowel, and easily confounded with it in a broad pronunciation: when this new sound is lengthened, it approaches very nearly to the *fourth* vowel, which we form by a bolder and stronger rotundity of the mouth: a farther contraction of it, produces the *fifth* vowel, which, in its elongation, almost closes the lips, a small passage only being left for the breath. These are all short vowels: and if an *Italian* were to read the words *an innocent bull* he would give the sound of each corresponding long vowel, as in the monosyllables of his own language, *fa, fi, fo, fe, fu*. Between these ten vowels are numberless gradations, and nice inflexions, which use only can teach; and, by the composition of them all, might be formed an hundred diphthongs, and a thousand triphthongs!; many of which are found in *Italian*, and were probably articulated by the *Greeks*; but we have only occasion in this tract for two diphthongs, which are compounded of the *first* vowel with the *third*, and with the *fifth*, and should be expressed by their constituent letters. As to those vocal compounds which begin with the *third* and *fifth* short vowels, they are generally, and not inconveniently, rendered by distinct characters, which are improperly arranged among the consonants. The tongue, which assists in forming some of the vowels, is the principal instrument in articulating two liquid sounds, which have something of a local nature a one

by ftriking the roots of the upper teeth, while the breath paffes gently through the lips; another, by an inflexion upwards, with a tremulous motion; and thefe two liquids coalefce with fuch eafe, that a mixed letter, ufed in fome languages, may be formed by the firft of them followed by the fecond. When the breath is obftructed by the preffure of the tongue, and forced between the teeth on each fide of it, a liquid is formed peculiar to the *Britifh* dialed of the *Celtick*.

We may now confider in the fame order, beginning with the root of the tongue, and ending with the perfect clofe of the lips, thofe lefs mufical founds, which require the aid of a vowel, or at leaft of the *fimple breathing*, to be fully articulated : and it may here be premifed, that the *harfh breathing* diftinctly pronounced after each of thefe *confonants*, as they are named by grammarians, conftitutes its proper *affpirate*.

By the affiftance of the tongue and the palate, are produced two congenial founds, differing only as *hard* and *foft*; and thefe two may be formed itili deeper in the throat, fo as to imitate, with a long vowel after them, the voice of a raven : but if, while they are uttered, the breath beharfhly protruded, two analogous articulations are heard, the fecond of which feems to characterize the pronunciation of the *Arabs*; while the *nafal* found, very common among the *Perfians* and *Indians*, may be confidered as the *foft palatine*, with part of the breath paffing through the nofe; which organ would by itfelf rather produce a *vocal* found, common alfo in *Arabia*, and not unlike the cry of a young antelope, and fome other quadrupeds.

Next come different claffes of *dentals*; and among the firft of them fhould be placed the *fibilants*, which moft nations exprefs by an *indented* figure. Each of
the

the *dental* founds is hard or foft, fharp or obtufe; and by thrufting the tip of the tongue between the teeth, we form two founds exceedingly common in *Arabick* and *Englifh* but changed into lifping fibilants by the *Perfians* and *French*; while they, on the other hand, have a found unkhown to the *Arabs*, and uncommon in our language, though it occurs in fome words, by the compofition of the hard fibilant with our laft vowel pronounced as a diphthong. The liquid *nafal* follows thefe, being formed by the tongue and roots of the teeth, with a little affiftance from the other organ : and we muft particularly remember, when we attend to the pronunciation of *Indian* dialefts, that moft founds of this clafs are varied in a lingular manner by turning the tongue upwards; and almoft bending it back towards the palate, fo as to exclude them nearly from the order, but not from the analogy, of dentals.

The *labials* form the laft feries, moft of which are pronounced by the appulfe of the lips on each other, or on the teeth, and one of them by their perfect clofe. The letters by which they are denoted, reprefent, in moft alphabets, the curvature of one lip, or of both : and a *natural character* for all articulate founds might eafily be agreed on, if nations would agree on any thing generally beneficial, by delineating the feveral organs of fpeech in the aft of articulation, and felecting from each a diftinct and elegant outline. A perfect; language would be that in which every idea capable of entering the human mind, might be neatly and emphatically expreffed by one fpecifick word; fimple, if the idea were fimple; complex, if complex: and on the fame principle, a perfect fyftem of letters ought to contain one fpecifick fymbol for every found ufed in pronouncing the language to which they belonged. In this refpect the old *Perfian*, or *Zend*, approaches to perfection: but the *Arabian* alphabet, which *all Mohammedan nations* have inconfiderately adopted, appears to me fo compieic for the purpofe of writing *Arabick*, that not a letter

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ए ऐ ओ औ अं अः

क का कि की कु कू कृ कृ

कृ कृ के कै को कौ कं कः

ख ख ग घ ङ च छ ज झ ञ

ट ठ ड ढ ण त थ द ध न

प फ ब भ म य र ल व श

ष स ह क्ष श

could be added, or taken away, without manifest inconvenience; and the same may indubitably be said of the, *Devanagari* system; which, as it is more naturally arranged than any other, shall here be the standard of my particular observations on *Asiatick* letters. Our *English* alphabet and orthography are disgracefully, and almost ridiculously, imperfect; and it would be impossible to express either *Indian*, *Persian* or *Arabian* words in *Roman* characters, as we are absurdly taught to pronounce them; but a mixture of new characters would be inconvenient; and, by the help of the diacritical marks used by the *French*, with a few of those adopted in our own treatises on *fluxions* we may apply our present alphabet so happily to the notations of all *Asiatick* languages, as to equal the *Devanagari* itself in precision and clearness; and so regularly, that any one, who know with original letters, might rapidly and unherringly trespass into them all the proper names, appellatives, or cited passages, occurring in tracts of *Asiatick* literature.

This is the simplest element of articulation, or first vocal sound, concerning which enough has been said. The word *America* begins and ends with it; and its proper symbol therefore is A; though it may lie often very conveniently expressed by E, for reasons which I shall presently offer. In our own anomalous language, we commonly mark this elementary sound by our *fifth* vowel, but sometimes express it by a strange variety both of vowels and diphthongs; as in the phrase, *a mother bird flutters over her young*; an irregularity which no regard to the derivation of words, or to blind custom, can in any degree justify. The *Nagari* letter is called *Acar*; but it is pronounced in *Bengal* like *out fourth*

fhort vowel; and in the *weft* of *India* like our *firft*. In all the dialects properly *Indian*, it is confidered as *inherent* in every confonant; and is placed laft in the fyftem of the *Tibetians*, becaufe the letters which include it are firft explained in their fchools. If our double confonants were invariably connected, as in *Sanfcrit*, it would certainly be the better way to omit the fimple element, except when it begins a word. This letter answers to the *fal-hhah*, or *open* found of the *Arabs*, and, in fome few words, to the *Zeber* of the *Perfians*, or an acute placed *above* the letters: but this *Arabian* mark, which was fupplied in the *Pahlavi* by a diftinct character, is more frequently pronounced at *Isfahan*, either like our *firft* or our *fecond* fhort vowel, as in *chafhm* and *ferzend*; and the diftinction feems to depend, in general, on the nature of the confonant which follows it. Two of our letters, therefore, are neceffary for the complete notation of the *acar* and *zeber*; and thus we may be able occafionally to avoid ridiculous or offensive equivocations in writing oriental words, and to preferve the true pronunciation of the *Perfians*, which differs as widely from that of the *Muflimans* in *India*, as the language of our court at *St. James's* differs from that of the rufticks In the *Gentle Shepherd*.

When the *firft* vowel, as the *Perfians* pronounce it in the word *bakht*, is doubled, or prolonged, as in *bakht*, it has the found of the fecond *Nagari* vowel, and of the firft *Arabick* letter, that is, of our long vowel in *caft*; but the *Arabs* deride the *Perfians* for their broad pronunciation of this letter, which in *Iran* has always the found of our vowel in *call*, and is often fo prolated, as to refemble the *fourth*, and even the *fifth*, of our long vowels. Its natural mark would be the fhort A *doubled*: but an *acute* accent in the middle of words, or a *grave* at the end of them, will be equally clear, and conform-

able to the practice of polifhed nations on the continent of *Europe*. The very broad found of the *Arabian* letter, which they call *extended*, and which the *Perfians* extend yet more, as in the word *afan*, may aptly enough be repreſented by the profodial ſign, ſince it is conſtantly long; whereas the mark *hamzhah* as conſtantly ſhortens the letter, and gives it the found of the point above or below it, as in the words *osul* and *Iflam*. The changes of this letter may perplex the learned, but his perplexity will ſoon vaniſh as he advances. In writing *Afiatick* names, we frequently confound the broad *a* with its correſpondent ſhort vowel, which we improperly expreſs by an *O* : thus we write *Coffim* for *Kafim*, in defiance of analogy and correctneſs. Our vowel in *fond* occurs but feldom, if ever, in *Arabian*, *Indian*, or *Perſian* words. It is placed, nevertheleſs, in the general ſyſtem, with the ſhort profodial mark, and ſtands at the head of the vowels, becauſe it is, in truth, only a variation of the ſimple breathing.

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Our *third* vowel, correctly pronounced, appears next in the *Nagari* ſyſtem; for our *ſecond* ſhort vowel has no place in it. This vocal found is repreſented in *Arabick* by an acute accent *under* the letter, which at *Mecca* has almoſt invariably the ſame pronunciation; but ſince in the *Zend* a character like the *Greek E-pſilon* repreſents both our *ſecond* and *third* ſhort vowels, the *Perſians* often pronounce *zir* like *zeber*, calling this country *Hend*, **and** the natives of it *Hendus* : nevertheleſs, it will be proper to denote the *Sanjcrit* *icar*, and the *Arabian caſr*, by one unaltered ſymbol, as in the words *Indra* and *Imam*.

The *third* vowel produced or lengthened, is, for the reaſon before ſuggeſted, beſt marked by an accent, either acute or grave, as in *Italian* :

ON THE ORTHOGRAPHY

Se cerca, fe dice ;
 L'amico dov'e ?
 L'amico infelice,
 Rifpondi, mori !
 Ah ! no; si gran duolo
 Non darle per me.
 Rifpondi, ma folo ;
 Piangendo parti

It was oncerny practice to represent this long vowel by two marks, as in the words *Lebeid* and *Deiwan*, to denote the *point* in *Arabick* as well as the letter above it: but my present opinion is, that *Lebid* and *Diwan* are more conformable to analogy, and to the *Italian* orthography, which, of all *European* systems, approaches nearest to perfection.

This is our *fifth* vowel; for our *fourth* short one is, like our *second*, rejected from the pure pronunciation of the *Sanfrit* in the *west* of *India*, and at *Banaras*; though the *Bengalese* retain it in the first *Nagari* letter, which they call *ocar*. To the notation of this sound, our vowel in *full*, and the *Persian* in *gul*, should be constantly appropriated, since it is a simple articulation, and cannot, without impropriety, be represented by a double letter. It answers to *hu-pfilon*, and, like that, is often confounded with *iota*. Thus *mufhc* has the sound of *mifhc* among the modern *Persians*; as *Numpha* was pronounced *Nympha* by the *Romans*. The *damm* of the *Arabs* is, however, frequently sounded, especially, in *Persia*, like our short *O* in *memory*; and the choice of two marks for a variable sound is not improper in itself. and will sometimes be found very convenient.

The fame lengthened, and properly expreffed by **an** accent, as in the word *virtu* : it is a very long vowel in *Perfian*, fo as nearly to treble the quantity of its correffondent fhort one; and this, indeed, may be obferved of all the long vowels in the genuine *Isfahdni* pronunciation; but the letter *vau* is often redundant, fo as not to alter the found of the fhort vowel preceding it; as in *khofh* and *khod*: it may, neverthelefs, be right to exprefs that letter by an accent.

A vocal found peculiar to the *Sanfcrit* language: it is formed by a gentle vibration of the tongue preceding cur *third* vowel pronounced very *fhort*, and may be well expreffed by the profodial mark, as in *Rifhi*, **a** Saint. When it is connected with a confonant, as in *Chrifhna*,) no part of it is ufed but the curve at the bottom. We have a fimilar found in the word *merrily*, the fecond fyllable of which is much fhorter than **the** firft fyllable of *riches*.

The fame complex found confiderably lengthened ; and, therefore, diftinguiftable by the profodial fign of a *long* vowel.

In *Bengal*, where the *ra* is often sunk in the pronunciation of compound syllables, this letter expresses both syllables of our word *lily* : but its genuine sound, I believe, is *Iri*, a short triphthong, peculiar to the *Sanfrit* language.

Whatever be the true pronunciation of the former symbol, this is only an elongation of it, and may, therefore, be distinguished by the metrical sign of a long vowel.

Our *second* long vowel, being represented, like the others, by an accent, as in *Veda*, the sacred book of the *Hindus*, which is a derivative from the *Sanfrit* root *vid*, to know. The notation which I recommend will have this important advantage, that learned foreigners in *Europe*, will in general pronounce the oriental words expressed by it, with as much correctness and facility as our own nation.

This is a diphthong, composed of our *first* and *third* vowels, and expressible, therefore, by them, as in the word *Vaidya*, derived from *Veda*, and meaning *a man of the medical craft* in *Bengal*. It is pronounced as the Greek diphthong in *poimen*, a *shepherd*, was probably
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founded

founded in ancient *Greece*. The *Arabs* and the *Englilh* articulate this compofition exactly alike; though we are pleafed to exprefs it by a fimple letter, which on the continent of *Europe* has its genuine found. In the mouth of an *Italian*, the conftituent vowels in the words *mat* and *miei* do not perfectly coalefce, and at the clofe of a verfe, they are feparated; but a *Frenchman* and a *Perfian* would pronounce them nearly like the preceding long vowel; as in the word *Mai*, which at Paris means our month of the fame name, and at *Isfahan* fignifies *wine*. The *Per/tan* word, indeed, might with great propriety be written *mei*, as the diphthong feems rather to be compofed of our *fecond* and *third* fhort vowels; a compofition very common in *Italian* poetry.

3

Though a coalition of *acar* and *ucar* forms this found in *Sanfcrit*, as in the myftical word *om*, yet it is, in fact, a fimple articulation, and the *fourth* of our long vowels.

Here, indeed, we meet with a proper diphthong, compounded of our *firft* and *fifth* vowels; and in *Perfia* the conftituent founds are not perfectly united; as in the word *Firdaufi*, which an Italian would pronounce exactly like a native of *Isfahan*. Perhaps, in *Arabick* words, it may be proper to reprefent by an accent, the letters *yd* and *waw*, which, preceded by the open vowel, form the refpective diphthongs in *Zohair* and *Jauheri*; but the omiffion of this accent would occafion little inconvenience.

अ०

This is no vowel, but an abbreviation, at the end of a syllable, of the *naṣal* consonants: thus the *Portuguese* write *Siad* for *Siam* with a *naṣal* termination: and the accurate M. D'ANVILLE expresses great unwillingness to write *Siam* for the country, and *Siamois* for the people of it, yet acknowledges his fear of innovating, ' notwithstanding his attachment to the original and proper ' denominations of countries and places.' It appears to me, that the addition of a distinct letter, *ga*, would be an improper and inconvenient mode of expressing the *naṣal* sound, and that we cannot do better than adopt the *Indian* method of distinguishing it, in *Sanskrit*, *Chinese*, and *Persian* words, by a point above the letter; as in *Sinha*, a lion; *Canhi*, the name of an illustrious Emperor; and *Saman* a household.

This too is an abbreviation or substitute, at the close of a syllable, for the *strong aspirate*, and may be distinguished in the middle of a word by a hyphen, as in *duh-c'ha*, pain; though it seems often to resemble the *Arabian ha*, which gives only a more forcible sound to the vowel which precedes it, as in *hhiemah*, science. It is well known, that, when such *Arabick* words are used in construction, the *final* aspirate of the first noun has the sound of *ta*; but, as the letter remains unaltered, it should, I think, be preserved in our characters, and expressed either by two points above it, as in *Arabick*, or by an accentual mark; since, if we write *Zubdahulmulc*, Or, *the Flower of the Realm*, with a comma to denote the suppression of the *final* every learner will know, that the first word should be pronounced

nounced *Zubdat*. The *ha* is often omitted by us, when we write *Perfian* in *Englilh* letters, but ought invariably to be inferted, as in *Shahnamah*; fince the afpiration is very perceptibly founded in the true pronunciation of *dergah*, *rubah*, and other fimilar words. The *Sanfcrit* character before us has the fingular property of being interchangeable, by certain rules, both with *ra* and *fa*; in the fame manner as the *Sylva* of the *Romans* was formed from the *Æolick* word *hylva*, and as *ar bos* was ufed in old *Latin* for *arbor*.

We come now to the firft proper confonant of the *Indian* fyftem, in which a feries of letters, formed in the throat near the root of the tongue, properly takes the lead. This letter has the found of our *k* and *c* in the words *king* and *cannibal*; but there will be great convenience in expreihng it uniformly by *the fecond* of thofe marks, whatever be the vowel following it. The *Arabs*, and, perhaps, all nations defcended from *SEM*, have a remarkable letter founded near the palate with a hard preffure, not unlike the cawing of a raven, as in the word *Kafim*; and for this particular found the redundancy of our own alphabet fupplies us with an ufeful fymbol. The common people in *Hhejaz* and *Egypt* confound it, indeed, with the firft letter of *Gabr*; and the *Perfians* only add to that letter the hard palatine found of the *Arabian kaf*: but if we diftinguifh it invariably by *k*, we (hall find the utility of appropriating our *c* to the notation of the *Indian* letter now before us. The third letter of the *Roman alphabet* was probably articulated like the *kappa* of the *Greeks*; and we may fairly fuppofe, that *Cicero* and *Cithara* were pronounced alike at *Rome* and at *Athens*. The *Welfh* apply this letter

letter uniformly to the same sound, as in *cat* and *cefn* ; and a little practice will render such words as *citab* and *cinnara* familiar to our eyes.

We hear much of aspirated letters; but the only proper *affirates* (those, I mean, in which a strong breathing is distinctly heard after the consonant) are to be found in the languages of *India* ; unless the word *cachexy*, which our medical writers have borrowed from the *Greek*, be thought an exception to the rule. This aspiration may be distinguished by a *comma*, as the letter before us is expressed in the word *c'hanitra*, a *spade*. The *Arabian*, *Persian*, and *Turcan* aspirate, which is formed by a harsh protrusion of the breath, while the consonant is roughly articulated near the root of the tongue, may be written as in the word *makhzen*, a *treasury*.

Whatever vowel follows this letter, it should constantly be expressed as in the words *gul*, a flower, and *gil*, clay : and we may observe, as before, that a little use will reconcile us to this deviation from our irregular system. The *Germans*, whose pronunciation appears to be more confident than our own, would scarce understand the *Latin* name of their own country, if an *Englishman* were to pronounce it as he was taught at school.

The proper aspirate of the last letter, as in the word *Rag'huvanfa*. The *Persians* and *Arabs* pronounce their *ghain* with a bur in the throat, and a tremulous motion
of

of the tongue, which gives it a found refembling that of r, as it is pronounced in *Northumberland* : but it is, in truth, a compound guttural, though frequently exprefTed by a fimple letter, as in *Gaza*, which fhould be written *Ghazzah*, a city of *Paleftine* ; and in *gazelle*, as the *French* naturalifts call the *ghazal*, or antelope, of the *Arabians*. The *Perfian* word *migh*, a cloud, is *meg'ha* in *Sanfcrit*; as *mijh*, a fheep, appears alfo to be derived from *mefha*, by that change of the long vowels which generally diftinguifhes the *Iranian* from the *Indian* pronunciation.

This is the *nafal* palatine, which I have already propofed to denote by a *point* above the letter *n*; fince the addition of a *g* would create confufion, and often fugged the idea of a different fyllable. Thus ends the firft feries of *Nagari* letters, confifting of the *hard* and *foft* guttural, each attended by its proper afpirate, and followed by a *nafal* of the fame clafs; which elegant arrangement is continued, as far as poffible, through the *Sanfcrit* fyftem, and feems conformable to the beautiful analogy of nature.

The next is a feries of *compound* letters, as moft grammarians confider them, though fome hold them to be fimple founds, articulated near the palate. The firft of them has no diftinct fign in our own alphabet, but is expreffed, as in the word *China*, by two letters, which are certainly not its component principles. It might, perhaps, be more properly denoted, as it is in the great work of M. D'HERBELOT, by *tfh* ; but the inconvenience of retaining our own fymbol will be lefs than that of introducing a new combination, or inventing, after the example of Dr. FRANKLIN, anew character.

China

China is a *Sanfcrit* word; and it will be convenient fo to write it, though I feel an inclination to exprefs it otherwife.

The fame compofition, with a ftrong breathing articulated after it, Harfh as it may feem, we cannot, if we continue the former fymbol, avoid expreffing this found, as in the word *ch'andas*, metre.

This too feems to have been confidered by the *Hindus* as a fimple palatine, but appear truth, to be the complex expreffion of *dzh*. haps the fame letter may, by a fmall difference of articulation, partake of two different founds. This, at leaft, we may obferve, that the letter under confideration is confounded, as a fimple found, with *ya* ; and, as a compound, with *za*, one of its conftituents; thus the *yafmin* of *Arabia* is by us called *jafmin*; while the fame man is *Giorgi* at *Rome*, and *Zorzi* at *Venice* ; or (to give an example of both in a fingle word) *yug*, or *junction*, at *Banares*, is *jug* in *Bengal*; and was pronounced *zug*, or, in the nominative, *zupon*, at *Athens*. We fhould, however, invariably exprefs the letter before us by *ja*.

The *Arabian* letters *dhal* *dad* and *dha* are all pronounced in *Perfia* like *za*, with a fort of lifp, from an attempt to give them their genuine found: They may be well expreffed as in fluxionary characters, by a ferief of points above them, *z*, *z*, *z*,

The preceding letter aspirated, as in the word
J' hafha, a fifth.

This is the *second* nafal, composed of the former and the letter *ya*. As the *Italian* word *agnello* and our *onion* contain a composition of *n* and *y*, they should regularly be written *anyello* and *onyon* ; and the *Indian* found differs only in the greater nafality of the first letter, which may be distinguished, as before, by a *point*. A very useful *Sanfcrit* root, signifying *to know*, begins with the letter *ja*, followed by this compound *nafal*, and should be written *jhya*; whence *jnyana*, knowledge; but this harsh combination is in Bengal softened into *gya*: it is expressed by a distinct character, which stands left in the plate annexed.*

In the curious work entitled *Tohfahul Hind*, or, *The Prefent of INDIA*, this is the *fourth* series of *Sanfcrit* letters; but, in general, it has the *third* rank, more agreeably, I think, to the analogy of the system. This class is pronounced with an inflexion of the tongue towards the roof of the mouth, which gives an obtuse sound to the consonant, and may be distinguished by an accent above it. The first is the *INDIAN* , *ta*, as in the word *cotara*, a rotten tree, and is commonly expressed in *Persian* writings by *four* points, but would be better marked by the *ARABIAN* *ta*, which it very nearly resembles.

The

* Plate II,

The fame with a ftrong breathing after it, as in *Vaicunit'ha*, or *unwearied*, an epithet of *Vifhnu*.

A remarkable letter, which the *Muftimans* call the INDIAN *dal*; and exprefs, alfo, by four points over it: but it fhould, by analogy to the others, bediftinguifhed by an accentual mark, as in the word *danda*, punifhment. When the tongue is inverted with a flight vibratory motion, this letter has a mixture of the *ra*, with which it is often, but incorrectly, confounded; as in the common word *bera* for *beda*, great. It refembles the ARABIAN *Bad*.

The preceding letter afpirated, as in *D'haca*, improperly pronounced *Dacca*. In the fame manner may be written the ARABIAN *dha*, but without the comma, fince its afpirate is lefs diftinctly heard than in the *Indian* found.

This is the *nafal* of the third ferief, and formed by a fimilar inverfion of the tongue. In *Sanfcrit* words it ufually follows the letters *ra* and *fha*, (as in *Brdhmena*, derived from *Brahman*, the Supreme Being; *Vifhnu*, a
name

name of his *preferving* power,) or precedes the other letters of the third class.

Here begins the *fourth* series, on which we have little more to remark. The first letter of this class is the common *ta*, or *hard* dental, if it may not rather be considered as a *lingual*.

Its aspirate, which ought to be written with a comma, as in the word *Afwatt'ha*, the *Indian* fig-tree, left it be confounded by our countrymen with the *Arabian* found in *thurayya*, the *Pleiads*, which is precisely the *Englilh* aspiration in *think*; a sound which the *Perfians* and *French* cannot easily articulate. In *Perfian* it should be expressed by *s* with a point above it.

The *soft* dental in *Devata*, or *Deity*.

The same aspirated, as in *Dherma*, justice, virtue, or piety. We must also distinguish this letter by a comma from the *Arabian* in *dhahab*, gold; a sound of difficult articulation in *France* and *Persia*, which we write *thus* very improperly, instead of retaining the genuine *Anglo-Saxon* letter; or expressing it, as we might with great convenience, *dhus*.

The

The fimple *nafal*, founded by the teeth with a little affittance from the noftrils, but not fo much as in many *French* and *Perfian* words. Both this *nafal* and the former occur in the name *Narayena*, or *dwelling in water*.

Next come the *labials* in the fame order; and firft the hard labial *pa*, formed by a ftrong compreffion of the lips, which fo ill fuits the configuration of an *Arabian* mouth, that it cannot be articulated by an *Arab* without much effort.

The proper afpirate of *pa*, as in the word *fhepherd* ; but often pronounced like our *fa*, as in *fela*, inftead of *p'hela*, *fruit*. In truth, the *fa* is a diftinct letter; and *OUT pha*, which in *Engliffh* is redundant, fhould be appropriated to the notation of this *Indian* labial.

The foft labial in *Budd'ha*, wife, and the fecond letter in moft alphabets ufed by *Europeans* ; which begin with a vowel, a labial, a palatine, and a lingual. It ought ever to be diftinguifhed in *Nagari* by a tranfverfe bar, though the copyifts often omit this ufeul diftinction.

The *Indian* aspirate of the preceding letter, as in the word *bhafha*, or a *fpoken* dialect. No comma is necessary in this notation, since the found of *bha* cannot be confounded with any in our own language.

This is the *lafl nafal*, as in *Menu*, one of the first created beings according to the *Indians*: it is formed by closing the lips entirely, whilst the breath passes gently through the nose. And here ends the regular arrangement of the *Nagari* letters. Another series might have been added, namely, *fa, fha, za, zha*, which are in the same proportion as *ta, tha, da, dha*, and the rest; but the two last sounds are not used in *Sanscrit*.

Then follows a set of letters approaching to the nature of vowels. The first of them seems, in truth, to be no more than our *third* short vowel beginning a diphthong, and may, therefore, be thought a superfluous character. Since this union, however, produces a kind of consonant articulated near the palate, it is ranked by many among the consonants, and often confounded with *o* : hence *Yamuna*, a sacred river in *India*, called also the *Daughter of the Sun*, is written *Jomanes* by the *Greeks*, and *Jumna*, less properly, by the *English*.

The two liquids *na* and *ma*, one of which is a lingual, and the other a labial, are kept apart, in order to preserve the analogy of the fyftem ; and the other two are introduced between the two femi-vowels : the firft of thefe is *ra*, as in *RA'MA*, the conqueror of *Silan*.

The fecond is *Ia* in *Lanca*, another name of that ifland both in *Tibut*, and in *India*. A defect in the organs of the common *Bengalefe* often caufes a confufion between thefe two liquids, and even the found of *na* is frequently fubftituted for the letter before us.

When this character correponds, as it fometimes does in *Sanfcrit*, with our *wa*, it is, in fact, our *fifth* *fhort* vowel preceding another in forming a diphthong, and might eafily be fpared in our fyftem of letters; but when it has the found of *va*, it is a labial, formed by ftriking the lower lip againft the upper teeth, and might thus be arranged in a ferief of proportionals, *pa*, *fa*, *ba*, *va*. It cannot eafily be pronorinced in this manner by the inhabitants of *Bengal*, and fome other provinces, who confound it with *ba*, from which it ought carefully to be diftinguifhed; fince we cannot conceive that, in fo perfect a fyftem as the *Sanfcrit*, there could ever have been two fymbols for the fame found. In fact, the *Montes Parveti* of our ancient Geographers were fo named from *Parveta*, not *Parbeta*, a mountain. The *waw* of the *Arabs* is always a vowel, either feparate or coalefcng with

with another in the form of a diphthong ; but in *Perfian* words it is a consonant, and pronounced like our *va*, though with rather less force.

Then follow three *fibilants*, the first of which is often, very inaccurately, confounded with the second, and even with the third; it belongs to that class of consonants which, in the notation here proposed, are expressed by acute accents above them, to denote an inversion of the tongue towards the palate, whence this letter is called in *India* the *palatine fa*. It occurs in a great number of words, and should be written as in *palasa*, the name of a sacred tree, with a very brilliant flower. In the same manner may be noted the *sad* of the *Arabs* and *Hebrews*, which last it resembles in shape, and probably resembled in sound; except that in *Casimir*, and the provinces bordering on *Perfia*, it is hardly distinguishable from the following letter.

The second is improperly written *fha* in our *English* system, and *cha*, still more erroneously, in that of the *French*; but the form generally known may be retained, to avoid the inconvenience of too great a change even from wrong to right. This letter, of which *fa* and *ha* are not the component parts, is formed so far back in the head, that the *Indians* call it a *cerebral*. Either it was not articulated by the *Greeks*, or they chose to express it by their *Xi*; since of the *Perfian* word *Ardaahir* they have formed *Artaxerxes*.

The dental *fa*, which resembles the *Hebrew* letter of the same sound, and, like that, is often mistaken by ignorant copyists for the *ma*.

The

The strong breathing *ha*, but rather misplaced in the *Nagari* system, since it is the second element of articulate sounds. The very hard breathing of the *Arabs* may be well expressed by doubling the mark of aspiration, as in *Muhhammed*; or by an accent above it, in the manner of the long vowels, as in *Ahmed*.

The *Indian* system of letters closes with a compound of *ca* and *fha*, as in the word *paric fha*, ordeal: it is analogous to our *x*, a superfluous character, of no use, that I know of, except in algebra. The *Bengalese* give it the sound of *cya*, or of our *k* in such words as *kind* and *fky*: but we may conclude, that the other pronunciation is very ancient, since the old *Persians* appear to have borrowed their word *Racfhah* from the *Racfha*, or demon of the *Hindus*, which is written with the letter before us. The Greeks rendered this letter by their *Khi*, changing *Dacfhin*, or the fourth, into *Dakhin*.

All the sounds used in *Sanskrit*, *Arabick*, *Persian*, and *Hindi*, are arranged systematically in the table prefixed to this dissertation;* and the Angular letter of the *Arabs*, which they call *din*, is placed immediately before the consonants. It might have been classed, as the modern *Jews* pronounce it, among the strong *nasals* of the *Indians*; but, in *Arabia* and *Persia*, it has a very different sound, of which no verbal description can give an idea* and may not improperly be called a *nasal* vowel; it is uniformly distinguished by a *circumflex* either above a short vowel, or over the letter preceding a long one, as *ilm*, learning; *aalim*, learned.

* Plate I.

Agreeably

अहमेवाहमेवाग्रे नान्यद्यत् सदसत् परम्
पञ्चादहं वदेतत्र योवशिष्येत सोऽस्म्यहम्

अद्वैतं यत् प्रतीयेत न प्रतीयेत चात्मनि
विद्यादात्मने मायां यथा भासो यथा तमः

यथा मदांति भूतानि भूतेषूच्चावचे धनु
प्रविष्टान् प्रविष्टानि तथा तेषु न तेषहं

इतावदेव जिज्ञास्य तत्त्वजिज्ञासुनात्मनः

अन्यत्र व्यतिरेकाभ्यां यत् स्यात् सवत्र सर्वदा

Agreeably to the preceding analyfis of letters, if I were to adopt a new mode of *Engliffh* orthography, I fhould write *Addifons* defcription of the angel in the following manner, diftinguifhing the *fimple breathing*, or firft element, which we cannot invariably omit, by a perpendicular line over our firft or fecond vowel.

So hwen fm enjel, bai divain camand,
 Widh raifin tempefts fhecs a gilti land
 Sch az av let or pel Britanya paft,
 Calm and firin hi draivz dhi fyuryas blaft,
 And, pliz'd dh' almaitiz arderz tu perform,
 Raids in dhi hwerlwind, and dairects dhi ftarm.

This mode of writing poetry would be the touch-ftone of bad rhymes, which the eye, as well as the ear, would inflantly detect ; as in the firft couplet of this description, and even in the laft, according to the common pronunciation of the word *perform*. I clofe this paper with fpecimens of oriental writing; not as fixed ftandards of orthography, which no individual has a right to fettle, but as examples of the method which I recommend; and, in order to relieve the drynefs of the fubject, I annex tranflations of all but the firft Specimen, which I referve for another occafion.

I.

Four Distichs from the SRI BHA'GAWAT.

Mr, WILKIN'S Orthography.

ahamevasamevagre nanyadyat sadasat param
 paschadaham yadetachcha yovaseeshyeta sosmyaham

* See Plate IV. The Letters are in Plate II.

reetertham yat prateeyeta na prateeyeta chatmanee
tadveedyad atmano mayam yatha bhaso yatha tamah

[noo
yatha mahantee bhootanee bhooteshoochchavacheshwa-
prSvecstanyaprive^shtance tatha teshoo nateshwaham

etavadeva jeejnasyam tattwa jeejnasoonatmanah
anwaya vyateerekabhyam yat syat sarvatra sarvada.

This wonderful paffage I fhould exprefs in the follow-
ing manner :

ahamevasamevagre nanyadyat sadasat param
paschadaham yadetachcha yovasishyeta sosmyaham

ritert'ham yat pratiyeta na pratiyeta chatmani
tadvidyadatmano mayam yat'ha bhaso yat'ha tamah

yat 'ha mahanti bhutani bhuteshuchchavacheshwanu
pravishtanyapraavishtani tat'ha teshu na teshwaham

etavadeva jijnyasyam tattwa jijriyasunatmanah
anwaya vyatirecabhyam yat syat servatra servada

II.

MO'HA MUDGARA.

The title of this fine piece properly fignifies, *The Mallet of Delufion* or *Folly*; but may likewife be tranf-
lated, *A Remedy for Diftraction of Mind*; it is com-
pofed

pofed in regular anapæftick verfes according to the ftrictelt rules of *Greek* profody, but in rhymed couplets, two of which here form a *sloca*.

সূৰবৰমান্দিবতকতলবাসঃ শয্যাভূতলমাজিন° বাসঃ ।
সৰ্বপৰিগ্রহভোগত্যাগঃ কস্যস্মৃৎ° নকৰোত্তিৰিধাঃ ॥

শাত্ৰোমিত্ৰেণুশ্ৰেবলৌমানবগম্ব° বিগ্রহসম্মো ।
ভবসম্ভিত্তঃ সৰ্বব্রহ্ম° বাঙ্কন্যচিবাক্ৰদিবিক্ৰহ° ॥
অম্বকুলাচলসপ্তসমুদ্রাব্ৰহ্মপুৰন্দবদিনকববদ্রাঃ ।
নহ° নাহ° নায়° নোকস্তুদপিকিমর্থ° কিমভেশৌকঃ ॥

শ্রমিমমিচান্যত্রৈকোবিস্তব্যর্থ° ন্যপানিমম্যসহিষ্ণুঃ ।
সৰ্ব° পশ্যত্নন্যাযান° সৰ্বব্রোৎসুভেদজ্ঞান° ॥
বালস্তাবৎক্ৰীড়াশক্তসুৰ্য্যস্তাবৎকনীৰক্তঃ ।
বৃষ্টিস্তাবৎচিত্তাবগ্নঃ পৰমেব্রহ্মণিকোপিনলগ্নঃ ॥

দ্বাদশপঞ্চটিকাভিৰশেষঃ শিষ্যাণা° কথিতোভ্যুপদেশঃ ।
যেষা° নৈষবৰোত্তিবিবেক° তেষা° কঃ কৃষ্ণতামতিবেক° ॥

mudha jahihi dhanagamatrishnam
curu tenul uddnimanah suvittrishnam
yallabhase nijacarmopattam
vittam tena vinodaya chittam.

ca tava canta caste putrah
sanscaroyam ativavichittrah
casya twam va cuta ayata
stattwam chintaya tadidam bhratah.

OF ASIATICK WORDS.

ma curu dhanajanayauvanagarvam
harati nimeshat calah sarvam
mayamayamidamac'hilam hitwa
brehmapadam previsasu viditwa

nalinidalagatajalavattararam
tadvajjivanamatisaya chapalam
cshenarpiha sajjana sangatireca
bhawati bhawarnavatarane nauca.

angam galitam palitam mundam
dantavihinarn jatam tundam
caradhritacampitaisobhitadandam
tadapi namunchatyasa bhandam,

yavajjananam tavanmaranam
tavajjanani jathare sayanam
iti sansare fp'huiatara doshah
cat'hamiha manava tava fantofhah.

dinayaminyau sayam pratah
sisiravasantau punarayatah
calah cridati gach'haty ayu
stadapi na munchatyasavayuh

suravaramafidiratarutalavasah
sayya bbutalarnajinam vasah
servaparigrahabhogatyagah
casya suc'ham na caroti viragah-

satrau mitre putre bahdhau
 ma curu yatnam vighrahasahdhau
 bhava samachittah servatra twam
 vanch'hasyachirad yadi vifhnutwam

ashfaculachalaseptasamudra
 brehmapurandaradinacararudrah
 natwam nayam nayam loca
 stadapi cimart'ham criyate socah.

twayi mayi chanyatraico vishnur
 vyart'ham cupyasi mayyasahishnuh
 servam pasyatmanyatmanam
 servatrotsrija bhedajnyanam

valaftavat cridasacta
 staruhastavat taruniractah
 vriddhastavach chintamagnah
 pereme brahmani copi nalagnah.

dwadasa pajj'haticabhiraseshah
 sishyanam cat'hitobhyupadesah
 yesham naisha caroti vivecam
 tesham cah curutamatiirecam.

A verbal Tranflation.

1. Refrain, deluded *mortal*, thy thirft of acquiring
 wealth; excite an averfion from *it* in *thy body*, under-
 ftanding, and inclination: with the riches which
thou

thou acquireft by thy own actions, with thefe **gratify** thy foul.

2. Who *is* thy wife; who thy fon ? How extremely wonderful is even this world ! Whofe *creature* thou alfo art; whence thou cameft. Meditate on this, O brother, *and again* on this.

3. Make no boaft of opulence, attendants, youth ; all *the*fe time (hatches away in the twinkling of an eye : checking all this illufion like *Maya*, fet thy heart on the foot of BRAHME, fpeedily gaining knowledge of him.

4. As a drop of water moves tremulous on the lotos-leaf, thus *is* human life inexpicffibly ffippery: the company of the virtuous *endures* here but for a moment; that is our (hip in paffing the ocean of the world.

5. The body *is* tottering; the head, grey; the mouth, toothlefs : the delicate ftaff trembles in the hand which holds it: ftill the flaggon of covetoufnefs remains unemptied.

6. How foon *are* we born ! how foon dead ! how long lying in the mother's womb ! How great is the prevalence of vice in this world ! Wherefore, O man, haft thou complacency here below ?

7. Day and night, evening and morning, winter and fpring, depart and return : time fports, life paffes on ; yet the wind of expectation continues unretrained.

8. To dwell under the manfion of the high gods at the foot of a tree, to have the ground for a couch, and a hide for vefture, to renounce all extrinfick enjoyments ; whom doth not fuch devotion fill with delight ?

9. Place

9. Place not thy affections too ftrongly on foe of friend, on a fon or a kinfman, in war or in peace t be thou even-minded towards all, if thou defireft fpeedily to attain the nature of VISHNU.

10. Eight original mountains, and feven feas, BRAHME, INDRA, the SUN, and RUDRA, *theſe are permanent*; not thou, not I, nor this or that people; wherefore then ſhould anxiety be raifed *in our minds* ?

11. In thee, in me, in every other being, is VISHNU: fooliſhly art thou offended with me, not bearing my approach: fee every foul in thy own foul; *in* all places lay afide a notion of diverfity.

12. The boy fo long delights in his play, the youth fo long purfues his damfel, the old man fo long broods over uneaſineſs, *that* no one meditates on the Supreme Being.

13. This is the infruccion of learners delivered in twelve diſtinct ftanzas : what more can be done with fuch, as this work fills not with devotion ?

III.

The following Elegy, which is choſen as a ſpecimen of *Arabick*,* was compoſed by a learned Philoſopher and Scholar, M'IR MUHAWMED HUSAIN, before his journey to *Haidarabad* with RICHARD JOHNSON,

*ma Ansa Ia ansa allati
jaat ilayya alai hadhar
alnaumu athkala jaſnaha
wadlkalbu tara bihi aldkaar*

rasadat

* Plate III. and Plate V.

فَإِنَّ الْإِلَهَ بِمَا تَعْمَلُونَ بَصِيرٌ

جَاءَتْكَ الْبُكْلُ حَسَنَةً
 وَالْقَلْبُ طَارَ بِهِ الْعَيْنُ
 فَجَلَسَتْ مِنْهَا الْعَيْنُ
 الْأَنْفَ حَارَةً
 قَدَدَتْ مَا كُنْتَ لَتَحْ
 لَكُمُ حَسَنَةً الْعَيْنُ
 وَكُنْ لَكُمُ حَسَنَةً
 طَرَدَتْهَا الْقُرْمُ
 مَحْسُومًا إِلَيْكَ الْعَيْنُ
 الْأَصْحَابُ فِي صَوْرَةِ الْحَرَمِ
 حَسَنَةً غَسَقَتْ مِنْ حَسَنَةٍ
 وَكُنْ رِيَاضًا لَدُنْكَ
 وَوَرِثَ الْوَدَى بِالْحَسَنَةِ
 أَنْتَ لِي حَسَنَةً الْعَيْنُ
 وَأَدْنَى حَسَنَةٍ
 وَكُنْ مَا صَحَابُ الْعَيْنِ
 أَوْ رَدَّكَ لَكُمُ الْمُنَى
 وَكُنْ لَكُمُ حَسَنَةً
 حَوْلًا لَدُنْكَ الْوَدَى
 وَكُنْ أَوَّلَ الشَّيْءِ
 بِأَيْدِي حَسَنَةٍ
 وَكُنْ لَكُمُ حَسَنَةً

مَا أَلَسْنَاكَ أَفْرَاقِي
الْوَدَّ أَتَقْبَلُ حُضُونِي
رَحِمْتُ أَسَاوِدَ قَوْمِي
تَرَبَّتْ حِلَامِي لَهَا
تَشَكُّو الطَّرِيقَ لَطْلِبِي
فِي لَيْلٍ قَدْ حَمَلْتِ
وَرَبَّ الْعَمَلِ كَأَحْمَلِي
تَكُنِي عُمُورُ السَّمَا
وَالْأَرْضِ يَسْمُ تَسْرُ
وَالزَّجَلُ كَأَكْمَحَرِي
فَوَيْتَ نَيْفِي وَوَدَّ
وَاللَّحْمُ مِلَّ حُلْدِي وَهَامَا
وَنَبَسْتُ إِذَا كَلَمْتُ
طَلْتُ نَجَابِي عَلَى
قَالَ شَدِيدُ قَادِسَا
بَعْدَ أَوَّلِ لَهْوِي
وَمَنْ وَهْنِ أُمْرِ إِلَى
يَوْمَ الْبَيْتِ رَأَيْتُ لَهَا
مَادَ الْأَادِي حَوْلِي
أَلْفَتْ أَخِيَّةَ الْفَلَا
أَمْرِي قَدْ مَلَيْتُ حَوَارِي
مَا رَحِمَ عَلَى قَلْبِي الذَّمَّ

OF ASIATICS WORDS.

*rasadat asawida kaumiha
fatakhallasat minha algharar
nazaat khalakhilan leha
alla tufajihna bishar.*

*teshcu altarika lidhulmuhi
fakadat biha najma alsahhar
fi lailahin kad cahhalat
bisawadiha jafna alkamar*

*wa terai alghamama caajmulin
terat alnujuma alai ashar
tebci uyunon lilsemai
alai hadayikiha alzuhar*

*waalberku yebsimu thegruhu
ajaban lihdtica alghiyar
waalradu cada yukharriku
alasmakha fi summi alhajar*

*fahawat tuaanikuni wakad
hadharat inaki min khafar
waaldemu bella khududaha
wasakai riyadan lilnadhar*

*watentffasat idh callamat
waramat fuwadi bialsherar
dhallat tuaatibunei alai
an jedda li azmu alsafar*

kalat adhabta fuwadana
waadhaktahu, herra alfakar
taasi awamera lilhawai
watutuu nasihaca alghudar

wateduru min ardin ilai
ard in wama terdai almekarr
yauman tesiru bica albihharu
watarahan turmai bibarr

ma dha afadaca jaulahon
haua albiladi fiwai aldajar
aalifta adhbaa alfela
wanesita drama albafter

dm kad melelta jiwarana
yd waiha khillin kad nafar
farhem alai kalbi alladhi
rama alfuluwwa wama kadar.

The Tranflation.

1. Never, oh ! never fhall I forget the fair one, who came to my tent with timid circumfpection:

2. Sleep fat heavy on her eye-lids, and her heart fluttered with fear.

3. She had marked the dragons of her tribe, (the *fentinels*,) and had difmiffed all dread of danger' from them:

4. She

4. She had laid aside the rings which used to grace her ankles, lest the loss of them should expose her to calamity :

5. She deplored the darkness of the way, which hid from her the morning-star.

6. It was a night, when the eye-lashes of the moon were tinged with the black powder (*alcohol*) of the gloom ;

7. A *night*, in which thou mightest have seen the clouds, like camels, eagerly gazing on the stars;

8. While the eyes of heaven wept on the bright borders of the sky ;

9. The lightning displayed his shining teeth, with wonder at this change *in the firmament*;

10. And the thunder almost burst the ears of the deafened rocks.

11. She was desirous of embracing me, but, through modesty, declined my embrace.

12. Tears bedewed her cheeks, and to my eyes, watered a bower of roses.

13. When she spoke, her panting sighs blew flames into my heart.

14. She

14. She continued expoflulating with me on my exceffive defire of travel.

15. ' Thou haft melted my heart, (fhe faid,) and
' made it feel inexpressible anguifh.

16. ' Thou art perverfe in thy conduct to her who
' loves thee, and obfequious to thy guileful advifer.

17. ' Thou goeft round from country to country,
' and art never pleafed with a fixed refidence.

18. ' One while the feas roll with thee; and another
' while, thou art agitated on the fhore.

19. ' What fruit, but painful fatigue, can arife from
' rambling over foreign regions ?

20. ' Haft thou affociated thy felf with the wild an-
' telopes of the defert, and forgotten the tame deer ?

21. ' Art thou weary then of our neighbourhood ?
' O woe to him who flees from his beloved !

22. ' Have pity at length on my afflicted heart,
' which feeks relief, and cannot obtain it.'

Each couplet of the original confifts of two *Dimeter lambicks*, and muft be read in the proper cadence.

IV.

As a specimen of the old *Perſian* language and character, I ſubjoin a very curious paſſage from the *Zend*, which was communicated to me by BAHMAN, the ſon of BAHRA'M, a native of *Yezd*, and, as his name indicates, a *Parsi*: he wrote the paſſage from memory, ſince his books in *Pahlavi* and *Deri* are not yet brought to *Bengal*. It is a ſuppoſed anſwer of I'ZAD, or GOD, to ZERA'HTU-HT, who had aſked by what means mankind could obtain happineſs.

*Az pid u mad che ce pid u mad ne khojhnud bid har-giz bihiſht ne vinid ; be jayi cirſah bizah vinid: mehan ra be azarm nic darid, cehan ra be hich gunah mayazarid : aj khifhavendi dervifh nang medarid : dad u vendad i khaliki yeeta beh cat darid ; az riftakhi zi ten paſin endi fheh nemayid: mabada ce aſhu ten khi fh ra duzakhi cunid, va anche be khi fh ten naſhahad be caſan mapafendid va ma cunid : herche be giti cunid be mainu az aueh pazirah ayed**

A verbal Tranſlation

" If you do that with which your father and mother are not pleaſed, you (hall never ſee heaven; inſtead of good ſpirits, you ſhall ſee evil beings. Behave with honeſty and with reſpect to the great; and on no account injure the mean : hold not your poor relations a reproach to you; imitate the juſtice and goodneſs of the Only Creator: meditate on the reſurrection of the future body, leſt you make your ſouls and bodies the inhabitants of hell; and whatever would be unpleaſing to yourſelves, think not that pleaſing to others, and do it not: whatever good you do on earth, for that you ſhall receive a retribution in heaven."

* plate VII. The *Zend* Letters are in Plate III.

It will, perhaps, be suspected (and the language itself may confirm the suspicion) that this doctrine has been taken from a religion very different, both in age and authority, from that of ZERA'HTUSHT.

V.

The following story in modern *Perfian*, was given to me by *Mirza ABDU'LRAHHI'M*, of *Isfahan* : it seems extracted from one of the many poems on the loves of *MEJNU'N* and *LAIL'I*, the *ROMEO* and *JuLIET* of the East. Each verse consists of a *Crelick* foot, followed by two *Choriambi*, or a *Choriambus* and a *Moloffus*.

شیرمست سرپستان الم	پرورش یافته دامن غم
آبرنگ درخ لیلیا جنون	خال رخساره نامون مجنون
یافت چون راه بکاشانه عشق	آستان شد در خانه عشق
بر سرش شخص جنون سایه نکند	قصه عاشقیش کشت باند
در عرب هر طرفی خوشامد	نقل او نقل مجالس باشد
بد امیری بعرب و الاستان	صاحب نمکنت و ثروت بجهان
ترکستند غم بهبران دیده	پرکل داغ محبت چیده
دیده در طفلی خود سوز فراق	تلخی زهر فراقش بر ذاق

یافت چون قصه آن در رسکال کرد فرمان بخلانی در حال

که سومی بنجر قدم ساز ز سر شویہ تعجیل روان چون صرصر
اکله دلبرده ز مجنون بیکاه بهرم زرد بسیار همراه

رفت و آورد غلامک در حال لیلی آن بادشہ ملک جمال
بخلانی دگرش شد فرمان که تو ہم شوی سومی دشت روان

جانب زینت ارباب جنون شمع پر نور محبت مجنون
زود آوریم آن سوخته را آن جگر سوز غم اندوخته را

رفت و برگشت غلامک چون نگاه والی کشور عشقش همراه
کرد او را چون نظر مرد امیر دید زاری بغم عشق اسیر

بر سرش مستخص جنون کرده وطن زخم هجران به تنش پیرامن
موی سر بر بدنش کثرت قبا موزه از آبله پابر پا

شانه از خار مخیالان بر موش خرقه از یک بیابان بردوش
گفت کای کم شده دادی ضم هیچ خواهی که تمنیات ہم
سر فرازت کنم از مکنات وجاه لیلی آرم بهزت خاطر خواه

گفتني ني که بعيد است بعيد ذره را ام نظري باخو رشيد
 گفت خواهي که کنسي راست بگو سير آن صفحه رخصتارنگو
 ياداري بجماش ميلي راست برکوي بجان ليلي
 گفت کاي قدوه ارباب کرم ذره خاک در تاج سرم
 هر دلم درد زليبي کافي است خواهش وصل زبي الصافيت
 بهر خور سندي اين جزو حقير بس بود برتوي از مهر منير
 گفت و کرد پد سوي دشت روان دیده کريان و مره اشک غشان

*Shirmafti feri piftani alem
 perverefh yaftehi dameni ghem*

*abi rang o rokhi lailayi jonun
 Khali rokhferehi hamun Mejnun*

*yaft chun rah hi cifhanehi ifhk
 afitan fhud bideri khanehi ifhk*

*ber ferefh fhakhsi jonun fayah ficand
 kissehi aafhiki afh gafht boland*

*der drab her tarafi ghaugha fhud
 nakli u nokli mejalis-ha fhud*

*bud amiri biarab vala fhan
sahibi micnat o fervat * bijehan*

*tore tazi ghemi hejran didah
pur guli daghi mohabbat chidah*

*didah der tifliyi khod suzi ferak
talkhiyi zahri ferakefh bimezak*

*yaft chun kissehi an derd fignal
card ferman bighulami der hal*

*ceh suyi naja kadam faz zi fer
fhau beh tajil ravan chun 'serser*

*an ceh dil bordah zi Mejnun bi nigah
beh berem zud biyaver hemrah*

*raft o avard ghulamac der hal
Laili an padifhahi mulci jermal*

*beh ghulami digarefh fhud ferman
ceh to hem fhau bi fuyi dajht ravan*

*janibi zinati arbabi jonun
fhemi pur nuri mohabbat Mejnun*

The reader will supply the point over s, when it stands for *th*.

ON THE ORTHOGRAPHY

*zud aver berem an fukhtah ra
ah jigarsuzi ghem andukhtah ra*

*raft o bergafht ghulamac chu nigah
valiyi cifhvare ifhkefh hemrah*

*card ura chu nazar mard amir
did zari bi ghemi ifhk asir*

*ber ferefh fhakhsi jonun cardah vaten
zakhmi hejran bi tenefh pirahen*

*muyi fer ber bedenefh gafhtah koba
muzah az abilahi pa ber pa*

*fhanah az khari mughilan ber muhf
khirkah az rigi biyaban ber dufh*

*goft cai gomfhudahi vadiyi ghem
hich khwahi ceh temennat dehem*

*ferferazat cunam az micnat o jah
Laili arem biberet khater khwah*

*goft ni ni ceh baiideft baiid
ze reh ra hem nazari ba khorfhid*

goft khwahi ceh coni raft bigu
fairi an safhahi rokhfari nicu

*yd nedari bijemalefh maili
raft berguyi hi jani Laili*

*goft cai kodvahi arbabi cerem
zerrahi khaci der et taji ferem*

*her dilem derd zi Laili cafi
khwahefhi vasl zi bi infafift*

*bahri khor fendiyi in jozvi hakim
bas buvad pertavi az mihri monir*

*goft o gardid fuyi dafht ravan
didah giryan o mizhah afhcfishan*

The Tranflation,

1. *The man who had* inebriated himself with milk from the nipple of Anguifh, who had been nourifhed in the lap of Affliction,

2. MEJNU'N, mad with the bright hue and fair face of LAILI, himfelf a dark mole on the cheek of the defert,

3. Having found the way to the manfion of Love, became *fixed like* the threfhold on the door of Love's palace.

4. Over his head the form of Madnefs had caft her. fhadow : the tale of his paffion was loudly celebrated.

5. Among the *Arabs* a tumult arofe on all fides: the relation of his adventures was a deffert in their affemblies.

6. A powerful Prince reigned in *Arabia*, poffeffing worldly magnificence and riches:

7. He had feen the depredations of Grief through abfence from a beloved object : he had plucked many a black-fpotted flower from *the garden of Love*.

8. Even in his infancy he had felt the pain of fepARATION; the bitter tafte of that poifon remained on his palate.

9. When he learned the ftory of that afflicted lover, he instantly gave an order to a flave,

10. *Saying*, ' Make thy head like thy feet in running ' towards *Najd* : go with celerity, like a violent wind.

11. ' Bring fpeedily with thee to my prefence, Her ' who has ftolen the heart of MEJNU'N with a glance.'

12. The flripling ran, and in a fhort time brought LAILI, ' that Emprefs in the dominion of beauty.

13. To another flave *the* Prince gave this order: ' Run thou alfo into the defert:

14. ' Go to that ornament of frantic lovers, MEJNU'N, ' the illumined taper of love,

15, ' Bring

15. ' Bring quickly before me that inflamed youth,
' that heart-confumed, anguifh-pierced lover.'

16. The boy went, and returned, in the twinkling
of an eye, accompanied by the ruler in the territories
of Love.

17. When the Prince looked at him, he beheld a
wretch in bondage to the misery of defire,

18. Madnefs had fixed her abode on his head : he
was clothed, as with a veft, with the wounds of feparation.

19. His locks flowed, like a mantle, over his body;
his only fandal was the callus of his feet.

20. In his hair ftuck a comb of *Arabian* thorns: a
robe of fand from the defert covered his back.

21.' O thou, (faid *the Prince*,) who haft been loft in
' the valley of forrow, do thou not wifh me to give
' thee the object of thy paffion,

22. ' To exalt thee with dignity and power, to bring
' *LAILI* before thee, gratifying thy. foul ?'

23. ' No, no, (anfwered he:) far, far is it from my
' wifh that an atom fhould be feen together with the fun.'

24. ' Speak truly, (replied the Prince:) art thou not
' willing to recreate thyfelf on the fmooth plain of that
' beautiful cheek ?

25. ' Or haft thou no inclination to enjoy her charms?
 * I adjure thee, by the foul of LAILI, to declare the
 ' truth •

26. He rejoined : ' O chief of men with generous
 ' hearts, a particle of duft from thy gate is a diadem on
 ' my head.

27. ' The pain of my love for LAILI is fufficient for
 ' my heart: a wifh to enjoy her prefence *thus* would be
 ' injuftice.

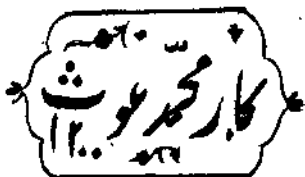
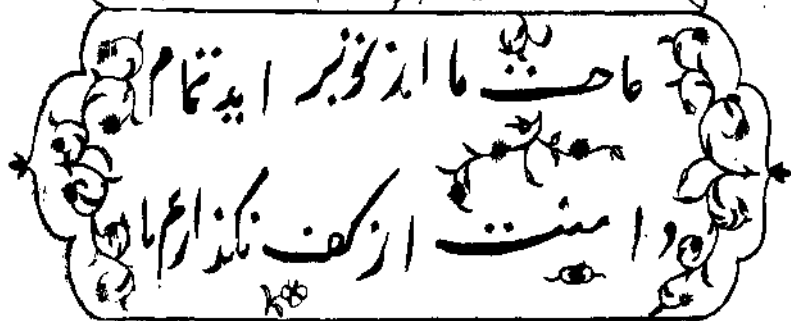
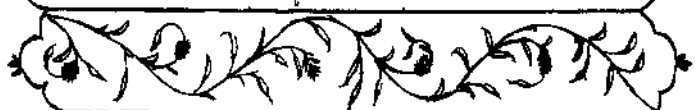
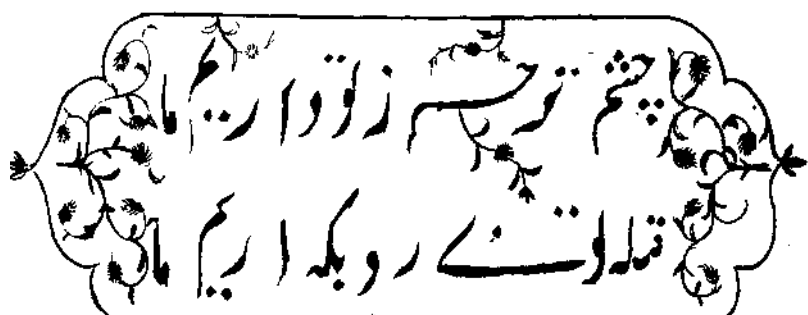
28. ' To gratify this contemptible foul of mine, a
 ' fingle ray from that bright luminary would be enough.'

29. He fpake, and ran towards the defert, his eye
 weeping, and his eye-lafhes raining tears.

Thefe couplets would fully anfwer the purpofe of fhewing the method in which *Perfian* may be written according to the original characters, with fome regard alfo to the *Isfahane* pronunciation; but fince a very ingenious artift, named MUHAMMED GHAUT'H, has engraved a tetractich on copper, as a fpecimen of his art, and fince no moveable types can equal the beauty of *Perfian* writing, I annex his plate*, and add the four lines, which he has felected, in *Englifh* letters: they are too eafy to require a tranflation, and too insignificant to deferve it.

Huwa'l dziz
 Chaflimi terahhum zi to darim ma
 keblah toyi ru beceh arim ma
 hajati ma az to ber ayed temam
 damenat az caf nuguzarim ma.

* Plate VI.



VI.

THE first specimen of *Hindi*, that occurs to me, is a little *Ghazal*, or love-song, in a *Choriambick* measure, written by GUNNA' BEIGUM, the wife of GHA'ZU'LDI'N KHA'N, a man of consummate abilities and consummate wickedness, who has borne an "active part in the modern transactions of Upper Hindustan,

مدعي همسي سخن ساز باوسي هي
 اب تمنا کو يهان مرده مايوسي هي
 اه اب کثرت داغ غم خوابسي حمام
 صفحہ سينہ میرا جاوہ طاوسي هي
 هي ميري طرح جگر خون تيرا مدت سي
 اي جا کسکي خجهي خواهش پاوسي اي
 عوض درد مزي سي وه بهري اين ساري
 زخم ني شمشير تيري چوسي هي
 عشق عبث کرتی اين مجھ پر منت
 تان بہرہ سچ مانسي کي خوان سي تو تک خود سي هي

Muddaii hemse sokhan saz bi salusi hai
ab tamenna' co yehan muzhdei mayusl hai
ah ab casrati daghi ghemi khuban se tamam
safhai 'sinah mera lilwai tausi hai

hai meri tarah jigar khuni tera muddatse
 ai hinna cisci tujhe khwahishi pabusi hai
 awazi derd meze se wah bhere hain sare
 jis lebi zakhm ne shemshiri teri chusi hai
 tohmati ishk abas carte hain mujhper Minnat
 han yeh sech milne ci khuban se cit tuc khusi hai.

The Tranflation.

1. My belaved foe fpeaks of me with diffimulation;
 and now the tidings of defpair are brought hither to
 the defire of my foul.

2. Alas ! that the fsmooth furface of my bofom,
 through the marks of burning, in the fad abfence of
 lovely youths, is become like the'plumage of a peacock.

3. Like me, O *Hinna*, (the fragrant and elegant
 fhrub, with the leaves of which the nails of *Arabian*
 women are dyed crimfon,) thy heart has long been full
 of blood : whofe foot art thou defirous of killing?

4. Inftead of pain, *my beloved*, every wound from
 thy cimeter fucks with its lips the fweetnefs with which
 it is filled.

5. The fuppiicion of love is vainly caft on MINNAT-
 Yes, true it is, that my nature rather leads me to the
 company of beautiful youths.

Thus have I explained, by obfervations and examples,
 my method of noting in *Roman* letters, the principal
 languages of *Asia* ; nor can I doubt that *Armenian*,
Turkifh, and the various dialects of *Tartary*, may be
 expreffed in the fame manner with equal advantage ;
 but, as *Chinefe* words are not written in alphabetical
 characters, it is obvious that they muft be noted ac-
 cording to the beft *pronunciation* ufed in *China*, which
 has, I imagine, few founds incapable of being rendered
 by the fymbols ufed in this effay,

II. ASTRONOMICAL

II.

ASTRONOMICAL OBSERVATIONS

IN

FORT WILLIAM,

AND BETWEEN

MADRAS AND CALCUTTA.

BY COLONEL THOMAS D. PEARSE,

*Commandant of the Artillery, and Second in Command
of the Bengal Army.*

T BEG leave to communicate to the Society some
Astronomical Observations which I made at different
times in *Fort William*.

The clock I used from December, 1775, was made
by ELLICOT: It beats dead seconds: there is one hand
for minutes, and the hours revolve with the plate fixed
to the hour-wheel

The pendulum can be lengthened without flopping
the clock, by means of a screw, which supports the
spring by which the pendulum hangs. And the pendu-
lum is described in the 47th volume of the Philosophi-
cal Transactions, p. 479. The clock-case is firmly
screwed to the wall. The transit instrument was made
by Sisson; it is four feet long, and has a double ob-
ject glass. This is supported by two iron bars, which
are joined to a square frame, that lies two feet under
the floor, buried in brick-work.

The upright bars are protected by a case of wood,
which is fixed to the house, without touching them in
any part

At first I used the cornice of the Commandant's
house to adjust by; but afterwards a Aider, with a slit, in
place,

place, behind which I could place a light to adjuft with by night. There was another object alfo to the fouth, about 1500 yards off, which I could ufe by day; and both thefe were fixed when the tranfits by telefcopes and equal altitudes agreed, and were examined from time to time.

I had only a tolerably good HADLEY'S quadrant and quickfilver, till December, 1776, when I was lucky enough to get an 18 inch land quadrant, made by RAMSDEN, with a micrometer to fubdivide the nonius. This inverts, and is capable of the niceft adjuftments. My firft telefcopes was an 18 inch reflector, made by GREGORY.

In Auguft, 1777, I obtained Mr. SMITH'S refractor, made by DOLLOND, with a triple objet glafs, and a double object glafs micrometer. And I made a polar axis for it of brafs with rack-work, and a declination circle not divided, which is alfo racked; to which, when the micrometer was ufed, the telefcopes was fixed.

I likewife communicate obfervations made by myfelf chiefly, and by Lieutenant COLEBROOKE for me, to afcertain the longitudes and latitudes of places between *Madras* and *Calcutta*.

Going to *Madras* in 1782, I ufed a HALLEY'S octant and quickfilver, which I fhall here defcribe.

The octant had a wooden index. I feparated the part which carries the fpeculum from the arm; then fixed it into a lath, and turned it On its own center: it was three tenths of an inch thick; the thicknefs was divided into three parts, and then the edge was turned away on each fide; fo that the whole piece of wood became like three wheels of different diameters joined together on
their

their flat surfaces, and the middle one was the biggest; that below was the next in size ; and the upper one was the 'least, and only equal to the brass plate on which the speculum was screwed,

A plate of brass, nearly one tenth thick, broad enough to admit of a hole as big as the under circular part of the turned wood, and to afford a rim of half an inch broad, was then fixed into the lath, and had a hole turned in it of that size : on one side it had an arm as broad as the wooden index was.

A second plate of the same kind was also prepared ; but the hole was larger, though less than the middle part of the turned wood.

The turned piece was then fixed to the octant by its pin, and the plate with the smaller hole beneath it. As they fitted very nicely, the brass plate turned upon the wood round the center of the octant, if that were held fast; and both turned on the center pin if they, were pressed together.

The plate with the large hole was then laid above the turned wood, its center coinciding with the common center: the wooden arm of the index had the end nearest the center cut away, above and below, equal to the thicknesses of the plates of brass: it was there fixed to the octant in the same manner as before it, was cut off from the center, and the brass plates were drilled, and rivetted to it.

When these plates were pressed together; they held the turned piece as it were in a vice; when they were forced asunder, the turned piece might be moved independently ; and there were in the direction of the,
radius

radius two screws, one beyond the speculum, and one between it and the nonius, for the purpose ; they had button heads, and their flanks were as high as the top of the index speculum.

On the back of the octant there was a screw with a button head; the thread entered the center pin, and the shoulder pressed upon the plate which keeps that pin in its place.

The back screw and vice screws being flacked, the index speculum was brought parallel to the horizon glass; then the vice screws were turned to join the speculum to the index, as before the alteration was made.

To extend the power of the octant occasionally, it was nicely adjusted: then the index was carried to 90° , and there screwed to the limb. Next the back screw of the center pin was forced, till by its pressure the speculum was held fast: after that, the vice screws being flacked, the index was carried back to 0° , and there screwed to the limb. Whilst it was in this position, the vice screws were again turned, which fixed the speculum-piece to the index, and then the back screw being flacked, the speculum followed its motions. When it was used, the index shewed the angle which was to be added to 90° for the angular distance.

By this contrivance, with an octant, I could take angles of 150° ; and consequently meridian altitudes as far as 75° : and if the horizon glass and telescope could have been made to slide nearer towards the center, it would have increased still further.

In RAMSDEN'S new quadrant there is a screw to adjust the horizon glass, and bring it parallel to the other: provided the index speculum is perpendicular to the limb, this is all well; but if that be inclined, as soon as the index quits 0° , there will be an error in the angles observed.

observed. I found it so experimentally, and corrected my quadrants accordingly, by turning the horizon glass round its own axis; then having adjusted as usual, the error sideways was corrected by moving both glasses, by means of their adjusting screws, and dividing the error between them. If, when the horizon glass was refitted to its proper position, there still was a lateral error, the operation was repeated. I do not find any mention of this in any of the instructions for using HADLEY'S instruments that I have seen.

The horizon was artificial, invented for the occasion, and consisted of a wooden trough about $\frac{1}{2}$ an inch deep, (or rather more,) tilted nearly with quicksilver, which served to float a plate of thick glass, the under surface of which had been unpolished, and blacked, that only one image might appear. This needs not any adjustment; the only requisite is, that the glass be equally thick all over, and smooth: that which was used was a part of a very large looking-glass, that had been broken by accident.

The watch was a time-keeper, by BROOKBANK, which goes whilst it is wound up, and is tolerably good, considered as a false watch lent to *India*.

The telescope had a double object. glass, with a brass stand, and was made by GREGORY: it magnifies 80 times; but, like all of this construction, that I have seen, it had a dark speck in the middle, and was not equally good in the whole field.

In the way back, we had a land quadrant, of 15 inches radius, made by B. MARTIN, and sent out by the *India* Company. It was used by Mr. HURST in the transit of *Venus*. This could not be inverted. But, to destroy the effects of collimation, and error of level, the latitudes are all determined by stars taken north and south of each place, as the observations will shew.

T. D. PEARSE.

JUPITER'S FIRST SATELLITE. IMMERSIONS.

<i>Date.</i>	<i>Apparent Time.</i> H. M. S.	<i>Time by Ephemeris.</i> H. M. S.	<i>Longitude.</i> H. M. S.	
1774, 14th Oct.	12.32.25	6.39.00	5.53.25	<i>Jupiter</i> very nearly vertical, and the glafs flhook much.
23d do.	8.57.15	3.03.17	5.53.58	
1776, 13th Nov.	13.58.56,3	8.04.46	5.54. 10,3	
29th.	12.09.39	6.15.53	5.53.46	
6th Dec.	14.00.32.6	8.06.38	5.53.54, 6	
13th.		9.57.02	5.53.57,3	
15th.	10.18.31	4.24.35	5.53.56	
22d.	12.08.47,6	6.14.50	5.53.57,6	
31ft.	8.26.54,1	2.32.49	5.54. 05,1	
1777, 16th Jan.	8.51.19,6	2.57.11	5.54.08,6	
27th Dec.	9.38.58,8	3.45.01	5.53.57,8	<i>Dollond's</i> triple object glafs.

EMERSIONS.

1774, 29th Dec.	11.25.47	5.31.52	5.53.45	<i>Dollond's</i> triple object glais. Ditto. Ditto. Ditto.
1777, 30th Jan	12.36.11,8	6.42.30	5.53.41,8	
1778, 15th March	8.40.49,6	2.47.41	5.53.08,6	
7th April	9.00.02,2	3.07.00	5.53.02,2	
14th.	10.56.35,1	5-03.30	5.53.05.1	
1779, 3 ^d May	12.07.38,8	6.14.37	5.53.01,8	

SECOND SATELLITE. IMMERSIONS.

1776, 4th Dec.	10.53.23,5	4.58.08	5.55.21,5	Emerg'd from behind the body 9 27.04.3, and was quite clear of the body at 9.28 55.3. <i>Dollond's</i> triple object glafs
11th.	13.25.50,4	7.30.42	5.55.08,4	
18th.	15.58.21	10.03.14	5.55.07,0	
29th.	7.48.01,4	1.52.27	5.55.34,4	
1789, 11th July	9.34.17,3	3.41.33		

EMERSIONS.

1775, 29th Dec.	8.47.41,7	2.53.18	5.54.23,7	Here the tables seem to have been, corrected. <i>Dollond's</i> triple object glafs.
1777 23 ^d J ^{an} .	7.32.44,3	1.37.41	5.55.03,3	
55th April	7.20.34,1	1.25-43	5.54.51,1	
6th May	9.59.28,9	4.04.11	5.55, 17,9	
1779, 8th May	11.45.53,5	5.52.13	5.53.40,5	

THIRD

THIRD SATELLITE.

<i>Date.</i>	<i>Apparent Time correct.</i>	<i>Time by Ephemeris.</i>		
	H. M. S.	H. M. S.		
1774, 10th Nov.	13.12.30	7.18.17	Emerfion.	But I thought I saw it about a minute before; however it was so very dim that I cannot be certain.
1775, 28th Jan.	7.28.58,5	1.33.45	Immerfion.	
	9.04.21	3.07.49	Emerfion.	
1776, 3d Nov,	10.55.20,2	5.00.14	Emerfion.	I think I might have <i>seen</i> it earlier if I had expected it to emerge at a greater distance than one Satellite appeared, which was the case. <i>Dollond's</i> triple object 'glafs. Rather doubtful I thought I saw it, but <i>Jupiter</i> was so very- bright it dazzled my eyes.
17th.		9.42.37	Immerfion.	
23d Dec.	11.10.33,6	5.19.58	Immerfion.	
1777, 28th Jan.	10.13.13,2	4.22.53	Emerfion.	
1778, 3d April.	9.21.24,9	3.33.12	Do.	
1779, ad May.	8.44.37,5	2.54.27	Immerfion.	
	45.26,5			
	11.32.80,6	5.44.27	Emerfion.	

FOURTH SATELLITE.

1776, 2d Nov.	13.23.14,0	Emerfion'.	At the time of this obscrvation, there was a very small star a very little to the west of the western- most Satellite. <i>Dollond's</i> triple object glafs.
1777, 8th Jan.	9.28.49,5	Immerfion.	
25th	7.23.02,0	Emerfion.	
1778, 9th May.	8,25.13,0	Emerfion.	

Other Observations of Jupiter and his Satellites.

1776, 22 November, between nine and ten, I saw a very small star, not bigger than a Satellite, very near to *Jupiter*. The configuration thus,



At 12h 9'. 39". the configuration was thus,



that is, the two outermost Satellites had gone forward, and *Jupiter* back, in right ascension, visibly.

30th November the configuration was thus,

W

that is, the star was north; distant from the limb in declination about the quantity of the lesser axis. In right ascension the star was advanced further than *Jupiter's* center, about a fifth of the axis. Some time after I found that the little Satellite, which was below the limb, had immersed into the disk; and soon after I saw the shadow of that Satellite upon the Great Belt. I observed the shadow go off the disk; and about an hour after that, the Satellite emerged a little to the north of the

the Great Belt. The times were noted, but the book was destroyed by accident. When *Jupiter* passed the meridian, I could not see the star in the transit telescope; but about 4' afterwards the configuration was thus,



. W

that is, a line drawn from the star to *Jupiter's* center, made an angle with the Great Belt, which I judged to be about 41° ; and in that direction it was about the quantity of the lesser axis distant from the limb; so that *Jupiter* had moved back about $\frac{3}{4}$ of his diameter from the time I first saw him to-night till he passed the meridian.

1776, 8th December, my clock was flopped by an earthquake, which spoiled the observation of the immersion of *Jupiter's* first Satellite.

1776, 23d December, an Emergence of the first Satellite from the Disk.

Apparent Time correct

The shadow touched the middle of

the edge of the Great Belt, and then

made a visible notch in it - - 11.26.00

It was still visible - 28.05

It vanished - 30.50

Satellite at the edge of the limb - ' 53.25

In contact: emerged - 58.53

1777, 25th January, 7h.23'.00', I saw a small star a little to the West of the westernmost Satellite, not so

bright as either of them; it was hardly visible through the reflector.

Configuration thus,



26th, I could not find the star at 7h 11m.

29th May, *Jupiter's* second Satellite immersed behind the disk - - 7.25.18,7

1779, 2d May, an Immersion of *Jupiter's* first Satellite into the Disk.

Apparent Time correct.

		^h	»
In contact		11.31.37,6	
Immersion doubtful	-	35.19,6	
certain		35.50,6	

If the immersions and emersions of this nature were calculated so as to set astronomers to look out for them, *Jupiter's* satellites might be rendered more useful than they now are in regard to longitudes by land; and that too, whether the calculations are accurate or erroneous*

For I mean to use an immersion or emersion of any kind, only to note an instant for taking the altitude of *Jupiter* at the place of observation.

If the instruments be of equal powers, and the eyes of equal strength, then certainly the altitudes will be taken

taken by every perfon, who fhall obfervethe fame phenomenon at one and the fame infant of time; and thence the diftance of *Jupiter* from the meridian of each will be known to feconds, if we fuppofe the latitudes known before-hand.

And if the telefcopes of quadrants could be made fufficieatly powerful to obferve the fatellites, then a fingle obferver, at any place, could perform the whole without trouble or difficulty, and would only need a common watch, and a little more patience than would be requifite if the watch were perfect, and calculation true.

But fuppofing the telefcopes and quadrants as they are, and two obfervers at each place, one employed with the fatellite, and the other with the quadrant, then the latter mult carefully keep the body of *Jupiter* on the line of altitude till the other tells him to ftop, which is to be done at the infant of obferving the expected phenomenon.

By this mode a degree of longitude may be meafured with as much accuracy as a degree of latitude; and it is what I have in contemplation to perform, as foon as I can get the requifite inftruments.

*Remarks on fome erroneous Obfervations of Jupiter's
firft Satellite,*

In 1778, I took notice, that when *Jupiter* is very near the oppofition, the obfervations are not to be depended on, and that the Satellite vanifhed without changing colour. The fame happened in 1779, 1780, and again in 1784, at *Beemulwilfa*; therefore I have put down the times of fuch obfervations, as they are reduced to apparent time, from the known deviation of the clock from mean time. The tranfit inftrument was examined

VoL.

I.

F

by

by stars that pass over the zenith, and by others north and south, and by equal altitudes; all which shewed it was as nicely in the meridian as it well could be.

In 1779, on the 3d of March, I observed α and β Gemorum, and the deviation was the same as that derived from the transits of the sun on the 23d February and 5th March. In the observation of the moon 23d November following, the accuracy of its position was ascertained, so that the times were correct; and the errors depend on something at the Satellite and planet. Perhaps *Jupiter's* atmosphere may be so dense as to prevent the free passage of the diminished light soon after the beginning of an eclipse, or even before it. If so, these observations may tend to clear up that point, and to measure the extent of that atmosphere.

Date.	Apparent Time correct. H. M. S.	Ephemeris H. M. S.	
1778, 4th Feb.	7.5 ^{1.10.3}	1.58.08	
1779, 23d do.	9.02.51,0	3.10.01	
2d March	10.58.15	5.05.17	
* 9th do.	12.53.08	7.01.07	
11th do,		1.30.10	
	7.20.35,3		These two were observed at <i>Dumdum</i> ; but the time was taken from the transit instrument by a watch, carried out before, and back after, and compared with the clock.
1780, 13th March.		4.20.23	

All these observations were made with *Dolland's* triple object glass.

Observations of Venus.

1776, 2d January, at 7h.55', in the morning, I measured the distance between *Venus* and the *Sun* $46^{\circ} 32'$.

I was

I was informed the natives were viewing it with astonishment, but I did not see it with the naked eye. Through the little telescope of my HADLEY'S quadrant it appeared as bright as *Capilla*.

	Apparent Time correct,
X777, 1st July, Venus passed the meridian	21.30.41,5
14th, Venus visible to the naked eye, and has been for three days.	
Passed the meridian	21.01.02,0

Distances from the Sun, measured with an HADLEY'S Quadrant.

				h
West limb $41^{\circ} 57'$				91.21.58,5
East do. $42^{\circ} 29'$				25.08,5
15th, Passed the meridian	-	-		20.59.29
16th, Ditto	-			58.08,5
17th, Still visible.				

Distances measured as before.

				h
From nearest limb $42^{\circ} 31'$				0.08.10
From furthest do. $43^{\circ} 05'$	-	-		0.12.14

1780, 18th March, an Appearance of Venus to Mars.

Inch.	Non.	Distances.		apparent Time correct.
				h
2,45,,3	=	15.17,2	-	7.39.33,9
2,45.8	=	15.20,9	-	44.33,9
2,45,,5	=	15.18,7	-	49.33,9

N. B. The scale of the micrometer is divided into twentieth parts of an inch, and the nonius subdivides, these into twenty-five parts each.

70 A S T R O N O M I C A L O B S E R V A T I O N S

The next morning the *Sun's* diameters were measured.

	<i>Inch.</i>	<i>Non.</i>
Horizontal	5,15	17,25
Vertical	5,10	21
Mean	5,15	„ 06,625
Error of micrometer	+	4
	5,15	10,625

San's diameter by Ephemeris 32' 11",6, from which the distances were calculated.

19th March, Difference of Declinations, and right Ascension.

<i>Inch.</i>	<i>Non.</i>			<i>Apparent Time correct.</i> <i>h</i>
4,20	00	=	26.08,7 at	- 7.41.51,4
Mars passed the vertical wire			-	- 43.09,4
Venus do.	-			45.16,4

Mars was fourth of Venus.

Observations of Mars.

An Appulse of Mars to α Librae.

Distances.

<i>Inch.</i>	<i>Non.</i>				
1,00	„ 19	=	6.18,5	-	- 10-50.05
1,00	„ 17	=	6.17,0	-	- 10.58,05

The star was west of Mars.

Observations of the Moon.

1775, 12th January, an Occultation of Aldebaran.

Immersion	-	8,54.55
		I believe

I believe the watch was fet by equal altitudes; but I have loft the book in which the entry was made, and have only a copy of my obfervations as a register of this and the next that follows.

15th February, an Eclipse of the Moon,

End 10h.15'.00",5, apparent time correct.

17765 3d March, an Occultation of Regulus.

Not having an ephemeris at the time, the obfervation was accidental, and confequently not prepared for, The tranfit infrument was but lately put up, and had not been much ufed, but it was the only refource for time: accordingly, it was adjufted truly as to level and wires, but it was not in the meridian accurately. Therefore the tranfits of feveral ftars were taken to determine the pofition of the infrument, and the error of that being known, the times could be correfted by a very eafy rule, which I fubjoin Let x be the error in feconds at the horizon, a and b the fines of the zenith diftances of two ftars, A and B the fines of the polar diftances, d the difference of the errors of the clock, as found from the obferved and the calculated tranfit of thofe two ftars.

Then $\frac{x}{a}$ will be the fpace at the equator for the equation to correft one, and $\frac{x}{b}$ the fame for the other; and the fum of thefe two will be equal to $d+15$. or, which is the fame thing, $\frac{x}{15} \frac{a}{A} + \frac{x}{15} \frac{b}{B} = d$. Whence for all fmall angles $x = \frac{15 + d + \frac{a}{B} + \frac{b}{A}}{\frac{a}{B} + \frac{b}{A}}$

and y Leonis were the two ftars that were relied on for time and pofition, becaufe they pafs fo nearly at equal diftances from the zenith, that the mean of their errors of the clock would be fo near to the true one, that

that any clock yet invented could not fthew the difference actually.

The difference of their errors was 5",6, and thence the error of the tranfit inftrument was only 1246,16 at the horizon, and the diftance of the wires of the telefcopce is 1478".

	<i>Times of paffing the Middle Wire.</i>	<i>Equation for the Error of the Inftru- ment.</i>	<i>Page by Calcula- tion,</i>	<i>Error of Cluck.</i>
3d March.				
Weft Limb.	10.58.19,5	— 15,08,		
_n Leonis,	11.01.45,0	— 7,16	10.54.56,8	6.41,04
_a Leonis.	03.11	— 14,07		6.41,03
The Northern.	10.33			
The Southern.	10.39	+ 3,01	11.04.00,6	6.41,41
_y The Southern.	14.04			
_y The Northern.	14.08	— 2,59	07.24	6.41,41
Urfe Majoris:	13.08.48	+92,27	13.03.43,9	6.36,37
Urfæ Majoris.	48.40	+92,01	43.34	6.38,00
Immerfion,	14.02.39,5			
It was emerged,	52.30			
but I did not				
fee the Emer-				
fion.				

6th March, *Equal Altitudes, by a HADLEY'S
Quadrant and Quick filver.*

Quadrant.

30.00	tiling	-	^h 20.29.41	
	falling	-	27.42.30	6.05,5
30.30	rifing	-	20.32.14	
	falling	-	27.39.56	6.05,0
	Mean	-		6.05,25
	Equation of equal altitudes	-		7,10
				5-58,15

This

This compared with the error of the clock by andy,,
 fhews that it was lofing 17",06 daily; at which rate,
 to the time that Urfæ Majoris paffed the meridian, it
 muft have loft 1,95, and the error by ought to have
 been 6'.39",4. The difference is only 1",,4, which is
 not greater than the errors of obfervation may fome-
 time be in ftars of great declination.

<i>Result.</i>	<i>Apparent Time correct.</i>
	^h
West Limb paffed the meridian	- 10.51.23
Regulus	56.15,5
Immerfion	13.56.00,15

And emerged in lefs than 50'.

1776, 30th July, an Eclipse of the Moon.

Beginning of total darknefs.

	<i>Apparent Time correct.</i>
	^h
By eye - - -	17.00.49
By telefcop - - -	01.16
Clouds prevented any other obfervations.	

1777, 20th January, an Occultation of Geminorum
 by the Moon.

	<i>Apparent Time correct.</i>
	^h
Immerfion - . - . -	13.37.38,6

23d January, an Eclipse of the Moon.

	<i>Apparent Time correct.</i>
Eclipse began - - - - -	8.41.21,7
Shadow well defined - . -	44.33,7
Mare Humorū touched -	49.13,7
Grimaldus do.	50.43,7

Grimaldus

ASTRONOMICAL OBSERVATIONS

	Apparent Time correct h
Grimaldus paffed -	53.18,7
Mare Humorū do. -	53.33,7
Tycho's dark circle touched - -	56.13,7
Tycho's body do. -	56.40,7
Copernicus do. -	9.26.28,7
Do. puffed -	33.23,7

Going off again.

Copernicus paffed -	10.12.58,5
Grimaldus do. - . .	21.23,5
Mare Humorū touched -	36.17,5
Arifteus paffed - . -	37 33,5
Mare Humorū do. - - - -	47 23,5
Regiomontanus do. -	11.0008,5
Tycho's body - - - -	02.33,5
Tycho's dark circle paffed -	05.38,5
Vendelin do. - -	12.23,5
Faint Penumbra remained -	32.25,5
Limb clean End -	33,33,5
Weft limb paffed the meridian -	12.03.22,7
Eaft do. do,	05.38,2

The times are thofe of the fhadow's edge, unlefs it be otherwife expreffed.

1777, 13th February, an Occultation of u. Ceti.

Apparent Time correct.

Immerfion - -	7.53.46,7

I was very certain of the time of the immerfion
 Five feconds before it the ftar began to change colour,
 and to lofe light fenfibly : one fecond before the im-
 1 merfion,

merfion, it was confiderably broader and redder than at firft, and the light was not fo ftrong as before.

This fupports the fuppofition of an atmofphere round the moon, though it does not extend to any great diftance. It has been doubted, and is, I believe, not yet abfolutely admitted. But our atmofphere may be doubted by an inhabitant of the moon; for if to its greateft extent, fuppofed 45 miles, it were of the fame denfity as at the furface of the earth, which is not the cafe, it would not fubfift a minute, as the earth is 8000 miles in diameter, and the greateft parallax only 62'.

1777, 16th May, an Appulfe of the Moon to , Scorpii.

apparent Time correct.

West limb paffed the meridian	-	7.59 50,1
y Scorpii do.	-	8.00.02,1

By the arch of the tranfit inftrument, the diftance was 10' from the limb.

1779, 1 ft May, an Appulfe of the Moon to Mars
and Saturn.

Having brought the Moons limb to run along a wire of declination,

Apparent Time correct.

The eaftern limb paffed the vertical wire	10.23,09,5
Saturn paffed the fame	- 10.23.21,5

Saturn did not come within the fcale of the micrometer.

For the right Affenfions.

*Apparent Time correct**

h m s

Mars	,	12.55.4a
Saturn	Paffed the meridian at	56.34
Eaftern limb		57.36
		<i>Diftances</i>

Distances of the Moon and Mars.

<i>Inch.</i>	<i>Non.</i>		<i>Apparent Time correct.</i> <i>h</i>
4,70	„ 08,5	= 28.40,3	13.18.42,5
4,65	21	= 28,31,1	26.34,5
Mean of the three times			
4,65	„ 15	— 28.26,7	and the fame meafure 31.53,5
4,65	„ 21	= 28.31,1	36.49,5
4,70	„ 05	= 28.37,7	41.06,5

1779, 3d May, an Appulfe of the Moon to B Ophiuchi.
Difference of Declination.

<i>Inch.</i>	<i>Non.</i>		<i>Apparent Time correct.</i>
4,70	„ 17	= 28.09,9	10.22.58,1
The ftar was to the weft of the Moon's horn from which the diftance was meafured, becaufe the micro-meter could not take in the limb.			
<i>Inch.</i>	<i>Non.</i>		<i>Apparent Time correct</i>
4,60	„ 17	= 28.09,9	10.22.51,1

Examination of the Micrometer.

	<i>h</i>		<i>Inch.</i>	<i>Non.</i>
1ft May,	19.29.	leffer diameter of the Sun	5,2	„ 13
		Again	-	5,2 „ 15
		Greater diameter	-	5,2 „ 23
		Again	-	5,2 „ 24

Hence mean diameter 5,2 „ 17,5

There are twenty-five nonius to divide one twentieth of an inch.

When the limbs coincided the zeros agreed.

The ephemeris gives 15'.54",6 for the femi-diameter, therefore one nonius is equal to 0,,7294.

1779, 23d November, an Eclipse of the Moon.

		<i>Apparent Time correct.</i>
Beginning	- - - - -	12.02.33,0
Shadow well defined	-	03.36,0
Ariftarchus	—	10.37,1
		Infula

Apparent Time correct,
h

tnfula Ventorum	12.14.32,9
Copernicus -	21.18,9
Mare Vaporum -	32.07,8
Bright spot in Mare Vaporum	34.27,7
Tycho's body touched	35.29,7
Mare Serenitatis, do. the border	35.47,7
Tycho paffed	36 52,7
Mare Tranquillitatis touched	40.17,6
Ariadaes -	41.37,6
Mare Serenitatis paffed	44.07,6
Meerob -	51.37,5
Mare Crifium touched	52 37,5
Do, paffed	56.40,4
Total darknefs by eye	13.00.37,5
By telefcopce	01.41,3
Do. end by telefcopce	14.40.13,3
By eye -	41.16,3
Grimaldus paffed	43-06,3
Ariftarchus	50.42,2
Infula Ventorum touched -	53.46,2
Paffed	54.20,2
Copernicus	15.02.44,1
Tycho's body touched	04.56,0
Paffed -	06.23,0
Mare Crifium touched	32.22,7
Paffed	35.55,7
Mare Faccunditatis paffed	37.23,6
End by telefcopce, doubtful	39.45,6
Certain -	42.00,6

ASTRONOMICAL OBSERVATIONS

The apparent times here noted in these observations, were derived from the mean times, the difference between the clock and mean time being applied to the hours shown by the clock; and as the difference or equation was derived from the transit instrument, here follows an examination of its position.

	<i>Iran fits over the middle Wirt by Clock.</i>	<i>Difference between the Clock and mean Time.</i>
22d November		
West limb	23.42.34	
East do.	44.53	
Center	23.43,43,5	
Eqn. time	0.13.19,5	
23d November		
a Arietis	9.42.02	—2'.5 7" to be added ; to all the transit hours.
West limb	11.38.28	
East do.	40.51	
Rigel	12.50.41	
Bellatrix	13 00 01	
Castor	15.06 51	
Procyon	14.05	
1st December		
© West limb	23.45 26	
East do.	47.47	
Center	23-46.36,5	
Eqn. of time	10.17,7	—3.05,8

Equal Altitudes with the Quadrant which has only one Wire.

N. B. Before and after this last transit. Another altitude not moved.

	^h	h , , "
Rising U limb	20.16.41	20.23.47
L limb	20.19.38,5	20.26.46,5
Falling L limb	27.13.27	27.06.17
U limb	27.16.23	27.09.19
Center	23.46.32,4	23.46.32,4
Equation of equal altitudes		+ 4 , 3 7
		23.46.36,77"

apparent Time correct.

1780, 18th February,	Eaft limb paffed	h , ,
the meridian	-	10.39.31,6
15th April,	Weft limb paffed the me-	
ridian	-	9.17.34

5th Auguft, an Appulfe of the Moon to Jupiter.

Weft limb paffed a circle of the meridian	7.14.44
<i>Jupiter's</i> weftern limb	- 14.48
Eaftern do.	 14.58
Center	- - - - - 18.49
Weft limb	- - . . - 00.53
<i>Jupiter's</i> center	. - - . - 25.06
	 25,19
<i>Jupiter's</i> center	- - - - - 42.31
	 43.08
<i>Jupiter.</i>	 51.21
	 52.15
<i>Jupiter</i>	- - - - - 8.42.255
	- - - - - 44.42
The difference of declination of <i>Jupiter</i>	
and the neareft horn of the <i>Moon</i> , was	
9'.01",4.	 7.28.49

Distances of Limbs.

14-33,2	 7 32.12
15.01,5	 35,36
15.32,7	- - - - - 38.53
16.25,9.	 44.31
17.06.5	- . - - - 48.16
30.58.6	 8.35.49

OBSERVATIONS

	Face East.	Face West.	Mean or observed Altitude	EQUATIO S.			Altitude correct.	Declination.	Latitude.	
				refrac- tion.	Aber- ration.	Nuta- tion				
y Tauri	89.57.37,3	89.58.16	89.57.56,6	0	2,34	0,4	89.57.54,7	22.30.56,4	22.33.01,7	N. B. Face east, 15th Jan. 1779, when the barometer was 30,05, and the thermometer 63,5.
T Tauri	88.41.47	88.42.28	88.42.07,5	1,2	0,82	0,63	88.42.06,5	21.15.26,2	19,7	
O Tauri	89.09.49,7	89.11.04	89.10.26,9	0,7	0,95	0,39	89.10.25,1	21.43.46,5	21,4	
Tauri	88.25.48,8	88.26.45,0	88.26.16,9	1,4	0,7	0,7	88.26.16,9	20.59.28	06,1	
132 Tauri	88.05.07,9	88.04.17	88.04.42,5	2,9	1,11	1,05	88.04.41,8	24.28.25,9	07,7	Face west 19th Jan. when the barometer was 30,05, and the thermome- ter 65, agreea- bly to which the refraction is ta- ken.
H Geminorum	89.18.11,7	89.17.08	89.17.39,8	0,6	0,16	1,49	89.17.39,8	23.15.25,3	05,1	
Geminorum	89.57.17,3	89.55.58,0	89.56.37,6	0	0,44	2,03	89.56.40,4	22.36.32,7	13,1	
Geminorum	87.46.28,2	87.47.17	87.46.52,6	2,2	0,84	2,6	87.46.53,8	20.20.00,3	06,2	

Mean 22.33.09,4

Aldeberan	83.29.09,7			6,7	0,82	0,63	83.29.03,2	16.02.58 N.	22.33.54,8
Rigel	58.57.52,2			33,7	5,1	0,12	58.57.13,8	8.28.15,9 S.	34.30,3
a Orion	74.47.00			15,3	2,2	1,28	74.46.43,8	7.20.57 N.	34.13,8
y Geminorum	84.00.29,9			6,0	2,5	2,00	84.00.28,4	16.34.11 N.	33.47,6
Syrius	51.00.43,5			45,5	4,6	2,75	51.00.00	16.25.04,3 S.	34.15,7
Mean									22.34.07,4
Capella		66.47.18		23,5	6,8	0,06	66.47.00,3	45.45.12,5	22.32.12,8
Tauri		84.08.43		5,6	2,4	0,37	84.08.40,2	28.24.08	48,2
136 Tauri		84.59.37,1		4,8	1,2	1,2	84.59.34,7	27.32.27,1	01,8
Aurigæ		75.21.42,8		15,0	2,4	1,2	75.21.31,4	37.10.34	05,4
Geminorum		87.12.30		2,9	0,4	2,6	87.12.29,3	25.19.52,4	11,7

Mean 22.32.16

Mean of the left two sets 22.33.11,7

Double collimation or difference of the left two sets 1.51,4

Latitude by the whole 22.33.10,55

TRIVATOORE.

Obfervations by T. D. P. 1783.

Day h

On the meridian, Dec. 5th, 23.33.52,5 flow 26.07,4

On the meridian, Dec. 6th, 23.35.53,1 flow 24 06,9

Daily gain, - - 2.00,6

The equation of equal altitudes was applied.

An Emerfion of Jupiter's firft Satellite,

6th Dec, by watch emerged h_{m} 6.31.53
 Too flow at noon +26.07,3
 Gain till obfervation 34,4

Emerfion 6.57.25,9

Ephemeris 1.36.52,0

Longitude in time 5.20,33,9

in degrees $80^{\circ}08.28,5$

On the meridian, Dec. 28 23,26.37
 Equation of E. A. - 1,9

26.29.35, 1 flow 33.24,9
 On

On the meridian, Dec. 30^h 23.23.40,3
 Equation of E. A. - • - 1,9
 23.23.38,4 flow 36.21,6
 Daily lofs 88,4

An Emerfion of Jupiter's firft Satellite.

29th of Dec. by watch emerged	-	6.27.07
Too flow at noon		33.24,9
Lofs till obfervation at 88,4		25,8
Emerfion		'7.00.57,7
Ephemeris		1.40.44,0
Longitude in time		5.20.13,7
	in degrees	80.03.24,6
The mean of the two longitudes		80.05,56,5

The diftance between the flag in the fort, and the place of obfervation at *Trivatoore*, was determined by a long bafe meafured in the fands, and by taking angles for trigonometrical calculations.

Madras flag, diftance - - 2787,1 feet.
 Bearing - S. 10.33.50 W,

Which gives difference of Longitude 50,5
 Latitude 4.30,7

VIPEREE.

Having borrowed the quadrant that Mr. HURST ufed in the tranfit of *Venus*, I was defired not to alter *its*
 VOL. I G line

line of collimation till I had determined the quantity of error: those observations are in the tables of latitude. It was used in the survey to *Calcutta*.

As I intended to observe at this place, I determined its distance from the fort as accurately as I could by trigonometry. The result is :

Madras flag, distance - 8072,2 feet
 bearing S. 23.15,00 E.

Which gives difference of Latitude 31,5

MADRAS.

Latitude of *Trivatoore*, see table - 13,09.00,4
 Madras south of it - — 4.30,7

Latitude 13. 4.29,7

Latitude of *Viperee*, see table - 13.05.05,4
 Madras south of it - — 31,5

Latitude 13.04.33,9

Mean 13.04.31,8

Longitude of *Trivatoore*, Mean - 80.05.56,5
 Madras west of it - — 00.50,5

Longitude 80.05.06,0

WUNGOLE, 1782, commonly called *ONGOLE*.

Observations by T. D. P.

14th November, double altitudes of the pole, with the small sextant made by RAMSDEN, and the artificial horizon.

<i>Watch.</i>	<i>Angles.</i>	
9.16.12	34.45.30	
21.00	47 30	these were with the small
31.00	45.30	fextant.
49.00	46.30	this was with the large fextant.
9.29.18	34.46.15	
	17.23.08	
	+ 2.40 *	beneath meridian,
	— 2.58	refraction.
	17.22.50	meridian altitude.
	1.51.13	polar distance.
	15.31.37	Latitude.

16th November, with the octant double altitudes of the
Sun.

	<i>Upper L.</i>	<i>Lower L.</i>
12.00.28	111.51.00	
2.24	54.00	
4.14 ,		110.48.20 M. A.,
5.41	111.56.00 M. A.	
6.36		110.47.00
Observed altitude		55.41.05
Ref. and par.		— 34
Meridian altitude correct		5540.31
Declination S.		18.49.05
Co. Latitude		74.29.36
Latitude		15.30.24

1784, The Latitude observed by T. D. P. (see observations at large) was

15.29.10

This is inferred only to bring to test the accuracy of the octant, which is mentioned (page 58) in the Introduction : and it appears that, by a single observation made with it, the Latitude was determined within 1'.8".

It serves also to show that, though it is very difficult to take double altitudes of so faint a star, in low latitudes, even the polar star may be used to great advantage : and in these hot climates the stars only can be employed, for the Sun's heat at noon, after a long march, is really not to be borne by any constitution.

MASULIPATAM, 1782, by T. D. P.

27th Oct. diameter forward 33, backward, 32 dex back

Double altitudes of the Sun's lower limb, taken with the HADLEY'S octant and the artificial horizon.

Watch..	Angles.
12. 19.21	120.52.20
20.32	120.55.20
28.17	121.21.00
33.40	121.23.30
31.38	121.24.00
32.34	121.25.40 meridian.
34.23	121.23.20

Observed

Observed meridian altitude	-	L.	L.	60.42.50
Error of quadrant	-	-	-	— 30
Semi-diameter	-	-	-	+ 16.10
Ref. and pan	-	-	-	— 27

Altitude	-	60.58.03
Declination S.	-	12.51.09

Co. Latitude 73.49.12

Latitude 16.10.48

28th October, quadrant the fame as above.

The mode the fame, double altitude	-	-	120.45.00
Meridian altitude correct	-	-	60.37.42
Declination	-	- S.	13.11.55

Co. Latitude 73.49.37

Latitude 16.10.23

1 ft Nov. 0 diameter 34 forwards, then fet the fpe-
33 backwards, J culum to 90°.

Time. Upper L. Lower L.

h
12.14.56

119.13.10

15.33

118.04.30 M.A.

16.11 119.14.50 M. A. °

Observed meridian altitude	-	59.19.50
Ref. and par.	-	— 30
Error of quadrant	-	—30

Meridian altitude	-	59.18.50
Declination	- S.	14.30.45

Co. Latitude 73.49.35

Latitude 16.10.25

The

The fame day Lieutenant HUMPHREYS obferved with a fextant made by RAMSDEN, about four inches radius: he made the angles of the lower limb $118^{\circ}.09'.00''$; and the error of his quadrant was—2', which gave the latitude $16^{\circ}.11'.05''$. This was intended as a kind of teft of the infruments, but it was not a fair one, and yet the refult is clofer than could be expected, confidering the difficulty of reading the fmall one.

Mean of three latitudes with oftant $16^{\circ}.10'.32''$

		h		
On Meridian, Oct. 29th,	00.04.56	too fall	4.56	
By the fmall watch 30ft	00.08.36,5		8.36,5	
	<u>00.12.37</u>		12.37	
Nov. 1ft.	00.16.36,5		16.36,5	

Examination of the large watch ufed at the obfervation of *Jupiter's* Satellite.

29th October, altered the fpring, and fet it a-going at one o'clock.

	<i>Small Watch.</i>	<i>Large Watch,</i>		
	h			
Octo. 29th	22.37.00			
Too fall	8.23,2			
		h		
Solar time	22.28.36,8	22.34.42	too faft	6.05,2
	h			
Nov. 1ft	1.46.00			
Too faft	0.16.54			
Solar time	1.29.06	1.35	57,5	too faft 6.51,5

Therefore in 51 hours folar time the large watch gained $46''$,3.

An

An Emerfion of Jupiter's firft Satellite.

ft November, by watch emerged - - **h** , 7.27,20
 At laft obfervation, too faft —06.51,5
 Gained afterwards at 46",3 — 05,3

Emerfion 7.20.23,2
 Ephemeris 1.56.15

Longitude in time 5.24,0832

in degrees 81.02.03

The obfervations before written were made at the Chiefs garden. The Fort flag was diftant 2'. 5" in a ftraight line, and bore S. by E. which gives difference of

Longitude - +0.30
 Latitude - —2,28
 Longitude of Gardens 81.2.03
 +30

Longitude of Flag 81,2.33
 Latitude of Gardens 16.10.32
 — 2.28

Latitude of the Flag 16.08.04

PEDDAPOORE, 1784.

Obfervations by T. D. P.

a *Serpentis*, on the meridian, June 18th - 9.36.45
 Ditto 19th - 9.28.57,5

7.47.,5

Acceleration for the time -4.09,4.

Lofs in one day 3.38,1

On

ASTRONOMICAL OBSERVATIONS

On the meridian, June 18, 23.51..47,75^{flow} 8.12,25

An Immerfion of Jupiter's firft Satellite.

The Planet was extremely bright, and the Belts dif-
tinct and clear; the glaſs perfectly ſteady h

19th June, by watch changed colour 15.16.22

Immerged 15.18.38

Too flow at moon + 8.12,25

Lofs to obſervation at 219 + 2.21

Immerfion 15.29.11,15

Ephemeris 10.00.13

Longitude in time 5.28.58,25

in degrees 82.14.34

From the obſervations at *Calcutta*, it appears that
there is a difference between the Longitudes derived
from obſervations of immerfions and emerfions.

The mean of Longitudes, 10 in number,
derived from obſervations of immer-
fions, with an 18 inch reflector, was 5.53.53,77

Of emerfions (2) with the ſame inſtrument,
was 5.53.43, 4

The ſingle emerfion with *Dollond's* triple
object glaſs is - - - 5.53.57, 8

The mean of 4 emerfions with the ſame - 5.53. 3, 9

Difference by the reflector - - - o. 0.10,77

By *Dollond's* refractor - - - 0.00.54,90

The mean of all the immerfions (11) - 5.53.54,13

Emerfions (6) 5.53.17, 4

Difference 36,73

As

An Emerfion of Jupiter's firft Satellite.

9th October, by clock emerged	^h 7.11.45
Too faft at the obfervation	— 1.57

Emerfion	7.09.48
Ephemeris	1.38.00

Longitude in time	5.31.48
in degrees	^o 82.57.00

VI Z A C P A T A M, 1782.

*Obfervations by T. D. P.**An Emerfion of Jupiter's fecond Satellite.*

3d October, emerged	-	8.30.58
Ephemeris		2.57.20

Longitude	5.33.38

83.24 30

An Immerfion of Jupiter's third Satellite,

7th October, immerfion	^h 8.9.57

The time was fhewn by Mr. RUSSELL'S time-keeper, which was made by ARNOLD, and was regulated by the meridian line in his hall.

7th September, an Emerfion of Jupiter's firft Satellite.
by T. D. P. 1784.

7th September, by watch emerged	-	-	^h 8.23.38
Sky remarkably clear, and glaſs fteady.			

Full fplendor	-	.	-	-	-	.	.	25.40

Obfervations

Observations for Time.

h

Zenith Distance.

7th Sept.	U. L.	22.22.25	By arch of 90	41.29.20
				D.S. D.Non:
		24.48	96	44.01.01
Lat. by 2 northern		ftarsi		17.44.33,4
2 fouthern		ftars		17.38.16,5
N. B. Refraction	+ 50	True Latitude		17.41.45
		Error of collimation	+ 02.58	
Declination for the time and place N.				5.30.39
				h
From the above data the time was				21.17.15,5
				By the watch 20.23.36,5

The watch too flow 53.39

Middle Wire. Upper Wire.
h / h /

8th Sept. a Aquillarifing 7.01.13 7.03.16
falling 8.07.35 8.05.30

: h

On the meridian 7.34.24 7.34.23 = 7.34 23,5

Paffage by calculation 8.29.55,5

Watch too flow 55,32

8th September, Zenith Distance.

Zenith Distance.

	h		D.S.D.NON.	
0 L.	19.13-55	I 9°		56.59 20
U.	16.06	96	60.03.05	56.59.23
U.	16.49	90		56.18.20
L.	19 00	96	60.00.07	56.18 04, 6
U.	21.57	90		55.05 00
L.	24.09	96	58.03.00	55.04.41, 2
U.	25.18	90		54.18.00
L.	27.28	96	57.03.20	54.7 12, 7
	<u>19.20.20</u>			Mean 55.40.00, 3

0 Declination

© Declination N. 5.09.42^o

Latitude 17.41.45^h

From the above data time 20.17,30

Watch 19.20.20

Watch flow 57.10

Therefore the watch loft in 22.57 211,0

And consequently daily - 221,0

Day ^h ^h , ”

8 at 7.34.23.5 watch too flow 55.27.9^h

7 at 8.23.38 the emerfion happened 0.55.32,0

Difference 23.10.45,5 Lofs in this time at 221, —3.33

Therefore flow at emerfion 51.59

Emerfion by watch 8.23.38

Time of emerfion 9.15.37

Ephemeris 3.42.56

Longitude in time 5.32,41

^o
in degrees 83,10.15

October 23d an Obfervation of Jupiter's firft Satellite,
by Mr. MAXTON.

The glafs the fame as mine; and the watch corrected
by Mr, RUSSELL'S meridian line.

Emerfion by watch 10.5.30

Watch faft — 6.05

Emerfion 9.59.25

Ephemeris 4.26.08

Longitude in time 5.33.17

^o
in degrees 83.19,15

This

This was the infant of first appearance, as well as Lieutenant COLEBROOKE'S, who observed the same at Vizianagarum Palace.

Longitude by T. D. P. 83.10.15
by M, - - 83.19.15

Mean 83.14.45

Mr. RUSSELL also made an observation, which I do not use, because he noted the time of full splendor, which is uncertain : it follows :

16th October, Watch fast at noon	^h 1,43,5
gained daily 56'' ,5	
Add its gain to the observation	18,5
Watch fast	— 2.02
Time of full splendor	8. 4.39
Time of observation	8. 2.37
Ephemeris	2.29.17
Longitude in time	5.33.20
in degrees	83,20.00

B E E M U L W I L S A, 1784.

Observations by Lieutenant COLEBROOKE.

On Meridian, Aug. 7th 23.40.23,15
Equation of E. A. +,60

23.40.23,75 flow 19.36,25
On

On Meridian, Aug. 12th ^h 23.22.30,5
 Equation of E. A. + 0,75

23,22.31,25 flow 37.28,75

Lofs in 5 days 17.52,50
 Daily lofs - 3.34, 5

An Immerfion of Jupiter's fecond Satellite.

This was with his firft obfervation. ^h , , ,
 8th Auguft, by watch immerged 12.33.20
 Too flow at noon 19.36,25
 Lofs to the obfervation, at 214",5 1.55. 2

Immerfion 12.54.51,45
 Ephemeris 7.20.50

Longitude in time 5.34.01,45

in degrees 83.30.15,00

Auguft 13th, by T. D. P.

Jupiter's firft Satellite vanifhed by the watch ^h 11.32.28

6 or 8 feconds before the time noted, it had not changed colour: a cloud came on, and hid it for about 8 feconds, and when it was gone, the Satellite had vanifhed.

Auguft 20th, by T. D. P.

Jupiter's firft Satellite vanifhed by the watch ^h 14.2.30

The fky was clear, the glafs fteady. Here I expected what happened, and was on my guard. The Satellite vanifhed at a fmall diftance from the body, *i. e.* before the contact and without changing colour.

On.

Day h , „
On Meridian, Aug. 19th 23.57.13,25
Equation of E. A. + 1, 5

19th 23.57.14,75 flow 2.45,25
Immediately before this obfervation, the watch was fet forward one hour without flopping. By comparing this with the obfervation of the 12th, the watch loft daily 3'.36",6.

The foregoing obfervation of time is only of ufe for the erroneous immerfions of the 13th and 20th.

Day h ,
On Meridian, Aug. 27th 23.41.26,5
Equation of E. A. + 2 , 1

27th 23.41.28,6 flow 18,31,4

On Meridian, Aug. 29th 23.35.17,5
Equation of E. A. +2,4

23.35.19,9 flow 24.40,1

Daily lofs 3.04,4

*An Emerfion of Jupiter's firft Satellite,
By Lieut. COLEBROOKE.*

	h
29th Auguft, by watch emerged	12.27.00
Too flow at noon after the obfervation	+24.40,1
Lofs after the obfervation	— 1.25,5
Emerfion	12.50.14,6
Ephemeris	7.16.33

Longitude in time 5.33.41,6

in degrees 83.25.16

Obfervations

Observations by T. D. P.

^h
 0 On the Meridian, Sept. 2 23.20.47
 Equation of E. A. +02,5
 23.20.49,5 flow 39.10,5

^h
 Altitude, 5th Sept. 21.53.55,5 67.31.35
 Refraction and parallax — 20
 Collimation + 5 1
 67.32.06

Declination at the time and place 6. 14.26
 Latitude 17.53.32

^h
 From which data the time was 22.41.10,0
 By the watch 21.53.55,5 flow 47.20,5

Whence the daily was 167,7

An Emerfion of Jupiter's firft Satellite.

The fky clear of clouds, and the glafs fteady; **but** the vapours had a perceptible motion through the telefcope. The Belts were very diftinct.

5th Sep-

5th September, by watch emerged	^h 14.00.35
N. B. Full splendor ^h 14.2.15. Too flow at the altitude of the taken after the obfervation - - - - - + 47.20,5 Lofs after the obfervation, at 167", 7 — 54,4	
Emerfion	14.47.01,1
Ephemeris	9.13.36
Longitude in time -	5.33.25,1 o
in degrees	83.21.18

Obfervations by Lieutenant COLEBROOKE.

0 On Meridian, Sept. 29th	23.38.27,6	
Equation of E. A.	+ 5,4	
Equation of time	23.38.33,0 23.49,46,4	flow 21.27,0 flow 11.13,4
On Meridian, Oct. 1st	23.32.17,3	
Equation of E. A,	+ 5.7	
Equation of time	23,32.23,0 23.49.08,6	flow 27.37,0 flow 16,45,6

Daily lofs on folar time 3.05,1

An Emerfion of Jupiter's firft Satellite.

30th of Sept. by watch emerged	-	-	9.15.10
Too flow at noon	-	-	+21.27
Lofs till obfervation at	185",1	+	1,15
Emerfion			9.37.52
Ephemeris			4.05.02
Longitude in time			5.32.50
		^o	
in degrees			83.12.30

I fufpect that a miftake was committed in writing^h
down the time, and that it ought to have been 9,16,1^a
But this is as it is entered in the original book.

13th October, at 1.48 fet the watch forward one hour
without flopping it.

	^h		
On Meridian, Oct. 15th	23.51,53,5		
Equation of E. A. -	+	6,8	
	23.52.00,3	flow	759,7
Equation of time	23.45.31,7	fail	6.28,6

The obfervation of the paffage aver the meridian
was not taken the next day after the emerfion as ufual,
and between the 17th and 18th the watch ran down;
therefore the rate is afcertained from the mean time,
compared wiith the 29th September and 1ft October.

And

And the watch loft by the 1ft 173,6 daily
by the 2d 174,7

Mean 174,7
Daily variation +11,5

Daily lofs on folar time 185,7

An Emerfion of Jupiter's firft Satellite.

16th October, by watch emerged $h^{\circ} 7.53.35$
Too flow at noon + 7.59,7
Lofs till obfervation at 185,7 + 1.01,9

Emerfion 8.02.36,6
Ephemeris 2,29.17,0

Longitude in time 5.33.19,6
in degrees $83.19.54^{\circ}$

Refult of the Obfervation of Longitude.

	h°	$^{\circ}$
29th Aug ft, COLEBROOKE	83.25.16	83.25.16
5th September, PEARSE	83.21.18	83.21.18
30th ditto, COLEBROOKE	82.12.30	rejected.
16th October, COLEBROOKE	83.19,54	83.19.54
Mean	83.19.44,5	83 22 09,3

VIZIANA GARUM PALACE.

An Obfervation of Jupiter's fecond Satellite, by T. D. P.

22d October, by watch emerged $h^{\circ} 7.16.06$
Full fplendor 18.18

Obfervations by Lieutenant COLEBROOKE.

	<i>Equal</i>	<i>Altitudes.</i>
	^h	
* <i>Fumulhoot</i> rifing	7.48.10	
falling	9.44.25	
* On the Meridian	8.46.17,5	
By calculation	8.54.35,5	flow 8.18
0 On the Meridian, Oct. 22d	23.50.14,5	
Equation of $\mathbb{E}$. A.	-	+ 7,0
	23.50.21,5	flow 9.38,5
23d Oft. * <i>Fumulhoot</i> rifing	7.51.39	
falling	9.29.05	
* On the Meridian	8.40.22	
By calculation	8.50.46,2	flow 10.24,2
On the Meridian, 23d	23.48.10,3	
Equation of $\mathbb{E}$. A.	+	7,6
	23.48.17,3	flow 11.42,7

From the above, daily lofs 125,2

An Emerfion of Jupiter's firft Satellite.

By watch emerged 948.55

22d Oct. *Jupiter's* fecond Satellite emerged $7.16.06^h$
 By *Fumulhoot*, watch flow $+8.18$

Lofs in 1.30 after emerfion, at 125,2 — 07,8

Emerfion 7.24.16,2
 Ephemeris 1.49.57

Longitude in time 5.34.19,2

in degrees 83.34,48

23d Oct. *Jupiter's* firft Satellite emerged 9.48.55

By *Fumulhoot* too flow $+10.24,6$

Lofs in 1.8. after *Fumulhoot* paffed at 125,2 + 06,0

Emerfion 9 59.25,6
 Ephemeris 4.26.08,0

Longitude in time 5.33.17,6

in degrees $83.19.54,0^{\circ}$

Mr. MAXTON obferved this at *Vizacpatam* : and the two obfervations fhew only 39 difference of longitude; but the high hill that lies to the north of the Palace bore from *Beemulwilfa*.N. $8^{\circ}.25'$ E. and by trigonometry its diftance was 22.978 miles, therefore it lay north of *Beemulwilfa* $19'.28."$ and eaft $2' 52"$. The Palace lies $12'.20",3$ to the north by obfervations at large, and therefore to the eaft $1'.48"$. But *Beemulwilfa* lies to the eaft of *Vizacpatam*. Mr. MAXTON'S eye, it may be

perfumed, is not so quick as Lieutenant CoLEBROOKE'S, and will suffice to account for the difference; for, by a particular survey round these parts, Vizianagur Fort does lie 6'.36" east of Vizacpatam.

NA R R A I N P O O R E,

Which, by the table of the route, lies west of Vizianagurum Palace 2'.

Observations by Lieutenant CoLEBROOKE for Time,

		<i>h</i>	
On the Meridian Oct. 3	1ft	23.36.04,3	
Equation		+	6,4
		23.36.10,7	flow 23.49,3
November	1ft	23.34.39,5	
Equation		+	6,8
		23.34.46,3	^{flow} 25.13,7
		Daily loss	1.24,4

An Observation of, Jupiter's first Satellite.

Sky remarkably clear, and glass	steady	<i>h</i>	,
31ft October, emerged by watch		6,00.45	
Too flow at noon		23.49,3	
Loss till observation at	84",4	22,5	
	Emerfion	6.24.56,8	
	Ephemeris	51.26	
Longitude in time		5.33.30,8	
	in degrees	83.22.42,0	

KALINGA

K A LING A PAT AM, 1784.

Obfervations by Lieutenant COLEBROOKE for Time.

0 On Meridian, Nov. 7th	^h 23.50.56,5
Equation of E. A.	+ 6,8

β Caffiopæ æ on the Meridian	8.49.48
by calculation	9.00.01,6 flow 10.13,6

Therefore the watch loft 1.16,9 in 9 hours, and 205,06 daily,

N. B. The watch had run down on the 5th, and the weather was changing from dry to cloudy, which ended in rain.

For Longitude.

An Emerfion of Jupiter's firt Satellite.

Glafs fteady, atmofphere rather thick.	h
By watch emerged	8.13.35
Too flow by the ftar	+ 10.13.6
The ftar paffed after the emerfion 36'; lofs for that time	

Emerfion	8.23.43,5
Ephemeris	2.47,01,0

Longitude in time	5.36.42,5

in degrees	84.10.37,5

IECHA-

By comparison of the obfervations at A, it appears that the fhadow required 4'.49" to move through the breadth of the penumbra. By comparing thofe at B, it appears that 4".24" were then fufficient.

The mean of thefe will be very near the truth; it is 4'.37'.

	h
Shadow came on	7,02.40
Advance of penumbra	— 04.37
Beginning of eclipfe	6.58.03
Shadow touched the limb	9.06.56
Retreat of penumbra	+ 04.37
End of eclipfe	9.11.33
Duration obferved	2.13.30
Duration by ephemeris	2.08.30
	+ 05.00
By ephemeris end	3.28
Beginning	1.19.30
Duration	2.08.30
Ephemeris middle	2.23.45
Middle obferved by watch	8.04.48
Too faft	— 1.39,4
	8.03.08,6
Ephemeris	2.23.45
Longitude in time	5.39.23,6
degrees	84.50.54

GANJAM FORT, 1782.

Observations by T. D. P. Latitude determined.

4th September, horizon clear,	octant	-	19.21,30
6th very hazy, by sextant and quadrant,			
both agreed	-	-	19.21.03
16th	Sextant		19.21.50
	Octant		19.19.50
	Mean		19.21.03

These were taken from the top of the Chief's house: the sea was the horizon; the height above the area of the fort was measured, but the height of that area was guessed at; the dip was taken corresponding to this height from the tables.

An Observation of Jupiter's fourth Satellite,

	^h
16th September, 1782, immersion	6.45.27
The change of colour was noted at	6.44.04

Clouds prevented the observing of the emergence of this and - the immersion of the first, which happened that night.

GANJAM CAMP, 1784,

Observations by Lieut. COLEBROOKE.

On the Meridian, Nov. 20th 23.57.36,3
Equation of E. A. + 05,5

23.57.4138 flow 2.18,2
On

h

On the Meridian, Nov. 21ft 23,56 00
Equation of E. A. + 05,5

23.56.05,5 flow 3.54,5

On the Meridian, 22d 23.54.15,0
Equation of E. A. 05,4

23.54.20,4 flow 5.59,6

* *Caffiopææ*, 24th November.

	<i>First Wire,</i> h.	<i>Middle.</i>	<i>Upper.</i>
Rifing	7.28.20	3440	42.40
Falling	9.35.53	29.35	21.37

On the Meridian 8.32.06,5 32.07,5 32.08,5=8.32.07,5
By calculation 8.39.51,2

Slow 7.43,7

Which, compared with the laft folar obfervation,
gives 91,3 daily lofs.

An Emerfion of Jupiter's firft Satellite.

24th November, by watch emerged 6.37.35
Too flow by the ftar + 7.43,7
Loſs after the emerfion, at 91",3 — 7,3

Emerfion 6.45.11,4
Ephemeris 1.04.39

Longitude in time 5.40.32,4

in degrees 86.08.06

JEHAUD-

JEHAUDJEPOORE,

1784.

Observations by Lieut. COLEBROOKE.

17th Dec. *	<i>Caffiopæ æ</i>	<i>h</i> ,		
	riling	6.31.40	42.03	
	falling	8.05.53	55.31	
				<i>h</i> , „
* On the Meridian	7.18.46,5	18.473=	7.18.46,7	
	By calculation	7.54.48,7		
	Watch flow	36.02,0		
		<i>h</i>		
0 On the Meridian, 17th	23.23.59,3			
Equation of E. A.	+1			
	23.24. 00	flow	36,00	

An Emerfion of Jupiter's firft Satellite.

By watch emerged	6.21.25
Too flow by the*	36.02;
Emerfion	6.57.27
Ephemeris	1.11.50
Longitude in time	5 45.37
	^o
in degrees	86.24.15

SOOBUN-

SOOBUNREEKA RIVER CAMP, 1784.

Obfervations by Lieutenant COLEBROOKE.

N. B. *Oppofite Jellafore, on the Ballafore fide of the River.*

On the Meridian, Dec. 24th ^h 23.19.34,1
Equation of E. A. — 7

23.19,33,4 flow 40.2636

On the Meridian, Dec. 25th 23.18.12
Equation of E. A. — , 1

23.18.11 flow 41.49,0

Daily lofs 82,4

An Emerfion of Jupiter's firft Satellite.

17th December, by watch emerged	^h ; 8.12.42
Full fplendor. Too flow at the following	
h , noon -	40.26,2
8.13.50 Lofs after emerfion, at 82",4	—52
Emerfion	8.52.16,2
Epherneris	3.04.14
Longitude in time	5.48.02,2
in degrees	87.00.33,0

An

An Emerfion of Jupiter's fecond Satellite.

		h
25th December, by watch emerged		6.04.40
	Watch flow	+40.26,6
Lofs till obfervation, at	82",4	+ 23,2
	Emerfion	6.45.29,8
	Ephemeris	55.57
Longitude in time		5.49.32,8
	in degrees	^o 87.23.12

A Comparifon of the Obfervations for Longitudes with correſponding Obfervations at different Places, to fix the Longitudes of thofe which were undetermined.

By T. D. PEARSE.

CALCUTTA.

The obfervatory was at the Treafury Gate in *Fort William-*

Lunar Eclipfes.

1776, July 30, Immerfion at *Calcutta* 17.01.16
Greenwich 11.08.21 h

As this was not of the beft, I reject it. 5.52.55

1799 November 23d, I reject the beginning, becaufe, when compared with *Tycho* in the former part, it appears, from a like comparifon of the *Greenwich* obfervations, that it is erroneous a full minute. The firft

Copernicus is also rejected And by comparing the end doubtful with *Tycho* and *Copernicus* of the latter part in both sets, it appears to be the observation that must be compared with the end at *Greenwich*.

	<i>Calcutta.</i>			<i>Greenwich,</i>			<i>Longitude.</i>		
	h	'	"	h	'	"	h	'	"
The body of Tycho touched	12.	35.	30	6.	42.	29	5.	53.	01,0
puffed		36.	53		43.	36			17,0
Immerfion	13.	01.	41,3	7.	08.	08			33,3
Emerfion	14.	40.	13,3	8.	46.	23			50,3
Grimaldi touched		43.	06,3		49.	45			21,3
The middle of Copernicus	15.	02.	44,1	9.	08.	59,5			44,6
The body of Tycho touched		04.	56		11.	39			17,0
palled		06.	23		12.	49			34,0
The end	15.	39	45,6	9.	46.	09			36,6
Mean in time 5.53.28,3									
0									
in degrees 88.22.04,5									

Jupiter's Satellites.

From the beginning of 1774? till the 27th of December 17779 the observations were made with a middling 18 inch reflector. I allow 24" to compare it with the large reflector at *Greenwich*, and 12" for their refractor. The comparifonis of actual correffponding obffervations, except in two cafes, in which the *Calcutta* obffervations are one revolution later. The Longitudes of *Paris* and *Stockholm* are taken from WARGENTIN, Phil. Tranf. vol. 67. LUNDEN, from thirty-three correffponding obffervations found in that fame paper. Of *Chiflehurft*, from WOLLASTON, vol. 74. Of *Geneva*, *Oxford*, and *Marfeilles*, from PIGOT, vol. 68 and 76, *Nagpoore* and *Chunargur* were communicated to me by Lieutenant EWART, of the *Bengal* eftablifhment, who obfferved at each place a confiderable time.

Date.	Place.	Time.	Correction for Longitude or Glass.	Time correct.	LONGITUDE. In Time.	In Degrees.
1774, October 14th.	Calcutta, Stockholm,	$h \quad / \quad "$ 12.32.25 07.52.00	1st Sat. Im. $+$ 24 — 1.12.21	$h \quad / \quad "$ 12.32.49 6.39.39	$h \quad / \quad "$ 5.53.10.0	
21st.	Greenwich, Paris, Geneva, Oxford,	$^{\circ} \quad / \quad "$ 8.44.47 8.59.20 8.30.26	1st Sat. Im. — 09.25 — 24.05 $+$ 4.59	8.35.00 22 15 25		
		Immersion. Add	Mean, one Revolution 1. Day, 23d	8.35.15.5 18.28.49		
23d.	Calcutta,	8.57.15	1 Sat. Im. $+$ 24	3.04. 4.5 8.57.39	5.53.34.5	
December 31st.	Calcutta, Lunden,	11.25.47 6.25.05	— 24 Em. 52.55	11.25.23 5.32.10		
1776, November 11th.	Greenwich,	1st Sat. Im. Add	N. B. Refractor, one Revolution 1. Day, 13th,	13.37.32 18.28.06	5.53.13.0	
13th.	Calcutta,	13.58.56.3	1 Sat. Im. $+$ 12	8.05.38 13.59.08.3		
17th.	Calcutta, Chislehurst,	15.31.51.3 9.38.48.5	3d Sat. Im. $+$ 12 — 19	15.32.03.3 9.38.29.5	5.53.30.3 5.53.33.8	

December 18th.

Calcutta,
Marseilles,2d Sat. Im. $+$ 12
— 21.255.53.52.0
5.53.29
5.53.28Mean by Jupiter's Satellite
By Lunar Eclipses5.53.28.5
88.22.07.5

Result—Longitude of Calcutta

Date.	Place.	Time.	Correction for Longitude or Glass.	Time correct.	LONGITUDE. In Time.	In Degrees.
1782, September 21st.	Ichapooze,	A LUNAR The shadow	ECLIPSE. touched the limb,	$h \quad / \quad "$ 9.05.16.6		
	Nagpoore,	$h \quad / \quad "$ 8.44.22	$h \quad / \quad "$ 5.18.46	3.25.36	$h \quad / \quad "$ 5.39.40.6	$^{\circ} \quad / \quad "$ 84.55.09.0
October 9th.	Koslim Kota, Nagpoore,	JUPITER'S 1st Sat. E. 6.56.43	SATELLITES. — 5.18.46	7.09.48 1.37.57		
1784, September 5th.	York, Greenwich	9.08.54	$+$ 4.31	9.13.25 15	5.31.51.0	82.57.45
	Paris,	9.22.18	Refractor, { $+$ glass, 13 — 9.25	06		
	Beemulwillar	14.47.01.1	1st Sat. E. Mean, — 12	9.13.15.5 14.46.49.1		
November 8th.	Kalingapatnam, Chunarpur,	8.19.45	1st Sat. E. — 5.32.26	8.23.43.5 2.47.09	5.33.34.0 5.36.34.5	83.23.30.0 84.08.37.0

Observations at large for determining the Latitude of Places.

Phenomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 96.	Refraction or Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
♌ Aquilæ,	1783, Oct. 9th.	D. S. D. N. 4. 3 28.3	4.39.36.2	° / ' "	"	° / ' "	8.18.24.7N.	° / ' "	Viperæ.
♌ Cygni,	W. 11th.	6. 3. 01.5	4.54.39.2	4.55.00	5	4.54.54.2		13.13.18.9	
♌ Cygni,	E. 12th.	4. 3. 28	4.39.29.6	4.40.00	4.3	4.39.49.1		12.58.13.8	
♌ Cygni,	W. 9th.	33. 1.20.5	31.19.19.3	31.19.10	35.3	31.19.50	44.30.53.8N.	13.11.03.8	
♌ Cygni,	W. 11th.	33. 1.18.5	31.18.26.5	31.18.30	35.3	31.19.03.6		13.11.50.2	
♌ Cygni,	E. 11th.	46. 2.18	43.43.32	43.44.00	54.5	43.44.40.5	30.45.43 S.	12.58.57.5	
♌ Pegasi,	E. 11th.	2. 3.12	1. 5.02.4	1. 5.00	1	1. 5.02.2	14. 2.42.8N.	12.57.40.6	
♌ Stars	W. 11th.	0. 3.21	0.51.11.3	0.51.30.0	0.8	0.51.21.5		13.11.21.3	Viperæ.
♌ Stars,	E. Nov.	1. 4.00	0.56.15	0.57.00	0.9	0.56.38.4	13.58.34.7N.	13.11.53.5	° / ' "
♌ Algenib,	W. 21st.	0. 3.00	0.42.11.3	0.42.30	0.7	0.42.21.3		13. 1.50.4	Trivatoore.
Pole at 10 P.		79. 3.16	74.53.18	74.53.30	210.0	75.00.12.2	88. 9.08	13.16.13.3	° / ' "
				Collim. 428.0				13.08.55.8	13. 9.00.4
♌ Leonis,	1784, April 23d,	0. 4.04	Below the Pole	0.15.55	228.0		13.00.53 N.	13.16.45	North side of Cortlare River.

Observations at large for determining the Latitude of Places.

Phenomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 96.	Refraction or Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
♌ Urf. Maj.	1784, April 23d.	D. S. D. N. 52. 3.29	49.39.56	49.40.40	"	° / ' "	62.54.43 N.	° / ' "	° / ' "
♌ Leonis,	W. 25th.	0. 2.09	0.32.05	0.32.40	67.0	49.41.25	13.00.53 N.	13.13.18	13.15.01.5
				Collim. 102	0.5	0.30.43		13.31.34	Arambaukum.
♌ Urf. Maj.	W. 26th.	52. 1.29	49.11.48.4	49.12.20	67.0	49.13.11.2	62.54.43 N.	13.41.32.2	13.31.36
♌ Virginis,	E. 27th.	25. 1.01	23.40.45	23.41.00	25	23.41.17.5	10. 1.46 S.	13.39.31.5	° / ' "
♌ Leonis,	W. 27th.	0. 3.10.5	0.46.48	0.47.00	0.8	0.46.54.8	13. 0.53 N.	13.47.47.8	13.40.32
♌ Leonis,	W. 28th.	7. 2.14	7. 8.01.6	7. 7.30	7	7. 7.48.8	20.55.38 N.	13.47.50	° / ' "
		7. 1.20	6.56.36	6.57. 0	7	6.56.55		13.40.43	Nayrpett.
♌ Virginis,	E. 29th.	25.20.01	23.54.49	23.55.00	25	23.55.19	10. 1.46 S.	13.53.33	° / ' "
♌ Urf. Maj.	W. 29th.	52. 0.12.5	48.50.29.6	48.50.50	65	48.51.45	62.54.43 N.	14. 2.58	13.56.08
♌ Virginis,	E. 30th.	25. 2.25	24. 5.22	24. 5.50	25	24. 6.01	10. 1.46 S.	14. 4.15	Korware.
♌ Leonis,	W. 30th.	7. 1. 3	6.49.07.2	6.49.10	6.5	6.49.15	20.55.38 N.	14. 6.23	° / ' "
♌ Urf. Maj.	W. 31st.	52. 0. 9	48.48.57	48.49.40	65	48.50.23	62.54.43 N.	14. 4.20	14. 5.12.6
♌ Virginis,	E. May 1st.	25. 2.23	24. 4.29	24. 5.10	25	24. 5.15	10. 1.46 S.	14. 3.29	Vincaetechil-
♌ Urf. Maj.	W. May 1st.	51. 3.04	48.32.42	48.32.00	64	48.33.25	62.54.43 N.	14.21.18	lum ° / ' "
♌ Virginis,	E. May 1st.	25. 3.26	24.19.52	24.20.00	26	24.20.22	10. 1.46 S.	14.18.36	24.19.57

Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
1784,		D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
♂ Urf. Maj.	W. May	46. 2.17	43.43. 6	43.44.00	54	43.44.27	58.13.58	N. 14.29.31	Pinnare River
ζ Urf. Maj.	W. 3d	44. 1.10	41.43.27.4	41.33.10	50.3	41.34.09	56. 3.23	N. 14.29.14	North Bank
α Virginis,	E.	26. 0.15	24.29.05.5	24.29.10	26	24.29.33.7	10. 1.46	S. 14.27.47.7	14.28.35
α Virginis,	E. 10th,	26. 2.22	25.00.17.6	25.00.40	26.2	25.00.55		14.59.09	Ollore*
ζ Urf. Maj.	W.	44. 1.20	41.37.51	41.37.20	49	41.38.24.5	56. 3.23	N. 14.24.58.5	14.42.03.8
♂ Urf. Maj.	W. 12th,	46. 0.22	43.17.10	43.17.10	58	43.18.03	58.13.58	N. 14.55.55	Mooaumillo-
α Virginis,	E.	26. 1.28	24.48.52	24.48.50	25	24.49.16	10. 1.48	S. 14.47.28	dooro
ζ Urf. Maj.	W.	43. 3.15	41. 7.32	41. 8.10	44	41. 8.35	56. 3.23	N. 14.54.48	
α Virginis,	E. 13th,	26. 1.30	24.49.48.5	24.50.00	25	24.50.19.3	10. 1.48	S. 14.48.31.3	
ζ Urf. Maj.	W.	43. 3.14	41. 7.05.5	41. 7.10	44	41. 7.51.7	56. 3.23	N. 14.55.31.3	14.51.42.1
♂ Urf. Maj.	W. 19th,	45. 2.07	42.42.27.1	42.42.10	53	42.43.11.5	58.13.58	N. 15.30.46.5	Ongole, pro-
♂ Urf. Maj.	W.	44. 1.17	41.36.32	41.36.00	50	41.37.06	57. 8.02.5	N. 15.30.56.5	perly Wungole
α Virginis,	E.	27. 0.22	25.28.25	25.29.00	27	25.29.09.5	10. 1.48	S. 15.27.21.5	
ζ Urf. Maj.	W.	43. 0.27	40.30.37	40.30.30	49	40.31.22.5	56. 3.23	N. 15.32.00.5	15.29.18.2
α Virginis,	E. 20th,	27. 1.05	25.35.01	25.35.00	27	25.35.27.5	10. 1.48	S. 15.33.39.5	Chicoortee
ζ Urf. Maj.	W.	43. 0.17	40.26.13	40.26.05	49	40.26.58	56. 3.23	N. 15.36.25	15.35.44.5

Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
1784,		D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
α Virginis,	E. 22d,	27. 1.05	25.35.01	25.35.00	27	25.35.27.5	10. 1.48	S. 15.33.39.5	Yenmunbender
ζ Urf. Maj.	W.	43. 0.13	40.24.29	40.25.00	49	40.25.33.4	56. 3.23	N. 15.37.49.6	15.46.27.5
α Urf. Maj.	W. 23d,	36. 3.15	34.33.37	34.33.50	39	34.34.22.5	50.23.42	N. 15.49.09	Vantipollam
α Libræ,	E.	32. 3.21	30.51.25	30.51.05	34	30.51.49	15. 8.03	S. 15.43.46	15.46.27.5
α Virginis,	E. 25th,	27. 2.15	25.53.28	25.54.00	28	25.54.12	10. 1.48	S. 15.52.24	Banpetla
ζ Urf. Maj.	W.	42. 3. 3	40. 6.00	40. 5.50	48	40. 6.43	56. 3.23	N. 15.56.40	15.54.32

LIEUTENANT COLZBROOKE had by this time acquired the art of using the quadrant, and his observations will appear where I did not take any. The next is his, and where his are substituted, they will be marked C. He did observe Chicoortee, the result I had entered in my book, it was $15^{\circ} 34' 10''$. but his observation was lost.

α Urf. Maj.	W. 26th,	36. 2.16	34.20.09.4	34.20.00	39	34.20.43.7	50.23.42	N. 16.02.58.2	Chundole
α Libræ,	E.	33. 0.20	31. 5.02	31. 5.00	34	31. 5.35	15. 8.03	S. 15.57.32	16. 0.15.2 C.
α Urf. Maj.	W. 28th,	36. 1.22	34. 8.44	35. 8.05	38	34. 9.02.5	50.23.42	N. 16.14.39.5	Sicacollum, on the North Bank of the Kistna
α Libræ,	E.	33. 1.15	31.16.54	31.17.00	34	31.17.31	15. 8.03	S. 16. 9.28	16.12.04.3

* The quadrant was pulled to pieces at Pinnare Camp, and the line of collimation had not been adjuſted; it was performed before it was next uſed.

Observations at large for determining the Latitudes of Places.

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ASTRONOMICAL OBSERVATIONS

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
☉ Urf. Maj.	W. 1784 May 29th,	D. S. D. N. 43. 1.18	40.40.43	40.39.55	49	40.41.08	57. 8.02,5 N	16.26.54,5	Moodenoore
α Virginis,	E.	28. 0.21	26.24.14	26.23.30	29	26.24.21	10. 1.48 S	16.22.33	16.24.38,8 C.
α Virginis,	E.	28. 1.28	26.41.22	26.42.00	29	26.42.10		16.40.22	Ellore
ζ Urf. Maj.	W. 1st,	41. 3.22	39.18.16	39.18.10	48	39.19.10	56. 3.25 N	16.44.13	16.42.17,5 P.
☉ Urf. Maj.	W.	43. 0.08	40.22.15,9	40.22.20	49	40.23.07	57. 8.02,5 N	16.44.55,5	
γ Urf. Maj.	W.	35. 3.17	33.38.24,5	33.38.40	37,7	33.39.10	50.23.42 N	16.44.32	
α Libræ,	E.	33. 3.22	31.48.06,3	31.48.10	35	31.48.43,2	15. 8.04 S	16.40.39,2	16.42.41,5 C.
☉ Up. Limb.	W. 4th,	5. 2.20	5.18.10	5.18.40	5,0	5.34.18	22.32.32 N	16.58.14 P	Soolaurum
				Semedia,	15,49				
				Parallax.	1,0				
α Virginis,	E.	28. 2.28	26.55.26	26.55.20	29	26.55.52	10. 1.48 S	16.04.54 C	16.56.08,5
α Virginis,	E. 12th,	28. 3.02	26.58.04	26.57.05	29	26.58.03,5		16.56.15,5	Rajahmundry
ζ Urf. Maj.	W.	41. 2.15,5	39. 1.11,2	39. 1.20	46	39. 2.01,6	56. 3.23 N	17. 1.12,4	16.58.43,6 P.
☉ Urf. Maj.	W. 12th,	35. 2.09	33.20.50	33.21.00	36	33.21.31	50.23.42 N	17. 2.11	
α Libræ,	E.	34. 0.23	32. 2.44	32. 2.40	35	32. 3.17	15. 8.04 S	16.55.13	16.58.42 C.
☉ Urf. Maj.	W. 13th,	35. 1.29	33.15.33	33.15.00	35,5	33.15.52	50.23.42 N	17. 7.50	Rajahnagur
β Libræ,	E.	27. 1.07	25.35.53	25.35.00	27	25.35.53	8.34.33 S	17. 1.20	7. 4.35 C.

Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
☉ Urf. Maj.	W. 1784 June 14th,	D. S. D. N. 35. 1.29	33.15.33,5	33.15.55	37	33.16.21	50.23.42 N	17. 7.21	Peddapore
α Draconis,	W.	51. 2.00	48.16.52,5	48.16.10	62,7	48.17.34	65.24.36 N	17. 7.02	
α Libræ,	E.	34. 1.18	32.10.05	32. 9.30	34,5	32.10.22	15. 8.04 S	17. 2.18	
β Libræ,	E.	27. 1.07	25.35.53,3	25.34.40	25,4	25.36.12	8.34.33 S	17. 1.39	17. 4.35 P
β Scorpii,	E. 18th,	38. 2.20	36.14.25	36.13.40	41,5	36.14.44	19.12.01,6 S	17. 2.42	
γ Draconis,	W.	36. 2.24	34.23.40	34.24.00	39,0	34.24.29	51.31.18 N	17. 6.49	17. 4.45,5 C.
α Virginis,	E. 20th,	28. 3.27	27. 8.59,7	27. 8.30	29,0	27. 9.13,7	10. 1.48 S	17. 7.26	Gooloopool-loore,
β Libræ,	E.	27. 1.19	25.41.09,7	25.41.30	28,0	25.41.48	8.34.33 S	17. 7.15	
ζ Urf. Maj.	W.	41. 1.30	38.53.30	38.53.20	44,0	38.54.09	56. 3.33 N	17. 9.05	
☉ Urf. Maj.	W.	35. 1.23	33.12.55,2	33.12.50	37	33.13.15	50.23.42 N	17.10.27	17. 8.35,5 C
☉ Urf. Maj.	W. 21st,	35. 1.16	33. 9.50,6	33. 9.20	37	33.10.12	50.23.42 N	17.13.30	Tonding and Mateor.
α Libræ,	E.	34. 1.39	32.19.18	32.20.00	35	32.20.14	58.18.04 S	17.12.10	17.12.45 C.
β Libræ,	E. 22d,	27. 2.10	25.51.16	25.50.20	28	25.53.06	8.34.33 S	17.18.33	Suteawaurum
					+				
					1,50				
α Coronæ Borealis,	24th, W.	10. 2.02	9.51.30	9.50.40	10	9.51.15	27.27.03,5 N	17.35.48,5	17.18.33 C.
β Scorpii,	E.	39. 0.19	36.42.06	36.41.50	43	36.42.41	19.12.01,6 S	17.30.39,4	17.33.14 C.

IN FORT WILLIAM, &C.

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Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
α Coronæ Borealis, W.	1784. June 27th,	D.S.D.N. 10. 1.08	9.40.04.7	9.39.40	9.6	9.40.02	27.27.03.5 N.	17.47.01.5	Sobaurum
β Scorpii, E.	July 9th,	39. 1.23.5	36.58.08.4	30.57.20	43	36.58.27.2	19.12.02 S.	17.46.25.2	17 46.59.2 C.
α Scorpii, E.	12th,	46. 2.11	43.40.27.6	43.41.00	55	43.41.39	25.56.12 S	17.45.27	These were made with difficulty amongst clouds & winds, but they were all that could be had.
☉ Up. Limb W.		5.04.12	3.50.16.4	3.50.00	3.6	4. 5.59	27.55.02 N.	17.49.03	
	Sept. 8th,			Ref. & Par. Semedia. 15.17	+				
α Lyræ, W.		22.00.29	20.50.14	20.49.40	33	20.50.30	38.35.26.3 N.	17.44.56.3	Vizacpatam
β Lyræ, W.		16.01.20	15.22.51	15.22.10	15	15.22.45.5	33.07.16 N.	17.44.30.5	
α Aquilæ, E.		9.03.27	9.20.18.2	9.20.00	9	9.20.18.1	8.18.32.5 N.	17.38.50.6	
β Aquilæ, E.		12.02.05.5	11.45.33	11.45 10	12	11.45 34	5.53.08.3 N.	17.38.42.3	17.41.45
α Coronæ Borealis, W.	July 14th,	10. 0.16	9.29.32	9.28.50	9.5	9.29.20.5	27.27.03.5 N.	17.57.43.0	Beemulwilfa Camp, A clear Night.
γ Draconis, W.		35. 3.07	33.34 01	33.33.10	37.5	33.34.13	51.31.18 N	17.57.05	
α Scorpii, E.		39. 2.03	37. 3.11	37. 2.40	43	37. 3.38.5	19.12.02 S	17.51.36.5	17.54.15 C.
β Scorpii, E.		46. 2.23	43.45.44	43.46.00	55	43.46.47	25.56.12 S	17.50.35	Simachillum
β Libræ, E.		28. 0.08	26.18.31	26.19.00	20.5	26.19.14	8.34.33 S	17.44.41	
α Coronæ Borealis, W.	8th,	10. 1.05.5	9.38.59	9.38.40	9.5	9.38.59.0	27.27.03.5 N.	17.48.04.5	17.46.28.8 C.

Observations at Urge for determining the Latitudes of Places.

The four following Observations were taken by a Quadrant made by RAMSDEN, eighteen inches radius, which shewed Altitudes.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
α Lyræ, W.	1784. Aug. 29th,	D.S.D.N. 73. 3.10	69.17.13.6	69.17.35	-22	69.17.02.3	38.35.26.1 N.	17.52.28.4	Beemulwilfa, Head Quarters,
β Lyræ, W.		79.03 00.9	74.45.47.3	74.46. 0	-15.6	74.45 38	33.07.16 N.	17.52.54.0	
α Aquilæ*, E.		85.03. 2	80.24.24	80.24.50	-10	80.24.27	8.18.32 N.	17.54. 5	
β Aquilæ†, E.		83.00.12	77.58.32	77.58.47	-12	77.58.28	5.53.08 N	17.54.40	17.53.32 P
α Draconis, W.	8th,	35.03.11	33.35.46.3	33.35.00	38	33.36.01	51.31.18 N.	17.55.17	
α Lyræ, W.		22.00.04	20.39.16	20.38.30	20	20.39.13	38.35.26 N.	17.56.13	
α Lyræ, W.	9th,	22.00.05	20.39.42	20.39.00	20	20.39.41		17.55.45	
γ Sagittarii, E.		55.03.08	52.19.27.3	52.18.50	75	52.20.18.6	34.27.59.5 S	17.52.29	
α Aquilæ, E.	28th,	10.00.23.5	9.32.50	9.33.00	10	9.33.05	8.18.32.5 N.	17.51.37.5	
γ Sagittarii, E.	31st,	55.03.07	52.19.01	52.18.40	75	52.20.06	34.27.59.5 S.	17.52.06.5	
α Lyræ, W.		22.00.06	20.40.09	20.39.30	20	20.40.15	38.35.26 N.	17.55.11	
α Cygni, W.	Sept 3d,	38.01.13	26.34.46.6	26.35.00	29	26.35.22	44.31.05.3 N.	17.55.43.3	
β Aquarii, E.		25.03.30	24.21.37.3	24.22.00	25	24.22.14	6.30.33 S	17.51.41	
α Cephei, W.	27th,	46.02.22	43.45.17.3	43.45.00	55	43.46.04	61.40.42 N	17.54.38	
β Aquarii, E.		26.00.00	24.20.30	24.22.20	25	24.22.50	6.30.33 S.	17.52.17	
6 North. Stars,								17.55.28	
6 South. Stars,								17.52.14	

from the leading of α Aquilæ, 29th August, subtract 48', † and from β Aquilæ 45

Observations at large for determining the Latitudes of Places.

From henceforward all the Observations were taken by Lieutenant COLEBROOKE.

Phenomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784 Oct.	D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
α Cephei,	W. 22d,	46.01.24	43.32.06,8	43.31.30	53	43.32.42,3	61.40.42,2 N.	18.08.00	Vizianagur Palace,
β Aquarii,	E. 22d,	26.00.26	24.33.55,6	24.33.30	26	24.34.08,8	6.30.33 S.	18.03.35,8	
α Cygni,	W. 23d,	28.00.15,8	26.21.35,5	26.22.00	28	26.22.15,8	44.31.05,3 N.	18.08.49,6	
α Cephei,	W. 23d,	46.01.25	43.32.32,9	43.31.46	54	43.33.03,5	61.40.42,2 N.	18.07.38,7	
β Aquarii,	E. 23d,	26.00.26	24.33.55,6	24.33.35	26	24.34.11,3	6.30.33 S.	18.03.38,3	18.05.52,3
α Cygni,	W. 25th,	28.00.27	26.26.51,9	26.27.00	28	26.27.24	44.31.05,2 N.	18.03.41,2	Brimling,
α Cephei,	W. 25th,	46.02.00	43.36.30,2	43.35.50	54	43.37.04,1	61.40.42,2 N.	18.03.38,1	
β Aquarii,	E. 25th,	26.00.19	24.30.51	24.30.00	26	24.30.51,5	6.30.33 S.	18.00.18,0	18.01.59
7 Lacertæ,	W. 26th,	33.01.23	31.20.25,2	31.20.00	34,4	31.20.47	49.10.48 N.	17.51.01	Santipollum,
Fumulooot,	E. 26th,	51.03.07	48.34.00,8	48.33.30	64	48.34.49,5	30.45.25,6 S.	17.49.23,8	17.49.42,4
α Cephei,	W. 31st,	46.02.00	43.35.37,5	43.35.00	54	43.36.13	61.40.42,2 N.	18.05.29,2	Chuntulwilla,
β Aquarii,	E. 31st,	26.00.18	24.30.24,6	24.30.00	25,7	24.30.38	6.30.33 S.	18.00.05	18.02.17,1
α Cephei,	W. Nov. 1st,	46.01.26	43.32.59,3	43.32.50	54	43.33.48,6	61.40.42,2 N.	18.06.53,6	Narrainpoore,
β Aquarii,	E. 1st,	26.00.23	24.32.36,5	24.32.20	26	24.32.54,3	6.30.33 S.	18.02.21,3	
Fumulooot,	E. 1st,	52.00.08	48.48.30,9	48.48.30	65	48.49.35,5	30.45.25,6 S.	18.04.08,9	
β Calliopææ,	W. 3d,	42.01.29	39.49.18,4	39.49.00	48	39.49.57,2	57.57.50 N.	18.07.52,8	18.05.18,7
α Aquarii,	E. 3d,	20.02.26	19.24.33,5	19.24.00	20	19.24.36,8	1.21.30,6 S.	18.03.06,2	Kundalwilla.
7 Lacertæ,	W. 4th,	33.00.11	31.01.05,1	31.01.30	34	31.01.51,6	49.10.48 N.	18.08.56,4	18.06.01,3
α Aquarii,	E. 4th,	20.03.10	19.31.34,9	19.31.30	20	19.31.52,5	1.21.30,6 S.	18.10.21,9	Timorgudha,

Observations at large for determining the Latitudes of Places.

Phenomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784 Nov.	D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
7 Lacertæ,	W. 4th,	33.00.00	30.56.15	30.55.20	34	30.56.21,5	49.10.48 N.	18.14.26,5	18.12.24,2
α Andromedis,	W. 5th,	10.00.27	9.34.22	9.34.20	10	9.34.31	27.53.56 N.	18.19.25	Sicatole Camp,
γ Pegasi,	E. 5th,	4.02.06	4.15.45,7	4.15.00	4	4.15.27	13.59.10 N.	18.14.37	18.17.01
α Cephei,	W. 7th,	46.00.21	43.16.43,7	43.17.00	53	43.17.45	61.40.42,2 N.	18.22.57,2	Kalingapatam Camp,
Fumulooot,	E. 7th,	52.01.11	49.03.54	49.04.00	65	49.05.02	30.45.25,6 S.	18.19.36,4	18.21.16,8
Fumulooot,	E. 9th,	52.08.28	49.11.22,1	49.11.20	64	49.12.25		18.26.59,4	Kulliparoo,
α Andromedis,	W. 10th,	10.00.02	9.23.22,4	9.23.30	10	9.23.36	27.53.53 N.	18.30.17	
γ Pegasi,	E. 10th,	4.03.02	4.28.04	4.27.30	5	4.27.25	13.59.07 N.	18.26.59	18.28.39
α Andromedis,	W. 11th,	9.02.27	9.06.14,5	9.05.40	10	9.06.07	27.53.53 N.	18.47.46	Coffeboogaum,
γ Pegasi,	E. 14th,	5.00.05	4.43.27	4.43.00	4,5	4.43.18	13.59.07,5 N.	18.42.25,5	18.45.05,8
Fumulooot,	E. 14th,	53.00.10	49.45.38,7	49.45.30	67	49.46.41,4	30.45.22,5 S.	19.01.19	Kutwaul Tau- laub,
β Calliopææ,	W. 14th,	41.01.28	38.52.37,1	38.52.00	56	38.53.04,6	57.57.46,7 N.	19.04.42,1	19.03.00,5

Observations at large for determining the Latitudes of Places.

P ^h ænomenon and Face of the Quadrant.	Date	ARCH of 96.		Arch of 90.	Equation applied	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
α Andromedis,	1784. Nov.	D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	Ichapoor,
W.	15th,	9.01.10	8.44.42,5	8.45.00	8,7	8.45.00	27.53.59 N.	19.08.59	° ' "
γ Pegasi,	E.	5.01.23	5.05.25,3	5.05.00	5	5.05.17,5	13.59.13,3 N.	19.04.30,8	19.06.45
7 Lacertæ,	W.	16th,	31.03.10	29.50.20	29.49.40	33	29.50.33	49.10.45 N.	19.20.12
Fumulhoot,	E.		53.01.15	50.01.54,3	50.02.00	67	50.03.04,2	30.45.22,5 S.	19.17.41,7
7 Lacertæ,	W.	17th,	31.03.13	29.51.39,1	29.51.00	33	29.51.52,6	49.10.45 N.	19.18.52,4
Fumulhoot,	E.		53.01.10	49.59.40,4	49.59.30	67	50.00.42,2	30.45.22,5 S.	19.15.19,7
	E.	18th,	53.01.24	50.05.51,6	50.05.30	67	50.06.48		19.21.25,5
β Cassiopææ,	W.		41.00.03	38.31.58	38.31.00	46	38.32.15	57.57.53 N.	19.25.38
Fumulhoot,	E.	25th,	53.02.06	50.12.00,7	50.12.00	67	50.307,5	30.45.22,5 S.	19.27.45
β Cassiopææ,	W.		41.00.03	38.27.34,7	38.26.50	45,6	38.27.58	57.57.50,0 N.	19.29.55
Fumulhoot,	E.	26th,	43.02.14	50.15.31,7	50.15.30	67	50.16.38	30.45.22,5 S.	19.31.15,5
β Cassiopææ,	W.		40.03.25	38.23.11	38.23.10	45,6	38.23.56	57.57.53 N.	19.33.57
Fumulhoot,	E.	29th,	53.03.04	50.25.11,8	50.24.40	67	50.26.02	30.45.22,5 S.	19.40.40,5
α Andromedis,	W.		8.02.29	8.10.52,2	8.10.50	8	8.10.59,1	27.53.59,0 N.	19.43.00

Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784.								
	Nov.	D. S. D. N.	° / ' / "	° / ' / "	"	° / ' / "	° / ' / "	° / ' / "	° / ' / "
α Cassiopææ, W.	29th,	38.00.01	35.37.56,4	35.37.30	40,8	35.38.24	55.21.23,0	19.42.59	19.41.50
Fumulhoot, E.	Dec.	53.03.21	50.32.40	50.32.30	67	50.32.12	30.45.22,5 S.	19.48.19,5	Jaggernaut,
γ Pegasi, E.	4th,	6.00.21	5.46.43,7	5.46.30	6	5.46.43	13.59.13,3 S.	19.45.56,3	
α Cassiopææ, W.		37.03.22	35.33.06,3	35.32.40	41	35.33.34,2	55.21.23 N.	19.47.19	
α Andromedis, W.		8.02.12	8.03.26	8.03.00	8	8.03.21	27.53.59 N.	19.50.38	19.41.50
α Andromedis, W.	7th,	8.01.21	7.53.17,5	7.53.20	8	7.53.27	27.53.59 N.	20.00.32	Ahmetpoore,
α Cassiopææ, W.		37.02.26	35.20.48	35.21.00	40	35.21.34	55.21.23 N.	19.59.49	
α Cassiopææ, W.		15.01.24	42.35.52	42.36.00	52	42.36.44	62.36.07 N.	19.59.23	
γ Pegasi, E.		6.01.06	5.54.12	5.54.00	6	5.54.12	13.59.13,3 N.	19.53.25,3	
η Ceti, E.		33.01.05	31.12.30,7	31.12.00	34	31.12.49,4	11.19.35 S.	19.53.14,4	
θ Ceti, E.		31.00.17	29.11.13,3	29.10.30	32	29.11.23,6	9.17.47 S.	19.53.36,6	19.56.40,2
α Cassiopææ, W.		37.02.05	35.11.34,3	35.11.00	40	35.11.57	55.21.23 N.	20.09.26	Peeply,
Cassiopeæ, W.	8th,	41.02.07	38.57.27,1	38.57.00	46	38.57.59,6	59.06.56 N.	20.08.56	
η Ceti, E.		33.02.00	31.24.22,6	31.24.00	34,4	31.24.46	11.19.35 S.	20.05.11	20.07.11
α Andromedis, W.	9th,	8.00.08	7.33.31	7.33.00	6	7.33.23	27.53.59 N.	20.20.36	Ballunta
γ Pegasi, E.		6.01.22	6.15.18	6.15.30	7,5	6.15.30	13.59.13 N.	20.14.43	20.17.40

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Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784, Dec.	D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
γ Cassiopææ, W.	10th,	41.02.22	39 04.02.6	39.03 30	46	39.04.30	59.52.54 N.	20.28.21,7	Sowlagunda, near Kuttack,
η Ceti, E.		33.03.13	31.43.59	31.43.30	35	31.44.20	11.19.35 S.	20.24.45	° ' "
ε Cassiopææ, W.	15th,	44.02.16	41.50.09,4	41.49.40	51	41.50.45,7	62.36.07 N.	20.45.21,3	Koomereah River, north side,
α Piscium, E.		20.00.29	18.57.44,7	18.57.40	19	18.58.04,4	1.43.03 N.	20.41.04,4	20.43.18
α Cassiopææ, W.	17th,	36.02.20	34.26.18,5	34.26.00	39	34.26.48,3	55.21.23 N.	20.54.34,7	Jehaujpoore River, N. side,
η Ceti, E.		34.01.04	32.18.19,3	32.08.20	35	32.08.55	11.19.35 S.	20.49.20	20.51.57
γ Cassiopææ, W.	19th,	41.00.15	38.32.50,5	38.32.30	45	38 33.25,8	59.32.54 N.	20.59.28,7	Chorakootce,
δ Cassiopææ, W.		40.02.18	38.06.02,1	38 05.30	44	38.06.30	59 06.56 N.	21.00.26	
θ Ceti, E.		32.01.04	30.15.49,3	30.15.20	33,3	30.16.08	9.17.47 S.	20.58.21	20.59.09
β Cassiopææ, W.	20th,	44.00.29	31.27.44,7	41.27.30	50	41.28.27,4	62.36.07 N.	21.07.40,4	Raneeka Taulaub
δ Ceti, E.		23.00.29	21.42.06	21.42.00	22	21.42.25	0.36.32 S.	21.05.53	21.06.46
α Cassiopææ, W.	21st,	36.01.15	34.05.39,3	34.05.20	38	34.06.08	55.21.23 N.	21.15.15	Kaunse Baunse,
δ Cassiopææ, W.		40.01.16	37.51.05,7	37.51.00	44	37.51.47	59.06.56 N.	21.15.09	
η Ceti, E.		34.02.24	32.31.10,3	32.30.40	36	32.31.31,2	11.19.35 S.	21.11.56,2	
θ Ceti, E.		32.02.06	30.30.45,7	30.30.20	33	30.31.06	9.17.47 S.	21.13.19	21.13.52,3
α Cassiopææ, W.	22d,	36.00.24	33.55.33	33.55.30	38	33.56.09,5	55.21.23 N.	21.25.13,5	Aumnulla,
η Ceti, E.		34.03.12	32.39.57,3	32.39.40	35,4	32.40.24	11.19.35 S.	21.20.49,0	21.23.01,2
α Cassiopææ, W.	23d,	43.02.24	40.57.05,4	40.57.00	40,3	40.57.52	62.36.07 N.	21.38.14,3	Daundurpoor,

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Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784, Dec.	D. S. D. N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
γ Andromel's, W.	23d,	20.03.25	19.38.10,5	19.37.40	21,8	19.38.17	41.17.22 N.	21.39. 5,0	
α Piscium, E.		21.00.24	19.51.48	19.51.00	21	19.51.45	1.43.03 N.	21.34.48,0	° ' "
δ Ceti, E.		23.02.18	22.09.47,2	22.10.00	22,4	22.10.16	0.36 32,0 S.	21.33.44,0	21.36.38
ε Cassiopææ, W.	24th,	43.02.06	40.49.10,8	40.49.00	49	40.19.51,4	62.36.07 N.	21.46.12,6	Soobanrecka River, at Rauje Gaut, on the Ballafore side,
δ Ceti, E.		23.03.09	22.19.54	22.19.30	22	22.20.04	0.36.32 S.	21.43.32,0	
ε Cassiopææ, W.	26th,	43.01.30	40.46.10	40.46.00	49	40.46 54	62.36.07 N.	21.49.13,0	
ε Eridani, E.		34.00.06	31.55.08	31.55.08	35	31.55.43	10.13.26,6 S.	21.42.16,4	21.45.18,5
δ Cassiopææ, W.	27th,	39.03.02	37.16.49	37.16.00	48	37.17.13	59.06.56 N.	21.49.43	Jellafore Camp
δ Ceti, E.		23.03.10	22.20.20	22.20.00	24	22.20.34	0.36.32 S.	21.44.02	21.46.53
η Ceti, E.	28th,	35.01.27	33.14.40,6	33.14.00	38	33.14.58,3	11.19.35 S.	21.55.23,3	Dantoon Camp
δ Cassiopææ, W.		49.02.11	37.06.32,5	37.06.00	43	37.06.59,3	59 06.56 N.	21.59.56,7	21.57.40

IN PORT WILLIAM, &c.

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Observations at large for determining the Latitudes of Places,

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784.	D.S.D.N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
γ Calliopææ, W.	29th, Dec.	39.03.21	37.25.10	37.24.40	42	37.25.37	59 32.55.5N.	22.07.18	Khutnager,
η Ceti,	E.	35.02.06	33 19.30,6	33.19.10	37	33.19.57,3	11.19.35 S.	22.00.22	° ' "
γ Calliopææ, W.	30th,	39.03.02	37.16.49	37.16.30	42	37.17.22	59.32.55.5N.	22.15.33,5	Mokurum-poor,
δ Calliopææ, W.		39.01.08	36.51.19,7	36.50.40	43	36.51.43	59.06.56 N.	22.15.13	
η Ceti,	E.	35.02.27,5	33.28.57,5	33.28.20	37	33.29.16	11.19.35 S.	22.09.41	22.12.32,1
γ Perfei,	W.	32.00.29	30.12.44,7	30.13.00	33	30.13.25,4	52.37.59 N.	22.24.33,6	Kaffai River,
β Perfei,	W.	18.03.14	17.40.50,4	17.40.30	18	17.40.58,2	40.06.50 N.	22.25.51,8	
δ Ceti,	E.	24.01.26	22.55.29,3	22.55.00	24	22.55.39	00.36.32 S.	22.19.07	
12 Eridani,	E.	Jan. 55.02.16	52.08.54,5	52.09.10	73	52.10.15,3	29.51.02 S.	22.19.13,3	22.22.11,3
δ Calliopææ, W.	4th,	39.00.10	36.38.08,7	36.37.40	42	36.38.36,3	59.06.56 S.	22.28.19,7	Midnapoor Fort,
γ Calliopææ, W.		42.03.07	40.07.46	40.07.30	48	40.08.26	62.36.07 N.	22.27.41	
δ Ceti,	E.	24.02.00	22.58.07,5	22.58.00	24	22.58.48	00.36.32 S.	22.22.16	22.25.08,3

ASTRONOMICAL OBSERVATIONS

Observations at large for determining the Latitudes of Places.

Phænomenon and Face of the Quadrant.	Date.	ARCH of 96.		Arch of 90.	Equation applied.	Zenith Distance corrected.	Declination.	Latitude by the Observation.	Name of the Place and its correct Latitude.
		Reading.	Value.						
	1784.	D.S.D.N.	° ' "	° ' "	"	° ' "	° ' "	° ' "	
γ Calliopææ, W.	Jan. 5th,	42.03.05	40.06.53	40.06.00	48	40.07.15	62.36.07 N.	22.28.52	Bunpoor,
δ Ceti,	E.	24.02.06	23.00.46	23.00.30	24	23.01.02	00.36.32 S.	22.24.30	° ' "
δ Calliopææ, W.	6th,	38.03.12	36.24.57,7	36.25.00	43	36.25.42	59.06.56 N.	22.41.14	Narraindeowul,
12 Eridani,	E.	55.03.22	52.25.36,4	52.25.30	75	52.26.48,2	29.51.02 S.	22.35.46,2	22.38.30
γ Perfei,	W.	31.03.09	29.49.53,6	29.49.20	33	29.50.10	52.37.59 N.	22.47.49	Madapoor,
12 Eridani,	E.	56.00.10	52.34.24	52.34.40	74	52.35.46	29.51.02 S.	22.44.44	22.46.16,5
γ Perfei,	W.	31.03.05	29.48.03	29.47.50	33	29.48.32	52.37.59 N.	22.49.27	Chunderbund,
12 Eridani,	E.	56.00.09	52.34.11	52.34.00	74	52.35.20	29.51.02 S.	22.44.18	22.46.52,5
γ Perfei,	W.	10th, 32.00.03	30.01.19,8	30.01.00	33	30.01.42,5	52.37.39 N.	22.36.16,5	Habra Gaut,
12 Eridani,	E.	55.03.14	52.22.05,4	52.22.10	74	52.33.21,7	29.51.02 S.	22.32.19,7	22.34.18,1

ASTRONOMICAL OBSERVATIONS

Mr. BURROWS published, in the Lady's Diary, a Theorem fimilar to mine, page 71 : he fhewed it to me laft year My original Book of Observations convinced him, that his Publication could not have been known to me when I wrote the Theorem.

III.

A ROYAL GRANT OF LAND,
ENGRAVED ON A COPPER-PLATE, BEARING DATE
TWENTY-THREE YEARS BEFORE CHRIST ; AND
DISCOVERED AMONG THE
RUINS AT MONGUEER.

Translated from the Original Sanscrit,

BY CHARLES WILKINS, Esq.

In the Year 1781.

DEB PAAL DEB.*

PROSPERITY !

*H*IS wishes are accomplished. His heart is steadfast in the cause of others. He walks in the paths of virtue. May the achievements of this fortunate Prince cause innumerable blessings to his People !

By displaying the strength of his genius, he hath discovered the road to all human acquirements; for being a *Soogot* (1) he is Lord of the Universe.

Gopaal, King of the World, possessed matchless good Fortune: he was Lord of two Brides; the Earth and her Wealth. By comparison of the learned, he was likened unto *Preetoo* (2,) *Sogor* (3,) and others, and it is credited.

When his innumerable army marched, the heavens were so filled with the dust of their feet, that the birds of the air could rest upon it.

L2

He

* In this translation the *Sanskrit* names are written as they are pronounced in *Bengal*; but in the following paper, the translator has adopted the more elegant pronunciation of *farcifies* and *Cashmir*-

He acted according to what is written in the *Shaafta*, (i) and obliged the different sects to conform to their proper tenets. He was bleffed with a fon, *Dhormo Paal*, when he became independent of his forefathers, who are in heaven.

His elephants moved like walking mountains ; and the earth, oppreffed by their weight, and mouldered into duft, found refuge in the peaceful heavens.

He went to extirpate the wicked, and plant the good; and happily his falvation was effected at the fame time: for his fervants vifited *Kedaar*, (2,) and drank milk according to the law: and they offered up their vows where the Ganges joins the Ocean, and at *Gokornaa*, (3) and other places, (4)*

When he had completed his conquelts, he releafed all the rebellious Princes he had made captive; and each returning to his own country laden with prefents, reflected upon this generous deed, and longed to fee him again; as mortals, remembering a pre-exiftence, wifh to return to the realms of light.

This Prince took the hand of the daughter of *Porobol*, Raajaa of many countries, whose name was *Ronnaa Debee*; and he became fettled.

The people, being amazed at her beauty, formed different opinions of her. Some faid it was *Lochee*(5) herfet in her fhape; others, that the earth had affumed her form: many faid it. was the Raajaa's fame and reputation ; and others, that a houfehold goddefs had entered his palace. And her wifdom and virtue fet her above all the ladies of the court.

This

This virtuous and praise-worthy Princefs bore a fon, *Deb Paal Deb*, as the fhell of the ocean produces the pearl;

In whose heart there is no impurity; of few words, and gentle manners; and who peaceably inherited the kingdom of his father, as *Bodheesotwo* (1) fucceeded *Soogot*.

He who, marching through many countries making conquests, arrived with his elephants in the forests of the mountains of *Becndhyo*, (2,) where seeing again their long-lost families, they mixed their mutual tears; and who going to subdue other Princes, his young horses meeting their females at *Komboge*, (3,) they mutually neighed for joy.

He who has opened again the road of liberality, which was first marked out in the *Kreto Joog* (4) by *Bolee*, (5,) in which *Bhaargob* (6) walked in the *Treetaa Joog*, (7,) which was cleaned by *Korno* (8) in the *Dwapor Joog*, (9,) and was again choaked up in the *Kolee Joog* (10) after, the death of *Sokodweesee* (11.)

He who conquered the earth from the source of the Ganges as far as the well-known bridge which was constructed by the enemy of *Dosaasyo* (12,) from the River of *Luckecool* (13) as far as the ocean of the habitation of *Boroon*, (14.)

At *Mood-go-gheeree*, (15,) where is encamped his victorious army, across whole river a bridge of boats is constructed for a road, which is mistaken for a chain of mountains, where immense herds of elephants, like thick black clouds, so darken the face of day, that people think it the season of the rains ; whither the Princes of the North send so many troops of horse, that the dust of
their

their hoofs freads darknefs on all fides; whither fo many mighty Chiefs boodweep (1) refort to pay their refpects, that the earth finks beneath the weight of the feet of their attendants. There *Deb Paal Deb* (who, 'walking in the footfteps of the mighty Lord of the great *Soogots*, the great Commander, *Raajaa* of *Mohaa Raajaas*, *Dhormo Paal Deb*, *ishimfelf mighty Lord* of the great *Soogots*, a great Commander, and *Raajaa* of *Mohaa Raajaas*) iffues his commands. To all the inhabitants of the town of *Meseeka*, fituated in *Kreemeelaa*, in the province of *Sree Nogor* (2,) which is my own property, and which is not divided by any land belonging to another ; to all *Raanok* and *Kaaje-pootro*; to the (3) *Omaatyo*, *Mohaa-kaarttaa-kreeteeko*, *Mohaa-Don-do-Nayk*, *Mohaa Proteehaar*, *Mohaa-Saamont*, *Mohaa-Jow-Saadho?* *i-SaadhoneekOj Mohaa - Koomaaraa - Matyo* ; to the *Promaatree* and *Sorobhongo* ; to the *Raajostaanceyo*, *Ooporeeko*, *Daasaaporaadheeko*, *Chowrod-dhoroneeko*, *Daandecko*, *Dondopaaseeko*, *Sowl-keeko*, *Gowlmeeko*, *Kyotrope*, *Praantopaalo*, *Kothtopaalo* and *Kaandaarokyo*; to the *Todaajooktoho* and the *Beeneejooktoko* ; to the keeper of the elephants, horfes, and camels; to the keeper of the mares, colts, cows, buf-faloes, fheep, and goats; to the *Dootoprysoneeko*, *Gomaa-Gomeeko*, and *Obheetworomaano*; to the *Beesoy-potee*, *Torcpotee*, and *Toreeko*. To the different tribes, *Gowr*, *Maalob*, *Khoso*, *Hoon*, *Kolecko*, *Kornaato*, *Laa-saatOj* and *Bhoto* ; to all others of our fubjects, who are not here fpecified; and to the inhabitants of the neighbouring villages, from the *Braahmon* and fathers of large families, to the tribes of *Medo Ondhoroko*, and *Chondaalo*.

Be it known that I have given the above-mentioned town of *Meseeka*, whole limits include the fields where the cattle graze, above and below the furface, with all the lands belonging to it; together with all the *Manga* and *Modhoo* trees; all its waters, and all their banks and verdure; all its rents and tolls, with all fines for crimes,

and rewards for catching thieves. In it there'fhall be no moteftation, no paffage for froops; nor (hall any one take from it the fmalleft part. I give like wife every thing that has been poffeffed by the fervants of the Raa-jaa. I give the Earth and Sky, as long as the Sun and Moon fhall laft. Except, however, fuch lands as have been given to God, and to the *Braahmons*, which they have long poffeffed, and now enjoy. And that the glory of my father and mother, and my own fame, may be increased, I have caufed this *Saafon* (1) to be engraved, and granted unto the great *Botha Beehkoraato Meefro*, who has acquired all the wifdom of books, and has ftudied the *Beads* (2) under *Oflaayono*; who is defcended from *Owpomonyobo*; who is the fon of the learned and immaculate *Botho Boraahoraato*; and whose grandfather was *Botho Beefworaato*, learned in the *Beads*, and expert in performing the *Jog* (3).

Know all the aforefaid, that as beftowing is meritorious, fo taking away deferves punifhment; wherefore leave it as I have granted it. Let all his neighbours, and thofe who till the land, be obedient to my commands. What you have formerly been accuftomed to perform and pay, do it unto him in all things, Dated in the 33d *Sombot* (4,) and 21ft day of the month of *Maargo*,

Thus fpeak the following *Slokes* (5) from *Dhormo Onoofaafon*:

1, " *Ram* hath required, from time to time, of all
" the *Raajaas* that may reign, that the bridge of
" their beneficence be the fame, and that they do con-
" tinually repair it.

2. " Lands have been granted by *Sogar*, and many
" other *Raajaas*; and the fame of their deeds devolves
" to their fucceffors.

3, " He who difpoffeffes any one of his property,
" which I myfelf, or others, have given, may he, be-
" coming a worm, grow rotten in ordure with hit
" forefathers !

4. " Riches, and the life of man, are as tranfient as
" drops of water upon a leaf of the lotus. Learn-
" ing this truth, O man ! do not attempt to deprive
" another of his reputation,"

The Raajaa, for the public good, hath appointed his
virtuous fon, *Raajyo Paal*, to the dignity of *Jowbo*
Raajaa. He is in both lines of defcent illuftrious,
and hath acquired all the knowledge of his father,

NOTES,

Page 123. (1) *Soogot* signifies an atheist, or follower of the tenets of *Soogot*, a philosopher, who is said to have flourished at a place called *Keekot*, in the province of *Behar*, one thousand years after the commencement of the *Kolee Joog*, or *Iron Age*; of which this is the 4882d year. He believed in visible things only, or such as may be deduced from effects the cause of which is known; as from smoke the existence of fire. He wrote many books to prove the absurdity of the religion of the *Brahmans*; and come upon astronomy, and other sciences, all which are laid to be now in being. He further held that all our actions are attended by their own rewards and punishments in this life; and that all animals, having an equal right to existence with man, they should not be killed either for sport or food.

(2) *Pretoo* was the son of *Beno*, and *Raajaa* of a place called *Beetoor*, near *Lucknow*. He flourished in the first age of the world, and is said to have levelled the earth; and, having prepared it for cultivation, obliged the people to live in society.

(3) *Sogor*, the name of a *Raajaa* who lived in the second age at *Ojoodho*, and is said to have dug the rivers.

Page 124. (r) *Shaastra*—book of divine ordinations. The word is derived from a root signifying to command.

(2) *Kedaar-a* famous place, situated to the north of *Hindooftan*, visited, to this day, on account of its supposed sanctity.

(3) *Gokornaa*—a place of religious resort, near *Punjab*.

(4) This and a few other passages appear inconsistent with the principles of a *Soogot*; to reconcile it, therefore, it should be remarked, that, as he was issuing his orders to subjects of a different persuasion, it was natural for him to use a language the best calculated to strike them with awe, and bind them to a performance of his commands. The *Pundit*, by whose assistance this translation was made, when he was desired to explain this seeming contradiction, asked whether we did not, in our courts, swear a *Muffulman* upon the *Koran*, and a *Hindoo* by the waters of the *Ganges*, although we ourselves had not the least faith in either.

(5) *Lockee*—the *Hindoo* Goddeffs of Fortune.

Page 125. (1) *Bodheefotwo*—was the son of *Soogot*.

-name of the mountains on the continent near *Ceylon*.

-now called *Cambay*.

Joog—the first age of the world, sometimes called the
or age of purity.

(5) *Bolee*—a famous giant of the first age, who is fabled to have conquered earth, heaven, and hell.

(6) *Bhargob*—a *Brahman*, who, having put to death all the princes of the earth, usurped the government of the whole.

(7) *Treetoo Joog*—the second age, or of three parts good.

(8) *Korno*

(8) *Korno*—a famous hero in the third age of the world. He was General to *Doorjodhon*, whose wars with *Joodifteer* are the subjects of the *Mohabharat*, the grand epick poem of the Hindoos.

(9) *Dwapor Joog*—the third age of the world.

(10) *Kolee Joog*—the fourth or present age of the world, of which 4882 years are elapsed.

(11) *Sokodweefee*—an epithet of *Bechomaadeetyo*, a famous Raajaa. He succeeded his brother *Sokaadeetyo*, whom he put to death.

(12) *Dofaafyo*—one of the names of *Raabon*, whose wars with *Raam* are the subject of a poem called the *Raamayon*.

(13) *Luckeecoool*—now called *Luckeepoor*.

(14) *Boroon*—God of the ocean.

According to this account the Raajaa's dominions extended from the Cow's Mouth to Adam's Bridge in Ceylon, said to have been built by *Raam* in his wars with *Raabon*; from *Luckeepoor* as far as *Goozerat*.

(15) *Mood-go-gheeree*—now called *Mongucer*.

Page 126. (1) *Jumbodweep*—according to the Hindoo geography, implies the habitable part of the earth.

(2) *Sree Nogor*—the ancient name of *Patna*.

(3) *Omaatyo*, prime minister. *Mohaa-kaarttaa kreeteeko*, chief investigator of all things. *Mohaa-Dondo-Nayk*, chief officer of punishment. *Mohaa-Protee-haar*, chief keeper of the gates. *Mohaa-Saamonto*, generalissimo. *Mohaa-Dow-Saadhon-Saadhoneeko*, chief obviator of difficulties. *Mohaa-Koomaaraa-Matyo*, chief instructor of children. *Promaa-tree*, keeper of the records. *Sorobhongo*, patrols. *Raajofaaneeyo*, viceroy, *Ooporeeko*, superintendent. *Daafaaraadheeko*, investigator of crimes. *Chow-rod-dho-roneeko*, thief catcher. *Daandeeko*, mace-bearer. *Dondofafeeko*, keeper of the instruments of punishment. *Sowl-keeko*, collector of customs. *Gowlmeeko*, commander of a small party. *Kyotropo*, superintendent of cultivation. *Praantopaalo*, guard of the suburbs. *Kothtofaalo*, commander of a fort. *Kaandaarokyo*, guard of the wards of the city. *TodaaJooktoko*, chief guard of the wards. *Beeneejooktoko*, director of affairs. *Dootopryfoneeko*, chief of the spies. *Gomaa-Gomeeko*, messengers. *Obheevoromaano*, swift messengers. *Beefoyptotee*, governor of a city. *Toropotee*, superintendent of the rivers. *Toreeko*, chief of the boats.

Page 127. (1) *Saajon*—signifies an edict.

(2) *Beads*—Hindoo Scriptures.

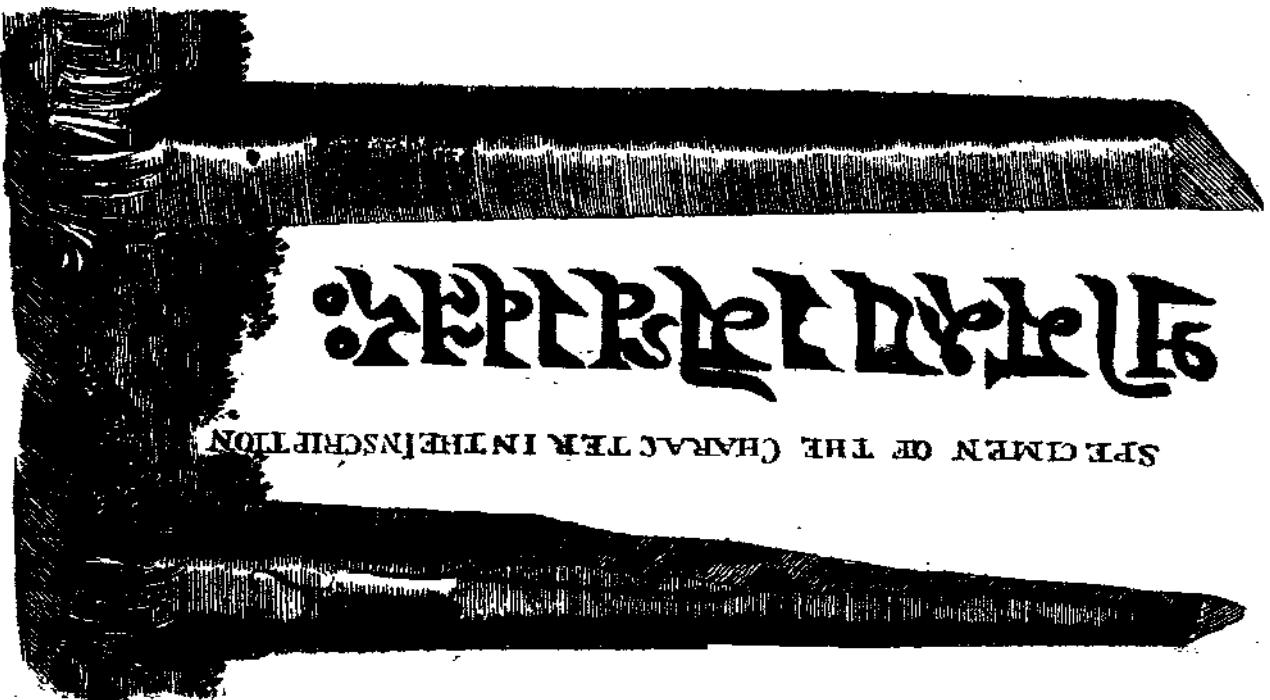
(3) *Jog*—Sacrifice.

(4) *Sombot*—implies the era of Raajaa *Beekromadeetyo*, The Brahmins throughout Hindoostan keep time according to the three following epochs: The *Kolyobdo*, from the flight of *Kreefhnno*, or commencement of the *Kolee Joog*, 4882 years. The *Sombot*, from the death of *Beekromadeetyo*, 1837 years. The *Sokaabdo*, from the death of Raajaa *Soko* 1703.

(5) *Slokes*—stanzas, commonly, but erroneously, written *Afhlogues*.

FRONT View

SIDE VIEW



IV-

AN

INSCRIPTION ON A PILLAR NEAR BUDDAL

TRANSLATED FROM THE SANSKRIT.

BY CHARLES WILKINS, ESQUIRE.

C O M E time in the month of November, in the year 1780, I difcovered, in the vicinity of the town of *Buddal*, near which the Company have a factory, and -which at that time was under ray charge, a decapitated monumtental column, which at a little diftance has very much the appearance of the trunk of a cocoa-nut tree broken off in the middle. It ftands in a fwamp overgrown with weeds, near a fmall temple dedicated to *Hargowree*, whofe image it contains. Upon my getting clofe enough to the monument to examine it, I took its dimenfions, and made a drawing of it; and foon after a plate was engraved, from which the accompanying is an impreffion.

It is formed of a fingle ftone, of a dirty grey complexion; and it has loft by .accidenta considerable part of its original height. I was told upon the fpot that it had, in the courfe of time, funk confiderably in the ground; but upon my digging about the foundation, I found this was not the cafe. At a few feet above the ground is an infcription, engraved in the ftone, from which I took two reverfed impreffions with printer's ink. I have lately been fo fortunate as to decypher the character; and I have the honour to lay before the Society a tranfcript of the original in the modern writing, 2nd a tranflation; and at the fame time to exhibit the two impreffions J took from the ftone itfelf.

The

The original character of this infcription is very different from the modern form; but it fo much refembles that on the plate found by COL. WATSON at *Mongueer*, that I am induced to conclude it to be the work of the fame period. The language is *Samfkreet*, and the whole is comprifed in twenty-eight metrical verfes of various meafures,

CHARLES WILKINS.

14th July, 1785.

PROSPERITY !

I.

VEERA DEV was of the *Sandeelya* race, (1;) from him was descended *Panchal*; of whose generation, and of whom. Was *Garga* born.

II.

He, another *Sakra*, (2,) was ruler but of one quarter, and had no authority in other regions. He, too, was defeated by *Ditya* (3) chiefs ; but, being a virtuous prince, he became supreme over every country without reserve; and his conduct was such, that he laughed *Vreahaspattee* (4) to scorn.

III.

Eecha (5) was his wife; and like love, (he was the mistress of his heart. She was admired for the native purity of her mind, and her beauty was like the light of the moon.

In

(1) A tribe of Brahmins; still extant.

(2) Eendra, the God of the Heavens, who is supposed to be the Guardian of the East.

(3) Evil Spirits. Eendra is said to have lost his kingdom, for a while, to the Afores, or evil spirits.

(4) The tutor of the good spirits, and the Planet Jupiter,

(5) Love, Desire.

IV.

In his countenance, which was like the flower of the waters, (1,) were to be traced the lines of four sciences, (2.) The three worlds were held in subjection by his hereditary high rank.

From these two was descended a *Brahman like Kamalayonee*, (3,) and he took unto himself the name of *Sree Darbha-panee* ;

V.

Whose country (extending to *Reva-Janak*, (4 ;) to the father of *Gowree*, (5,) whose piles of rocks reek with the juice exuding from the heads of intoxicated elephants, and whose snow-white mountains are brightened by the sun's rays; to the two oceans: to that whence *Aroon* (6) riseth from its bed, and to that wherein the sun sinketh in the west) the Prince *Sree Dev Pal*, (7,) by his policy, rendered tributary :

VI.

At whose gates (although the prospect, hidden by the dust arising from the multitude of marching forces, was rendered clear from the earth, being watered by constant and

(1) The Lotus.

(2) Arms, Music, Mechanics, Physics.

(3) Brahma.

(4) Perhaps the *Narbadda*.

(5) The snowy Mountains that part India from Tartary. *Gowree*, one of the names of the *Parvatee*, the consort of *Seev*.

(6) The Charioteer of the Sun,—The Aurora of the Hindoos.

(7) If this be the Prince mentioned in the copper-plate found by Col. WATSON, he reigned at Mongueer above 1800 years ago.

and abundant fstreams, flowing from the heads of luftful elephants of various breeds) ftood, fcarce vifible, amongft the vaft concourfe of nobles flocking to his fstandard from every quarter, *Sree Dev Pal*, in expectation of his fubmiffion.

VII

Whofe throne that Prince (who was the image of *Eendra*, and the duft of whofe feet was impreffed with the diadems of fundry potentates) himfelf afcended with a flaſh of glory, although he had formerly been wont to offer him large fums of *Peetas*, (1,) bright as the lunar rays.

VIII

To him was born, of the Princefs *Sarkara*, the Brahman *Someſwar*, who was like *Som*, (2,) the offspring of *Atree*, and a favourite of the Moll High,

IX.

He adopted the manners of *Dhananjay*, (3,) and did not exult over the ignorant and ill-favoured. He fpent his riches amongft the needy. He neither vainly accepted adulation, nor uttered honey words. His attendants were attached by his bounty; and becaufe of his vaft talents, which the whole univerfe could not equal, he was the wonder of all good men,

Anxious

(1) A ſquare coin.

(2) The Moon.

(3) One of the Sons of Paadoo, commonly called *Arjoon*

X.

Anxious for a home and an afylum, he took the hand of *Ranna*, (1) a Princefs of his own likenefs, according to the law, even as *Seev* the hand of *Seeva*, (2,)—— even as *Haree* (3) the hand of *Lakfhmee*

X L

From this pair proceeded into life, burfting forth like *Gooha*, (4,) with a countenance of a golden hue, the fortunate *Kedara Meesra*, whose actions rendered him the favourite of heaven. The lofty diadem, which he had attained, fhone with faultlefs fplendor, kiffing the vaft circumference of the earth. His extenflve power was hard to be limited; and *he* was renowned for boundlefs knowledge, raifed from his own internal fource.

X II.

The ocean of the four fcienes, which had been at a fingle draught drunk up, he brought forth again, and laughed at the power of *Agastyā*, (5.)

X III.

Trufting to his wifdom, the king of *Gowr* (6) for a long time enjoyed the country of the eradicated race of *Ootkal*, (7) of the *Noons*, (8,) of humbled pride, of the
kings

[] A Princess of this name is also mentioned in Colonel W A T - SOM'S Plate.

(2) *Seeva* is the feminine of *Seev*.

(3) *Haree*, a name of *Veeshnoo*.

(4) *Gooha*, a name of *Karteek*.

(5) Who is said to have drunk up the Ocean.

(6) The kingdom of *Gowr* anciently included all the countries which now form the kingdom of Bengal on this side the *Brahmapootta*, except *Mongueer*.

(7) *Orixia*.

(8) *Huns*.

kings of *Draveer* (1) and *Goojar*, (2,) whose glory was reduced, and the universal sea-girt throne.

XIV.

He considered his own acquired wealth the property of the needy, and his mind made no distinction between the friend and the foe. He was both afraid and ashamed of those offences which condemn the soul to sink again into the ocean of mortal birth ; and he despised the pleasures of this life, because he delighted in a supreme abode.

XV.

To him, emblem of *Vreehapatee*, (3,) and to his religious rites, the Prince *Sree Soora Pal* (who was a second *Eendra*, and whose soldiers were fond of wounds) went repeatedly; and that long and happy companion of the world, which is girt with several oceans as with a belt, was wont, with a soul purified at the fountain of faith, and his head humbly bowed down, to bear pure water before him.

XVI.

Vanwa, of celestial birth, was his comfort, with whom neither the fickle *Lakshmee*, nor *Satee*, (4,) constant to her lord, were to be compared.

VOL,

I

M

XVII.

(1) A Country to the South of the Carnatick.

(2) Goozerat.

(3) The Preceptor of the good Spirits, and the Planet *Jupiter*.

(4) The Consort of *Seev*.

XVII.

She, like another *Devakee*, (1,) bore unto him a son of high *renown*, who resembled the adopted *Yasodha*, (2,) and husband of *Lakshmee*, (3.)

XVIII.

This youth, by name *Sree Goerava Meesra*, was acquainted with all the constellations. He resembled *Ram*, the son of *Jamadagnee*, (4.) He was another *Ram*.

XIX.

His abilities were so great, that he was solicitous to discover the essence of things, wherefore he was greatly respected by the Prince *Sree Narayan Pal*. What other honour was necessary ?

XX.

His policy [who was of no mean capacity, and of a reputation not to be conceived] following the sense of the *Veds*, was of boundless splendor; and, as it were a descent of *Dharma* the Genius of Justice. It was regulated by the example of those who trust in the power of speech over things future, who stand upon the connexion of family, who are in the exercise of paying due

(1) The real mother of *Kreeshna*

(2) The Foster-Mother of *Kreeshna*.

(3) *Rookmeenee*, the Consort of *Kreeshna*. She is here called *Lakshmee*, in compliance with the idea of her being a descent of that Goddess.

(4) This is neither the Conqueror of *Ceylon*, nor the Brother of *Kreeshna*.

due praise to the virtues of great men, and who believe in the purity of *Astrology*,

XXL

In him was united a lovely pair, *Lakshmee* and *Saraswatee*, the Dispenser of Fortune, and the Goddesses of Science, who seemed to have forsaken their natural enmity, and to stand together pointing at Friendship.

XXII.

He laughed to scorn him who, in the assemblies of the learned, was intoxicated with the love of argument, and confounded him with profound and elegant discourses framed according to the doctrine of the *Sastras*; and he spared not the man who, because of his boundless power and riches, was overwhelmed with the pride of victory over his enemy in the field.

XXIII.

He had a womb, but it obstinately bore him no fruit. One like him can have no great relief for the enjoyments of life. He never was blessed with that giver of delight, by obtaining which a man goeth unto another almoner, (1.)

M 2

XXIV.

(1) He had no Issue to perform the *Sradh* for the release of his Soul from the Bonds of Sin. By *another Almoner* is meant the Deity.

XXIV.

He, who was, as it were, another *Valmeekee*, (1,) born in this dark age of impiety, amongst a dreadful and a cruel race of mortals, was a devout man, who displayed the learning of the *Veds* in books of moral tales.

XXV.

His profound and pleasing language, like *Ganga*, flowing in a triple course (2) and constant stream, purifieth and delighteth.

XXVI.

He, to whom, and to those of whose generation, men were wont to resort as it were to *Brahma*, waited so long in expectation of being a father, that, at length, he himself arrived at the state of a child.

XXVII.

By him was recorded here upon this lasting column, the superior beauty of whose shaft catcheth the eye of the beholder, whose aspiring height is as boundless as his own ideas, which is, as it were, a Rake planted in the breast of *Kalee*, (3,) and on whose top sits *Tarkshya*, (4.) the foe of serpents, and favourite bird of *Ilaree*, the line of his own descent.

XXVIII.

(1) The first Poet of the Hindoos, and supposed Author of the

(2) He is supposed to have written in three languages.

(3) Time.

(4) Otherwise called *Garoor*.

XXVIII.

Garoor, like his fame, having wandered to the extremity' of the world, and descended even unto its foundation, was exalted here with a ferpent in his mouth.

This work was executed by the artift *Beendoo Bhadra*.

Remarks on the two preceding Papers.

By the PRESIDENT.

NO man has greater respect than myself for the talents of Mr. WILIINS, who, by decyphering and explaining the old *Sanscrit* Inscriptions lately found in these provinces, has performed more than any other *European* had learning enough to accomplish, or than any *Asiatick* had industry enough even to undertake: but some doubts having arisen in my mind concerning a few passages in the two preceding Translations, I venture to propose them in the form of Notes with entire deference to his judgment.

P. 123. /. ll. *This fortunate Prince*—Is not the first couplet in honour of BUDDHA, one of whose names, in the *Amarcosh*, is SUGATA ? A follower of his tenets would have been denominated a *Saugat*, in the derivative form. We must observe, that the *Bauddhs*, or *Saugats*, are called *Atheists* by the *Brahmins*, whom they opposed ; but it is mere invective ; and this very grant fully disproves the calumny, by admitting a future state of rewards and punishments. SUGAT was a reformer ; and every reformer must expect to be calumniated.

P. 123./ . 18. *When his innumerable army*—The third stanza in the original is here omitted, either by an oversight, or because the same image of *weeping elephants* occurs afterwards, and might have been thought superfluous in this place ; nevertheless, I insert a literal translation of it.

" By whom, having conquered the earth as far as the ocean, it was left, as being unprofitably seized ; so he declared: and his elephants weeping saw again in the forests their kindred, whose-eyes-were-full-of-tears."

P. 124. l. 18. *Of many countries*—The *Pandits* insist that *Rash-tracuta*, in the original, is the name of a particular country.

P. 127. /. 18. *Dated in the 33d Sombat*—That is, year ; for *Samvat* is only an abbreviation of *Samvatsara*. This date, therefore, might only mean the thirty-third year of the King's reign ; but, since V I - CRAMADITYA was surnamed the foe of SACA, and is praised by that name in a preceding stanza, we may safely infer, that the grant ; was dated thirty-three years after the date of that illustrious Emperor, whom the king of *Gaur*, though a Sovereign Prince, acknowledged as lord paramount of *India*.

P. 133. Verse I I . *A virtuous Prince*—Many stanzas in this inscription prove, that the *Sandilya* family were not *Princes* ; but that some of them were Prime Ministers to the Kings of *Gaur*, or *Bengal*, according to this comparative genealogy :

Kings.

Kings.	Ministers,*
GOPALA.	PANCHALA.
DHERMAPALA.	GARGA.
DEVAPALA. B. C. 23.	* DERBHAPANI.
RAJYAPALA.	SOMESWARA.
SURAPALA.	*CEDARAMISRA.
NARAYANAPALA. A.C. 67.	* GURAVAMISRA.

So that reckoning thirty years to a generation, we may date the Pillar of GURAVAMISRA in the sixty-seventh year *after* CHRIST-Pandit, named RADHACANTA, with whom I read the original, appeared struck with my remark on the two families, and adopted it without hesitation ; but if it be just, the second stanza must be differently interpreted. I suspect *Dharma*, the Genius of *Justice* or *Virtue*, to be the true reading, instead of *Dharmya*, or *virtuous*; and have no doubt that *puro* must be substituted for *paro*: the sense will then be, that INDRA *was ruler in the East only*; and, *though valiant, had been defeated even there by the Daityas or Titans*; but *thai* DHARMA *was made Sovereign over him in all quarters**

P. 134., Verse V. *Whose country*—The original is :

a revajanacanmatangajamadastimyachch'hilasanghateh,
a gauripituriswarendraciranaihpushyatsitimnogireh,
martan'dastamayodayarun'ajalad a var'irasidwayat,
nitya yasya bhuwan chacara caradan sri devapalo nripah.

The father of *Reva* is the *Mahendra* mountain in the south, in which that river has its source; as the father of GAURI is the *Himalaya* in the north, where ISWARA, who has a *moon* on his forehead, is believed often to reside: hence RADHACANTA proposed a conjectural emendation, which would have done honour to SCALIGER or BENTLEY. Instead of *Indra*, which is a name of the *Sun*, he reads *Indu*, or the *Moon*, by changing only a small straight line into a small curve; and then the stanza will run thus :

By whose policy the great Prince DEVLPALA made the earth tributary, from the father of *Reva*, whose-piles-of-rocks-are-raoist-with-juice-from-the-heads-of-lascivious-elephants, to the father-of-GAURI, whole-white-mountains are-brightened-with-beams-from-the-moon-of-Isware;-and as far as the-two-oceans-whose-waters-are-red-with-the-rising-and-with-the-setting-Sun.

The words connected by hyphens are compounds in *Sanscrit*.

P. 135. Verse VI. *Submission*—I understand *avasara* in this place, to mean the *leisure* of the Minister from public affairs, for which even the King waited at the head of his army.

P. 135. Verse VII. *Sums of Peetas*—The common sense of *pit ha* is a *chair, seat, or throne*; and in this sense it occurs in the thirteenth verse. *Udupachch'habipit'ham*, or *with-a-seat-bright-as-the moon*, appears to be the compound epithet of *asanam*, or *chair of state*, which, though the King had often given to his Ministers, yet, abashed by his wisdom, and apprehensive of his popularity, he had himself ascended his throne *with fear*.

P. 136. Verse X. The tenth stanza is extremely difficult, as it contains many words with two meanings, applied in one sense to the Minister CEDARA MISRA; but, in another, to CARTICEYA, the Indian Mars: thus, in the first hemistich, *s' ic'hin* means *fire*, or a *peacock*; *s' ic'ha*, a *bright flame*, or a *crest*; and *s' acti*, either *power* or a *spear*. As the verse is differently understood, it may be a description of the *Brahmen*, or of the Deity.

P. 136. Verse XII. The *Brahmans* of this province insist, that by the four *Vidya's*, or branches of *knowledge*, are meant the four *Vedas*, not the *Upaveda's*, or *Medicine, Archery, Musick, and Mechanicks*; and they cite two distichs from the *Agnipurana*, in which *eighteen Vidya's* are enumerated, and among them the *four Vedas*; three only of which are mentioned in the *Amarcosh*, and in several older books. In this verse also RADHACANT has displayed his critical sagacity: instead of *nala* he reads *bala*; and, if his conjecture be right, we must add, "even when he was a boy."

P. 137. Verse XVI. *Constant to her lord*—RADHACANT reads *anapatyaya*, or *childless*, for *anupatyaya*; SATI having borne no children till she became regenerate in the person of PARVATI.

P. 139. Verse XXIII. *It obstinately bore him no fruit*.—The original stanza is uncommonly obscure: it begins with the words *yo-Tlirbabhwca*, the two first syllables of which certainly mean a *womb*: but several *Pandits*, who were consulted apart, are of opinion, that *yo* is the relative, of which some word in the masculine gender, signifying *speech*, is the antecedent, though not expressed: they explain the whole stanza thus—"That *speech*, which came forth, " (*nirbabhuva*) inconsiderately, of which *there* was no fruit, he was " a man who spoke nothing of that kind for his own gratification; " he was a man also, by whom no present-of-play things was ever "given, which the suppliant having received, goes to another more " bountiful giver." If the relative had been *yan* in the neuter gender, I should have acquiesced in the translation offered by the *Pandits*; but the suppression of so material a word as *speech*, which, indeed, is commonly *feminine* in *Sanscrit*, appears unwarrantably harsh according to *European* ideas of construction.

P. 140. Verse XXVI. If the preceding interpretation be just, the object of the Pillar was to perpetuate the names of GURAVA MISRA and his ancestors; and this verse must imply, that *he expected to receive from his own sons, the pious offices which he had performed to his forefathers*.

V.

SOME ACCOUNT

OF THE

SCULPTURES AND RUINS

AT MAVALIPURAM,

A Place a few Miles North of Sadras, and known to Seamen by the Name of the Seven Pagodas.

BY WILLIAM CHAMBERS, Esq.

AS amidft inquiries after the hiftories and antiquities of *Afia* at large, thofe of that divifion of it in which this Society refides, may feem on many accounts to lay claim to a particular fhare of its attention, a few hints put down from recollection, concerning fome monuments of *Hindoo* antiquity, which, though fituated in the neighbourhood of *European* fettlements on the *Choremandel* coaft, have hitherto been little obferved, may, it is conceived, be acceptable, at leaft as they may poffibly give rife hereafter to more accurate obfervations, and more complete difcoveries on the fame fubject. The writer of this account went firft to view them in the year 1772, and curiofity led him thither again in 1776; but as he neither meafured the diftances nor fize of the objects, nor committed to writing at the time, the obfervations he made on them, he hopes to be excufed if, after the lapfe of fo many years, his recollection fhould fail him in fome refpects, and his account fall far fhort of that precifion and exactnefs, which might have been expected, had there then exifted in *India*, fo powerful an incentive to diligent enquiry, and accurate communication, as the eftablifhment of this Society muft now prove.

The

The monuments he means to describe, appear to be the remains of some great city, that has been ruined many centuries ago ; they are situated close to the sea, between *Covelong* and *Sadras*, somewhat remote from the high road that leads to the different *European* settlements. And, when he visited them in 1776, there was still a native village adjoining to them, which retained the ancient name, and in which a number of *Bramins* resided, that seemed perfectly well acquainted with the subjects of most of the Sculptures to be seen there.

The rock, or rather hill of stone, on which great part of these works are executed, is one of the principal marks for mariners as they approach the coast, and to them the place is known by the name of the *Seven Pagodas*, possibly because the summits of the rock have presented them with that idea as they passed : but it must be confessed, that no aspect which the hill assumes, as viewed on the shore, seems at all to authorize this notion; and there are circumstances, which will be mentioned in the sequel, that would lead one to suspect, that this name has arisen from some such number of Pagodas that formerly stood here, and in time have been buried in the waves. But, be that as it may, the appellation by which the natives distinguish it, is of a quite different origin : in their language, which is the *Tamulic*, (improperly termed *Malabar*,) the place is called *Mavalipuram*, which, in *Shanfcrit*, and the languages of the more northern *Hindoos*, would be *Mahabalipur*, or the *City of the great Bali*. For the *Tamulians*, (or *Malabars*,) having no *h* in their alphabet, are under a necessity of shortening the *Shanfcrit* word *Maha*, *great*, and write it *ma*.* They are obliged also, for a similar reason, to substitute a *v* for a *b*, in words of *Shanfcrit*, or other foreign original, that begin with that letter; and the syllable *am*, at the end, is merely a termination,

* They do indeed admit a substitute, but the abbreviation is most used.

initiation, which, like *um* in *Latin*, is generally annexed to neuter substantives. To this etymology of the name of this place it may be proper to add, that *Bali* is the name of an hero very famous in *Hindoo* romance; and that the river *Mavaligonga*, which waters the eastern side of *Ceylone*, where the *Tamulic* language also prevails, has probably taken its name from him, as, according to that orthography, it apparently signifies the *Ganges* of the great *Bali*.

The rock, or hill of stone, above mentioned, is that which first engrosses the attention on approaching the place; for, as it arises abruptly out of a level plain of great extent, consists chiefly of one single stone, and is situated very near to the sea beach, it is such a kind of object as an inquisitive traveller would naturally turn aside to examine. Its shape is also singular and romantic, and, from a distant view, has an appearance like some antique and lofty edifice. On coming near to the foot of the rock from the north, works of imagery† and sculpture crowd so thick upon the eye, as might seem to favour the idea of a petrified town, like those that have been fabled in different parts of the world by too credulous travellers‡. Proceeding on by the foot of the hill, on the side facing the sea, there is a pagoda rising out of the ground of one solid stone, about fifteen or eighteen feet high, which seems to have been cut upon the spot out of a detached rock, that has been

found

* This explains also, why the *Shanscrit* word *Ved*, by which the *Hindoos* denominate the Books of the Law of their Religion, is written by the *Tamulians*, *Vedam*, which is according to the true orthography of their language, and no mistake of *European* travellers, as some have supposed; while the same word is called *Bid* by the *Bengalies*, who have, in effect, no V in their alphabet.—See Dow, Vol. I. Dissert, p. 41.

† Among these one object, though a mean one, attracts the attention, on account of the grotesque and ridiculous nature of the design; it consists of two monkeys cut out of one stone, one of them in a stooping posture, while the other is taking the insects out of his head.

‡ See SHAW'S Travels, p. 155, et seq.

found of a proper fize for that purpofe. The top is arched, and the ftyle of architecture according to which it is formed, different from any now ufed in thofe parts. A little further on there appears upon a huge furface of ftone, that juts out a little from the fide of the hill, a numerous group of human figures in bafs-relief, considerably larger than life, reprefenting the moft remarkable perfons whofe aftions are celebrated in the *Mahabharit*, each of them in an attitude, or with weapons, or other infignia, expreffive of his charafter, or of fomeone of his moft famous exploits. All thefe figures are, doubtlefs, much lefs diftinct than they were at firft; for, upon comparing thefe and the reft of the fculptures that are expofed to the fea air, with others at the fame place, whofe fituation has afforded them proteftion from that element, the difference is ftriking; the former being every where much defaced, while the others are frefh as recently finifhed. This defacement is no where more obfervable than in the piece of fculpture which occurs next in the order of description. This is an excavation in another part of the eaft fide of the great rock, which appears to have been made on the fame plan, and for the fame purpofe, that Chowlttries are ufually built in that country, that is to fay, for the accommodation of travellers. The rock is hollowed out to the fize of a fpacious room, and two or three rows of pillars are left, as a feeming fupport to the mountainous mafs of ftone which forms the roof. Of what pattern thefe pillars have originally been, it is not eafy now to conjecture; for the air of the fea has greatly corroded them, as well as all the other parts of the cave. And this circumftance renders it difficult to difcover, at firft fight, that there is a fcene of fculpture on the fide fronting the entrance. The natives, however, point it out; and the fubject of it is manifeftly that of *Krifhen* attending the herds of *Nund Ghofe*, the *Admetus* of the *Hindoos*; from which circumftance *Krifhen* is alfo called *Goupaul*, or the cowherd, as *Apollo* was entitled *Nomius*.

The objects that seem next to claim regard, are those upon the hill itself, the ascent of which, on the north, is, from its natural shape, gradual and easy at first, and is in other parts rendered more so by very excellent steps cut out in several places, where the communication would be difficult or impracticable without them. A winding flair of this sort leads to a kind of temple cut out of the solid rock, with some figures of idols in high relief upon its walls, very well finished, and perfectly fresh, as it faces the west, and is therefore sheltered from the sea air. From this temple again there are flights of steps, that seem to have led to some edifice, formerly standing upon the hill; nor does it seem absurd to suppose, that this may have been a palace, to which this temple, as a place of worship, may have appertained. For, besides the small detached ranges of stairs that are here and there cut in the rock, and seem as if they had once led to different parts of one great building, there appear in many places, small water channels cut also in the rock, as if for drains to a house; and the whole top of the hill is strewn with small round pieces of brick, which may be supposed, from their appearance, to have *been* worn down to their present form during the lapse of many ages. On ascending the hill by its slope on the north, a very singular piece of sculpture presents itself to view. On a plain surface of the rock, which may once have served as the floor of some apartment, there is a platform, of stone, about eight or nine feet long, by three or four wide, in a situation rather elevated, with two or three steps leading up to it, perfectly resembling a couch or bed, and a lion very well executed at the upper end of it by way of pillow, the whole of one piece, being part of the hill itself. This the *Brahmins*, inhabitants of the place, called *the bed of Dhermarajah or judifter*, the eldest of the five brothers whose fortunes and exploits are the leading subject in the *Mahabharit*. And at a considerable distance from this, at such a distance, indeed, as the apartment of the women might be supposed

posed to be from that of the men, is a bath excavated also from the solid rock, with steps in the inside, which the *Bramins* call the bath of *Dropedy*, the wife of *Judijker*^ and his brothers. How much credit is due to this tradition, and whether this stone couch may not have been anciently used as a kind of throne rather than a bed, is matter for future inquiry. A circumstance, however, which may seem to favour this idea is, that a throne in the *Shanfcrit*, and other *Hindoo* languages, is called *Singhafen*, which is composed of the words *Sing*, a lion; and *afen*, a feat.

These are all that appear on that part of the upper surface of the hill, the ascent to which is on the north; but, on descending from thence, you are led round the hill to the opposite side, in which there are steps cut from the bottom to a place near the summit, where is an excavation that seems to have been intended for a place of worship, and contains various sculptures of *Hindoo* deities. The most remarkable of these is a gigantic figure of *Vishnoo*, asleep on a kind of bed, with a huge snake wound about in many coils by way of pillow for his head; and these figures, according to the manner of this place, are all of one piece, hewn from the body of the rock.

But though these works may be deemed stupendous, they are surpassed by others that are to be seen at the distance of about a mile, or a mile and a half, to the southward of the hill. They consist of two Pagodas, of about thirty feet long by twenty feet wide, and about as many in height, cut out of the solid rock, and each consisting originally of one single stone. Near these also stand an elephant full as big as life, and a lion much

larger than the natural size, but very well executed, each hewn also out of one stone. None of the pieces that have fallen off in cutting these extraordinary sculptures, are now to be found near or any where in the neighbourhood of them, so that there is no means of ascertaining the degree of labour and time that has been spent upon them, nor the size of the rock or rocks from which they have been hewn, a circumstance which renders their appearance the more striking and Angular. And though their situation is very near the sea-beach, they have not suffered at all by the corrosive air of that element, which has provided them with a defence against itself, by throwing up before them a high bank, that completely shelters them. There is also great symmetry in their form; though that of the Pagodas is different from the style of architecture according to which idol temples are now built in that country. The latter resemble the *Egyptian*; for the towers are always pyramidal, and the gates and roofs flat, and without arches; but these sculptures approach nearer to the *Gothic* taste, being surmounted by arched roofs or domes, that are not semicircular, but composed of two segments of circles meeting in a point at top. It is also observable, that the lion in this group of sculptures, as well as that upon the stone couch above mentioned, are perfectly just representations of the true lion; and the natives there give them the name which is always understood to mean a lion in the *Hindoo* language, to wit, *Sing*: but the figure which they have made to represent that animal in their idol temples for centuries past, though it bears the same appellation, is a distorted monster, totally unlike the original; inasmuch, that it has from hence been supposed that the lion was not anciently known in this country, and that *Singwas* a name given to a monster that existed only in *Hindoo* romance. But it is plain that that animal was well known to the authors of these works who, in manners as well as arts, seem to have differed much from the modern *Hindoos*.

There

There are two circumstances attending these monuments, which cannot but excite great curiosity, and on which future inquiries may possibly throw some light. One is, that on one of the Pagodas last mentioned, there is an inscription of a single line, in a character at present unknown to the *Hindoos*. It resembles neither the *Deyva-nagre*, nor any of the various characters connected with or derived from it, which have come to the writer's knowledge from any part of *Hindustan*. Nor did it, at the time he viewed it, appear to correspond with any character, *Afiatick* or *European*, that is commonly known. He had not then, however, seen the alphabet of the *Balic*, the learned language of the *Siamefe*, a sight of which has since raised in his mind a suspicion that there is a near affinity between them, if the character be not identically the same. But as these conjectures, after such a lapse of time, are somewhat vague, and the subject of them is perhaps yet within the reach of our researches, it is to be hoped that some method may be fallen upon of procuring an exact copy of this inscription.

The other circumstance is, that though the outward form of the Pagodas is complete, the ultimate design of them has manifestly not been accomplished, but seems to have been defeated by some extraordinary convulsion of nature. For the western side of the most northerly one is excavated to the depth of four or five feet, and a row of pillars left on the outside to support the roof; but here the work has been flopped, and an uniform rent of about four inches breadth has been made throughout the solid rock, and appears to extend to its foundations, which are probably at a prodigious depth below the surface of the ground. That this rent has happened since the work was begun, or while it was carrying on, cannot be doubted; for the marks of the mason's tools are perfectly visible in the excavated part on both sides of the rent, in such a manner as to show plainly that'

that they have been divided by it. Nor is it reasonable to suppose that such a work would ever have been, designed, or begun, upon a rock that had previously been rent *in* two.

Nothing less than an earthquake, and that a violent one, could apparently have produced such a fissure in the solid rock; and that this has been the case in point of fact, may be gathered from other circumstances, which it is necessary to mention in an account of this curious place.

The great rock above described, is at some small distance from the sea, perhaps fifty or an hundred yards, and in that space the *Hindoo* village before mentioned stood in 1776. But close to the sea are the remains of a Pagoda, built of brick, and dedicated to- *Sib*, the greatest part of which has evidently been (wallowed up by that element: for the door of the innermost apartment, in which the idol is placed, and before which there are always two or three spacious courts surrounded with walls, is now washed by the waves; and the pillar used to discover the meridian at the time of founding the Pagoda*, is *seen* standing at some distance in the sea. In the neighbourhood of this building there are some detached rocks, washed also by the waves, on which there appear sculptures, though now much worn and defaced. And the natives of the place declared to the writer of this account, that the more aged people among them remembered to have seen the tops of several pagodas far out in the sea, which being covered with copper, (probably gilt,) were particularly visible at sun-rise, as their shining surface used then to reflect: the sun's rays; but that now that effect was no longer produced, as the copper had since become incrusted with mould and verdigrise.

* See Voyage du M. Gentil, Vol, I. page 158,

These circumstances look much like the effects of a sudden inundation ; and the rent in the rock above described, makes it reasonable to conjecture, that an earthquake may have caused the sea to overflow its boundaries, and that these two formidable enemies may have joined to destroy this once magnificent city. The account which the *Bramins*, natives of the place, gave of its origin and downfall, partly, it should seem, on the authority of the *Mahabhdrit*, and partly on that of later records, at the same time that it countenances this idea, contains some other curious particulars, which may seem to render it worthy of attention. Nor ought it to be rejected on account of that fabulous garb, in which all nations, but especially those of the east, have always clad the events of early ages.

" *Hirinacheren* (faid they) was a gigantick Prince, that rolled up the earth into a fhapelefs mafs, and carried it down to the abyfs, whither *Vifhnoo* followed him in the fhape of an hog, killed him with his tulks, and replaced the earth in its original fituation. The younger brother of *Hirinacheren* was *Hirinakaffap*) who fucceeded him in his kingdom, and refuted to do homage to *Vifhnoo*. He had a fon, named *Pralhaud*, who, at an early age, openly difapproved this part of his father's conduct, being under the tuition of *Sokerachari*. His father perfecuted him on this account, banifhed him, and even fought to kill him, but was prevented by the interpofition of heaven, which appeared on the fide of *Pralhaud*. " At length *Hirinakaffap* was foftened, and recalled his fon to his court, where, as he fat in full affembly, he began again to argue with him againft the fupremacy of *Vifhnoo*, boafled that he himfelf was lord of all the vifible world, and afked what *Vifhnoo* could pretend to more. *Pralhaud* replied, that *Vifhnoo* had no fixed abode, but was prefent every where. ' Is he (faid his father) in that pillar ?' Yes,' returned *Pralhaud*. " Then let him come forth."

" faid *Hirinakajfap* ; and, rifing from his feat, ftruck
 " the pillar with his foot; upon which *Vifhnoo*, in the
 " *Narajinghah Awtar*, that is to fay, with a body like
 " a man, but an head like a lion, came out of the pil-
 " lar, and tore *Hirinakaffap* in pieces. *Vifhnoo* then
 " fixed *Pralhaud* on his father's throne; and his reign
 " was a mild and virtuous one, and as fuch was a con-
 " trail to that of his father. He left a fon, named *Na-*
 " *macheſ*, who inherited his power and his virtues, and
 " was the father of *Bake*, the founder of the once mag-
 " nificent city of *Mahabalipoor*, the fituation of which
 " is faid to be defcribed in the following verſe, taken
 " from the *Mahabharit*"

গঙ্গায়াঃ দক্ষিণেভাগে যোজনানাং শতদ্বয়ং—
 পঞ্চযোজন যাত্রো পূর্ব্বাভিষিক্ত পশ্চিমে—

" South of the *Ganges* two hundred Yojen,
 " Five Yojen* weftward from the Eaſtern Sea."

Such is the *Bramin* account of **the** origin of this place. The *fequel* of its hiftory, according to them, is as follows:

N 2

"

The

* The *Yojen* is a measure often mentioned in the *Shanscrit* books, and, according to some accounts, is equal to **nine**, according to others, twelve, *English* miles. But at that rate the distance here mentioned, between this place and the *Ganges*, is prodigiously exaggerated, and will carry us far south of *Ceylone*. This, however,, is not surprising in an *Hindoo* poem ; but, from the second line, it seems pretty clear, that this city, at thy time this verse was com- posed, must have stood at a great distance from the sea.

" The son of *Balee* was *Bandchtren*, who is represented as a giant with a thousand hands. *Anuredh*, the son of *Krifhen*, came to his court in disguise, and seduced his daughter, which produced a war, in the course of which *Anuredh* was taken prisoner, and brought to *Mahabalipoor*; upon which *Krifhen* came in person from his capital, *Duarikah*, and laid siege to the place. *Sib* guarded the gates, and fought for *Banacheren*, who worshipped him with his thousand hands: but *Krifhen* found means to overthrow *Sib*, and having taken the city, cut off all *Banacheren's* hands, except two, with which he obliged him to do him homage. He continued 'n subjection to *Krifhen* till his death; after which a long period ensued, in which no mention is any where made of this place, till a prince arose, whose name was *Malecheren*, who restored the kingdom to great splendor, and enlarged and beautified the capital." But in his time the calamity is said to have happened by which the city was entirely destroyed; and the cause and manner of it have been wrapt up by the *Braynins* in the following fabulous narration. "*Malecheren*, (say they,) in an excursion which he made one day alone, and in disguise, came to a garden in the environs of the city, where was a fountain so inviting, that two celestial nymphs had come down to bathe there. The *Rajah* became enamoured of one of them, who condescended to allow of his attachment to her; and the and her fitter nymph used thenceforward to have frequent interview's with him in that garden. On one of those occasions, they brought with them a male inhabitant of the heavenly regions, to whom they introduced the *Rajah*; and between him and *Malecheren* a strict friendship ensued in consequence of which, he agreed, at the *Rajah's* earnest request, to carry him in disguise to see the court of the divine *Inder*, a favour never before granted to any mortal. The *Rajah* returned from thence with new ideas of splendor and magnificence,

" nificence, which he immediately adopted in regulating his court, and his retinue, and in beautifying his feat of government. By this means *Mahabalipoor* became soon celebrated beyond all the cities of the earth ; and an account of its magnificence having been brought to the gods assembled at the court of *Inder*, their jealousy was so much excited at it, that they sent orders to the God of the Sea to let loose his billows, and overflow a place which impiously pretended to vie in splendor with their celestial mansions. This command he obeyed; and the city was at once overflowed by that furious element, nor has it ever since been able to rear its head."

Such is the mode in which the *Bramins* choose to account for the signal overthrow of a place devoted to their wretched superstitions.

It is not, however, improbable, that the rest of this history may contain, like the mythology of *Greece* and *Rome*, a great deal of real matter of fact, though enveloped in dark and figurative representations. Through the disguise of these we may discern some imperfect records of great events, and of revolutions that have happened in remote times; and they perhaps merit our attention the more, as it is not likely that any records of ancient *Hindoo* history exist but in this obscure and fantastic dress. Their poets seem to have been their only historians, as well as divines; and whatever they relate, is wrapped up in this burlesque garb, set off, by way of ornament, with circumstances hugely incredible and absurd, and all this without any date, and in no other order or method, than such as the poet's fancy suggested, and found most convenient. Nevertheless, by comparing names and grand events, recorded by them, with those interspersed in the histories of other nations, and by calling in the assistance of ancient monuments, coins, and inscriptions, as occasion shall offer,

offer, some probable conjectures, at least, if not important discoveries, may, it is hoped, be made on these interesting subjects. It is much to be regretted, that a blind zeal, attended with a total want of curiosity, in the *Mahomedan* governors of this country, have been so hostile to the preservation of *Hindoo* monuments and coins. But a spirit of enquiry among *Europeans* may yet perhaps be successful; and an instance which relates to the place above described, though in itself a subject of regret, leaves room to hope that futurity may yet have in store some useful discoveries. The *Kauzy* of *Madras*, who had often occasion to go to a place in the neighbourhood of *Mahabalipoor*, assured the writer of this account, that within his remembrance, a ryot of those parts had found, in plowing his ground, a pot of gold and silver coins, with characters on them which no one in those parts, *Hindoo* or *Mohammedan*, was able to decypher. He added, however, that all search for them would now be vain, for they had doubtless been long ago devoted to the crucible, as, in their original form, no one there thought them of any value.

The inscription on the Pagoda mentioned above, is an object which, in this point of view, appears to merit great attention. That the conjecture, however, which places it among the languages of *Siam*, may not seem in itself chimerical, the following passages from some authors of repute are here inserted, to shew, that the idea of a communication having formerly subsisted between that country and the Coast of *Choromandel* is by no means without foundation; nay, that there is some affinity, even at this day, between the *Balic* and some of the *Hindoo* languages, and that the same mode of worship seems formerly to have prevailed in the *Deccan* which is now used by the *Siamefe*.

Monfieur de Ia Loubere, in his excellent account of *Siam*, (peaks thus of the origin of the *Balic* language.

" The Siamefe (fays he) do not mention any coun-
 " try where the Balic language, which is that of their
 " laws and their religion, is at prefent in ufe. They
 " fuppofe, indeed, on the report of fome among them,
 " who have been on the Coaft of Choromandel, that it
 " bears fome refemblance to fome of the dialects of that
 " country; but they at the fame time allow, that the
 " character in which it is written, is not known but
 " among themfelves. The fecular Miffionaries fettled
 " at Siam, believe that this language is not entirely a
 " dead one; becaufe they have feen in their hofpital a
 " man from the neighbourhood of Cape Comorin, who
 " mixed feveral Balic words in his difcourfe, declaring
 " that they were in ufe in his country, and that he
 " himfelf had never ftudied nor knew any other than
 " his mother tongue. They at the fame time men-
 " tion, as matter of certainty, that the religion of the
 " Siamefe comes from thofe parts; as they have read
 " in a Balic book, that Sommonacodom, the idol of
 " the Siamefe, was the fon of a King of Ceylone;*

The

* " Les Siamois ne nomment aucun pais ou Ia langue Bali qui
 " est celle de leurs loix et de leur religion, soit aujourd'hui en
 " usage, Ils soupçonnent a Ia verite, sur le rapport de quelques-
 " uns d'entre eux, qui ont ete a Ia Cote de Coromandel, que Ia
 " langue Balic a quelque ressemblance avec quelqu'un des dialects
 " de ce pais Ia : mais ils conviennent en meme temps que les let-
 " tres de Ia langue Balic ne sont connues que chez eux. Les Mis-
 " sionnaires feculiers a Siam croient que cette langue n'est pas en-
 " tierement morte; parce qu'ils ont vu dans leur hopital un homme
 " des environs du Cap de Comorin, qui metoit plusieurs mots Balis
 " dans son langage, assurant qu'ils etoient en usage en son pais,
 " et que luy n'avoit jamais etudie, et ne savoit que sa langue ma-
 " ternelle. Ils donnent d'ailleurs pour certain que Ia religion des
 " Siamois vient de ces quartiers Ia, parce qu'ils ont lu dans un
 " livre Balic que Sommonacodom que les Siamois adorent, etoit
 " fils d'un Roi de l'isle de Ceylone."

The language of the man mentioned in this passage, who came from the neighbourhood of *Cape Comorin*, could be no other than the *Tamulic*; but the words here alluded to may very possibly have been derivatives from the *Shanfcrit*, common to both that and the *Balic*.

In another part of the same work, where the author treats of the history of *Sommonacodom* at large, on the authority of the *Balic* books, he says,

" The father of *Sommonacodom*, according to the same *Balic* book, was a King of *Teve Lanca*; that " is to say, of the famous *Ceylone*."*

Here it is observable, that, while the country of *Siam* seems to be utterly unknown both to the natives of *Ceylone* and *Hindoestan*, *Ceylone* should nevertheless be so well known to the *Siamese*, and under the same appellation it bears in the *Shanfcrit*. An epithet is also here prefixed to it, which seems to be the same as that used by the *Hindoos* in speaking of that island; for they also call it, in *Shanfcrit*, *Dive Lanca*, or the *Sacred Lanca*. From several passages in the same work, it also appears, that the *Shanfcrit* word *Maha*, which signifies great, is constantly used in the *Balic* language in the same sense. And the names of the days of the week are most of them the same in *Shanfcrit* and in *Balic*, as may be seen in the following comparison of them.

<i>Shanfcrit.</i>	<i>Balic.</i>	
Aditta-var,	Van Athit.	Sunday.
		Soma-var,

* " Le pere de *Sommonacodom* etoit, selon ce mesme livre *Bali*, " un Roi de *Teve Lanca*, c'est-a-dire un Roi de la celebre *Ceylan*."

<i>Shanferit.</i>	<i>Balic.</i>	
Soma-var,	Van * Tchan,	Monday.
Mungela-var,	Van Angkaan,	Tuefday.
Bouta-var,	Van Pout,	Wednefday.
Brahfpati-var,	Van Prahout,	Thurfdday.
Soucra var,	Van Souc,	Friday.
Sany-var,	Van Saa,	Saturday.

The fame author gives, in another place, an account of a pretended print of a foot on a rock, which is an object: of worfhip to the *Siamefe*, and is called *Prabat*, or the venerable foot. For *pra*, in *Balic*, he fays, fignifies *venerable*, which agrees with *praper* and *pramesht* in *Shanscrit*; and *bat* in the fame tongue is a foot, as *pad* in *Shanscrit*. After which he goes on to fay ;

" We know that in the ifland of Ceylone there is a
 " pretended print of a human foot, which has long been
 " held in great veneration. It repreffents, doubtlefs,
 " the left foot; for the Siamefe fay that Sommonaco-
 " dom fet his right foot on their *Prabat*, and his left
 " foot at *Lanca* †."

From KNOX'S Hiftory of *Ceylone* it appears, that the impreffion here fpoken of, is upon the hill called, by the *Chingelays*, *Hamalell*; by *Europeans*, *Adam's Peak* ; and that the natives believe it to be the foot-ftep of their
 great

* Here one *Hindoo* word is fubftituted for another; for *Tchan* in *Hindostany*, and *Tchander* in *Shanscrit*, fignify the moon as well as *Somer*.

† " On fçait que dans l'ifle de Ceylan, il ya un pretendu veftige
 " de pie humain, que depuis long tems y est en grande veneration.
 " Il representee fans doute, le pie gauche ; car les Siamois difent
 " que Sommonacodom posa le pie droit a leur *prabat*, et le pie
 " gauche a *Lanca*."

great idol *Buddou* ; between the worship of whom, as described by KNOX, and that of *Sommonacodom*, as related by M. DE LA LOUBERE, there is a striking resemblance in many particulars, which it may be proper here to enumerate.

1st. Besides the footsteps above mentioned, there is a kind of tree (which, from description, appears to be the *Pipel* tree, so well known in *India*) which the *Chingelays* hold sacred to *Buddou*, and the *Siamefe* to *Sommonacodom* ; inasmuch that the latter deem it meritorious to hang themselves upon it. The *Chingelays* called it *Bogahah* ; for *gahah*, in their language, signifies a tree; and *bo* seems to be an abbreviation of *Bod*, or *Buddou* ; and the *Siamefe* call it, in *Balic*, *Pra fi Maha Pout*, which, according to DE LA LOUBERE'S interpretation, signifies the tree of the great *Pout**. This he supposes to mean *Mercury*; for he observes that *Pout*, or *Poot*, is the name of that planet in the *Balic* term for *Wednesday* ; and in another place, he says, *Pout* is one of the names of *Sommonacodom*. It is certain that *Wednesday* is called the day of *Bod*, or *Budd*, in all the *Hindoo* languages, among which the *Tamulic*, having no *b*, begins the word with a *p*, which brings it very near the *Balic* mode of writing it. It is equally certain that the days of the week, in all these languages, are called after the planets in the same order as with us, and that *Bod*, *Budd*, or *Pood*, holds the place of *Mercury*. From all which it should appear that *Pout*, which, among the *Siamefe*, is another name for *Sommonacodom*, is itself a corruption of *Buddou*, who is the *Mercury* of the *Greeks*. And it is Angular that, according to M. DE LA LOUBERE, the mother of *Sommonacodom*, is called, in *Balic*, *Maha-mania*, or the great *Mania*, which resembles much the name of *Maia*, the
mother

In vulgar *Siamese* they call it *Ton-po*.

mother of *Mercury*. At the same time that the *Tamulic* termination *en*, which renders the word *Pooden*, creates a resemblance between this and the *Woden* of the *Gothic* nations, from which the same day of the week is denominated, and which, on that and other accounts, is allowed to be the *Mercury* of the *Greeks*.

2dly. The temples of *Sommonacodom* are called *Pihan*; and round them are habitations for the priests, resembling a college; so those of *Buddou* are called *Vihar*, and the principal priests live in them as in a college. The word *Vihar*, or, as the natives of *Bengal* would write it, *Bihar*, is *Shanfcrit*; and *Ferifhtah*, in his History of *Bengal*, says, that this name was given by the *Hindoos* to the Province of *Behar*, because it was formerly so full of *Bramins*, as to be, as it were, one great *feminary of learning*, as the word imports.

3dly. The *Siamefe* have two orders of priests, and so have the worshippers of *Buddou*. Both the one and the other are distinguished by a yellow habit, and by another circumstance which must be mentioned in the words of the respective authors. KNOX says of the *Buddou* priests, " They have the honour of carrying " the *Tallipot* with the broad end over their heads " foremost, which none but the King does." And M. DE LA LOUBERE says of the *Siamefe* priests, " To " defend themselves from the sun they have the *Talapat*, which is their little umbrella, in the form of a " screen*."

The

* " Pour se garentir du soleil ils ont le Talapat, qui est leur " petit parasol en forme d'ecran."

, The word here used is common to most of the *Hindoo* languages, and signifies *the leaf of the Palmyra tree*. M. DE LA LOUBERE mentions it as a *Siamefe* word, without seeming to know its origin, or primary signification.

4thly. The priests of *Buddou*, as well as those of *Sommonacodom*, are bound to celibacy as long as they continue in the profession; but both the one and the other are allowed to lay it down and marry-

5thly. They both eat flesh, but will not kill the animal.

6thly. The priests of either nation are of no particular tribe, but are chosen-out of the body of the people.

These circumstances plainly show that this is a system of religion different from that of the *Veds*; and some of them are totally inconsistent with the principles and practice of the *Bramins*. And, indeed, it is manifest, from KNOX'S whole account, that the religion of the *Chingelays* is quite distinct from that which prevails at this day among the *Hindoos*; nor does it appear that there is such a race of men as that of the *Bramins* -among them. The only part in which there seems to be any agreement, is in the worship of the *Debtahs*, which has probably crept in among them from their *Tamulian* neighbours; but that is carried on in a manner very different from the *Braminical* system, and appears to be held by the nation at large in very great contempt, if not abhorrence. KNOX'S account of it is this: " Their temples (i. e. those of the *Debtahs*) are, he says, " called *Covels*," which is the *Tamulic* word For *Pagoda*. He then goes on to say, " A man piously " disposed, builds a maallhouse at his own charge, which

" which is the *temple*, and *himself becomes priest thereof*—
 " This house is seldom called *God's House*, but more
 " usually *Jacco*, the *Devil's*." But of the prevailing
 religion, he speaks in very different terms, and describes
 it as carried on with much parade and splendor, and
 attended with marks of great antiquity. " The Pagodas
 " or temples of their Gods (says he) are so many that I
 " cannot number them. Many of them are of rare and
 " exquisite work, built of hewn stone, engraven with
 " images and figures; but by whom, and when, I could
 " not attain to know, the inhabitants themselves being
 " ignorant therein. But sure I am, they were built by
 " far more ingenious artificers than the Chingelays that
 " now are on the land. For the Portuguese, in their
 " invasions, have defaced some of them, which there is
 " none found that hath skill enough to repair to this
 " day." In another place he says, " Here are some
 " ancient writings, engraven upon rocks, which puzzle
 " all that see them. There are divers great rocks in
 " divers parts in *Cande Uda*, and in the northern parts—
 " These rocks are cut deep with great letters for the
 " space of some yards, so deep that they may last to the
 " world's end. Nobody can read them, or make any
 " thing of them. I have asked Malabars and Gentoos,
 " as well as Chingelays and Moors, but none of them
 " understood them. There is an ancient temple, *God-*
diladenni in *Yattanour*, stands by a place where there
 " are of these letters." From all which the antiquity
 of the nation and their religion is sufficiently evident:
 and from other passages it is plain, that the worship of
Buddou, in particular, has been from remote times a
 very eminent part of that religion: for the same author,
 speaking of the tree at *Anurodgburro*, in the northern
 part of the island, which is sacred to *Buddou*, says,
 " The due performance of this worship they reckon not
 " a little meritorious; inasmuch that, as they report,
 " ninety kings have reigned there successively, where,
 " by the ruins that still remain, it appears, they spared
 " not their pains and labour to build temples and high

" monuments to the honour of this God, as if they had
 " been born to hew rocks and great ftones, and lay
 " them up in heaps. Thefe Kings are now happy
 " fpirits, having merited it by thefe labours." And
 again he fays, " For this God, above all other, they
 " feem to have a high refpect and devotion," &c.

And from other authorities it will appear, that this worfhip has formerly been by no means confined to *Ceylone*, but has prevailed in feveral parts of *India* prior to that of the *Bramins*: nay, that this has been the cafe even fo late as the ninth and twelfth centuries of the *Christian* era.

In the well-known * *Anciennes Relations*, tranflated from the *Arabic*, by that eminent orientallift EUSEBIUS RENAUDOT, the *Arabian* traveller gives this account of the cuftom of dancing-women, which continues to this day in the *Deckan*, but is not known among the *Hindoos* of *Bengal*, or *Hindoftan* Proper.

" There are in India public women, called *women*
 " of the idol, and the origin, of this cuftom is this:
 " When a woman has made a vow for the purpofe of
 " having children, if fhe brings into the world a pretty
 " daughter, fhe carries it to *Bod*, (fo they call the idol
 " which they adore,) and leaves it with him †."

This

* *Anciennes Relations des Indes et de la Chine*, de deux Voyageurs Mobametans, qui y allerent dans le neuvieme Siecle,—*Paris*, 171B, 8vo.

† " Il ya dans les Indes des femmes publiques, appellees, *femmas*
 " de pidole, l'origine de cette coustume est telle; Lors qu'une
 " femme a fait un voeu pour avoir des enfans, si elle met au monde
 " une belle fille, elle l'apporte au *Bod*, c'est ainsi qu'ils appellent
 " l'indole qu'ils adorent, aupres. duquel elle la laisse, &c." *Anc.*
Rel. p. 109,

This is a pretty juft account of this cuftom at it prevails at this day in the *Deckan*; for children are, indeed, devoted to this profeffion by their parents; and when they grow up in it, they are called, in *Tamulic*, *Devadafi* or *female flaves of the idol*. But it is evident they have changed their matter fince this *Arabian* account was written, for there is no idol of the name of *Bod* now worfliipped there. And "the circumftance of this cuftom being unknown in other parts of *India*, would lead one to fufpect that the *Bramins*, on introducing their fyftem of religion into that country, had thought fit to retain this part of the former worfhip, as being equally agreeable to themfelves and their new difciples.

The fame *Arabian* traveller gives us an account of a very powerful race of *Hindoo* Kings (according to them, indeed, the mod powerful in *India*) who then reigned on the *Malabar* Coaft with the title of *Balhara*. Their dominion appears to have extended over *Guzerat*, and the greateft part, if not the whole, of the ancient kingdom of *Vifiapoor*. For the *Arabian* geographer, quoted by M. RENAUDOT, makes *Nahelvarah* the metropolis of thefe Princes, which is, doubtlefs, *Nahelvalah*, the ancient capital of *Gazer at*; though M. RENAUDOT feems not to have known that place; and the reft of the defcription fufficicntly fhows the great extent of their dominion fouthward. M. D'ANVILLE fpeaks of this race of Kings on the authority of the *Arabian* geographer EDRISI, who wrote in the twelfth century, according to whom it appears, that their religion was, even fo late as that period, not the *Braminical*, but that of which we are now fpeaking. M. D'ANVILLE'S words are thefe: " Edrifi acquaints us with the religion which this Prince profeffed, in faying, that his " worfhip was addreffed to *Bodda*, who, according to " St. Jerome, and Clemens Alexandrinus, was the " founder of the fect of the Gymnofophifts, in like
" manner

" manner as the Bramins were ufed to attribute their
" iofstitution to Brahma*."

The authority of CLEMENS ALEXANDRINUS is alfo cited on the fame fubject by RELANDUS in his nth Differtation, where, treating of the language of *Ceylone*, he explains the word *Vehar*, above fspoken of, in thefe terms :

" Vehar fignifies a temple of their principal God
" Buddou, who, as Clemens Alexandrinus has long
" ago obferved, was worhipped as a God by the
" Hindoos †."

After the above quotations, the following extract from the voyage of that inquifitive and ingenious traveller M. GENTIL, publifhed in 1779, is given as a further and very remarkable illuftration of this fubject,

" This fyftem is alfo that of the Bramins of our
" time; it forms the bafis of that religion which they
" have brought with them into the fouthern parts of the
" Peninfula of Hindoftan, into Madura, Tanjore, and
" Maiflbre.

" There was then in thofe parts of India, and prin-
" cipally on the Coaft of Choromandel and Ceylone, a
fort

* " *L'Edrisi nous instruit sur la religion que professoit ce Prince, en disant que son culte s'adressoit a Bodda, que selon St. JE-ROME & St CLEMENT D'ALEXANDRIE, avoit ete l'instituteur des Gymnosophistes comme les Brachmanes rapportotent a Brahma leur institute* Ant. Geog. de L'Inde, p. 94.

† " *Vehar, templum dei primarii Buddoe quem Indos at Deum venerari jam olim notavit Clemens Alexandrinus.*" Storm, Kb. 1. p. 223. Rel, Diss, pars tertia, p. 85.

" fort of worftip, the precepts of which we are quite
 " unacquainted with. The God Baouth, of whom at
 " prefent; they know no more in India than the name,
 ", was the object: of this worfhip; but it is now totally
 ", abolifhed; except that there may poffibly yet be found
 " fome families of Indians who have remained faithful
 ", to Baouth, and do acknowledge the religion of
 " the Bramins, and who are on that account feparated
 " from, and defpifed by, the other cafts.

" I have not, indeed, heard that there are any fuch
 " families, in the neighbourhood of Pondicherry; but
 " there is a circumftance well worthy of remark,
 " which none of the travellers that have treated of the
 " Coaft of Choromandel and Pondicherry feem to have
 " noticed. It is this, that at a fhort league's diftance
 " to the fouth of this town, in the plain of Virapatnam,
 " and pretty near the river, we find a ftatue of granite
 " very hard and beautiful. This ftatue, which is from
 " three feet to three and a half in height, is funk in the
 " fand to the waift, and weighs doubtlefs many thoufand
 " weight; it is, as it were, abandoned in the midft of
 " this extenfive plain. I cannot give a better idea of
 " it, than by faying, that it exactly agrees with and re-
 " fembles the Sommonacodom of the Siamefe; its head
 " is of the fame form, it has the fame features, its arms
 " are in the fame attitude, and its ears are exactly fimilar
 " The form of this divinity, which has certainly been
 " made in the country, and which in no refpect: refembles
 " the prefent idols of the Gentoos, ftruck me as I paffed
 " this plain. I made various inquiries concerning this
 " fingular figure, and the Tamulians, one and all, af-
 " fured me that; this was the God Baouth, who was now
 " no longer regarded, for that his worftiip and his fefti-
 " vals had been abolifhed ever fince the Bramins had
 " made themfelves matters of the people's faith."*

Vol I, O M.Gentil

" Ce fysteme eft auffi celui des Brames de nos jours ; il fait
 " la Base de la religion qu'ils ont apportee dans le fud la pres-
 " qu'isle de l'Indoftan, la Madure, le Tanjaour et le Maiffour.

"nl

M. Gentil then goes on to say a good deal more upon this subject, in the course of which he supposes, that this Deity is the *Fo* of the *Chinefe*, whose worship, by their own accounts, was brought from *India*. And, indeed, the abridgement of the name *Pout*, mentioned in a note of this paper, which the vulgar *Siamefe* reduce to the single syllable *Po*., seems to countenance this opinion. But as this is foreign to our present purpose, and the above passages, it is hoped, are sufficient to establish what was proposed, it seems high time to take leave of this subject, with an apology for that prolixity which is inseparable from this kind of discussion.

17th June, 1784,

VI,

" Il y avoit alors dans ces parties de l'Inde, et principalement a
" la Cote de Coromandel & a Ceylan, un culte dont on ignore ab-
" solument les dogmes; le Dieu Baouth, dont on ne connoit au-
" jourd'hui, dans l'Inde, que le nom, etoit l'objet de ce **culte** ;
" mais il est tout-a-fait aboli, si ce n'est qu'il se trouve encore quel-
"ques familles d'Indiens separees & meprisees des autres Castes,
" qui sont restees fideles a Baouth, & qui *ne* reconnoissent point
" la religion des Bramees.

" Je n'ai pas entendu dire qu'il y ait de ces familles aux envi-
" rons de Pondichery; cependant, une chose tres digne de remar-
" que, & a laquelle aucun des voyageurs qui parlent de **la Cote**
" de Coromandel & de Pondicherry, n'ont fait attention, est **que**
" l'on trouve a une petite lieue au sud de cette ville, dans **la plaine**
" de Virapatnam, assez pres de la riviere, une statue de **Granit**
" tres-dur & tres-beau; cette statue, d'environ trois pieds & **demi**
" de hauteur, est enfoncee dans le sable jusqu'a la ceinture, & **pese**
" sans doute plusieurs milliers; elle est comme abandonnee **au**
" milieu de cette vast plaine: je ne peux mieux en donner **une**
" idee, qu'en disant qu'elle est exactement conforme & **ressem-**
" blante a *Sommonacodom* des Siamois; C'est la meme forme de
" tete, ce sont les memes traits dans le visage, c'est la meme **atti-**
" tude dans les bras, & les oreilles sont absolument semblables. La
" forme de cette divinite, qui certainement a ete faite dans le **pays**,
" & qui ne ressemble en rien aux divinites actuelles des Gentils,
" m'avoit frappe lorsque je passai dans cette plaine; je fis diverses
" informations sur cette figure singuliere, les Tamouls m'assure-
" rent tous que c'etoit Baouth qu'on ne regardoit plus; que **son**
" culte & ses fetes etoient cessees depuis que les Bramees s'etoient
" rendus les maitres de la croyance du peuple."

VI.

H I N T S

RELATIVE TO

FRICTION IN MECHANICS.

BY MR. REUBEN BURROW-

HYPOTHESIS.

IN the following estimation of friction, the weight or force necessary to overcome the resistance, &c. is supposed to be proportional to the pressure.

OF FRICTION IN THE INCLINED PLANE.

Let AB be an inclined plane,* and let PR represent a weight sustained on it by any force Rm, acting in the direction Rm : and draw PD perpendicular to AB, and let Rm meet PD in n : Now as Rn represents the force that would be necessary to sustain the body, exclusive of friction, and Pn represents the pressure against the plane, if mt be drawn perpendicular to PD meeting it in t, then will nm be the force necessary to overcome the friction in that direction, and Pt the real pressure against the plane AB, when the whole force Rm, necessary to overcome both the weight and the friction, acts in the direction Rm ; and as the force nm is equivalent to nt and tm, and nt has no other effect than to alter the pressure, therefore tm is the only force which overcomes the resistance of friction; and as this force is as the pressure, therefore tm is proportional to Pt, and hence the locus of all the points m is a right line.

O 2

Again,

* Fig. 1-

Again, fuppose the body, inftead of being drawn along, to be fuftained at reft only upon the plane; this, it is evident, will require a lefs force than the other, becaufe the friction prevents the body in part from defending.* Let R_m be the force required, and let the fame conftruction be made as before; then becaufe R_n is the force that would be neceffary if there was no friction, m_n is the effect of the friction itfelf; but m_n is equivalent to the forces m_t and t_n ; and as P_n would be the preffure exclafive of friction, P_t is the preffure inclusive; and a the force loft is as the friction, and m_t is as the force loft, therefore m_t is as P_t , for the friction is as the preffure; confequently the locus of all the points m is a right line paffing through P , and making the fame angle as $D P Q$ in the former cafe, and only differing by being drawn on the contrary fide of $P D$.

S C H O L I U M ,

In what follows, the force requifite to fuftain any-body is confidered under three different diftinctions. Firft, when it is juft barely fufficient to overcome the weight and refiftance arifing from friction, and the body is confidered as juft beginning to move in the direction of the force applied, and the force in this cafe is called the *moving force*: fecondly, when this force is diminifhed till the body would begin to move or defcend in a contrary direction if the force was diminifhed farther; this laft I call the *fufpending force*: and it is plain that whatever force is applied to the body lefs than the moving, and greater than the fufpending force, the body will remain at reft a laftly, it is manifelt that there is an intermediate ftate, in which fuch a degree of force may be applied, that the friction will have no effect either way; and this force is the fame as would keep the body in equilibrio if there was no friction, becaufe the effect or tendency

* Fig. 2

of friction is to keep the body at rest, or prevent it from moving either way : this being premised there will be little difficulty in the following.

PROBLEM I.

Having given the weight of the body to be sustained, the inclination of the plane, and the ratio of the friction to the pressure ; to find the force requisite to sustain the weight in a given direction.

In the foregoing figures, draw PR and PD at right angles to the horizon and plane respectively, PR representing the weight; take PD to DQ as the pressure to the friction, and let DQ be taken upwards or downwards as the requisite force is motive or suspensive; join PQ, and draw the line Rm in the given direction meeting PQ in m; then Rm is the force required.

Corollary 1. If the friction be the n part of the pressure, and W be the weight, s and c the sine and cosine of the plane's elevation, then the moving force parallel to the plane will be $W (s + c : n)$ and the suspending force $W (s - c : n)$.

Corollary 2. If the direction of the force be parallel to the horizon, and t be the tangent of the plane's elevation, then $W (tn + 1) : (n - t)$ will be the moving force, and $W (tn - 1) : (n + t)$ the suspending force, and Wt the force excluding friction.

Example. If the weight be a ton, the friction $\frac{1}{3}$ of the pressure, $AB = 5$, $BC = 3$, and $AC = 4$, then the moving force will be 3235 pounds the suspending force

force 747 pounds, and the force excluding friction 1680 pounds; nearly.

PROBLEM II.

Given the weight of the body, the inclination of the plane, and the ratio of the friction to the pressure; to find the direction so that the sustaining force may be a given quantity, or the least possible.

Draw DQ and QP as before, and let PR be to Rm as the weight to the given force; then from the center R, with a distance equal to Rm, intersect PQ in m; then Rm is the required direction when the force is given; but to have it the least possible, draw Rm at right angles to PQ, then Rm is the direction required.

Corollary 1. An expression for the sustaining force When the least possible, may be found as follows; In the triangles PDQ, RQm, the angle Q is common, therefore $PQ : PD :: RQ : Rm$; but PD is a fourth proportional to AB, AC, and PR, and DQ is to PD as 1 to $\tan$, supposing this the given ratio; also RD is a fourth proportional to AB, BC and PR, consequently RQ is equal to DQ either added to or subtracted from DR, as it is the first or second case; and because $PQ : PD :: V(n+1) : n :: RQ : Rm$, therefore $Rm = PR \cdot \frac{BC}{AB} \cdot \frac{(n+1)}{n}$ or $(n=c) \cdot W : (V \cdot n+1)$ by substituting 5 and c for the natural sine and cosine of the plane's elevation, and using the negative or affirmative sign as the force required, is the moving or suspending one respectively.

Example.

Example* If $AB=5$, $BC=3$, and $AC=4$, and the weight 1 ton, then the least moving and sustaining forces will be 182,5 and 702 pounds respectively.

Corollary 2. Because the triangles PDQ and RQM are similar, and the ratio of PD to DQ constant to each fixed value of n , therefore the angle QRM being equal to DPQ, will also be constant, whether the inclination of the plane be variable or not; and hence the angles of the direction with the plane for the draught to be made with the greatest advantage, are found for different values of n as follows :

n	QRM	n	QRM	n	QRM	n	QRM	n	QRM	n	QRM
1	45.0	2	26.34	3	18.26	4	14.25	5	11.19	6	9.28
$1\frac{1}{4}$	38.40	$2\frac{1}{4}$	23.58	$3\frac{1}{4}$	16.54	$4\frac{1}{4}$	13.15	$5\frac{1}{4}$	10.47	$6\frac{1}{4}$	8.8
$1\frac{1}{2}$	33.41	$2\frac{1}{2}$	21.48	$3\frac{1}{2}$	15.57	$4\frac{1}{2}$	12.32	$5\frac{1}{2}$	10.18	$6\frac{1}{2}$	7.8
$1\frac{3}{4}$	29.45	$2\frac{3}{4}$	19.59	$3\frac{3}{4}$	14.56	$4\frac{3}{4}$	11.53	$5\frac{3}{4}$	9.52	$6\frac{3}{4}$	6.20

N. B. The direction, or angle QRM, is to be taken below the plane for the suspending, and above the plane for the moving force.

Scholium. Though at first sight the former part of the above Problem, which shews the best method of applying an active force, seems superior to the other, yet, on farther consideration, the other appears of equal consequence, and particularly in building and fattening walls, banks of earth, fortifications, &c. and the application of what are called *land-ties*, &c. Thus if a weight, for instance, is to be drawn along the plane RB and the friction be $\frac{1}{3}$ of the pressure, the best direction is when Rm makes an angle of $18^{\circ}. 26'$ above the plane; but if the weight is a quantity of earth or stone, or any thing

to

to be suspended, as in the case of land-ties, the best angle (on the foregoing supposition) must be **18'.26' below** the planes

S C H O L I U M.

In those propositions the friction is estimated according to the most generally received opinion, that the resistance is proportional to the whole pressure compounded of the weight of the body, and the additional force* necessary to overcome the friction; but it has been asserted, that there may be cases where the friction is not proportional to the whole pressure, but to that which would arise if the body was sustained in a given direction, exclusive of friction; and that there might also be cases, where the resistance, arising from tenacity or cohesion, might be as the relative pressure against the plane, and the Force to overcome it the same in every direction; something similar to a globe stuck fast in wet tenacious clay: I shall therefore give solutions to both cases.

In the first case,* the force requisite to sustain the body in direction RV , exclusive of friction, is Rn ; and as Rn is equivalent to RD and Dn , therefore Pn is the pressure, exclusive of friction; and as the friction is the n part of the pressure, the force acting parallel to AB to overcome it, is the n part of Pn ; but the force which acting in direction Rn will be equivalent to the n part of Pn in the direction Rn , is a fourth proportional to n times RD , Pn , and Rn ; but because DQ is the n part of DP therefore fn is the n part of Pn , and the fourth proportional aforesaid will be fn ; consequently the sum or difference of Rn and fn must be a given quantity, or the least possible: the Problem therefore is reduced to drawing a line Rn from the given point R , meeting the two lines PD and PQ given in position

* Fig. 3.

Fig. 4.

tion in n and z ; so that nz added to or taken from Rn , the sum or difference may be a given quantity, or the least possible. To do this, let DS be taken equal to DR , and draw SR parallel to PD meeting PQ in M ; then because Rn is equal to rn , the sum or difference of the quantities aforesaid is rz ; and when rz is required to be a given quantity, the question is reduced to that particular case of the inclinations of APOLLONIUS, in solids, which has been resolved by NEWTON and BARROWS the limits of the Problem, or the mode of drawing the line Rr , so that the intercepted part rz may be the least possible, may be investigated as follows :

* Suppose it done, and Rr the position required, and let Rnm be indefinitely near to Rz , and Mh perpendicular to Rz , then by applying the analysis of the ancients to the *Newtonian* doctrine of prime and ultimate ratios, mn is equal to zr ; and if from the center R with the distances Rz and Rn , the arcs zv and nt be supposed to be described, vn is equal to zt , and consequently tr equal to mv ; but $rt : tn :: rh : Mh$, and $tn : zv :: Rr : Rz$, and $zv : vm :: Mh : hz$, whence by compounding the proportions, $tr : vm :: Rr : rh : Rz : zh$ and as the two first terms are equal, the two last are equal, and consequently $Rr : Rz :: zh : rh$, and dividing $Rr : rz :: zh : rz$, therefore Rr is equal to zh , and consequently the point h is in an hyperbola, whose asymptotes are QM and SM produced : but because the angle MhR is a right angle, the point h is also in the circumference of a circle; therefore a line drawn from R to h , the point where the hyperbola and circle intersect, is the position required.

In the other case, where the resistance arising from tenacity or cohesion is supposed to be as the relative pressure against the plane, and the force to overcome it

the

the fame in each direction, we have R_n for the fuftaining force, exclufive of friction, and the n part of P_n for the friction; and confequently the fum or difference of thefe is the expreffion for the whole force; and the Problem may be thus conftru6led. Take PD to DQ as the preffure to the friction, and join PQ ; on PD defcribe a circle, in which take Dv equal to DQ ; join Pv , and draw RV perpendicular to it: then RV will repreſent the direction and meafure of the whole force when it is the leaft poffible.

For DQ and Dv are equal, and confequently nf is equal to V_n ; but DQ is the n part of DP , therefore nf or V_n is the n part of P_n ; and confequently RV is equal to the fum or difference of R_n , and the n part of P_n ; but RV is the leaft poffible by conftru6tion, and therefore the other is a minimum alfo. For draw any other line Rk meeting RV in k and PD in m ; and draw mq , mt , parallel to DQ and Dv ; then the fum or difference of Rm and mt is equal to the fum or difference of Rm , and mq ; but the fum or difference of Rm and mt is greater than RV , and therefore the fum or difference of R_n and the n part of P_n is the leaft poffible.

P R O B L E M I I I .

Given the weight of the body, the inclination of the plane, and the force fuftaining the body in a given dire&ion: to find the ratio of the friction to the preffure.

Take PR as before, (fee Fig. 1. 2.) draw Rm in the given direction, and take PR to Rm as the weight of the body to the force fuftaining it; draw Pm meeting AB in Q , and PD perpendicular to AB ; then PD is to DQ as the preffure to the friftion.

P R O B L E M I V .

If AhqN be the fcgment of an equilateral triangle, which, by moving parallel to itself and the horizon, generates a folid, upon which a figure hmGEHKpqh moves, touching the former in hm and qp; required the effect of the friction; till fuppoſing it the n part of the preffure.

Let P be the center of gravity of half the body*, and PR its weight as before; then the body by means of its inflexibility is kept together in the ſame manner as if it was actuated by a force parallel to the horizon; but if PDn be perpendicular to Ah, and Rn parallel to the horizontal line AC, meeting PD in n, Pn will be the preffure againſt the ſide Ah, and the friction is the n part of Pn; but $PR : Pn :: AC : AB$; therefore if AC repreſent the weight of half the body, the n part of AB will expreſs the weight requiſite to overcome the friction for that half; and by doubling the expreſſions, they ſerve for the whole. Wherefore let W repreſent the weight of the body, f the ſecant of the angle BAC; then Wf will be the preffure againſt the plane AD; and the a part of Wf the force neceſſary to overcome the friction; and as this laſt is the force neceſſary to draw the body along a horizontal plane, therefore the force neceſſary to draw the body along a horizontal plane, is to that neceſſary to draw it along the body whoſe ſection is AhqN, as AC to AB, or as 1 to f.

Becaufe when the angle CAB is given, the ratio of PR to Pn is conſtant; therefore when the folid whoſe ſection is AhqN is elevated, making an angle with the horizon, ſo that its baſe forms an inclined plane/PR in that caſe repreſents the preffure in a normal direction to that plane, and Pn the preffure againſt the folid; and

as

* Fig. 7;

as the friction is increafed in the ratio of the preffure, therefore if the preffure which the body would have on the inclined plane be increafed in the ratio of AC to AB, or radius to the fecant of the angle C A B, then the preffure on the angular plane or body, whofe perpendicular fection is AhqN, will be had, and confequently its n part, or the friction Hence this conftruction*; let PR reprefent the weight; then PD at right angles to AB reprefents the preffure that the body, would exert againft the common inclined plane; take DK to DP as AB in the foregoing figure to AC, or as the fecant of the inclination of the angular plane with its bafe to radius; let Dq be the n part of DK, and join Kq; then RM drawn any Thow to meet Kq in M, gives RM for the meafure of the whole force in that direction; and it is the moving or fufpending force, according as Dq is taken upwards or downwards in the line A B.

It is evident that Kq is parallel to PQ, and therefore though the leaft force (which is perpendicular to Kq) differ from that in the former cafes; yet the directions for having the greateft effect are ftill the fame as in the foregoing table; the demonftration is in effect the fame as the firft.

Corollary. By fuppofing s to be the fecant of the angle † that the fides of the angular plane make with the bafe, proceeding as Corollary 2d of Problem 1ft, and putting t for the natural tangent of the plane's inclination, and W for PR the weight, we have $W (tn + f)$ (n—t) for the moving ; and $W (tn - f) : (n + t)$ for the fufpending force, neceffary to draw the body along the angular inclined plane by a force acting parallel to the bafe of the plane.

Example.

Example. Let AB, BC, and AC, be 5, 3, and 4, respectively, and let the inclination of the fides be 45° ; the weight of a ton and the friction one third of the preffure; then 3648 pounds is the moving, and 499 the fuppending force.

S C H O L I U M .

In this propofition, thofe parts of the plane on which the body moves are fupposed rectilinear, as moftly happens in practice; but the friction is eafily eftimated in curvilinear fufaces, and may be found generally as follows:

Let AMP^* be half the fection perpendicular to the horizon, and to the axis of the folid which forms the curvilinear plane on which the body is moved; AP the axis; PM the ordinate, and MS a tangent to the curve at the point M; alfo let RM reprezent the weight or preffure in a direftion perpendicular to the horizon at the point M; and let RF be perpendicular to MS meeting MP in F; alfo let PN be taken equal to MR, and PQ equal to RF; and fuppose the fame conftruction to be made for every point of the curve, and let HN be the locus of all the points N, and GQ the locus of ail the points Q; then will the friction, when drawn along the horizontal plane, be to the friction of the fame body when drawn along the curvilinear plane in the fame direftion, as the area APNH to the area APQG.

For the friction on the horizontal plane being as the fum of the preffures, is as the fum of all the elementary lines MR or PN; that is, as the area AHNP; and the friction on the curvilinear plane is for the fame reafon as the

* Fig. 9.

the fum of all the RF or PQ, namely, as the area APQG; hence the truth of the propofition is manifcft.

Corollary 1. Becaufe Mn or the fluxion of y is to Mm the fluxion of the curve, as MR or PN to RF or PQ, therefore if PN be a function of AP, PQ will be a fourth proportional to the fluxion of the ordinate, the fluxion of the curve AM, and this function; wherefore if the curves HM and AM be given, the nature of the curve GQ will be known, and its area may be found by the common methods of quadratures.

Corollary 2. It is evident that when the planes are inclined to the horizon, the frictions of the right and curvilinear planes are ftill in the fame ratio as in the preceding cafes, and confequently may be found by the fame mode of proceeding.

Corollary 3. It is alfo evident, that the above method holds good whether the parts of the body are connected together or not, with refpect to their motion in the direction RM, fo long as each elementary part MR may be confidered as fupported at the point M by a force parallel to MP; but when the body is rigid or inflexible, the cafe becomes more fimple, for MR is *then* conftant, and APNH becomes a parallelogram.

Corollary 4. By fuppofing given properties to exift in any two of the curves AM, HN, or GQ, the nature of the third will be known; and hence a number of problems relative to friction may be propofed and refolved by a proper application of the direct and inverfe methods of fluxions.

PROPOSITION

PROPOSITION 5. THEOREM.

In the application of forces to overcome friction, the same allowances must be made for the forces acting to advantage or disadvantage, by means of levers or other mechanical powers, as are made in the common doctrine; for instance, if a weight of two pounds, by acting at the distance of one foot from the fulcrum of a lever, be sufficient to overcome the friction, then one pound at two feet distance, will have the same effect, &c.

This is too evident to need a demonstration.

OF FRICTION IN THE SCREW.

As any force acting perpendicular to the direction of a moving body does not affect the motion of the body in that direction, so the force acting perpendicular to the axis of the screw, has no effect on the motion of a body raised thereby, exclusive of friction; it therefore requires the same force to raise a body by means of a screw, as to raise the same body in equal time along an inclined plane of the same elevation, as the threads of the screw by means of a force acting parallel to the base of the inclined plane : now, if we suppose the weight so contracted or condensed as to be capable of being placed on one of the threads of the screw, and fastened to an imaginary lever always perpendicular to its axis, then it is evident this lever will have no effect but to change the direction of the weight, and keep it in the midst of the thread of the screw ; and if a force be applied at the weight always perpendicular to this lever, so as to sustain or draw it along, this force will be determined exactly the same as was done before in the inclined plane: but the rigidity" of the parts of the " female screw"

fcrow" fervesexaftly the fame purpofe as this imaginary lever, and makes the weight aft upon the threads like a body fuftained on an inclined plane by a force parallel to its bate; and as the force to overcome both the weight and the friction is reciprocally as the diftance from the center of the axis, therefore the diftance of the power from the center of the axis, is to the diftance from the fame center to the middle of the threads of the fcrow, as the force neceffary to fuftain the body on the inclined plane, to the fame force in the fcrow at the diftance of the power. The fame proportion holds good whether the threads be cut perpendicular to the axis or in an angle; for in the firft, the common plane is to be taken; and in the fecond, the inclined or angular one, considered in the fourth Propofition: Wherefore if d be the diftance from the center of the axis to the middle of the threads of the fcrow, D the diftance of fame center to the point where the force is applied, the force to overcome the weight and friction is $Wd (tn==f) : (n=t) D$, where the letters exprefs the fame things as before, and the upper fign is for the moving, and the lower for the fufpending force. N. B, t is the natural tangent of the angle made by a line touching one of the threads, and a plane at right angles to the axis of the fcrow ; or it is equal to the diftance of the refpective edges of two threads, divided by the circumference of the cylinder, out of which the fcrow is cut,

Corollary t . When lines drawn from the center of the axis of the fcrow to coincide with the threads, are at right angles to the axis, the above expreffion becomes $Wd (tn==1) : (n==t) D$, for f becomes radius or unity.

Corollary 2. When n is equal to t , the moving force will be infinite; alfo the fufpending force will be no-

thing when t is the n part of s ; and when $Wd (tn-s)$: $(n+t)$ D becomes negative, it expresses the quantity of force which must act in a contrary direction to reduce the body just to a state of suspension.

S C H O L I U M .

It would be needless to make any allowance for the curvilinear surfaces of the threads of screws, as they seldom differ much from the two foregoing forms; neither is it of much consequence to allow for their parts being at different distances from the axis, as their breadth seldom bears any considerable ratio to the length of the levers by which they act; but the case is different when large bodies revolve on each other, and therefore it will be necessary to shew the mode of proceeding in such cases.

Let $MmAQ$ be a convex solid,* generated by the revolution of the curve MAQ about its axis perpendicular to the horizon, and $MRSQ$ a concave body exactly fitting it: then if this last body be revolved about the axis AP by means of the lever Pf , the force necessary to overcome the friction of one body turning upon the other may be found as follows. Suppose the revolving body divided into an infinite number of concentric tubes, that may descend independent of each other, and press freely against the body on which they revolve, and yet be so connected that the lever Pf may give the same angular velocity at the same time to each; also let the ordinates PN of the curve HN represent the weight or pressure (in a direction perpendicular to the horizon) of each of the indefinitely small parts Mk , or elementary lines of the body at the distance PM from

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the

* Fig. 10.

the'Axis, and let c be the circumference of a circle whose radius is unity: then because the friction of each of the elementary tubes $MR SQ$ is as its preffure, and the preffure is as the number of lines Mk , and the preffure of each; therefore as this number is as $PM.Mn.c$, we have the n part of this expreffion for the force which, acting at M , would overcome the friction of the cylindrical tube if moved round upon a horizontal plane: but as the preffure of each elementary partis increased in the ratio of Mn to Mm , when moved on the folid MAQ , the real force will be $(PM.c.Mm.PN):n$; also $Pf:PM:: (PM.c.Mm.PN):n$ to the small elementary force which will overcome the laft force when acting at f ; confequently the whole force will be equal to the fuent of $(PM \backslash PN.Mm.c):(n.Pf.)$

Corollary. By means of the curves AM , HN , &c. conclufions may be drawn fimilar to thofe in the Corollaries to the Scholium of the fourth Propofition.

OF FRICTION IN THE LEVER.

It has been already obferved, that a force acting perpendicular to the direction of a body in motion, does not alter the body's motion in that direction; therefore if* we fuppofe DB to be an upright cylinder, and AB a body touching it in a line as in the figure, and retained clofe to it by an imaginary force, drawing it perpendicular towards the axis; then if a force CP be applied to C , the center of gravity of AB , and be always fuppofed to aft perpendicularly to the radius CN , drawn from the center of the axis to the point C , the friction will be the fame in drawing the body round the cylinder, as in drawing it along a horizontal plane with an equal preffure; and if it be moved round by a force acting at a greater diftance, the force will be reciprocally as the diftance;

* Fig. 11.

distance i on the contrary, if the body AB be fixed, and the cylinder turned round about its axis, the friction will be the same as if the cylinder was fixed, and the body drawn round it by CP, as before : Likewise the friction is the same, whether the cylinder be fixed, and the body AB moved round the axis MR by a force Qc applied at c; or whether the point c be fixed with AB fattened to Cc, and the cylinder be revolved in a circle whose center is c, so as always to retain its parallelism with respect to any fixed object; and as this last case obtains in the axletrees of carriages, since every point of the wheel's contact with the ground may be considered as the center of motion for that instant, therefore the effect of the resistance arising from the friction of the concave part of the nave upon the axletree, is to the effect; that would arise from drawing the same weight over a horizontal plane of the same kind, as the parts that rub each other, as the radius of the axis to the radius of the wheel. It must be observed, that this is not the only friction to which carriages are subject; for there is another part, arising from the cohesion of the wheel and the ground at their contact, which is to be found and allowed for by the three first Propositions.

In the above the pressure and friction have been supposed to be as the weight, as it is on a horizontal plane ; but by the Scholium to the fourth Proposition, it is plain that the pressure is greater than the weight, and may be so in any proportion; however, as it appears by calculation, that the pressure On an arc of ninety degrees is to that on its chord, only as 1,183 to 1, when both the concave and convex parts have exactly the same curvature, the difference will be so trifling when the cylinders have different curvatures as usual, as to require very seldom to be allowed for,

This being premised, let M^* be a weight placed at the point A of a lever, moveable about an axis whose center is d , and radius dn ; and let N be the sustaining force acting at B : now it is evident that the pressure on the axis d differs so little from the weight, that it may be safely taken for it without any considerable error, except in some remarkable cases, which may be allowed for from what has been said already; and therefore the friction which ought in strictness to be taken as the n part of the pressure, will here be taken as the n part of the weight upon the axis. Now if N be taken for the force which, acting at B , would be just sufficient to keep the weight M at A in equilibrio, exclusive of friction, and if W be the additional force to be added to N so as to overcome the friction, then will $M + P$, $M - P$, and $P - M$, be the weight upon the axis at d in the first, second, and third figures respectively, (supposing the sum of M and N to be equal to P .) Now as the friction is the n part of each of these quantities, and its effect is to keep the lever in a state of rest, therefore in whatever direction the force at N endeavours to draw the lever by acting at B , the friction tends to counteract that force by keeping the lever steady, or acting in a contrary direction at n ; and as the effect of the friction, and the additional force W , are in equilibrio, and the friction acts by means of the lever dn , and the force W by the lever dB ; therefore Bd is to dn as the sum or difference of the n part of $N + W$ and M is to W ; consequently $W = dn (M + N) : (n. Bd - dn,)$ in the first figure; $W = dn (M - N) : (n. Bd + dn,)$ in the second figure; and in the third figure, $W = dn (N - M) : (n. Bd - dn.)$ All these are the expressions for the moving forces.

To find the suspending forces, or the forces which, acting at N , shall be just sufficient to prevent the weight M from descending: Let M and N be the same as before, and let w be the force which, taken from N , will leave
a force

a force juft fufficient to prevent M from defcending ; then the weight- upon d in the firft figure will be $M + N - w$; in the fecond figure, the weight will be $M - N + w$; and in the third figure, $N - M - u$; and by proceeding as before, the values of w in the fufpending forces are $dn (M+N) : (n.Bd+dn) : dn (M-N) : (n.Bd-dn)$, and $dn (N-M) : (n.Bd+dn)$, in the firft, fecond and third figures refpe&tively.

Becaufe $Bd : d A :: M : N$, therefore if this value of N be fubftituted in each of the above expreffions for the friction, the whole force capable of fuftaining the friction and weight M will be had. Thus, for example, the moving force to overcome the friction and weight M in the firft figure, will be $M (n.dA+dn) : (n.Bd-dn)$, and the fufpending force $M (n.dA-dn) : (n.Bd+dn)$; in the fecond figure the moving force will be $M (n.dA+dn) : (n.Bd+dn)$ and the fufpending force $M (n.dA-dn) : (n.Bd-dn)$; and in the third figure, the moving force will be $M (n.dA-dn) : (n.Bd-dn)$, and the fufpending force will be $M (n.dA+dn) : (n.Bd+dn)$.

The method of finding n from each of the above equations is evident, and confequently the ratio of the friction to the preffure by experiments.

OF FRICTION IN THE WEDGE.

Let AC^* be the force neceffary to fuftain the wedge QPB in the direction $a B$ perpendicular to QP , friction included; and let $A B$ be the force exclusive of friction: draw AN and AH perpendicular to the BQ and BP ; CG parallel to AN , and CF parallel to AH ; Now $G A$ and $A F$, the forces of the wood againft the fides of the wedge,

* Fig. 15.

wedge, in those directions, compound a force equivalent to the diagonal CA in the direction CA, and therefore a force represented by AC in that direction, must be applied to the head of the wedge at *a* to overcome these forces. Let *gr* be the *n* part of *Ag*, and let the lines *Ar* be drawn, and also *GK* and *FZ* perpendicular to *AQ* and *AF*, meeting the lines *Ar* in *K* and *Z*; then will *GK* and *FZ* represent the friction against the sides *BP* and *BQ*, being each the *n* part of *AG* and *AF*, the pressure against each side respectively; wherefore if *Be* be taken in *PB*, and *Bn* in *BQ*, equal to *GK* and *FZ* respectively, the forces *Be* and *Bn* in those directions, must compound a force to which the force *BC* in the direction *BC* must be equivalent; and consequently if *Bm* be the force compounded of *Be* and *Bn*, and *Cm* be joined, *Cm* must be perpendicular to *mB*; since *Be* or *GK* is the force of friction arising from the pressure against *BP*, which tends to prevent the wedge from moving either in the direction *BP* or *PB*; and *Bn* or *FZ* has a similar effect with respect to the direction in the line *BQ*; and by hypothesis, *BC* is just sufficient to balance these forces. It is also evident from what was said concerning the inclined plane, that *Be* and *Bn* must be taken in the directions *PB* and *QB* for the moving force, but in the directions *BP* and *BQ* for the suspending force.

The method of calculation is evident; for as *aB*, *AG*, and *AF*, are perpendicular to *QP*, *BP*, and *BQ*, the triangles *QPB* and *LAG* are similar, and the parallelogram *Bnme* similar to *FAGC*; whence by supposing certain parts given, the rest may be found, &c.

Corollary. When the wedge is isosceles, the point in falls on *C*, and *Be* is equal to *Bn*, and therefore *Be* or *GK* is equal to $(AB + BC)PB : (n.QP)$; but $PB : Ba :: 2 Be : BC$, and therefore $BC = 2 Ba (AB + BC) : (n.QP)$

or

or equal to $(2Ba.BA):(n.QP-2Ba)$, and therefore $AC = (n.QP.AB) : (n.QP - 2Ba)$; and by following the same method for the suspending force, we find $BC = (2Ba.AB):(n.QP+2Ba)$, and consequently AC is equal to $(n.QP.AB) : (n.QP+2Ba)$.

S C H O L I U M .

By proceeding in a similar method, the forces of the arch-stones of bridges may be determined; for let $QbbP$ be a stone sustained by the parts of the arch pressing against Pb and Qb , and let A be its center of gravity, and AB perpendicular to the horizon; also let AB and AC be the same as before; then because the body is in equilibrio, the force in direction AC will be equivalent to the force in a contrary direction, arising from the pressures against the body in the directions GA and KA , together with the force of friction; and because the pressures are AG and AK , if Be (the n part of AG) be drawn parallel to PB ; and Bn (the n part of AK) be drawn parallel to QB ; and the parallelogram $Bnme$ be completed, and Cm joined; Bin will be the force arising from friction, and the angle $BraC$ a right angle. The adjacent figure * is for the moving force; but the method is similar for the suspensive force; and it is evident that the construction is of use to determine the force which tends to break an arch by pressing it downwards, and the other the force that tends to break it upwards.

But as that excellent mathematician *P. Frifi*, in his *Istituzioni di Meccanica*, has objected to the division of the force AB into the forces AN and AH , and the above concluded *Belidor* and *Couplet* to have been mistaken on that account in their writing upon bridges; I shall, therefore,

therefore, prove that the common method is really a consequence of what that gentleman himself allows, and that his objections are not well founded. In the first place, he allows the force AB to be equivalent to the forces AV and AD or VB; now (excluding friction) if that part of the arch which touches Pb was removed, it is evident QbbP would immediately begin to descend along Qb with a force represented by VB or AD; but this descent is prevented by that part of the arch which touches Pb; and therefore the force of that arch, in the direction HA, must be such as to be equivalent to DA in the direction DA or BV: but no force greater or less than HA will be equivalent to DA in the direction DA, and therefore HA is the real pressure or force against Pb. Again, HD is the pressure in a perpendicular direction to Qb arising from this force; and as AV is the pressure against Qb arising from the force AB, therefore AV, together with HD, is the whole pressure against Qb in the direction AV; but because the body is in equilibrium, and consequently the action or force in the direction AV equal to the reaction in a contrary direction; therefore AV + HD or AN (because NV is equal to HD by the property of the parallelogram) represents the pressure against Qb, and AH the pressure against Pb; which is contrary to what P. Frisi asserts, and agreeable to the usual method.

The same learned author has made another very material mistake, from a similar cause, at page 67 of the aforefaid Treatise, relative to the tension of ropes; which cannot be attributed to haste or inadvertency, as he expressly asserts the holders of the common opinion to be mistaken, in consequence of their using the theory of composition of forces without sufficient precaution: I shall, therefore, after giving his own words, take the liberty of shewing where I apprehend he is mistaken.

" Parleremo piu a lungo delle altre ricerche matematiche, alle quali ha dato occasione la controversia intorno alla cupola di S. Pietro. Coll' occasione che fu e discorfo in Milano di munire la fabbrica del Duomo di un Conduttore elettrico, che dalla cima dell' aguglia fu dirimaffe, e scendefle per differenti parti del tempio, fu e ancora parlato dell' azione, che i fili del Conduttore potrebbero esercitare contral' aguglia, e furono proposti varj Problemi intorno alle tensioni delle funi. Io qui aggiugnero le soluzioni, che ho ritrovato, e incomincierò dalle primarie soluzioni, delle forze tendenti, laquale ficcome e interamente differente da quella, che hanno seguitato altri Autori, e finon farameravaglia che porti dei risultati interamente differenti da quelli che sono stati finora publicati. Penda il * filo, QVR, dai punti Q, ed R, e vi fu attacchi in V il peso P. fu produca la verticale PV in A; fu esprima il peso P colla retta AV, e dal punto A; fu tirino sopra RV, RV le perpendicolari AM, AN. Sara MV Tintera forza esercitata secondo QV, ed NV fara quella che fu eserciterà secondo RV.

" La fteffa cofa si dedurrebbe risolvendo la forza AV nelle due Aq, Ar parallele ai fili QV, RV, e poi risolvendo di nuovo la forza Aq nelle due AN, Nq, e finalmente la Ar in due altre AM, Mr. Mentre conseguente risoluzioni e manifesto che la forza totale esercitata nel tendere il filo QV dev'essere $Aq - Mi = rV - Mr - MV$, e la tensione del filo $RV = Vq - Nq = NV$.

" S'ingannerebbe chi misurasse separatamente la tensione del filo QV dalla forza Aq, ossia rV, e la tensione di RV da Ar, oppure da qV. Egli e vero, che le due tensioni equivalgono insieme, come alla sola forza AV, cosi ancora alle due Ar, Aq, oppuicallc quattro inficine AN, Nq, AM, Mr,, ma nel prender le tensioni sepa-

rate

ratte bifogna in oltre avvertire, che quando l' angold QVR non e retto, una porzione di Aq agifce fecondo RV , ed una porzione di Ar fecondo QV : e feparando le azioni fara MV , ia tenfione del filo QV , ed NV quella di RV ."

In the firft place, I fhall demonftrate the truth of the eftablifhed method from principles that FRISI has hitnfelf allowed ; and, fecoodly, point out the abfurdity of his conclufions.

1. Let Vn and Sr be parallel to AN ; then becaufe NVn is a right angle, and the force VA may be refolved, into VN and Vn , in thofe directions, therefore, if RV and VP were to remain in the fame pofition, and the force which now keeps the body fufpended by a&ing in the direfiion VQ , was to aft in the direction VN with a force expreffed by Vn , it is then granted that the equilibrium would ftill be maintained, and the tenfions would be as Vn and VN ; and, therefore, as no force VS whatever, acting at V in the direction RV , can have any effect in the direction Vn perpendicular to RV , it neceflarily follows, that the force in any other direction VQ , muft be fuch as to be equivalent to Vn in the direction Vn ; but it is likewife granted, that no other force but Vr in the direction VQ can be equivalent to Vn in the direction Vn ; and as the force Vr is equivalent to Vn and VS , and as VS , or itfequal, qN , only gives an additional tenfion to NV , the tenfion which the cord RV was fufpofed to have before, which whole tenfion is equal to the reaction of the tack R ; therefore qV is the tenfion of the cord RV , and Vr that of QV .

a. Let the points Q and R coincide, and RV , QV , and VP , will then be perpendicular to the horizon; and if VQ or VR be ailumed to exprefs the weight P ,
' then

then will the points A, R, Q, M, and N, coincide; and according to *Friis* principle, the tensions of RV, VQ, and VP, will be equal; but, from the well-known principle of the pulley, each cord VQ and VR bears but half the weight P, and therefore this absurdity follows, that a cord is as much stretched with half the weight as it would with the whole.

Again, if the points R, V, and Q, be supposed horizontal, it follows, from the common theory, that the tension of the rope RVQ would be infinite; but VN and VM vanish when RVQ is horizontal; and therefore, by *Friis* principle, the tension in that case would be nothing at all; but it is well known from the most common experiments to be very considerable, even when RQV is but nearly horizontal; and therefore the new theory of this great mathematician is indefeasible.

Remark. All the foregoing, except the last Scholium, was written in 1775, before the Author had seen any thing to speak of on the subject. He had designed and executed great part of an extensive treatise on friction, according to different hypotheses; but as nobody would be at the risk of publishing it, and he could not afford it himself, the most of it was accidentally lost. What is here given is an extract only of some of the first part, where velocity was not taken into the account, and where there were no complicated algebraic or fluxional expressions, which would be difficult to print in this country.

TO THE HONOURABLE

SIR WILLIAM JONES,

President of the Asiatic Society.

SIR,

I HAVE the honour to obey the orders of the Honourable the Governor General and Council, in transmitting to you, for the information of the *Asiatic Society*, an Extract of a Letter addressed to the Governor General, on the 2d of last Month, by Lieutenant SAMUEL Turner, who was appointed on an Embassy to *Tibet*; and a Copy of an Account enclosed in it, of Mr. TURNER'S Interview with TEESHOO LAMA, at the Monastery of *Terpaling*.

I have the honour to be, with great respect,

SIR,

Your most obedient and most humble Servant,

E. HAY, *Secretary.*

*Council Chamber,
Political Department) April 13, 1784,*

EXTRACT of a LETTER from Mr. SAMUEL TURNER to the Honourable the GOVERNOR GENERAL, dated Patna, 2d March, 1784.

DURING my residence in *Tibet*, it was an object I had much at heart, to obtain an interview of the infant *Teefhoo Lama*; but the Emperor of *China's* general orders, restricting his guardians to keep him in the strictest privacy, and prohibiting indiscriminately, the admission of all persons to his presence, even his votaries, who should come from a distance, appeared to me an obstacle almost insurmountable; yet, however, the Rajah, mindful of the amity fulfilling between the Governor and him, and unwilling, I believe, by any act, to hazard its interruption, at length consented to grant me that indulgence. As the meeting was attended with very Angular and striking circumstances, I could not help noting them with most particular attention; and though the repetition of such facts, interwoven and blended as they are with superstition, may expose me to the imputation of extravagance and exaggeration, yet I should think myself reprehensible to suppress them; and while I divest myself of all prejudice, and assume the part of a faithful narrator, I hope, however tedious the detail I propose to enter into may be found, it will be received with candour, and merit the attention of those for whose perusal and information it is intended, were it only to mark a strong feature in the national character, of implicit homage to the great religious Sovereign, and to instance the very uncommon, I may say almost unheard-of, effects of early tuition.

I shall, perhaps, be still more justified in making this relation, by adverting to that very extraordinary assurance the Rajah of *Teefhoo Loomboo* made me but a few days before my departure from his court, which, with-

out further introduction, I 'will beg leave literally to recite.

At an interview he allowed me, after having given me my audience of leave, he faid, " I had yefterday a " vifion of our tutelary deity, and to me it was a day " replete with much interefing and important matter. " This guardian power, who infpires us with his illu- " ruinations on every momentous and great occafion, " indulged me with a divination, from which I have " collected that every thing will be well. Setyour " heart at reft; for though a reparation is about to take " place between us, yet our friendfhip will not ceafe to " exift; but, through the favour of interpofing Provi- " deuce, you may reft affured it will increafe, and ter- " minate eventually in that which will be for the bed."

I fhould have paid lefs regard to fo ftrange an obfer- vation, but for this reafon, that, however diffonant from other doctrines their pofitions may be found, yet I judge they are the bell foundation to build our reliances upon; and fupcrftition combining with inclination to implant illich friendly fentiments in their minds, will ever con- ftitute, the opinion having once obtained, the ftrongeft barrier to their prefcrvation. Oppofed to the preju- dices of a people, no plan can reafonably be expected to take place : agreeing with them, fucces muft be the refult.

A true Extract,

E. H A Y,

'Secretary to the Governor General and Council.

VII.

COPY of an Account given by Mr. TURNER, of his Interview with TEESHOO LAMA at the Monastery of Terpaling, enclosed in Mr. TURNER'S Letter to the Honourable the GOVERNOR GENERAL, dated Patna, 2d March, 1784.

ON the 3d of December, 1783, I arrived at *Terpaling*, situated on the summit of a high hill; and it was about noon when I entered the gates of the Monastery, which was not long since erected for the reception and education of *Teefhoo Lama*. He resides in a Palace in the center of the Monastery, which occupies about a mile of ground in circumference, and the whole is encompassed by a wall. The several buildings serve for the accommodation of three hundred *Gylongs*, appointed to perform religious service with *Teefhoo Lama*, until he finally he removed to the Monastery and Mufnud of *Teejhoo Loomboo*. It is unusual to make visits, either here or in *Boo/an* on the day of arrival; we therefore rested this day, only receiving and sending messages of compliment.

On the 4th, in the morning, I was allowed to visit *Ttefioo Lama*, and found him placed in great form Upon his Mufnud. On the left side stood his father and mother, on the other the officer particularly appointed to wait upon his person. The Mufnud is a fabric of silk cushions, piled one upon the other until the seat is elevated to the height of four feet from the floor; embroidered silk covered the top; and the sides were decorated with pieces of silk of various colours,

3 fufpended

fufpended from the upper edge, and hanging down. By the particular requeft of *Teefhoo Lama's* father, Mr. *Saunders* and myfelf wore the Englifh drefs.

I advanced; and, as is the cuftom, prefented a white pelong handkerchief; and delivered alfo into the *Lamas* hands, the Governor's prefent of a firing of pearls and coral, while the other things were fet down before him. Having performed the ceremony of the exchange of handkerchiefs with his father and mother, we took our feats on the right of *Teefhoo Lama*.

A multitude of perfons, all thofe ordered to efkort me, were admitted to his prefence, and allowed to make their profltrations. The infant *Lama* turned towards them, and received them all with a cheerful and fignificant look of complacency. His father then addreffed me in the *Tibet* language, which was explained to me by the interpreter, that *Teefhoo Lama* had been ufed to remain at reft until this time of the day ; but he had awoke very early this morning, and could not be prevailed on to remain longer in bed; for, added he, " the " *Englijli* Gentlemen were arrived, and he could not " deep." During the time we were in the room, I obferved the *Lama's* eyes were fcarce ever turned from us; and when our cups were empty of tea, he appeared uneafy, and throwing back his head, and contracting the fkin of his brow, he kept making a noife, for he could not fpeak, until they were filled again. He took out of a golden cup, containing confers, fome burnt fugar, and ftretching out his arm, made a motion to his attendants to give them to me. He then fent fome in like manner to Mr. *Saunders*, who was with me. I found myfelf, though vifiting an infant, under the neceffity of
faying

faying fomething; for it was hinted to me, that, notwithstanding he is unable to reply, it is not to be inferred that he cannot underftand. However, his incapacity of anfwering excufed me many words; and I juft briefly faid, That the Governor-General, on receiving the news of his deceafe in *China*, was overwhelmed with grief and forrow, and continued to lament his abfence from the world, until the cloud that had overcaft the happinefs of this nation by his re-appearance was difpelled; and then, if poffible, a greater degree of joy had taken place than he had experienced of grief on receiving the firft: mournful news. The Governor wifhed he might long continue to illumine the world with his prefence; and was hopeful that the friendfhip which had formerly fubfifted between them would not be diminifhed, but rather that it might become ftill greater than before; and that, by his continuing to fhew kindnefs to my countrymen, there might be an extenfive communication between his votaries and the dependants of the *Rritifh* nation. The little creature turned, looking ftedfaftly towards me with the appearance of much attention while I fpoke, and nodded with repeated but flow movements of the head, as though he underftood and approved every word, but could not utter a reply. The parents, who flood by all the time, eyed their fon with a look of affection, and a fmile expreffive of heartfelt joy at the propriety of the young *Lama's* conduft. His whole regard was turned to us; he was filent and fedate, never once looking towards his parents, as if under their influence at the lime; and with whatever pains his manners may have been formed to correft; yet I muft own his behaviour on this occafion, appeared perfectly natural and fpontaneous, and not directed by any action or fign of authority.

The fcene in which I was here brought to take a part, was too new and extraordinary, however trivial, if not

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abfurd,

abfurd, as it may appear to fome, not to claim from me great attention, and confequently minute remark.

Teejhoo Lama is at this time about 18 months of age. He did not fpeak a word, but made moft expreffive figns, and conduced himfelf with aftonifhing dignity and decorum. His complexion is of that hue which in *England* we fhould term rather brown, but not without colour. His features good, fmall black eyes, an animated expreffion of countenance; and altogether I thought him one of the handfomeft children I had ever feen. I had but little converfation with the father. He told me he had directions to entertain me three days on account of *Teejhoo Lama*; and entreated me with fo much earneftnefs to pafs another on his own account, that I could not refill complying with "his request. He then invited us for to-morrow to an entertainment he propofed to make at a fmall diftance from the Mpnaftery, which invitation having accepted, we took our leave, and retired.

In the courfe of the afternoon I was vifited by two officers of the *Lama's* houfehold, both of whom are immediately attendant on his perfon. They fat and converted with me fome time, enquired after Mr. *Bogle*, whom both of them had feen; and then remarking how extremely fortunate it was the young *Lama's* having regarded us with very particular notice, obferved on the very ftrong partiality of the former *Teejhoo Lama* for the *Englifh*, and that the prefent one often tried to utter the name of the *Englifh*. I encouraged the thought, hopeful that they would teach the prejudice to ftrengthen with his encreafing age; and they aflured me that fhould he, when he begins to fpeak, have forgot, they would early teach him to repeat the name of *Haftings*.

On the morning of the 6th, I again waited on *Teeshoo Lama*, to present some curiosities I had brought for him from *Bengal*. He was very much struck with a small clock, and had it held to him, watching for a long time the revolutions of the moment hand; he admired it, but with gravity, and without any childish emotion. There was nothing in the ceremony different from the first day's visit. The father and mother were present. I staid about half an hour, and retired, to return and take leave in the afternoon.

The votaries of *Teeshoo Lama* already "begin to flock in numbers to pay their adorations to him. Few are yet admitted to his presence. Those who come, esteem it a happiness if he is but shewn to them from the window, and they are able to make their prostrations before he is removed. There came to-day a party of *Kilmaaks (Culmuc Tartars)* for purposes of devotion, and to make their offerings to the LAMA. When I returned from visiting him, I saw them standing at the entrance of the square in front of the palace, each with his cap off, his hands being placed together elevated, and held even with his face. They remained upwards of half an hour in this attitude, their eyes fixed upon the apartment of the LAMA, and anxiety very vividly depicted in their countenances. At length, I imagine, he appeared to them; for they began all together by lifting their hands, still closed, above their heads, then bringing them even with their faces, and after lowering them, to their breasts, then separating them: to assist them in sinking and rising, they dropt upon their knees, and struck their heads against the ground. This with the same motions was repeated nine times. They afterwards advanced to deliver their presents, consisting of talents of gold and silver, with the products of their Country, to the proper officer, who having received them, they retired apparently with much satisfaction,

Upon enquiry, I learnt that offerings made in this manner are by no means unfrequent, and, in reality, constitute one of the most copious sources from which the *Lamas* of *Tibet* derive their wealth.

No one thinks himself degraded by performing these humiliations. The persons I allude to, who came for this devout purpose, were attendant on a man of superior rank, that seemed to be more engrossed than the rest in the performance of the ceremony. He wore a rich satin garment, lined with fox skins; and a cap with a tassel of scarlet silk flowing from the center of the crown upon the sides all round, and edged with a broad band of *Siberian* fur.

According to appointment, I went in the afternoon to make my last visit to *Teejhoo Lama*. I received his dispatches for the Governor-General, and from his parents two pieces of satin for the Governor, with many compliments.

They presented me with a veil, lined with lamb skins, making many assurances of a long remembrance, and observing that at this time *Teejhoo Lama* is an infant, and incapable of conversing, but they hoped to see me again when he shall have become of age. I replied, that, by favor of the *Lama*, I might again visit this country: I looked forward with anxiety to the time when he should mount the Mufnud, and should then be extremely happy in the opportunity of paying my respects. After some expressions and protestations of mutual regard, my visit was concluded. I received
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the handkerchiefs, and took my leave; and am to purfue my journey toward *Bengal* to-morrow at the dawn of day.

(Signed) SAMUEL TURNER.

A true Copy,

E. HAY,

Secretary to the Governor General and Council.

TO SIR WILLIAM JONES, KNIGHT,

Prejident of the AJiatick Society.

S I R ,

THE Honorable the Governor-General! having received and laid before the Board, a Lejtter addreffed to him by Lieutenant SAMUEL TURNER, containing the Account of a Journey made to *Teejhoo Loomboo*, by a *Goffeyn* named POORUNGEER, and the Circumftances of his Reception by TEESHOO LAMA, and the Board deeming it worthy of the Attention of the *Afiatick Society*, I have the Honor, in Obedience to their Directions, to tranfmit to you a Copy of it.

I have the Honor to be,

S I R ,

Your moft obedient humble Servant,

E, H A Y , *Secretary.*

Fort William,
Secret Department, Feb. 22. 1786.

VIII.

An ACCOUNT of a JOURNEY to TIBET.

TO THE HONORABLE

JOHN MACPHERSON, ESQ.

GOVERNOR-GENERAL, &C.

Fort William.

HONORABLE SIR,

HAVING, in obedience to the instructions with which you were pleased to honour me, examined *Poorungeer*, the Gofleyn, who has at different times been employed in deputations to the late *Teefhoo Lama*, formerly accompanied him to the court of *Pekin*, and who is lately again returned from *Tibet*, and having collected from him such an account of the journey he has just performed, and other information, as he could give me relative to the countries he had left, I beg leave to submit it to you in the following narrative.

In the beginning of last year, *Poorungeer*, having received dispatches from Mr. *Hajlings*, a short time previous to his departure from *Bengal*, for *Teefhoo Lama*, and the Regent of *Teefhoo Loomboo*, immediately set about preparing for the distant journey he had engaged to undertake, which employed him until the beginning

of the following month of March, when I beg leave to recal to your remembrance, I had the honor to present him to you for his dismission. He then commenced his journey from *Calcutta*, and early in the month of April had passed, as he relates, the limits of the Company's Provinces, and entered the mountains that constitute the Kingdom of *Bootan*, where, in the prosecution of his journey, he received from the subjects of the *Daib Raja*, the most ample and voluntary assistance to the frontier of his territory; nor met with any impediment to oppose his progress until he came upon the borders of *Tibet*. Here he was compelled to halt for near a fortnight by a heavy fall of snow, that commenced upon his arrival, and continued incessantly for the space of six days, covering the face of the country to so great a depth, as totally to put a stop to all travelling, and render it impracticable for him to proceed until a thaw succeeded to open the communication. During the time of his confinement at *Phari*, he says, such was the severity of the cold, and the injurious effect so rapid a transition from a temperate climate had on the health of himself and his companions, that it left him little room to doubt, if an early change had not fortunately taken place, and permitted his advance, that they must all have fallen victims to the inclemency of the weather.

However, as early as it was possible for him to leave *Phari*, he proceeded by long stages on his journey, and, without encountering any further difficulty, on the 8th of May following, reached *Teejhoo Loomboo*, the capital of *Tibet*. Immediately upon entering the Monastery, he went to the Durbar of the Regent *Punjur Intinne Nemohein* to announce his arrival, and the purpose of his commission. Quarters were then allotted for his residence, and an hour fixed for him to wait upon *Tee-Jkoo Lama*; who, as he was informed the following morning, intended to leave the Palace to occupy one
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of his gardens, situated on the plain within sight of the Monastery, where it was visible a considerable encampment had been formed. The *Lama* quitted his apartment at the first dawn of day, and was lodged in the tents pitched for his accommodation before the sun had risen.

In the course of the morning, at the hour appointed for his audience, *Poorungeer* went down to the *Lama's* tents. He heard, on entering the gates of the enclosure, that the young *Lama* was taking his recreation in the garden, ranging about, which became with him a very-favourite amusement. As it was at this time in *Tibet* the warmest part of the year, that he might enjoy the benefit of the air, his attendants had chosen a spot where the trees afforded a complete shade, to place an elevated seat of cushions for the young *Lama*, after his exercise, to rest upon. In this situation *Poorungeer* found him, when summoned to his presence, attended by the Regent, his parents, *Soopoon Choomboo*, the cup-bearer, and the principal officers of the court. After making three obeisances at as remote a distance as it was possible, *Poorungeer* approached, and presented to the *Lama*, according to the custom of *Tibet*, a piece of white pelong, and then delivered the letters and presents with which he had been charged. The packages were all immediately opened before the *Lama*, who laid every article - brought near to him, and viewed them separately one by one. The letter he took into his own hand, himself broke the seal, and taking from under the cover a string of pearls, which it enclosed, ran them over between his fingers, as they read their rosaries, and then with an arch air, placed them by his side, not would, while the narrator was in his presence, permit any one to take them up. *Poorungeer* says the young *Lama* regarded him with a very kind and significant look.

look fpoke to him in the *Tibet* language, and afked him if he had had a fatiguing journey. The interview lafted more than an hour, during all which time the *Lama* fat with the utmoft compofure, not once attempting to quit his feat, nor difcovering the leaft forward uneafinefs at his confinement. Tea was twice brought in, and the *Lama* drank a cup each time. When ordered to accept his difmiffion, *Poorungeer* approached the *Lama*, and bowing before him, prefented his head uncovered to receive his bleffing, which the young *Lama* gave by ftretching out his hand, and laying it upon his head. He then ordered him, as long as he refided at *Teefhoo Loomboo*, to come to him once every day.

The following morning *Poorungeer* waited upon the Regent at his apartments in the Palace, to whom, after obferving the cuftomary forms of introduction, he delivered his difpatches. After this he vifited *Soopoon Choomboo*, the *Lama's* parents, and others, to whom he was before known, and fays he experienced from all quarters the moft cordial and kind reception; for they had been long ufed to confider him as an agent of the Government of *Bengal*. He found no change whatever to have enfued in the adminiftration fince his attendance upon me in *Tibet*. The country enjoyed perfeft tranquillity; and the only event that had taken place of importance in their annals, was the inauguration of the infant *Lama*, which happened the preceding year; and as this conftitutes a concern of the higheft moment, whether confidered in a political or religious point of view, being no lefs than the recognizance, in an infant form, of their regenerated immortal Sovereign and Ecclefiaftical Supreme, I was induced to bellow more than common pains to trace the ceremonies that attended the celebration of fuch a great event, conceiving that the novelty of the fubject might render the account curious, if even it fhould be found to contain no information

tuition of real utility. I fhall therefore, without further apology, fubjoin the refult of my enquiries, premifing only, that my authority for the defcription is derived principally from *Poorungeer*, and confirmed, with fome additional particulars, by the concurring reports of a Goffeyn who was at that time himfelf prefent on the fpot.

The Emperor of *China* appears, on this occafion, to have afumed a very confpicuous part, in giving teftimony of his refpect and zeal for the great religious Father of his Faith. Early in the year 1784, he difpatched Ambaffadors from the court of *Pekin* to *Teefhoo Loomboo*, to reprcfent their Sovereign in fupporting the dignity of the High Preft, and do honor to the occafion of the aflumption of his office. *Dalai Lama*, and the Viceroy of *Laffa*, accompanied by all the court, one of the *Chinefe* Generals ftationed at *Laffa*, with a part of the troops under his command, two of the four magiftrates of the city, the heads of every monaftery throughout *Tibet*, and the Emperor's Ambaffadors, appeared at *Teefhoo Loomboo* to celebrate this epocha in their theological intitutions. The 28th day of the feventh moon, correffponding nearly, as their year commences with the vernal equinox, to the middle of October, 1784, was chofen as the molt aufpicious for the ceremony of inauguration ; a few days previous from which the *Lama* was conducted from *Terpaling*, the Monaftery in which he had paffed his infancy, with every mark of pomp and homage that could be paid by an enthufiaftic people. So great a concourfe, as affembled either from curiofity or devotion, was never feen before; for not a perfon of any condition in *Tibet* was abfent who could join the fuite. The proceffion was hence neceffarily confrained to move fo flow, that though *Terpaling* is fituated at the diftance of twenty miles only from *Teefhoo Loomboo*, three days expired in the performance of this fhort march. The tirlt halt was
made

made at *Tfondue* ; the fecond at *Summaar* ; about fix miles off whence the moft fplendid parade was referved for the *Lama's* entry on the third day; the account of which is given me by a perfon who was prefent in the proceffion. The road, he fays, was previoufly prepared by being whitened with a wafh, and having piles of ftones heaped up, with fmall intervals between, on either fide. The retinue paffed between a double row of priefts, who formed a ftreet extending all the way from *Summaar* to the gates of the Palace. Some of the priefts held lighted rods of a perfumed compofition, that burn like decayed wood, and emit an aromatic fmoke; the reft were furnifhed with the different mu-fical infruments they ufe at their devotions, fuch as the gong, the cymbal, hautboy, trumpets, drums, and feafhells, which were all founded in union with the hymn they chanted. The croud of fpectators were kept without the ftreet, and none admitted on the high road, but fuch as properly belonged to, or had a prefcribed place in, the proceffion, which was arranged in the following order.

The van was led by three military commandants, or governors of diftricts, at the head of 6 or 7000 horfemen, armed with quivers, bows, and matchlocks. In their rear followed the Ambaffador, with his fuite, carrying his diploma, as is the cuftom of *China*, made up in the form of a large tube, and fattened on his back. Next the Chinefe General advanced with the troops under his command, mounted and accoutred after their way with fire arms and fabres; then came a very numerous group, bearing the various ftandards and infignia of ftate. Next to them moved a full band of wind and other fonorous infruments; after which were led two horfes, richly caparifoned, each carrying two large circular ftoves, difpofed like panniers acrofs the horfe's back, and filled with burning aromatic woods.

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These were followed by a senior priest, called a *Lama*, who bore a box, containing books of their form of prayer, and some favourite idols. Next nine sumptuary horses were led, loaded with the *Lamas* apparel; after which came the priests immediately attached to the *Lama's* person for the performance of daily offices in the Temple, amounting to about 700; following them were two men, each carrying on his shoulder a large cylindrical gold insignium, embossed with emblematical figures, (a gift from the Emperor of China.) The *Duhunnicks* and *Soopoons*, who were employed in communicating addresses, and distributing alms, immediately preceded the *Lamas* bier, which was covered with a gaudy canopy, and borne by eight of the fifteen *Chinese* appointed for this service. On one side of the bier attended the Regent, on the other the *Lama's* Father. It was followed by the heads of the different monasteries; and as the procession advanced, the priests who formed the street fell in in the rear, and brought up the suite, which moved at an extremely slow pace, and about noon was received within the confines of the Monastery, amidst an amazing display of colours, the acclamations of the crowd, solemn music, and the chanting of their priests.

The *Lama* being safely lodged in the Palace, the Regent and *Soopoon Choomboo* went out, as is a customary compliment paid to visitors of high rank on their near approach, to meet and conduct *Dalai Lama* and the Viceroy of *Laffa*, who were on the way to *Teefhoo foomboo*. Their retinues encountered the following morning at the foot of *Pamom* Castle, and the next day together entered the Monastery of *Teefhoo Loomboo*, in which both *Dalai Lama* and the Viceroy were accommodated during their stay.

The following morning, which was the third after *Teefhoo Lama's* arrival, he was carried to the great Temple, and about noon seated upon the throne of his progenitors; at which time the Emperor's Ambaffador delivered his diploma, and placed the presents with which he had been charged at the *Lama's* feet.

The three next ensuing days *Dalai Lama* met *Teejhoo Lama* in the Temple, where they were assisted by all the priests in the invocation and public worship of their Gods. The rites then performed completed, as I understand, the business of inauguration. During this interval, all who were at the capital were entertained at the public expence, and alms were distributed without reserve. In conformity likewise to previous notice, circulated every where for the same space of time, universal rejoicings prevailed throughout Tibet. Banners were unfurled on all their fortresses, the peasantry filled up the day with music and festivity, and the night was celebrated by general illuminations, A long period was afterwards employed in making presents and public entertainments to the newly inducted *Lama*, who, at the time of his accession to the Musnud, or (if I may use the term) Pontificate, of *Teefhoo Loomboo*, was not three years of age. The ceremony was begun by *Dalai Lama*, whose offerings are said to have amounted to a greater value, and his public entertainments to have been more splendid, than the rest. The second day was dedicated to the Viceroy of *Laffa*. The third to the *Chinese* General. Then followed the Culoong or Magistrates of *Laffa*, and the rest of the principal persons who had accompanied *Dalai Lama*. After which the Regent of *Teejhoo Loomboo*, and all that were dependent on that government, were severally admitted, according to pre-eminence of rank, to pay their tributes of obeisance and respect. As soon as the acknowledgments of all those were received who were admis-

fible to the privilege, *Teefhoo Lama* made, in the fame order, fuitable returns to each, and the confummation lafted forty days.

Many importunities were ufed with *Dalai Lama* to prolong his ftay at *Teefhoo Loomboo*, but he excufed himfelf from incumbering the capital any longer with fo numerous a concourfe of people as attended on his movements, and deeming it expedient to make his abfence as fhort as poffible from the feat of his authority, at the expiration of forty days he withdrew with all his fuite to *Laffa*, and the Emperor's Ambaffador received his difmiffion to return to *China*: and thus terminated this famous feftival.

With refpect to the lately eftablifhed commercial intercourfe, *Poorungeer* informs me, that though fo early, he found himfelf not the firft perfon who had arrived at *Teefhoo Loomboo* from *Bengal*. Many merchants had already brought their commodities to market, and others followed before he left it. He heard from no quarter any complaint of impediment or lofs, and concludes, therefore, that all adventurers met the fame eafy accefs and ready aid, as he himfelf had every where experienced. The markets are well flocked with *Englifh* and *Indian* articles, yet not in fo great a degree as to lower the value of commodities below the prices of the two or three laft preceding years. Bullion was fomewhat reduced in worth in comparifon with the year 1783. A pootree, or bulfe of gold duft, the fame quantity that then fold for twenty-one indermillees, waft procurable of a purer quality for nineteen and twenty indermillees. A talent of filver, which waa theft 500, was 450 indermillees; fo that the exchange was much in favor of the trader.

Poorungeer,

Poorungee, during his residence at *Teefhoo Loomhoo*, had very frequent interviews with the Regent and the Ministers, and assures me, he found the heartiest dispositions in them to encourage the commercial intercourse established under the auspices of the late Governor-General, whose departure, however, the Regent regretted, as the loss of the first friend and ally he became connected with, of, I believe it may be said, any foreign nation; in whom was acknowledged also the original means of opening the communication, and of commencing a correspondence, between the Governments of *Bengal* and *Tibet*; and although it may be observed that, in consequence of his having, from the beginning, been used exclusively to address himself to, and acknowledge alone the agents of, Mr. *Haftings*, his attachments to the *English* nation had grown not without a great degree of personality; yet, free from an unworthy capriciousness of temper, he descended not to take advantage of the opening offered by his friend's departure to close the new connection. For such was the respect he had learnt to entertain for our national integrity of character, that, under the apparent conviction our views tended to no scheme of ambition, but were confined merely to objects of utility and curiosity, *Poorungee* assures me, he expressed an anxious desire for continuing with the succeeding Governor-General, the exercise of those offices of friendship so long supported by his predecessor; and in the hope that his would be met with equal wishes, determined to invite you to join him in preserving the same intercourse of commerce and correspondence, so essentially calculated for the benefit of both countries. In consequence of which, the *Lama* and the Regent addressed the letters *Poorungter* had the honour to deliver to you; translations of which having, in obedience to your directions, been applied for to your *Persian* translator, | now subjoin them,

Copy of a Letter from TEESHOO LAMA.

" God be praifed that the fituation of thefe countries
 " is in peace and happinefs, and I am always praying
 " at the altar of the Almighty for your health and pre-
 " fervation. This is not unknown : you are certainly
 " employed in protecting and affifting the whole world,
 " and you promote the good and happinefs of mankind,
 " We have made no deviation from the union and una-
 " nimity which exifted during the time of the firft of
 " nobles, Mr. *Haftings*, and the deceafed *Lama* ; **and**
 " may you alfo grant friendfhip to thefe countries, **and**
 " always make me happy with the news of your health,
 " which will be the caufe of eafe to my heart, and con-
 " firmation to my foul. At this time, as friendly offer-
 " ings of union and unanimity, I fend one handker-
 " chief, one ketoo of filver, and one piece of cochin,
 " Let them be accepted."

From the RAJAH of Teettioo Loomboo.

" God be praifed that the fituation of thefe countries,
 " is in peace and happinefs, and I am always praying
 " at the altar of the Almighty for your health and pre-
 " fervation. This is not unknown : I am conftantly
 " employed in promoting the advantage of the fubjects
 " and the fervice of the newly-feated *Lama*, becaufe
 " the newly-feated *Lama* is not diftinct from the de-
 " ceafed *Lama*, and the light of his countenance is
 " exalted. Grant your friendfhip to *Poorungeer Gof-*
 " feyn.

" Maintain union, and unanimity, and affection, like
 " the firft of nobles, and every day make **me happy**
 " with the news of your health **and profferity** : **and**
 " **bellow** favors like the firft of nobles, and make me
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" happy with letters, which are caufes of confolation.
 " At this time, as friendly offerings of union, and
 " affection, and unanimity, I fend one handkerchief,
 " three tolah of gold, and one piece of cochin. Let
 " them be accepted."

Poorungeeri having received thefe difpatches in the beginning of October, after a refidence of five months at *Teefhoo Loomboo*, took leave of the *Lama* and the Regent, and fet out on his return by the fame route he came to *Bengal*. The weather at this feafon of the year being moft extremely favorable for travelling, he experienced no delay or interruption in the courfe of his journey thorough *Tibet* and *Bootan*, but arrived at *Rungpore* early in December, whence he proceeded as expeditioufly as poffible to the Prefidency ; where, to his great mortification and concern, he finds, upon his arrival, his affairs involved in great diftreffes ; the little territory his adopted Chela was left in charge of, having, during his abfence, been violently invaded by *Raaj Chund*, a neighbouring Zemeendar, and to the amount of fifty begas forcibly taken Out of his hands. Prevailed on by his earneft repeated follicitations, I am induced to fay for him, that in your juftice and favor Ire his only hopes of relief from his embarraffments; and he humbly fupplicates your proteftion in reftoring and fecuring him in the poffeffion of his invaded right. The liberty of this intercettion, I am confident to think, would be forgiven, were it not in favor of one who has rendered to this Government various ufeul fervices ; hut as, though of trivial importance, it affords an authentic inftance of the encroaching difpofition of inferior Zemeendars. Yet another circumftance it may not be improper to point out. The ground alluded to fa a part of the land fituated upon the weftern bank of the river oppofe Calcutta, that was formerly granted Wider a Sunnud of this Government to *Teefhoo Lamo*

for the foundation of a temple of worfhip. and as a refort for fuch pilgrims of their nation as might occasionally make vifits to the confecrated Ganges,

Having, in conformity to your defires, done my beft endeavours literally to tranflate all the information *Poorungeer* could give me, I have new only to apologize for the prolixity of the account, which I have been induced to be particularly minute in, as I conceived every circumftance, however trivial, might be in fome degree interefting, that tends to illuftrate any trait in the national chara6ler of a people we are but recently become acquainted with, and with whom, in its extended views, it has been an object of this Government to obtain a clofer alliance.

I will not now prefume to intrude longer on your time, by adding any obfervations on conjectures deducible from the elevated importance your young ally feems rifing to, in confequence of the fignal refpect paid him by the moft exalted political characters known to his nation ; but beg leave to repeat, that it is with infinite fatisfaftion I learn from the reports of *Poorungeer*, the flourifhing ftate of the lately projected fcheme of trade, to promote which, he affures me, not any thing had been wanting in facility of intercourfe; that the adventurers who had inverted their property, had experienced perfect fecurity in conducting their commerce, carried their articles to an exceeding good market, and found the rate of exchange materially in their favor.

Thofe advantages authorize the inference, that it will no doubt encourage more extenfive enterprize; and permit me to add, I derive a confidence from the fuccefs of this infartt effay, that infpires me with the ftrongeft

hopes, that the commiflion which your Honorable **Board** was pieafed to commit to my charge, will eventually be productive of eflential benefits to the political **and** commercial interefts of the Company.

I have the honor to be,

HONORABLE SIR,

With the greateft refpect,

Your molt obedient, faithful,

And moft humble Servant,

SAMUEL TURNER

Calcutta, February 8th, 1786.

IX.

ON THE GODS

OF

GREECE, ITALY, AND INDIA,

WRITTEN IN 1784.

And since revifed by the Prefident.

WE cannot juftly conclude, by arguments preceding the proof of facts, that one idolatrous people muft have borrowed their deities, rites, and tenets from another; fince Gods of all fhapes and dimenfions may be framed by the boundlefs powers of imagination, or by the frauds and follies of men, in countries never connected; but when features of refemblance, too ftrong to have been accidental, are obfervable in different fyftems of polytheifm, without fancy or prejudice to color them, and improve the likenefs, we can fcarce help believing, that fome connexion has immemorially fubfifted between the feveral nations who have adopted them. It is my defign, in this Effay, to point out fuch a refemblance between the popular worfhip of the old *Greeks* and *Italians* and that of the *Hindus*. Nor can there be room to doubt of a great fimilarity between their ftrange religions and that of *Egypt*, *China*, *Perfia*, *Phrygia*, *Phoenicia*, *Syria*; to which, perhaps, we may fafely add, fome of the fouthern kingdoms, and even iflands of *America*: while the *Gothic* fyftem, which prevailed in the northern regions of *Europe*, was not merely fimilar to thofe of *Greece* and *Italy*, but almoft the fame, in another drefs, with an embroidery of images apparently *Afiatick*. From all this, if it be fatisfactorily proved, we may infer a general union or affinity between the moft diftinguifhed

distinguished inhabitants of the primitive world, at the time when they deviated, as they did too early deviate, from the rational adoration of the only true God.

There seem to have been four principal Sources of all mythology. I. Historical or natural truth has been perverted into fable by ignorance, imagination, flattery, or stupidity; as a king of *Crete*, whose tomb had been discovered in that island, was conceived to have been the God of *Olympus*; and *Minos*, a legislator of that country, to have been his son, and to hold a supreme appellate jurisdiction over departed souls; hence too probably flowed the tale of *Cadmus*, as *Bochart* learnedly, traces it; hence beacons or volcanos became one-eyed giants, and monsters vomiting flames; and two rocks, from their appearance to mariners in certain positions, were supposed to crush all vessels attempting to pass between them; of which idle fictions many other instances might be collected from the *Odyssey*, and the various *Argonautick* poems. The less we say of *Julian* fables, deifications of princes or warriors, altars raised, with those of *Apollo*, to the basest of men, and divine titles bellowed, on such wretches as *Caius Octavianus*, the less we shall expose the infamy of grave senators and fine poets, or the brutal folly of the low multitude: but we may be assured, that the mad apotheosis of truly great men, or of little men falsely called great, has been the origin of gross idolatrous errors in every part of the Pagan world. II. The next source of them appears to have been a wild admiration of the heavenly bodies, and, after a time, the systems and calculations of astronomers; hence came a considerable portion of *Egyptian* and *Grecian* fable; the *Sabian* worship in *Arabia*; the *Persian* types and emblems of *Mihr*, or the Sun; and the far extended adoration of the elements and the powers of nature; and hence, perhaps, all the artificial Chronology of the *Chinese* and *Indians*, with the invention of demi-gods and heroes to fill the vacant niches in their extravagant and imaginary periods. III. Num-
berless

borlefs divinities have been created folely by the magick of poetry, whofe effential bufinefs it is to perfonify the njoft abftraft notions, and to place a Nymph or a Genius in every grove, and almoft in every flower ; hence *Hygieia* and *Jafo*, Health and Remedy, are the poetical daughters of *Æfculapim*, who was either a diftinguifhed phy fician, or medical fkill perfonified; and hence *Chloris*, or verdure, is married to the *Zephyr*. IV. The metaphors and allegories of moralifts and metaphyficians, have been alfo very fertile in deities ; of which a thoufand examples might be adduced from *Plato*, *Cicero*, and the inventive commentators or* *Homer*, in their pedigrees of the Gods, and their fabulous leffons of morality. The richeft and nobleft fteam from this abundant fountain, is the charming philofophical tale of *Pfyche*, or *the Progreffs of the Soul*; than which, to my tafte, a more beautiful, fublime, and well-fupported allegory was never produced by the wifdom and ingenuity of man. Hence alfo the Indian *Maya*, or, as the word is explained by fome *Hindoo* fcholars, " *the firft Inclination of the Godhead to diverfify himfelf*" (fuch, is their phrafe) " *by creating Worlds*," is feigned to be the Mother of univerfal Nature, and of all the inferior Gods; as a *Cafhmirian* informed me, when I afked him, why *Cama*, or *Love*, was reprefented as her Son : but the word *Maya*, or *Delufion*, has a more fubtle and recondite fenfe in the *Vedanta* philofophy, where it fignifies the fyftem of *perceptions*, whether of fecondary or primary qualities, which the Deity was believed by *Epicharmus*, *Plato*, and many truly pious men, to raife by his omniprcfent fpirit in the minds of his creatures; but which had not, in their opinion, any exiftence independent of mind.

In drawing a parallel between the Gods of the *Indian* and *European* Heathens, from whatever fource they were derived, I fhall remember, that nothing is left favorable to inquiries after truth than a fyftemtical fpirit and fhall call to mind the faying of a *Hindoo* writer, " that

" that whoever obftinately adheres to any fet of opini-
 " ons, may bring himfelf to believe that the freftieft fan-
 " dal-wood is a flame of fire." This will effectually
 prevent me from infifting, that fuch a God of *Indi* was
 the *Jupiter* of *Greece*; fuch, the *Apollo*; fuch, the
Mercury. In faft, fince all the caufes of polytheifna
 contributed largely to the affemblage of *Grecian* Divi-
 nities, (though *Bacon* reduces them ail to refined alle-
 gories, and *Newtontoa* poetical difguife of truehiftry,) we find many *Joves*, many *Apollos*, many *Mercuries*,
 with diftinct attributes and capacities: nor fhall I pre-
 fume to fuggeft more, than that, in one capacity or
 another, there exifts a ftriking fimilitude between the
 chief objects of worfhip in ancient *Greece* or *Italy*,
 and in the very interefting country which we now in-
 habit.

The comparifon, which I proceed to lay before you,
 muft needs be very fuperficial; partly from my fhort
 refidence in *Hindufian*, and partly from my want of
 complete leifure for literary amufements; but princi-
 pally becaufe I have no *European* book to refreih my
 memory of old fables, except the conceited, though not
 unlearned, work of *Pomey*, entitled the *Pantheon*, and
 that fo miferably tranflated, that it can hardly be read
 with patience. A thoufand more ftrokes of refemblance
 might, I am fure, be collected by any one who fhould
 with that view perufe *Heji*od, *Hyginus*, *Cornutus*, and
 the other mythologifts; or, which would be a fhotter
 and a pleafanter way, fhould be fatisfied with the very
 elegant *Syntagmata* of *Lilius Giraldus*.

Difquifitions concerning the manners and conduft; of
 our fpecies in early times, or indeed at any time, are
 always curious at leaft, and amufing; but they are highly
 intereftirtg to fuch as can fay of themfelves with *Chreines*
in the play, " We are men, and take an intereft in

"all

" all that relates to mankind." They may even be of solid importance in an age when some intelligent and virtuous persons are inclined to doubt the authenticity of the accounts delivered by *Moses* concerning the primitive world; since no modes or sources of reasoning can be unimportant, which have a tendency to remove such doubts. Either the first eleven chapters of *Genesis* (all due allowances being made for a figurative eastern style) are true, or the whole fabric of our national religion is false; a conclusion which none of us, I trust, would wish to be drawn. I, who cannot help believing the divinity of the *Messiah*, from the undisputed antiquity and manifest completion of many prophecies, especially those of *Isaiah*, in the only person recorded by history to whom they are applicable, am obliged, of course, to believe the sanctity of the venerable books to which that sacred person refers as genuine : but it is not the truth of our national religion, as such, that I have at heart; it is truth itself; and if any cool, unbiassed reasoner will clearly convince me, that *Moses* drew his narrative through *Egyptian* conduits from the primeval fountains of *Indian* literature, I shall esteem him as a friend for having weaned my mind from a capital error, and promise to stand among the foremost in assisting to circulate the truth which he has ascertained. After such a declaration, I cannot but persuade myself, that no candid man will be displeased, if, in the course of my work, I make as free with any arguments that he may have advanced, as I should really desire him to do with any of mine that he may be disposed to controvert. Having no system of my own to maintain, I shall not pursue a very regular method, but I shall take all the Gods, of whom I discourse, as they happen to present themselves; beginning, however, like the *Romans* and the *Hindus*, with *Janus* or *Ganesh*.

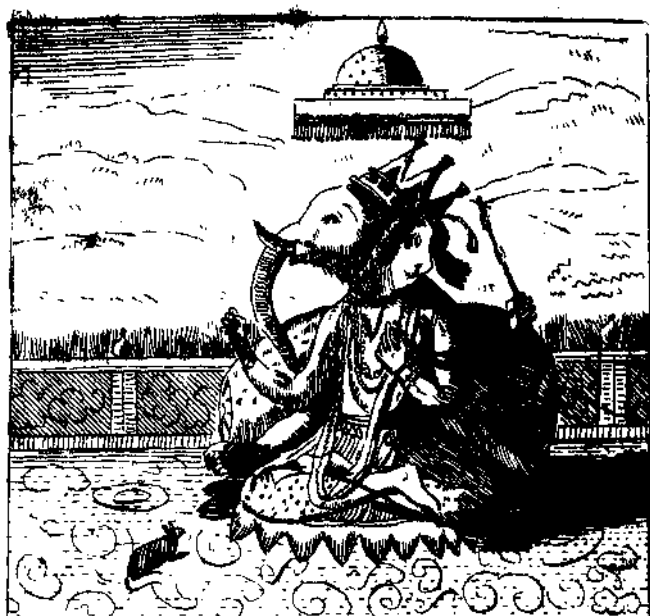
The titles and attributes of this old *Italian* deity are fully comprised in two choriambick verses of *Sulpitius*,
and

and a further account of him from *Ovid* would here be superfluous :

Jane pater, *Jane* tuens, dive biceps, biformis,
O cate rerum fator, O principium deorum!

" Father *Janus*, all-beholding *Janus*, thou divinity
" with two heads, and with two forms ; O fagacious
" planter of all things, and leader of deities!"

He was the God, we see, of *Wifdom*; whence he is represented on coins with *two*, and, on the *Hetrufcan* image found at *Falifci*, with four, faces; emblems of prudence and circumfpection: thus is *Ganefa*, the God of *Wifdom* in *Hinduftan*, painted with an *Elephant's* head, the fymbol of fagacious difcernment, and attended by a favourite *rat*, which the *Indians* confider as a wife and provident animal. His next great character (the plentiful fource of many fuperftitious ufages) was that from which he is emphatically ftyled *the father*, and which the fecond verfe before cited more fully expreffes, *the origin and founder of all things*. Whence this notion arofe, unlefs from a tradition that he firft built fhripes, raifed altars, and intituted facrifices, it is not eafy to conjecture; hence it came, however, that his name was invoked before any other God; that, in the old facred rites, com, and wine, and, in later times, incenfe alfo, were firft offered to *Janus*; that the *doors* or *entrances* to private houfes were called *Januce*; and any pervious paffage, or thoroughfare, in the plural number, *Jani*, or *with two beginnings*; that he was represented holding a rod, as guardian of ways, and a key, as *opening* not gates only, but *all important works and affairs* of mankind; that he was thought to prefide over the morning, or *beginning of day*; that, although the *Roman* year began regularly



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regularly with *March*, yet the eleventh month, named *Januarius*, was confidered as *firft* of the twelve, whence the whole year was fuppofed to be under his guidance, and opened with great folemnity by the confuls inaugurated in his fane, where his ftatue was decorated on that occafion with frefh laurel; and, for the fame reafon, a folemn denunciation of war, than which there can hardly be a more momentous national aft, was made by the military conful's opening the gates of his temple with all the pomp of his magiftracy. The twelve altars and twelve chapels of *Janus* might either denote, according to the general opinion, that he leads and governs twelve months, or that, as he fays of himfelf in *Ovid*, all entrance and accefs muft be made through him to the principal Gods, who were, to a proverb, of the fame number. We may add, that *Janus* was imagined to prefide over infants at their birth, on the *beginning* of life.

The Indian Divinity hasprecifely the famecharafter: all facrifices and religious ceremonies, all addrefles even to fuperior Gods, all ferious compofitions in writing, and all worldly affairs of moment, are begun by pious *Hindus* wiith zn invocation of *Ganefa*; a word compofed of *ifa*, the *governor* or *leader*, and *gana*, or a *company* of deities, *nine* of which companies are enumerated in the *Amarcofh*. Infiancesof opening bufinefsaufpicioufly by an ejaculation to the *Janus of India* (if the lines of rpfeemblance here traced will juftify me in fo calling him) might be multiplied with eafe. Few books are begun without the words "*falutacion to Gancs*;" and he is firft invoked by the *Brdhmans*, who conduft the trial by ordeal, or perform the ceremony of the *homa*, or facrifice to fire. M. *Sonnerat* reprefents him as highly revered on the coaft of *Coromandel*;" where the *Indians*? he fays, "wouldnoton any account build ahoufe, with*
" out having placed on the ground an image of this
" deity,

" deity, which they fprinkle with oil, and adorn every
 " day with flowers: they fet up his figure in all their
 " temples, in the ftreets, in the high roads, and in open
 " plains at the foot of fome tree; fo that perfons of all
 " ranks may invoke him, before they undertake any
 " bufinefs; and travellers worfhip him, before they pro-
 " ceed on their journey." To this I may add, from my
 own obfervation, that in the commodious and ufe-
 ful town which now rifes at *Dharmdranya* or *Gayd*, under
 the aufpices of the active and benevolent *Thomas Law*,
Efq. collector of *Rotas*, every new-built houfe, agree-
 ably to an immemorial Ufage of the *Hindus*, has the
 name of *Ganefa* fuperfcribed on its door; and in the
 old town, his image is placed over the gates of the
 temples.

We come now to *Saturn*, the oldeft of, the Pagan
 Gods, of whose office and aftions much is recorded.
 The jargon of his being the fon of Earth and Heaven,
 who was the fon of the Sky and the Day, is purely a
 confeffion of ignorance who were his parents, or who
 his predeceffors; and there appears more fenfe in the
 tradition faid to be mentioned by the inquisitive and
 well-informed *Plato*, " that both *Saturn*, or *Time*, and
 " his confort *Cybele*, or the *Earth*, together with their
 " attendants, were the children of *Ocean* and *Thetis* ;
 " or, in lefs poetical language, fprang from the waters of
 " the great deep." *Ceres*, the goddefs of harvefts, was,
 it feems, their daughter; and *Virgil* defcribes " the
 " mother and nurfe of all as crowned with turrets, in
 " a car drawn by lions, and exulting in her hundred
 " grandfons, all divine, all inhabiting fplendid celek
 " tial manfions." As the God of Time, or rather as
Tims itfelf perfonified, *Saturn* was ufually painted by
 the heathens holding a fcythe in one hand, and, in the
 other, a fnake with its tail in its mouth, the fymbol of
 perpetual cycles and revolutions of ages: he was often
 reprefented

represented in the act of devouring years, in the form of children; and sometimes encircled by the seasons, appearing like boys and girls. By the *Latins* he was named *Saturnus* : and the most ingenious etymology of that word is given by *Festus* the grammarian, who traces it, by a learned analogy to many similar names, *d fate*, from planting; because, when he reigned in *Italy*, he introduced and improved agriculture : but his distinguishing character, which explains, indeed, all his other titles and functions, was expressed allegorically by the stern of a ship or galley on the reverse of his ancient coins; for which *Ovid* assigns a very unsatisfactory reason, " because the divine stranger arrived " in a ship on the *Italian* coast;" as if he could have been expected on horseback, or hovering through the air.

The account, quoted by *Pomey* from *Alexander Polyhistor*, casts a clearer light, if it really came from genuine antiquity, on the whole tale of *Saturn*; " that he " predicted an extraordinary fall of rain, and ordered " the construction of a vessel, in which it was necessary " to secure men, beads, birds, and reptiles, from a general inundation,"

Now it seems not easy to take a cool review of all these testimonies concerning the birth, kindred, offspring, character, occupations, and entire life, of *Saturn*, without assenting to the opinion of *Bochart*, or admitting it at least to be highly probable, that the fable was raised on the true history of *Noah*; from whose flood a new period of time was computed, and a new series of ages may be said to have sprung; who rose fresh, and, as it were, newly born from the waves; whose wife was, in fact, the universal mother; and, that the earth might soon be repopled, was early blessed with numerous and flourishing

flourishing defcendants: if we produce, therefore,, an *Indian* king of divine birth, eminent for his piety and beneficence, whofe ftory feems evidently to be that of Noah difguifed by *Afiatick* fiction, we may fafely offer a conjecture, that he was alfo the fame perfonage with *Saturn*. This was *Menu*, or *Satyavrata*, whofe patronymick name was *Vaivafwata*, or Child of the *Sun* : and whom the *Indians* not only believed to have feigned *tovei* the whole world in the earlieft age of their chronology, but to have relided in the country of *Dravira*, on the coaft of the Eaftern *Indian* Peninfula: the following narrative of the principal event in his life I have literally tranflated from the *Bhdgovat*; and it is the fubjeft of the f[^]rft *Puranci*) entitled that of the *Matfya*, or *Fifh*

" Defiring the prefervation of herds, and of Brahmans,
 " of genii, and virtuous men, of the *Vedas*, of law, and
 " of precious things, the Lord of the Univerfe affurriefc
 " many bodily fhapes ; but though he pervades, like
 " the air, a variety of beings, yet he is himfelf unva-
 " ried, fince he has no quality fubjeft to change. At
 " the clofe of the laft *Calpa*, there was a general de-
 " ftruftion occafioned by the fleep of *Brahma* ; whence
 " his creatures in different worlds were drowned in a
 " vaft ocean, *Brahma*, being inclined to {lumber, de-
 " firing a repofe after a lapfe of ages, the ftrong demon
 " *Hayagriva* came near him, and ftole the *Vedas*, which
 " had flowed from his lips. When *Heri*, the Prefervfir
 " of the Univerfe, difcovered this deed of the Prince of
 " *Danavas*, he took the fhape of a minute fifh, called
 " *fafhari*. A holy king, named *Satyavfata*, them
 " reigned; a fervant of the fpirit, which moved on the
 " waves, and fo devout, that water was his only fufte-
 " nance. He was the child of the Sun, and, in the
 " pre fent *Calpa*, is invefted by *Naruyan* in the office of
 " *Menu*, by the name of *Sraddhadiva*, or the God of
 " Obfequies. One dny, as he was making a libation ti
 " the

" the river *Critamala*, and held water in the palm of his hand, he perceived a small fish moving in it. The king of *Dravira* immediately dropped the fish into the river, together with the water which he had taken from it; when the *fap'hari* thus pathetically addressed the benevolent monarch : " How canst thou, O king, who shewest affection to the oppressed, leave me in this river-water, where I am too weak to resist the monsters of the stream, who fill me with dread ?" He, not knowing who had assumed the form of a fish, applied his mind to the preservation of the *fap'hari*, both from good-nature, and from regard to his own foul; and, having heard its very suppliant address, he kindly placed it under his protection in a small vase full of water; but, in a single night, its bulk was so increased, that it could not be contained in the jar, and thus again addressed the illustrious Prince : " I am not pleased with living miserably in this little vase, make me a large mansion, where I may dwell in comfort." The king, removing it thence, placed it in the water of a cistern; but it grew three cubits in less than fifty minutes, and said, " O king, it pleases me not to stay vainly in this narrow cistern : since thou hast granted me an asylum, give me a spacious habitation." He then removed it, and placed it in a pool, where, having ample space around its body, it became a fish of considerable size. " This abode, O king, is not convenient for me, who must swim at large in the waters : exert thyself for my safety; and remove me to a deep lake." Thus addressed, the pious monarch threw the suppliant into a lake, and, when it grew of equal bulk with that piece of water, he cast the vast fish into the sea. When the fish was thrown into the waves, he thus again spoke to *Satyavrata*: " Here the horned sharks, and other monsters of great strength* will devour me; thou shouldest not, O valiant man, leave me in this ocean." Thus repeatedly deluded by the fish, who hid addressed him with gentle words, the king said, " Who art thou, that beguilest me in"

that

" that aflurnedfhape? Never before have I feen or heard
 " of fo prodigious an inhabitant of the waters, who,
 " like thee, haft filled up, in a fingle day, a lake an
 " hundred leagues in circumference. Surely, thou art
 " *Bhdgavat*, who appeared before me; the great *Heri*,
 " whose dwelling was on the waves; and who now, in
 " compaflion to thy fervants, beareft the form of the
 " natives of the deep. Salutation and praife to thee, O
 " firft male, the lord of creation, of prefervation, of
 " deftruftion ! Thou art the higheft object, O fupreme
 " ruler, of us thy adorers, who piously feek thee. Ail
 " thy delufive defcents in this world give exiftence to
 " various beings: yet I am anxious to know for what
 " caufe that fliape has been affumed by thee. Let me
 " not, O lotos-eyed, approach in vain the feet of a
 " deity, whose perfeft benevolence has been extended
 " to all; when thou haft fhown us, to our amazement*
 " the appearance of other bodies, not in reality exifting,
 " but fucceffively exhibited." The Lord of the Univerfe,
 " loving the pious man, who thus implored him, and
 " intending to preferve him from the fea of deftru&ion,
 " caufed by the depravity of the age, thus told him how
 " he was to ad. " In feven days from the prefent time,
 " O though tamer of enemies, the three worlds will be
 " plunged in an ocean of death; but, in the midft of
 " the deftroying waves, a large veffel, fent by me for
 " thy ufe, fhall ftand before thee. Then fhalt thou take
 " Ai medicinal herbs, all the variety of feeds; and
 " accompanied by feven faints, encircled by pairs of all
 " brute animals, thou fhalt enter the fpacious ark, and
 " continue in it, fecure from the flood, on one immenfe
 " ocean without light, except the radiance of thy holy
 " companions. When the fhipe fhall be agitated by an
 " impetuous wind, thou fhalt faften it with a large fea-
 " ferpent on my horn; for I will be near thee, draw-
 " ing the veflei, with thee and thy attendants. I will
 " remain on the ocean, O chief of men, until a night
 " of *Brahma* fhall be completely ended. Thou (haft
 " then

" then know my true greatness, rightly named the Supreme Godhead: by my favour, all thy questions shall be answered, and thy mind abundantly instructed,"

" *Heri*, having thus directed the monarch, disappeared, and *Satyavrata*. humbly waited for the time which the ruler of our senses had appointed. The pious king, having scattered toward the east the pointed blades of the grass *darbha*, and turning his face toward the north, sat meditating on the feet of the God who had borne the form of a fish. The sea, overwhelming its shores, deluged the whole earth; and it was soon perceived to be augmented by showers from immense clouds. He, still meditating on the command of *Bhagavat*, saw the vessel advancing, and entered it with the chiefs of *Brahmans*, having carried into it the medicinal creepers, and conformed to the directions of *Htru*. The faints thus addressed him: O king, meditate on *Cakava*; who will, surely, deliver us from this danger, and grant us prosperity."

" The God, being invoked by the monarch, appeared again distinctly on the vast ocean in the form of a fish, blazing like gold, extending a million of leagues, with one stupendous horn; on which the king, as he had before been commanded by *Heri*, tied the ship with a cable made of a vast serpent, and, happy in his preference, stood praising the destroyer of *Madhu*. When the monarch had finished his hymn, the primeval male, *Bhagavat*, who watched for his safety on the greater expanse of water, (spoke aloud to his own divine essence, pronouncing a sacred *Purdna*, which contained the rules of the *Sanc'hya* philosophy: but it was an infinite mystery to be concealed within the breast of *Satyavrata*; who, sitting in the vessel with the faints, heard the principle of the soul, the External Being, proclaimed by the preferring power. Then *Heri*, rising together with *Brahma*, from the destructive deluge, which was abated, slew the demon *Hayagriva*, and recovered the sacred books, *Satyavrata*, instructed

" in all divine and human knowledge, was appointed
 "in the present *Calpa*, by the favour of *Vishnu*, the
 "seventh *Menu*, furnished *Vaivafwata* : but the ap-
 "pearance of a horned fish to the religious monarch
 "was *Maya*, or delusion; and he who shall devoutly
 "hear this important allegorical narrative, will be de-
 "livered from the bondage of sin."

This 'epitome of the first *Indian* history that is now
 extant, appears to me very curious and very important;
 for the story, though whimsically dressed up in the form
 of an allegory, seems to prove a primeval tradition in
 this country of the *universal deluge* described by *MOSES*,
 and fixes consequently the *time* when the genuine *Hindu*
 chronology actually begins. We find, it is true, in the
Puran, from which the narrative is extracted; *another*
deluge, Which happened towards the close of the *third*
 age, when *Yudhisthir* was labouring under the perfect
 tion of his inveterate foe *Duryodhan*; and when *Christi-*
nit, Who had recently become incarnate for the purpose
 of succouring the pious, and destroying the wicked,
 was performing wonders in the country of *Mat'hura*;
 but the second flood was merely *local*, and intended
 Only to affect the people of *Vraja*: they, it seems, had
 offended *Indra*, the God of the firmament, by their
 enthusiastic adoration of the wonderful child, " who
 " lifted up the mountain *Goverdhen*, as if it; had been
 " a flower; and, by flickering all the herdsmen and
 " shepherds from the storm, convinced *Indra* of
 " his petnacy."

That the *Salya*, or (if we may venture to call it)
 the *Saurantan* age was, in truth, the age of the *general*
 flood, Will appear from a close examination of the tea
Avatars, or descents of the deity, in his capacity of pre-
 server; since of the four, Which are declared to have
 happened in the *Satya yug*, the *three first* apparently
 relate to some stupendous convulsion of our globe from
 the

the fountains of the deep 5 and the fourth exhibits the miraculous punishment of pride and impiety, First, as we have shown, there was, in the opinion of the *Hindus*,) an interposition of Providence to preserve a devout person and his family (for all the *Pundits* agree, that his wife, though not named, must be understood to have been laved with him) from an inundation, by which all the wicked, were destroyed: next, the power of the deity descends in the form of a *boar*, the symbol of strength, to draw up and support on his tusks the whole earth, which had been sunk beneath the ocean; thirdly, the same power is represented as a *tortoise* sustaining the globe, which had been convulsed by the violent faults of demons; while the Gods churned the sea with the mountain *Mandar*, and forced it to disgorge the sacred things and animals, together with the water of life; which it had swallowed. These three stories relate, I think, to the same event, shadowed by a moral, a metaphysical, and an astronomical, allegory: and all three seem connected with the hieroglyphical sculptures of the old *Egyptians*, The fourth *Avatar* was a *lion* issuing from a bursting column of marble to devour a blaspheming monarch, who would otherwise have slain his religious Son; and of the remaining fix, not one has the least relation to a deluge. The three which are ascribed to the *Treta yug*, when tyranny and irreligion are said to have been introduced, were ordained for the overthrow of tyrants, or their natural types, giants with a thousand arms, formed for the most extensive oppression: and, in the *Dwapar yug*, the incarnation of *Crishna* was partly for a similar purpose, and partly with a view to thin the world of unjust and impious men, who had multiplied in that age, and began to swarm on the approach of the *Cali yug*, or the age of *intention* and *bajanees*, As to *Buddha*, he seems to have been a reformer of the doctrines contained in the *Vedas*; and though his good-nature led him to censure those ancient books, because they enjoined sacrifices of

cattle, yet he is admitted as the ninth *Avatar* even by the *Brahmans* of *Casi*, and his praises are sung by the poet *Jayadeva* : his character is in many respects very extraordinary; but, as an account of it belongs rather to history than to mythology, it is reserved for another dissertation. The tenth *Avatar*, we are told, is yet to come, and is expected to appear mounted (like the crowned conqueror in the *Apocalypse*) on a white horse, with a cimeter blazing like a comet, to mow down all incorrigible and impenitent offenders who shall then be on earth.

These four *Yugs* have so apparent an affinity with the *Grecian* and *Roman* ages, that one origin may be naturally assigned to both systems. The first in both is distinguished as abounding in *gold*, though *Satya* means *truth* and *probity*, which were found, if ever, in the times immediately following so tremendous an exertion of the Divine Power as the definition of mankind by a general deluge: the next is characterized by *silver* : and the third by *copper*: though their usual names allude to proportions imagined in each between vice and virtue. The present, or *earthen*, age seems more properly discriminated than by *iron*, is in ancient *Europe*; since that metal is not baser, or less useful, though more common, in our times, and consequently less precious than copper; while mere *earth* conveys an idea of the lowest degradation. We may here observe, that the true History of the World seems obviously divisible into four ages or periods; which may be called, first the *Diluvian*, or purest age; namely, the times preceding the deluge, and those succeeding it till the mad introduction of idolatry at *Babel*: next, the *Patriarchal*, or pure, age; in which, indeed, there were mighty hunters of hearts and of men, from the rise of patriarchs in the* family of Sem, to the simultaneous

OUS,

ous eftablifhment of great empires by the defcendams of his brother *Ham* : thirdly; the *Mofaick*, of *lefs* pure, age ; from the legation of *Mofes*, and during the time when his ordinances were comparatively well obferved and uncorrupted: laftly, *the prophetical or impure, age*, beginning with the vehement warnings given by the prophets to apoftate kings and degenerate nations but flill fubfifting, and to fubfift, until all genuine prophecies fhall be fully accomplished. The duration of the hiftorical ages muft needs be very unequal and disproportionate ; while that of the *Indian Yugs* is difpofed fo regularly and artificially, that it cannot be admitted as natural or probable. Men do not become reprobate in a geometrical progreflion, or at the termination of regular periods; yet fo well proportioned are the *Yugs*, that even the length of human life is diminifhed as they advance, from an hundred thoufand years in a fubdecuple ratio; and, as the number of principal *Avatars* in each decreafes arithmetically from four, fo the number of years in each decreafes geometrically, and all together conftitute the extravagant fum of four million three hundred and twenty thoufand years, which aggregate, multiplied by feventy-one, is the period in which every *Menu* is believed to prefide over the world. Such a period, one might conceive, would have fatisfied *Archctas*, *the meafurer of fea and earthy and thenumberer of their fands* ; or *Archimedes*, who invented a notation that was capable of expreffing he number of them; but the comprehenlive mind of an *Indian* chronologitt has no limits; and the reigns of fourteen *Menus* are only a fingle day of *Brahind*, *fifty* of which days have elapfed, according to the *Hindus*, from the time of the creatiorv That all this puerility, as it feems at firft view, may be only anaftromical riddle, and allude to the apparent revolution of the fixed ftars, of which the *Brdkmans* made a myftery, I readily admit, and am even inclined to believe; but fo technical an arrangement excludes all idea of fcrious hiftory, I am fenfible how much thefe

remarks

remarks will offend the warm advocates for *Indian antiquity*; but we must not sacrifice truth to 't base fear of giv'g offence. That the *Vedas* were actually written before the flood, I shall never believe; nor can we infer, from the preceding story, that the learned *Hindus* believe it; for the allegorical (lumber of *Brahma*, and the theft of the sacred books, mean only, in simpler language, that *the human race was become corrupt*; but that the *Vedas* are very ancient, and far older than other *Sanfcrít* compositions, I will venture to assert from my own examination of them, and a comparison of their style with that of the *Purans* and the *Dherma Sastra*'. A similar comparison justifies me in pronouncing, that the excellent law-book ascribed to *Swdyambhuva Menu*, though not even pretended to have been written by him, is more ancient than the *Bhagavat*; but that it was composed in the first age of the world, the *Brahmans* would find it hard to persuade me; and the date which has been assigned to it, does not appear in either of the two copies which I possess, or in any other that has been collated for me: in fact, the supposed date is comprized in a verse, which flatly contradicts the work itself; for it was not *Menu* who composed the system of law, by the command of his father *Brahma*, but a holy personage, or demi-god, named *Bhrigu*, who revealed to men what *Menu* had delivered at the request of him, and other faints or patriarchs. In the *Mdnava Sastra*, to conclude this digression, the measure is so uniform and melodious, and the style so perfectly *Sanfcrity* or *polished*, that the book must be more modern than the scriptures of *Moses*, in which the simplicity, or rather nakedness, of the *Hebrew* diction, metre, and style, must convince every unbiassed man of their superior antiquity.

I leave etymologists, who decide every thing, to decide whether the word *Menu*, or, in the nominative case,

Menus,

Menus has any conneion with *Minos* the lawgiver, and fuppoifed fon of Jove. The *Cretans*, according to *Diodorus* of Sicily, ufed to feign, that moft of the great; men, who had been deified in return for the benefits which they fyad conferred on mankind, were born in their ifland; and hence a doubt may be raifed, whether *Minos* was really a *Cretan*. The *Indian* legiflator was the firft, not the feventh, *Menu*, or *Satyavrata*, whom I fuppoſe to be the *Saturn* of Italy. Part of *Saturn's* character, indeed, was that of a lawgiver:

Qui genus indocile ac difperſum montidus altis
Compoſuit legeſque dedit:

And we may ſuſpect that all the fourteen *Menus* are reducible to one, who was called *Nub* by the *Arabs*, arid probably by the *Hebrews*; though we have difguifed his name by an improper pronounciation of it. Some near relation between the feventh *Menu* and the Grecian *Minos*, may be inferred from the fingular charafter of the *Hindu* goa *Yama*, who was alfo a child of the Sun, and thence named *Vaivafwata*. He had too the fame title with his brother, *Srdddhadewa*. Another of his titles was *Dhcrmaraja*, or *King of Juftke*; and a third, *Pitru peti*, or *Lord of the Patriarchs*; but he is chiefly diſtingMiſhed as *judge of departed fouls*; for the *Hindus* believe, that, when a foul leaves its body, it immediately repairs to *Yamapur*, or the city of *Yama*, where it receives a jaſt ſeptence from him, and either aſcends to *Swerga*, or the firſt heaven; or is driven down to *Name*, the region of ſerpents; or affumes on earth the form of ſome animal, unleſs its offence had been fuch, that it oilght to be condemned to a vegetable, or even to a minerals

mineral, prifon. Another of his names is very remarkable; I mean that of *Cala*, or *time*, the idea of which is ihtifoately blended with the characters of *Saturn* and of *Noah*; for the name *Cronos* has a manifeft affinity with the word *chronos*; and a learned follower of *Zerdutjht* affures me, that, in the books which the *Behdins* hold facred, mention is made of an *univerfal inundation*, there named the deluge of *Time*.

It having been occafionally obferved, that *Ceres* was the poetical daughter of *Saturn*, we cannot clofe this head without adding, that the *Hindus* alfo have their *Goddefs of Abundance*, whom they ufually call *Lacfhmi*, and whom they confider as the daughter (not of *Menu*, but) of *Bhrigu*, by whom the firft code of facred ordinances was promulgated. She is alfo named *Pedmd* and *Camald*, from the facred lotos, or *Nymphce(i*: but her moll remarkable name is *Sri*, or, in the firft cafe, *Sris*, which has a refemblance to the *Latin*, and means *fortune* or *profperity*. It may be contended, that although *Lacfhmi* may be figuratively called the *Ceres* of *Hindujlan*, yet any two or more idolatrous nations, who fublitted by agriculture, njight naturally conceive a Deity to prefide over their labours, without having the leaft intercourfe with each other; but no reafon appears why two nations fhould concur in fuppofing that Deity to be a female. One, at leaft, of them would be more likely to imagine that the *Earth* was a goddefs, and that the God of Abundance rendered her fertile. Befides, in very ancient temples near *Gaya*, we fee images of *LacJlimz*, with full breaft, and a cord twifted under her arm like a *horn of plenty*, which look very much like the old *Grecian* and *Roman* figures of *Ceres*.

The fable of *Saturn* having been thusanalyfed, let us proceed to his defendants; and begin, as the Poet ad-



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आदिनामहविष्टः VISHNU

advifes, with *Jupiter*, whofe fupremacy, thunder, and libertinifm, every boy learns from *Ovid*; while his great offices of Creator, Preferver, and Deftroyer, are not generally confidered in the fyftems of *European* mythology. The *Romans* had, as we have before obferved, many *Jupiters*, one of whom was only the *Firmament* perfonified, as *Ennius* clearly exprefles it;

Afpice hoc fublime candens, quem invocant omne\$
Jovem.

This *Jupiter* or *Diefpiter* is the *Indian* God of the vifible heavens, called *Indra*, or the *King*; and *Divefpetir*, or *Lord of the Sky*; who has alfo the chara&er of the *Roman* *Genius*, or chief of the Good Spirits; hut moft of his epithets in *Savfcrit* are the fame with thofe of the *Ennian* *Jove*. His confort is named *Sachi*; hiscelestial city, *Amardvati*; his palace, *Vaijayanta*; his garden, *Nand ana*; his chief elephant, *Airavat*; his charioteer, *Maiah*; and his weapon, *Vajra*, or the thunderbolt: he is the regent of winds and fhowers; and though the Eaft is peculiarly under his care, yet his *Olympus* is *Merit*, or the north pole, ailegorically represented as a mountain of gold and gems. With all his power he is confidered as a fubordinate Deity, and far inferior to the *Indian* Triad, *Brahma*, *Vifhnu*, and *Mahddeva*, or *Siva*, who are three forms of one and the fame Godhead: thus the principal divinity of the *Greeks* and *Latians*, whom they called *Zeus* and *Jupiter*, with irregular inflexions *Dios* and *Jovis*, was not merely *Fulminaior*, the Thunderer, but, like the cleftroying power of *India*, *Magnus Divus*, *Ultor*, *Gonitor*; like the preferring power, *Confcrvator*, *Sotcr*, *Opitulus*, *Alior*, *Kuminus*; and like the cieating power, the *Giver of Life*; an attribute which I mention here

on

on the authority of *Cornutus*, a confurainate mafter of mythological teaming. We are advifed by *Plato* himfelf, to fearh for the roots of *Greek* words in fome barbarous, that is, foreign foil; but, fince I look upon etymological conjefures as a weak bafts for hiftorical inquiries, I hardly dare fuggeft, that *Zev*, *Siv*, and *Jov*, are the fame fyllable differently pronounced. It muft, however, be admitted, that the *Greeks* having no palatial *figma*, like that of the *Indians*, might have expreffed it by their *zita*, and that the initial letters of *zugon* and *jugwn* are (as the inftance proves) eafily interchangeable.

Let us now defcend, from thefe general and introductory remarks, to fome particular obfervations on the refemblance of *Zeus*, or *Jupiter*, to the triple divinity *Vijhnu*, *Siva*, *Brahma*; for that is the order in which they are expreffed by the letters A, U, and M, which coalefce, and form the myftical word Q M; a word which never efapes the lips of a pious *Hindu*, who meditates on it in filence. Whether the *Egyptian* ON, which is commonly fuppofed to mean the Sun, be the *Sanfcrit* monofyllable, I leave others to determine. It muft always be remembered, that the learned *Indians*, as they are intrufted by their own books, in truth, acknowledge only One Supreme Being, whom they call *Brahme*, or *the Great One*, in the neuter gender: they believe his effence to be infinitely removed from the comprehension of any mind but his own; and they fuppoze him to manifelt his power by the operation of his divine fpirit, whom they name *Vifknu*, the *Pervader*, and *Nardyan*, or *Moving on the Waters*, both in the mafculine gender, whence he is often denominated the *firft Male*; and by this power they believe that the whole order of nature is prefetved and fupprted: but the *Veddntis*, unable to form a diftinct idea of-brute matter independent of mind, or to conceive that the

work of Supreme Goodfaefs was left a motnent to itfelf, imagine that the Deity is ever prefent to his work, and conftantly fupports a feries of perceptions, which, *m* One Ten fe, they call *illufory*; thoiagh they cannot but admit the *reality* of all created forms, as far as the happinefs of creatures can be affected by them. When they confider the Divine Power exerted in *creating*, *ot* in giving exigence to that which exifted not before, they call the Deity *Brahma* in the mafculine gender alfo; and when they view him in the light of *Deftroyer*, or rather *Changer* of forms, they give him a thoufand names, of which *Siva*, *Ifa*, or *I/wara*, *Rudra*, *Hara*, *Sambhu*, and *Mahddeva*, or *hlahefa*, are the mofl common. The firft operations of thcfc three *Powers* are varioufly described in the different *Puidnas* by a number of allegories, and from them we may deduce the *Ionian* Philofophy of *primeval water*, the doctrine of the Mundane Egg, and the veneration paid to the *Nymphfe*^ or *Lotos*, which was anciently revered in *Egypt*, as it is at prefent in *Hinduftan*, *Tibet*, and *Nepal*. The *Tibetians* are faid to embellifh their temples and altars with it: and a native of *Nepal* made prollrations before it on entering my ftudy, where the tine plant and beautiful flowers lay for examination. Mr. *Holwel*, in explaining his fidt plate, fuppofes *Brahma* to be floating oh a leaf of *betel* in the miclft of the abyfs; but it was manifeflly intended by a bad painter for a lotos leaf, of for that of the *Indian* fig-tree; nor is the fpecies of pepper, known in *Bengal* by the name of *Tdmbilla*, and on the Coaft of *Malabar* by that of *betel*, held facred, as he afferts, by the *Hindus*, or neceffarily cultivated under the infpECTION of *Brdhmans*; though, as the vines are tender, all the plantations of them are carefully fecured, and ought to be cultivated by a particular tribe of *Sudras*, who are thence called *Tdmbulis*.

That *water* was the primitive element, and fifft work of the Creative Power, is the uniform opinion of the
Indian

Indian philosophers; but, as they give fo particular an account of the general deluge, and of the creation, it can never be admitted that their Whole fyftem arofe from traditions concerning the flood only, and inuft appear indubitable, that their do&rine is in part borrowed from the opening of *Birdsit*, or *Qenejzs*, than which a fublimer paffage, from the firft word to the laft, never flowed, or will flow, from any human pen : " *In*
 " *the beginning* God created the heavens and the earth.
 " —And the earth was void and wafte, and darknefs
 " was on the face of the deep, and the Spirit of God
 " -moved upoit the face of the waters: and God faid,
 " *Lei light it—and Light was.*" The fublimity of this paffage is confiderably diminifted by the *Indian* Paraphrafe of it, with which *Menu*, the fon of *Brahma*, Begins his addrefs to the fages, who confulted him on the formation of the univerfe. " This world (fays he)
 " was all darknefs, undifcernible, undiftinguifhable, al-
 " together as in profound fleep: till the felf-exiftentin-
 " vilible God, making it manifelt with five elements,
 " and other glorious forms, perfectly difpelled the gloom.
 " He, defiring to raife up various creatures by an ema*
 " nation from his own glory, firft created the *waters*,
 " and impreffed them with a power of motion: by
 " that power was produced a golden egg, blazing like
 " a thoufand funs, in which was born *Brahma*, felf-
 " exifting, the great parent of all rational beings, The
 " waters are called *ndrd*, fince they are the offspring
 " of *Neva*, or *Ifwara* ; and thence was *Ndrdyana*
 " named, becaufe his firft *ayana*, or *moving*, was on
 " them.

" That which is, the invifible caufe, eternal, felf-
 " exifting, but unperceived, becoming mafculine *from*
 " *neuter*, is celebrated among all creatures by the name
 " of *Brahma*. That God, having dwelled in the Egg,
 " through revolving years, Himfelf meditating on him*
 " felf, divided it into two equal parts; and from thofe
 " halves

" halves formed the heavens and the earth, plating in
 " the inidft the fubtikether, the eight points of the
 " world, and the permanent receptacle of waters."

To this curious defcription, with which the *Mdnava Safta* begins, I cannot refrain frdm fubjoining the four verfes, which are the text of the *Bhagavat*, and are believed to have been pronounced by the Supreme Being to *Brahma* : the following verfion is moft fcrupuloufly literal/

" Even I was even at firft, not any other thing; that
 " whichexifts unperceived; fupreme: afterwards *lam*
 " *that which is*: and he who muft remain, am I.

" Except the *Firft Caufe*, whatever may appear, and
 " may 4iot appear, in the mind, know that to be the
 " mind's *Mdyd*, or *Delufion*, as light, as darknefs.

" As the great elements are in various beings, enter-
 " ing, yet not entering, (that is, pervading, notdeftroy*
 " ing,) thus am I in them, yet not in them.

" Even thus far may inquiry be made by him who
 " feeks to know the principle of mind, in union and
 " reparation, which mull be *every where always*."

Wild

* See the Original, p, 33. Plate IV.

Wild and obfeure as thefe atident verbes muft appear in a naked vecbal tranflation, it will perflates be thought by many, that the poetry or mythology of *Greece* and *Italy* afford no conceptions more awfully magnificent: yet the brevity and iimplicity of the *Mofaick* didion are unequalled.

As to the creation of, the world, in the opinion of the *Romans*, *Ovid*, who might naturally have been expected to defcribe it with learning and elegance, leaves us wholly in the dark, *which of the Gods was the aihir in it*. Othermythologiits are more explicit; and we may rely on the authority of *Cornutus*, that the old *European* heathens conhdred *Jove* (not the fon of *Saturn*, but of the *Ether*, that is, of an unknown parent) as the great *Ifife-giver*, and *Father of Gods And Men*; to which may be added the *Orphean* do&rline, preserved by *Proclus*, that " the abyls and empyreum, the earth " and fea, the Gods and Goddeffes, were produced by " *Zeus*, or *Jupiter*" In this character he correffonds with *Brahma*; and, perhaps, with that God of the *Ba-lylonians*, (if we can rely on the accounts of their ancient religion,) who, like *Brahma*, reduced the univerfe to order, and, like *Brahma*, *loft his head*, with the blood of which new animals were initantly formed. I allude to the common ftory, the meaning of which I cannot difcover that *Brahma* had five heads, till one of them was cut off by *Narayan*.

That, in another capacity, *Jove* was the *Helper* and *Supporter* of all, we may collect from his old *Latin* epithets, and from *Cicero*, who informs us, that, his ufital name is a contraction of *Juvans Pater*; an etymology Which fhews the idea entertained of his character, though we may have fome doubt of «its accuracy, *Callimachus*, we know, addreffes him as *the bejlower of all good, and offecurity Jrom grief*; and, *fince neither wealth without virtue. not virtue without wealth, give complete*

complete happiness, he prays, like a Wife poet,, for both. An *Indian* prayer for riches would be directed to *Lacshmi*, the wife of *Vishnu*, since the *Hindu* goddeffts are believed to be the powers of their TrefpeQive lords.

As to *Cuvera*, the *Indian Plutus*, one of whose names in *Paulaflya*, he is revered, indeed, as a magnificent Deity, residing in the palace of *Alaca*, or borne through the sky in a splendid car, named *Pushpaca*, but is manifestly subordinate, like the other seven Genii, to three principal Gods, or rather to the principal God considered in three capacities. As the soul of the World, or the pervading *mind*, so finely described by *Virgil*, see *Jove* represented by several *Roman* poets; and with great sublimity by *Lucan* in the known speech of *Cato* concerning the *Ammonian* oracle : " *Jupiter* " is, wherever we look, wherever we move." This is precisely the *Indian* idea of *Vishnu*, according to the four verses above exhibited: not that the *Brahmaris* imagine their male Divinity to be the *divine Essence* of the Great One, which they declare to be wholly incomprehensible; but, since the power of *preserving* created things by a superintending providence, belongs eminently to the Godhead, they hold that power to exist transcendently in the *preserving* member of the Triad, whom they suppose to be every -where always; not in substance, but in spirit and energy: here, however, I speak of the *Vaishnavas*; for the *Saivas* ascribe a sort of pre-eminence to *Siva*, whose attributes are now to be concisely examined.

It was in the capacity of Avenger and Destroyer, that *Jove* encountered and overthrew the *Titans* and *Giants*, whom *Typhon*, *Briareus*, *Tityus*, and the rest of their fraternity, led against the God of *Olympus*; to whom an eagle brought lightning and thunderbolts during

during the warfare. Thus, in a fimilar conteft between Siva and the *Daityas*, or children of *Diti*, who frequently rebelled againft heaven, *Brahma* is believed fcric have prcfented the God of Definition with *fiery fhafts*. One of the many poems, entitled *Ramayan*, the laft book of which has been tranflated into *Italian*, contains an extraordinary dialogue between the crow *Bhufhunda*, and a rational eagle, named *Garuda*, who is often painted with the face of a beautiful youth, and the body of an imaginary bird; and one of the eighteen *Purdnas* bears his name, and comprifes his whole hiftory. *M. Sonnerat* informs us, that *Vijhnu* is represented in fome places riding on the *Garuda*, which he fuppofes to be the *Pondicherie* eagle of *Briffon*, efpecially as the *Brdhmans* of the Coaft highly venerate that bird, and provide food for numbers of them at ftated hours. I rather conceive the *G\$rudu* to be a fabulous bird; but agree with him, that the *Hindu* God, who rides on it, refembles the ancient: *Jupiter*. In the old temples at *Gaydy Vijhnu* is either mounted on this poetical bird, or attended by it, together with a little page; but, left an etymologift fhould find *Ganymed* in *Garud*, I muft obferve that the *Sanfcrit* word is pronounced *Garura*; though I admit that the *Grecian* and *Indian* ftories of the celeftial bird and the page appear to have fome refemblance. As the *Olympian Jupiter* fixed his court, and held his councils, on a lofty and brilliant mountain, fo the appropriated feat of *Mahddeva*, whom the *Saivas* confider as the Chief of the Deities, was mouht *Cailaja*, every fplinter of whofe rocks was an ineftimable gem. His terreftrial haunts are the fnowy hills of *Himalaya*, or that branch of them to the Eaft of the *Brahmaputra*, which has the name of *Chandrajic'hara*, or the *Mountain of the Moon*. When, after all thefe circumftances, we learn that *Siva* is believed to have three eyes, whence he is named alfo *Trildchan*[^] and know from *Paufanias*, not only that *Triophthalmos* was an epithet of *Zeus*, but that a ftatue of him had been found fo early as

the taking of *Troy*, with *a third eye in his forehead*, as we see him represented by the *Hindus*, we must conclude, that the identity of the two Gods falls little short of being demonstrated.

In the character of *Defrayer* also, we may look upon this *Indian* Deity as corresponding with the *Stygian Jove*, or *Plato*; especially since *Call*, or *Time*, in the feminine gender, is a name of his consort, who will appear hereafter to be *Proferpine*. Indeed, if we can rely on 3 *Perfian* translation of the *Bhdgavat*, (for the original is not yet in my possession,) the Sovereign of the *Infernal Regions*, is the *King of Serpents*, named *Sesha* ndga*; for *Crishna* is there said to have descended with his favourite *Arjun* to the feat of that formidable divinity, from whom he instantly obtained the favour which he requested, that the souls of a *Brahman's* six sons, who had been slain in battle, might reanimate their respective bodies; and *Sejhandga* is thus described. " He had a " gorgeous appearance, with a thousand heads, and on " each of them a crown set with resplendent gems, one " of which was larger and brighter than the rest; his " eyes gleamed like flaming torches; but his neck, his " tongues, and his body, were black; the skirts of his " habiliment were yellow, and a sparkling jewel hung " in every one of his ears; his arms were extended, and " adorned with rich bracelets; and his hands bore the " holy wheel, the radiated weapon, the mace for war, " and the lotos." Thus *Pluto* was often exhibited in painting and sculpture, with a diadem and sceptre; but himself and his equipage were of the blackest shade.

There is yet another attribute of *Mahadeve*, by which he is too vividly distinguished in the drawings and
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temples of *Bengal*. To destroy, according to the *Vedanti's* of *India*, the *Sup's* of *Perfia*, and many philosophers of our *European* schools, is only to *generate and reproduce* in another form. Hence the God of *Destruction* is holden in this country to preside over *Generation*; as a symbol of which he rides on a *white bull*. Can we doubt that the loves and feats of *Jupiter Genitor*, (not forgetting the *white bull* of *Europa*;) and his extraordinary title of *Lapis*, for which no satisfactory reason is commonly given, have a connexion with the *Indian* Philosophy and Mythology? As to the deity of *Lampfacus*, he was originally a mere scare-crow, and ought not to have a place in any mythological system; and, in regard to *Bacchus*, the God of *Vintage*, (between whole acts and those of *Jupiter*, we find, as *Bacon* observes, a wonderful affinity,) his *Ithyphallick* images, measures, and ceremonies, alluded probably to the supposed relation of Love and Wine; unless we believe them to have belonged originally to *Siva*; one of whose names is *Vdgts, ov Bdgts*, and to have been afterwards improperly applied. Though, in an Essay on the Gods of *India*, where the *Brahmins* are positively forbidden to taste fermented liquors, we can have little to do with *Bacchus*, as God of Wine, who was probably no more than the imaginary President over the vintage in *Italy*, *Greece** and the Lower *Asia*; yet we must not omit *Surddevt*, the Goddess of Wine, who arose, say the *Hindus*, from the ocean, when it was churned with the mountain *Mandar*: and this fable seems to indicate, that the *Indians* came from a country in which wine was anciently made, and considered as a blessing; though the dangerous effects of intemperance induced their early legislators to prohibit the use of all spirituous liquors; and it were wished that so wise a law had never been violated.

Here may be introduced the *Jupiter Marinus*, or *Neptune*, of the *Romans*, as resembling *Mahadeva* in



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वरुणोपासनामहम् VARUNA



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सेतानीनामहं संदः CARTICEYA

his *generative* character; especially as the *Hindu* God is the husband of *Bhavani*, whose relation to the *waters* is evidently marked by her image being restored to them at the conclusion of her great festival called *Durgotsava*. She is known also to have attributes exactly similar to those of *Venus Marina*, whose birth from the sea-foam, and splendid rise from the conch, in which she had been cradled, have afforded so many charming subjects to ancient and modern artists ; and it is very remarkable, that the *Rembha* of *Indra's* court, who seems to correspond with the popular *Venus*, or Goddess of Beauty, was produced, according to the *Indian* fabulists, from the froth of the churned ocean. The identity of the *trisula* and the *trident*, the weapon of *Siva* and of *Nep-tuncj* seems to establish this analogy; and the veneration paid all over *India* to the large *buccinum*, especially when it can be found with the spiral line and mouth turned from left to right, brings instantly to our mind the musick of *Triton*. The Genius of Water is *Varuna*; but he, like the rest, is far inferior to *Mahesa*, and even to *Indra*, who is the Prince of the beneficent Genii.

This way of considering the Gods as individual substances, but as distinct persons in distinct characters, is common to the *European and Indian* systems; as well as the custom of giving the highest of them the greatest number of names: hence, not to repeat what has been said of *Jupiter*, came the triple capacity of *Diana* ; and hence her petition in *Callimachus*, that she might be *polyonymous*, or *many-titled*. The comfort of *Siva* is more eminently marked by these distinctions than those of *brahma* or *Vishnu*: she resembles the *Myrionymost* to whom an ancient marble, described by *Gruter*, is dedicated; but her leading names and characters are *Pervati*, *Durga*, *Bhavit*.

As the *Mountain-born* Goddefs, or *Parvati*, ſhe has many properties of the Olympian *Juno* : her majeſtick deportment, high ſpirit, and general attributes, are the fame ; and we find her both on Mount *Cailaſa*, and at the banquets of the Deities, uniformly the companion of her hulband. One circumſtance in the parallel is extremely lingular: ſhe is uſually attended by her ſon *Carticeya*, who rides on a *peacock* ; and in ſome drawings, his own robe ſeems to be ſpangled with eyes ; to which muſt be added that, in ſome of her temples, a *peacock*, without a rider, ſtands near her image. Though *Carticeya*, with his fix faces and numerous eyes, bears ſome reſemblance to *Argus*, whom *Juno* employed as her principal wardour, yet, as he is a Deity of the fecund claſs, and a Commander of celeſtial Armies, he ſeems clearly to be the *Orus* of *Egypt*, and the *Mars* of *Italy*: his name, *Scanda*, by which he is celebrated in one of the *Purdnas*, has a connection, I am perſuaded, with the old *Secander* of *Perjia*, whom the poets ridiculouſly confound with the *Macedonian*.

The attributes of *Durgd*, or *difficult of acceſs*, are alſo conſpicuous in the feſtival above-mentioned, which is called by her name, and in this character ſhe reſembles *Minerva* ; not the peaceful inventreſs of the fine and uſeful arts, but *Pallas*, armed with a helmet and ſpear: both repreſent heroick *Virtue*, or valour united with wiſdom; both flew demons and giants with theirown hands, and both prote&ed the wife and virtuous, who paid them due adoration. As *Pallas*, they ſay, takes her name from vibrating a lance, and uſually appears in complete armour, thus *Curis*, the old *Latain* word for a ſpear, was one of *Juno's* titles; and ſo, if *Giraldus* be correct, was *Hoplofmia*, which at *Elis*, it ſeems, meant a female dreſſed in panoply, or complete accoutrements. The unarmed *Minerva* of the *Romans* apparently correſponds.

fponds, as patroness of Science and Genius, with *Serefuati*) the wife of *Brahma*, and the emblem of his principal *Creative Power*. Both Goddeffes have given their names to celebrated grammatical works; but the *Sarefwata* of *Sarupchdrya* is far more concise, as well as more useful and agreeable, than the *Minerva* of *Sanctius*;

The *Minerva* of *Italy* invented the *flute*, and *Serefwati* presides over melody: the protectress of *Athens* was even, on the same account, furnished *Musical*.

Many learned mythologists, with *Giraldus* at their head, consider the peaceful *Minerva* as the *Isis* of *Egypt*; from whose temple at *Sais* a wonderful inscription is quoted by *Plutarch*, which has a resemblance to the four *Sanskrit* verses above exhibited as the text of the *Bhagavat*: " I am all that hath been, and is, and shall be; " and my veil no mortal hath ever removed." For my part, I have no doubt that the *Ifwara* and *Ist* of the *Hindus*, are the *Osiris* and *Isis* of the *Egyptians*; though a distinct essay in the manner of *Plutarch* would be requisite in order to demonstrate their identity: they mean, I conceive, the *Powers of Nature* considered as Male and Female; and *Isis*, like the other goddesses, represents the active power of her lord, whose *eight* forms, under which he becomes visible to man, were thus enumerated by *Calidasa* near two thousand years ago. " *Water* was the first work of the Creator; and *Fire* receives " the oblation of clarified butter, as the law ordains : " the *Sacrifice* is performed with solemnity : the two " *Lights* of heaven distinguish time; the subtil *Ether*, " which is the vehicle of sound, pervades the universe; " the *Earth* is the natural parent of all increase; and by " *Air* all things breathing are animated. May *Ifa*, the " power propitiouly apparent in these eight forms, bless " and sustain you !" The five elements, therefore, as well-

well as the Sun and Moon, are confidered as *Ifa*, or the *Ruler*, from which word *Ifi* may be regularly formed; though *Ifani* be the ufual name of his *active power*, adored as the Goddefs of Nature. I have not yet found in *Sanfcrit*, the wild, though poetical, tale of *Jo*; but am perfuaded, that, by means of the *Puranas*, we fhall in time difcover all the learning of the *Egyptians*, without decyphering their hieroglyphicks. The bull of *Ifwara* feems to be *Apis*, or *Ap*, as he is more correctly named in the true reading of a paffage in *Jeremiah*; and if the veneration fhown, both in *Tibet* and *India*, to fo amiable and ufeul a quadruped as the Cow, together with the *regeneration* of the *Lama* himfelf, have not fome affinity with the religion of *Egypt* and the idolatry of *Ifrael*, we mult at leaft allow that circumftances have wonderfully coincided,

Bhavani now demands our attention; and in this character I fuppofe the wife of *Mahadeva* to be as well the *Juno Cinxia*, or *Lucina*, of the *Romans* (called alfo by them *Diana Solvizona*, and by the *Greeks*, *Illi-thyia*) as *Venus* herfelf: not the *Italian* Queen of Laughter and Jollity, who, with her Nymphs and Graces, was the beautiful child of poetical imagination, and anfwers to the *Indian Rembha*, with her celeftial train of *Apfara's*, or damfels of paradife; but *Venus Urania*, fo luxuriantly painted by *Lucretius*, and fo properly invoked by him at the opening of a poem on nature: *Venus* prefiding over *generation*, and, on that account, exhibited fometimes of both *fexes*, (an union very common in the *Indian* fculptures,) as in her bearded ftatue at *Rome*, in the images perhaps called *Hermathena*, and in thofe figures of her which had the form of a *conical marble*; " for the reafon of which figure we are left (fays *Tacitus*) " in the dark." The reafon appears too clearly in the temples and paintings of *Hinduftan*; where it never feems to have entered the heads of the legiflators or people,



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प्रजनशास्त्रिकंदर्पः C.A.M.A.



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people, that any thing natural could be offensively obscene; a Angularity which pervades all their writings and conversation, but is no proof of depravity in their morals.

Both *Plato* and *Cicero* speak of *Eros*, or the Heavenly *Cupid*, as the son of *Venus* and *Jupiter*; which proves, that the Monarch of *Olympus*, and the Goddess of Fecundity, were connected, as *Mahadeva* and *Bhavani*. The God *Cama*, indeed, had *Maya* and *Casyapa*, or *Uranus*, for his parents, at least according to the mythologisms of *Cashmir*; but, in most respects, he seems the twin-brother of *Cupid*, with richer and more lively appendages. One of his many epithets is *Dipaca*, the *Inflamer*, which is erroneously written *Dipuc*; and I am now convinced, that the sort of resemblance which has been observed between his *Latin* and *Sanskrit* names is accidental: in each name the three first letters are the *root*, and between them there is no affinity. Whether any mythological connection subsisted between the *amaracus*, with the fragrant leaves of which *Hymen* bound his temples, and the *tulasi* of *India*, must be left undetermined: the botanical relation of the two plants (if *amaracus* be properly translated *marjoram*) is extremely near.

One of the most remarkable ceremonies in the festival of the *Indian Goddess*, is that before-mentioned, of carting her image *into the river*. The *Pandits*, of whom I inquired concerning its origin and import, answered, " that it was prescribed by the *Veda*, they knew not " why ;" but this custom has, I conceive, a relation to the doctrine, that *water* is a *form* of *Ifwara*, and consequently of *Ifani*, who is even represented by some as the patroness of that element, to which her figure is restored after having received all due honours on *earth*, which is considered as another *form* of the God of Nature,

though

though fubfequent, in the order of Creation, to the primeval fluid. There feems no decifive proof of one original fyftem among idolatrous nations in the worfhip of river-gods and river-goddeffes, nor in the homage paid to their ftreams, and the ideas of purification annexed to them; fince *Greeks, Italians, Egyptians, and Hindus*, might (without any communication with each other) have adored the feveral Divinities of their great rivers, from which they derived pleafure, health, and abundance. The notion of Doctor *Mufgrave*, that large rivers were fuppofed, from their ftrength and rapidity, to be condufted by Gods, while rivulets only were protected by female Deities, is, like moft other notions of grammarians on the genders of nouns, overthrown by fafts. Moft of the great *Indian* rivers are feminine; and the three goddeffes of the waters, whom the *Hindus* chiefly venerate, are *Ganga*, who fprang, like armed *Pallas*, from the head of the Indian *Jove*; *Yamund*, daughter of the Sun; and *Sere/watt*. All three met at *Prayaga*, thence called *Triveni*, or *the three platted locks*; but *Sere/watt*, according to the popular belief, finks under ground, and rifes at another *Triveni* near *Htigli*, where fhe rejoins her beloved *Gangd*. The *Brahma-putra* is, indeed, a male river; and, as his name fignifies the Son of *Brahma*, I thence took occafion to feign that he was married to *Ganga*, though I have not yet feen any mention of him, as a God, in the *Sanfcrit* books.

Two incarnate deities of the firft rank, *Rama* and *Crifhna*, mull now be introduced, and their feveral attributes diftinctly explained. The firft of them, I believe, was the *Dionyfos* of the *Greeks*, whom they named *Bromius*, without knowing why; and *Bugenes*, when they reprefented him *horned*; as well as *Lyaïos* and *Elewtherios*, the Deliverer, and *Tridmbos*, or *Dithyrambos*^ the Triumphant- Moft of thefe titles were adopted by the *Romans*, by whom he was called *Bruma*, *Tauriformis*,

formis, Liber, Triumphus; and both nations had records or traditionary accounts of his giving laws to men, and deciding their contefts; of his improving navigation and commerce; and, what may appear yet more observable, of his conquering *India*, and other countries, with an army of *Satyrs*, commanded by no lefs a perfonage than *Pan*; whom *Lilius Giralduſ* (on what authority I know not) afferts to have refided in *Iberia*, "when he had returned (ſays the learned Mythologiſt) "from the *Indian* war, in which he accompanied " *Bacchus*." It were fuperfluous in a mere eſſay, to tun any length in the parallel between this *European* God and the fovereign *Ayodhya*, whom the *Hindus* believe to have been an appearance on earth of the *Preſerving Power*; to have been a conqueror of the higheſt renown, and the deliverer of nations from tyrants, as well as of his confort *Sita* from the giant *Ravan*, king of *Lanca*; and to have commanded in chief a numerous and intrepid race of thoſe large *Monkeys* which our naturaliſts, or ſome of them, have denominated *Indian Satyrs*. His General, the Prince of *Satyrs*, was named *Hanumat*, or with high cheek-bones; and, with workmen of ſuch agility, he foon raifed a bridge of rocks over the ſea, part of which, ſay the *Hindus*, yet remains; and it is, probably, the ſeries of rocks to which the *Mufelmans*, or the *Portugueſe*, have given the fooliſh name of *Adam's* (it ſhould be called *Rama's*) *Bridge*. Might not this army of *Satyrs* have been only a race of mountaineers, whom *Rama* (if ſuch a monarch ever exiſted) had civilized? However that may be, the large breed of *Indian Apes* is at this moment held in high veneration by the *Hindus*, and fed with devotion by the *Brdhmans*, who ſeem, in two or three places on the banks of the *Ganges*, to have a regular endowment for the ſupport of them. They live in tribes of three or four hundred, are wonderfully gentle, (I ſpeak as an eye-witneſs,) and appear to have ſome kind of order and ſubordination in their little ſylvan polity, We muſt not omit,

omit, that the father of *Hanumat* was the God of Wine, named *Pavan*, one of the eight Genii ; and, as *Pan* improved the pipe by adding fix reeds, and " played exquisitely on the cithern a few moments after his birth," so one of the four fyltems of *Indian* mufick bears the name of *Hanumat*, or *Hanuman* in the nominative, as its inventor, and is now in general eftimation.

The war of *Lanca* is dramatically reprefented at the feftival of *Rama*, on the ninth day of the new moon of *Chaitra*; and the drama concludes (fays *Holwel*, who had often feen it) with an exhibition of the fire-ordeal, by which the victor's wife *Sita* gave proof of her conubial fidelity. " The dialogue (he adds) is taken from " one of the eighteen holy books," meaning, I fuppofe, the *Purdnas*; but the *Hindus* have a great number of regular dramas, at leaft two thoufand years old, and among them are feveral very fine ones on the ftory of *Rama*. The firft poet of the *Hindus* was the great *Valmic*, and his *Ramayan* is an Epick Poem on the fame fubject, which, in unity of action, magnificence of imagery, and elegance of ftyle, far furpaffes the learned and elaborate work of *Nonnus*, entitled *Dionyfiaeque*, half of which, or twenty-four books, I perufed with great eagernefs when I was very young, and fhould have travelled to the conclufion of it, if other purfuits had not engaged me. I fhall never have leifure to compare the *Dionyficks* with the *Ramayan*, but am confident, that an accurate comparifon of the two poems would prove *Dionyfios* and *Rama* to have been the fame perfon; and I incline to think that he was *Rama*, the fon of *Cujh*, who might have eftablifhed the firft regular government in this part of *Afia*. I had almoft forgotten, that *Mercs* is faid by the *Greeks* to have been a mountain of *India*, on which their *Dionyfios* was born ; and that *Meru*, though it generally means the north pole in the *Indian* geography, is alfo a mountain near

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the

the city of *Naifhada*, or *Nyfa*, called by the *Grecian* geographers *Dionysopolis*, and univerfally celebrated in the *Sanfcrit* poems; though the birth-place of *Rama* is fuppofed to have been *Ayodhya*, or *Audh*. That ancient city extended, if we believe the *Brdhmans*, over a line often *Yojans*, or about forty miles; and the prefent city of *Lac'hnaue*, pronounced *Lucnow*, was only a lodge for one of its gates, called *Lacfhmanadwara*, or the gate of *Lacfhman*, a brother of *Rama*. M. *Sonnerat* fuppofes *Ayodhya* to have been *Siam* ; a mod erroneous and unfounded fuppofition ; which would have been of little confequence, if he had not grounded an argument on it, that *Rama* was the fame perfon with *Buddha*, who muft have appeared many centuries after the conquelt of *Lanca*.

The fecond great divinity, *Chrifhna*, paffed a life, according to the *Indians*, of a moft extraordinary and incomprehenfible nature. He was the fon of *Devaci* by *Vafudeva* ; but his birth was concealed through fear of the tyrant *Canfa*, to whom it had been predicted, that a child born at that time, in that family, would deftroy him : he was foftered, therefore, in *Mat'hura* by an honeft herdfman, furnamed *Ananda*, or *Happy*; and his amiable wife *Yafoda*, who, like another *Pales*, was constantly occupied in her paftures and her dairy. In their family were a multitude of young *Gopas*, or *Cowherds*, and beautiful *Gopis*, or *milkmaids*, who were his play-fellows during his infancy; and, in his early youth, he felected *nine* damfels as his favourites, with whom he paffed his gay hours in dancing, fporting, and playing on his flute. For the remarkable number of his *Gopis* I have no authority but a whimfical picture, where *nine* girls are grouped in the form of an elephant, on which he fits and pipes; and, unfortunately, the word nave fignifies both *nine* and *new*, or young; fo that, in the following ftanza, it may admit of two interpretations:

tara-

taranijapuline navaballavi
perifada faha celicutuhalat
drutavilamwitacharwvikarinam
herimaham hri dayena fada vahe.

" I bear in my bofom continually that God, who, for
 " fportive recreation with a train of *nine* (young) dairy-
 " maids, dances gracefully, now quick, now flow; on
 " the fands juft left by the Daughter of the Sun.

Both he and the *three Romas* are defcribed as youths of perfect beauty ; but the princeffes of *Hinduftan*, as well as the damfels of *Nanda's* farm, were paffionately in love with *Crifhna*, who continues to this hour the darling God of the *Indian* women. The fect of *Hindus*, who adore him with enthufiaftick, and almoft exclusive, devotion, have broached a doctrine, which they maintain with eagernefs, and which feems general in thefe provinces; that he was diftinct from all *the Avatars*, who had only an *anfa*, or portion, of his divinity; while *Crifhna* was the *perfon* of *Vifhnu* himfelf in a human form: hence they confider the third *Rama*, his elder brother, as the eighth *Avatar*, invefted with an *emanation* of his divine radiance; and in the principal *Sanfcrit* Dictionary, compiled about two thoufand years ago, *Crifhna*, *Vafadeva*, *Govinda*, and other names of the Shepherd God, are intermixed with epithets of *Nirayan*, or the Divine Spirit. Ali the *Avatars* are painted with gemmed *Ethiopian*, or *Parthian* coronets; with rays encircling their heads; jewels huheir ears; two necklaces, one iiraight, and one pendent on their feofoms, with dropping gems; garlands of well-difpofed many-coloured flowers, or collars of pearls, hanging down below their waifts? loofe mantles of golden tiffue or dyed filk, embroidered on their hems with flowers, **elegantly** thrown over one fhoulder, and folded, like



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रामः सप्तमः

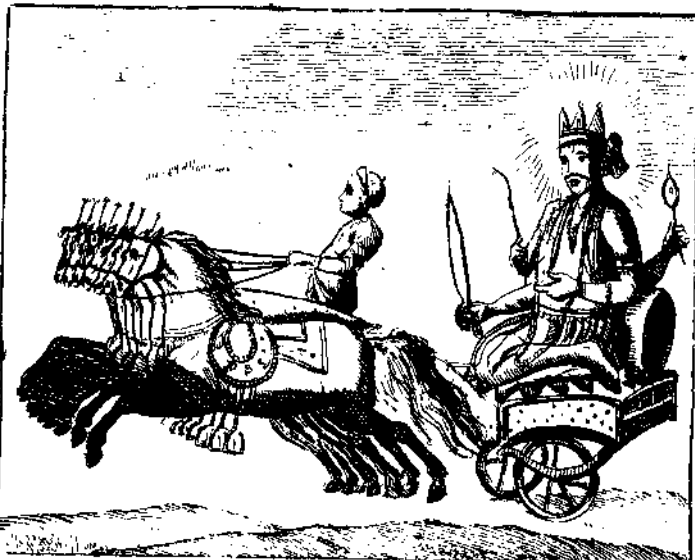
RAMA.



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दशमी नाम लक्ष्मणोऽसि

CRISHNA



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ribands, acrofs the breaft ; with bracelets too on one arm, and on each wrift : they are naked to the waifts, and uniformly with *dark azure* flefh, in allufion, probably, to the tint of that primordial fluid on which *Narayan* moved in the beginning of time; but their fkirts are bright yellow, the colour of the curious pericarpium in the center of the water-lily, where *Nature*, as Dr. *Murray* obferves, *in fome degree difclofes her fecrets*, each feed containing, before it germinates, a few perfect leaves: they are fometimes drawn with that flower in one hand; a radiated elliptical ring, ufed as a miffile weapon, in a fecond; the facred fhell, or left-handed buccinum, in a third; and a mace, or battle-axe, in a fourth. But *Crifhna*, when he appears, as he fometimes does appear, among the *Avatars*, is more fplendidly decorated than any, and wears a rich garland of fylvan flowers, whence he is named *Vanamuli*, as low as his ankles, which are adorned with firings of pearls, Dark blue, approaching to *black*, which is the meaning of the word *Crifhma*, is believed to have been his complexion ; and hence the large bee of that colour is confecrated to him, and is often drawn fluttering over his head. That azure tint, which approaches to blacknefs, is peculiar, as we have already remarked, to *Vifhnu*; and hence in the great refervoir or ciitern at *Catmandu*, the capital of *Nepal*, there is placed in a recumbent pofture, a large well-proportioned image of blue marble, reprefenting *Narayan* floating on the waters. But let us return to the actions of *Crifhna*, who was not lefs heroick than lovely, and, when a boy, flew the terrible ferpent *Caliya*, with a number of giants and monfters. At a more advanced age, he put to death his cruel enemy *Canfa* ; and, having taken under his protection the king *Yudhifht'hir*, and the other *Pandus*, who had been grievoufly oppreffed by the *Curus*, and their tyrannical chief, he kindled the war defcribed in the great Epick Poem, entitled the *Mahabharat*, at the prosperous conclufion of which he returned to his heavenly feat

in *Vaicont'ha*, having left the instructions comprised in the *Gita* with his difconfolate friend *Arjun*, whose grandfon became fovereign of *India*.

In this picture it is impoffible not to difcover, at the firft glance, the features of *Apollo*, furnamed *Nomios*, or the *Paftoral*, in *Greece*, and *Opifer* in *Italy*; who fed the herds of *Admetus*, and flew the ferpent *Python*; a God amorous, beautiful, and warlike. The word *Govinda* may be literally tranflated *Nomois*, as *Cefava* is *Crinitus*, or with fine hair; but whether *Gdpdla*^ or the *herd/man*, has any relation to *Apollo*, let our Etymologifts determine*

Colonel *Vallencey*, whose learned inquiries into the ancient literature of *Ireland* are highly interefting, affures me, that *Crifhna* in *Irifh* means the *Sun*; and we find *Apollo* and *Sol* confidered by the *Roman* poets as the fame deity. I am inclined, indeed, to believe, that not only *Crifhna*, or *Vifhnu*, but even *Brahma* and *Siva*, when united, and expreffed by the myftical word *O'M*, were daigned by the firft idolaters to represent the Solar Fire; but *Phoebus*, or the orb of the *Sun* perfonified, is adored by the *Indians* as the God *Surya*, whence the fect who pay him particular adoration, are called *Saurds*. Their poets and painters defcribe his car as drawn by feven green horfes, preceded by *Arun*, or the *Dawn*, who acts as his charioteer, and followed by thoufands of *Genii*, worshipping him, and modulating his praifes. He has a iriultitude of names, and among them twelve epithets or titles, which denote his diftinct powers in each of the twelve months; thofe powers are called *Adityas*, or fons of *Aditi* by *Cafyapa*, the *Indian Uranus*; and one of them has, according to fome authorities the name of *Vifhnu*, or *Pervader*.

Surya

Surya is believed to have descended frequently From his car in a human shape, and to have left a race on earth, who are equally renowned in the *Indian* stories with the *Heliadae* of *Greece*. It is very singular, that his two sons, called *Afwinau*, or *Afwinicumdrau*, in the dual, should be considered as twin-brothers, and painted like *Castor* and *Pollux* ; but they have each the character of *Æsculapius* among the Gods, and are believed to have been born of a nymph, who, in the form of a mare, was impregnated with sun-beams. I suspect; the whole fable of *Cafyapa* and his progeny to be agronomical, and cannot but imagine, that the *Greek* name *Caffiopeia* has a relation to it.

Another great *Indian* family are called the *Children of the Moon*, or *Chandra*; who is a male Deity, and consequently not to be compared with *Artemis*, or *Diana*; nor have I yet found a parallel in *India* for the Goddesses of the *Chafe*, who seems to have been the daughter of an *European* fancy, and very naturally created by the invention of *Bucolick* and *Georgick* poets; yet since the *Moon* is a form of *Ifwara*, the God of Nature, according to the verse of *Calidasa*, and since *Ifani* has been shown to be his consort, or power, we may consider her, in one of her characters, as *Luna*; especially as we shall soon be convinced that, in the shades below, she corresponds with the *Hecate* of *Europe*.

The worship of Solar or Vestal *Fire* may be ascribed, like that of *Ofiris* and *Ifis*, to the second source of Mythology, or an enthusiastick admiration of Nature's wonderful powers; and it seems, as far as I can yet understand the *Vedas*, to be the principal worship recommended in them. We have seen, that *Mahadiva* himself is personated by *Fire*; but subordinate to him is the God *Agni*, often called *Pdvaca*, or the *Purifier*, who
answers

answers to the *Vulcan* of *Egypt*, where he was a Deity of high rank; and his wife *Swaha* resembles the younger *Vesta*, or *Vestia*, as the *Eclians* pronounced the *Greek* word for a *hearth*. *Bhavani*, or *Venus*, is the comfort of the Supreme Destructive and Generative Power; but the *Greeks* and *Romans*, whose system is less regular than that of the *Indians*, married her to their *divine artist*, whom they also named *Hephaistos* and *Vulcan*, and who seems to be the *Indian Vishwacarnan*, the *forger of arms* for the Gods, and inventor of the *agnyastra*, or *fiery shaft*, in the war between them and the *Daityas*, or *Titans*. It is not easy here to refrain from observing (and, if the observation gives offence in *England*, it is contrary to my intention) that the newly-discovered planet should unquestionably be named *Vulcan*; since the confusion of analogy in the names of the planets is inelegant, unscholarly, and unphilosophical. The name *Uranus* is appropriated to the firmament; but *Vulcan*, the flower of the Gods, and, according to the *Egyptian* priests, the oldest of them, agrees admirably with an orb, which must perform its revolution in a very long period; and, by giving it this denomination, we shall have seven primary Planets with the names of as many *Roman* Deities, *Mercury*, *Venus*, *Tellus*, *Mars*, *Jupiter*, *Saturn*, *Vulcan*.

It has already been intimated, that the *Muses* and *Nymphs* are the *Gopys* of *Mat'hura*, and of *Goverdhan*, the *Parnassus* of the *Hindus*, and the lyric poems of *Jayadeva* will fully justify this opinion; but the *Nymphs* of *Musick* are the *thirty Raginis*, or *Female Passions*, whose various functions and properties are so richly delineated by the *Indian* painters, and so finely described by the poets: but I will not anticipate what will require a separate Essay, by enlarging here on the beautiful allegories of the *Hindus* in their system of musical modes, which they call *Ragas*, or *Passions*, and suppose to be *Genii*, or *Demigods*, A very distinguished son of

Brahma,

Brahma, named *Nared*) whose actions are the subject of a *Purāṇa*, bears a strong resemblance to *Hermes*, or *Mercury* : he was a wise legislator, great in arts and in arms, an eloquent messenger of the Gods, either to one another, or to favoured mortals, and a musician of exquisite skill. His invention of the *Vina*, or *Indian* lute, is thus described in the poem entitled *Magha* : " *Nared* " sat watching from time to time his large *Vina*, which, " by the impulse of the breeze, yielded notes that " pierced successively the regions of his ear, and proceeded by musical intervals." The law tract, supposed to have been revealed by *Nared*, is at this hour cited by the *Pandits* ; and we cannot, therefore, believe him to have been the patron of *Thieves*; though an innocent theft of *Crishna's* cattle, by way of putting his divinity to a proof, be strangely imputed, in the *Bhagavat*, to his father *Brahma*.

The laft of the *Greek* or *Italian* Divinities, for whom we find a parallel in the Pantheon of *India*, is the *Stygian* or *Taurick Diana*, otherwife named *Hecate*, and often confounded with *Proferpine* ; and there can be no doubt of her identity with *Cali*, or the wife of *Siva*, in his character of the *Stygian Jove*. To this black goddefs, with a collar of golden fkulls, as we fee her exhibited in all her principal temples, *human facrifices* were anciently offered, as the *Vedas* enjoined; but, in the prefent age, they are abfolutely prohibited, as are alfo the facrifices of bulls and horfes. Kids are ftill offered to her; and, to palliate the cruelty of the Daughter, which gave fuch offence to *Buddha*, the *Brahmans* inculcate a belief, that the poor victims rife in the heaven of *Indra*, where they become the muficians of his band.

Inftead of the obfolete, and now illegal, facrifices of a man, a bull, and a horfe, called *Neramedha*, *Gomedha*, and *Aiwamedha*, the powers of nature are
Vol, J, U thought

thought to be propitiated by the less bloody ceremonies at the end of autumn, when the festivals of *Cali* and *Lacshmi* are solemnized nearly at the same time. Now, if it be asked, how the Goddesses of Death came to be united with the mild Patronesses of Abundance, I must propose another question. How came *Proserpine* to be represented in the *European* system as the daughter of *Ceres* ? Perhaps, both questions may be answered by the proposition of natural philosophers, that " the apparent destruction of a substance is the production of it in a different form." The wild musick of *Cali's* priests at one of her festivals, brought instantly to my recollection the *Scythian* measures of *Diana's* adorers in the splendid opera of *Iphigenia in Tauris*, which *Gluck* exhibited at *Paris* with less genius, indeed, than art, but with every advantage that an orchestra could supply.

That we may not dismiss this assemblage of *European* and *Asiatick* Divinities with a subject so horrid as the altars of *Hecate* and *Cali*, let us conclude with two remarks, which properly, indeed, belong to the *Indian* Philosophy, with which we are not at present concerned. First; *Elysium* (not the place, but the bliss enjoyed there, in which sense *Milton* uses the word) cannot but appear, as described by the poets, a very tedious and infipid kind of enjoyment: It is, however, more exalted than the temporary *Elysium* in the court of *Indra*, where the pleasures, as in *Muhammed's* paradise, are wholly sensual; but the *Mukti*, or *Elysian* happiness of the *Vedanta* School, is far more sublime; for they represent it as a total absorption, though not such as to destroy consciousness in the Divine Essence; but, for the reason before suggested, I say no more of this idea of beatitude, and forbear touching on the doctrine of transmigration, and the similarity of the *Vedanta* to the *Sicilian*, *Italick*, and old *Academick* Schools.

Secondly ;

Secondly ; in the myftical and elevated character of *Pan*, as a perfonification of the *Univerfe*, according to the notion of Lord *Bacon*, there arifes a fort of fimilitude between him and *Crifhna*, confidered as *Narayan*. The *Grecian* God plays divinely on his reed, to exprefs, we are told, ethereal harmony. He has his attendant Nymphs of the paftures and the dairy. His face is as radiant as the fky, and his head illumined with the horns of a crefcent; whilst his lower extremities are deformed and fhaggy, as a fymbol of the vegetables which the earth produces, and of the beads who roam over the face of it. Now we may compare this portrait partly with the general character of *Crifhna*, the Shepherd God, and partly with the defcription in the *Bhagavat*, of the Divine Spirit exhibited in the form of this *Univerfal World* ; to which we may add the following ftory from the fame extraordinary poem* The Nymphs had complained to *Yafodd*, that the child *Crijhna* had been drinking their curds and milk. On being reproved by his fofter-mother for this indifcretion, he requested her to examine his mouth; in which, to her juft amazement, he beheld the *whole univerfe* in all its plenitude of magnificence,

We muft not be furprifed at finding, on a clofe examination, that the characters of all the *Pagan Deities*, male and female, melt into each other, and at laft into one or two; for it feems a well-founded opinion, that the whole crowd of gods and goddelfes in ancient *Rome*, and modern *Vordnes*, mezn only the powers of Nature* and principally thofe of the *Sun*, expreffed in a variety of ways, and by a multitude of fanciful names.

Thus have I attempted to trace, imperfectly at prefent, for want of ampler materials, but with a confi-

dence continually increafing as I advanced, a parallel between the Gods adored in three very different nations, *Greece, Italy, and India*; but which was the original fyftem, and which the copy, I will not prefume to decide; nor are we likely, I prefume, to be foon furnifhed with fufficient grounds for a decifion. The fundamental rule, that *natural, and moft human, operations proceed from the fimple to the compound*, will afford no affiftance on this point; fince neither the *Afiatick* nor *European* fyftem has any fimplicity in it; and both are fo complex, not to fay abfurd, however intermixed with the beautiful and the fublime, that the honour, fuch as it is, of the invention, cannot be allotted to either with tolerable certainty.

Since *Egypt* appears to have been the grand fource of knowledge for the *weftern*, and *India* for the more *eajlern*, parts of the globe, it may feem a material queftion, whether the *Egyptians* communicated their Mythology and Philofophy to the *Hindus*, or converfely : but what the learned of *Memphis* wrote or faid concerning *India*, no mortal knows; and what the learned of *Vdrdnes* have afferted, if any thing, concerning *Egypt*, can give us little fatisfaftion. Such circumftantial evidence on this queftion as I have been able to col left, fhall neverthelefs be ftated ; becaufe, unfatisfactory as it is, there may be fomethng in it not wholly unworthy of notice; though, after all, whatever colonies may have come from the *Nile* to the *Ganges*, we fhall, perhaps, agree at laft with Mr. *Bryant*, that *Egyptians, Indians, Greeks, and Italians*, proceeded originally from one central place, and that the fame people carried their religion and fcienes into *China* and *Japan* : may we not add, even to *Mexico* and *Peru* ?

Every one knows that the true name of *Egypt* is *Misr*, spelled with a palatal fibilant both in *Hebrew* and *Arabic*. It seems in *Hebrew* to have been the proper name of the first settler in it; and when the *Arabs* use the word for a great city, they probably mean a city like the capital of *Egypt*. Father *Marco*, a Roman missionary, who, though not a scholar of the first rate, is incapable, I am persuaded, of a deliberate falsehood, lent me the last book of a *Rdmayan*, which he had translated through the *Hindi* into his native language, and with it a short vocabulary of mythological and historical names, which had been explained to him by the *Pandits* of *Betiya*, where he had long resided. One of the articles in his little Dictionary was, " *Tirut*, a town or province, in which the priests from *Egypt* settled:" and when I asked him what name *Egypt* bore among the *Hindus*, he said *Misr*; but observed, that they sometimes confounded it with *Abyffinia*. I perceived that his memory of what he had written was correct; for *Misr* was another word in his index, " from which country (he said) came the *Egyptian* priests who settled in *Tirut*." I suspected immediately that his intelligence flowed from the *Mufelmans*, who call fugar-candy *Mifri*, or *Egyptian*; but, when I examined him closely, and earnestly desired him to recollect from whom he had received his information, he repeatedly and positively declared, that " it had been given him by several *Hindus*, and particularly by a *Brahman*, his intimate friend, who was reputed a considerable *Pandit*, and had lived three years near his house." We then conceived that the seat of his *Egyptian* colony must have been *Tirohit*, commonly pronounced *Tirut*, and anciently called *Mit'hild*, the principal town of *Janacadesa*, or *North Bahar*; but *Mahefa Pandit*, who was born in that very district, and who submitted patiently to a long examination concerning *Misr*, overfret all our conclusions; he denied that the *Brahmans* of his country were generally furnished *Mist*, as we had been informed; and said, that the addition of *Mifra* to the name of *Vdchepcti*, and other learned authors,

thors, was a title formerly conferred on the writers of *mifcellanies*,) or *compilers* of various tracts of religion or fcience, the word being derived from a root fignifying to *mix*. Being afked, where the country of *Miir* was, " There are two (he anfwered) of that name; one of " them *in the weft*, under the dominion of *Mufelmdns* ; " and another, which all the *Saftras* and *Purdnas* mention, in a mountainous region to the north of *Ayo-dhya*" It is evident that by the firft he meant *Egypt*; but what he meant by the fecond it is not eafy to afcertain. A country, called *Tiruhut*, by our geographers, appears in the maps between the north-eaftern frontier of *Audh* and the mountains of *Nepal*; but whether that was the *Tirut* mentioned to Father *Marco* by his friend of *Betty* a I cannot decide. This only I know wjth certainty, that *Mifra* is an epithet of two *Brdhmans* the drama of *Sacontald*, which was written near a century before the birth of *Chrijl*; that fome of the greateft lawyers, and two of the ftneft dramatick poets, of *India* have the fame title ; that we hear it frequently in court added to the names of *Hindu* parties; and that none of the *Pandits*, whom I have fince confulted, pretend to know the true meaning of the word, as a proper name, or to give any other explanation of it, than that it is a *furname* of *Brahmans in the weft*.

On the account given to Colonel *Kyd* by the old *Raft* of *Crifhnanagar*," concerning *traditions* among the *Hindus*, that fome *Egyptians* had fettled in this country," I cannot rely; becaufe I am credibly informed by fome of the *Raja's* own family, that he was not a man of folid learning, though he poffeffed curious books, and had been attentive to the converfation of learned men : befides, I know that his fon, and moft of his kinfmen, have been dabblers in *Perfian* literature, and believe them very likely, by confounding one fource of information with another, to puzzle themfelves, and miflead thofe with whom they converfe. The
word

word *Misr*, fpelled alfo in *Sanfcrit* with a palatial fibilant, is very remarkable; and, as far as etymology can help us, we may fafely derive *Nilus* from the *Sanfcrit* word *nila*, or *blue* : fince *Dionyfius* exprefsly calls the waters of that river " an *azure* fstream;" and, if we can depend on *Marco's* Italian verfion of the *Ramayan*, the name of *Nila* is given to a lofty and facred mountain, with a fummit of pure gold, from which flowed *a river of clear, fweet, and frefh water*.

M. *Sonnerat* refers to a diflertation by Mr. *Schmit*, which gained a prize at the Academy of Infcriptions, " On an *Egyptian* Colony eftablifhed in *India*." It would be worth while to examine his authorities, and either to overturn or verify them by fuch higher authorities as are now acceffible in thefe provinces. I ftrongly incline to think him right, and to believe that *Egyptian* priefts have actually come from the *Nile* to the *Ganga* and *Yamuna*, which the *Brahmans* moft affuredly would never have left. They might, indeed, have come either to be inftructed, or to inftruct; but it feems more probable that they vifited the *Sarmans* of *India*, as the fages of *Greece* vifited them, rather to acquire than to impart knowledge: nor is it likely that the felf-fuficient *Brdh-mans* would have received them as their preceptors.

Be all this as it may, I am perfuaded that a connection fubfifted between the old idolatrous nations of *Egypt*, *India*, *Greece*, and *Italy*, long before they emigrated to their feveral fettlements, and confequently before the birth of *Mofes* : but the proof of this propofition will in no degree affect the truth and fanctity of the *Mofaick* Hiftory, which, if confirmation were necefiary, it would rather tend to confirm. The *Divine Legate*, educated by the daughter of a king, and in all refpects highly accomplifhed, could not but know the mythological fyftem of *Egypt*; but he mull have condemned the fuperftitionsof that people, and defpifed the fpeculative abfurdities of their priefts; though fome

of

of their traditions concerning the creation and the flood were grounded on truth.

Who was better acquainted with the mythology of *Athens* than *Socrates* ? Who more accurately versed in the Rabbinical doirines than *Paul* ? Who possessed clearer ideas of all ancient astronomical systems than *Newton* ? or of scholastical metaphysics than *Locke* ? In whom could the *Roman* Church have had a more formidable opponent than in *Chillingworth*, whose deep knowledge of its tenets rendered him so competent to dispute them ? In a word, who more exactly knew the abominable rites, and shocking idolatry, of *Canaan* than *Moses* himself ? Yet the learning of those great men only incited them to seek other sources of truth, piety, and virtue, than those in which they had long been immersed. There is no shadow then of a foundation for an opinion, that *Moses* borrowed the first nine or ten chapters of *Genesis* from the literature of *Egypt*: still less can the adamantine pillars of our *Christian* faith be moved by the result of any debates on the comparative antiquity of the *Hindus* and *Egyptians*, or of any inquiries into the *Indian* Theology.

Very respectable natives have assured me, that one or two missionaries have been absurd enough, in their zeal for the conversion of the *Gentiles*, to urge, " that " the *Hindus* were even now almost *Christians*, because " their *Brahma*, *Vishnu*, and *Mahefa*, were no other " than the *Christian* Trinity;" a sentence in which we can only doubt whether folly, ignorance, or impiety, predominates. The three powers, *creative*, *preservative*, and *destructive*, which the *Hindus* express by the trilateral word O'm, were grossly ascribed by the first idolaters, to the *heat*, *light* and *flame* of their mistaken divinity the Sun; and their wiser successors in the East, who perceived that the Sun was only a created thing, applied those powers to its Creator; but the *Indian* Triad, and that of *Plato*, Which see calls the Supreme Good, the Reason, and the

Soul, ate infimely removed from the holinefs and dabolic mity of the doctrine which pious *Chriftians* have deduced from texts in the Golpel; though other *Chriftians*, as pious, openly profefs their diffent from them. Each feft muft be juftified by its own faith, and good intentions. This only I mean to inculcate, that the tenet of our Church cannot, without profanenefs, be compared with that of the *Hindus*, which has only an apparent refemblance to it, but a very different meaning.

One fingular fact, however, muft not be fuffered to pafs unnoticed. That the name of *Crifhna*, and the general outline of his flory, were long anterior to the birth of our Saviour, and probably to the time of *Horner*, we know very certainly; yet the celebrated poem entitled *Bhagavat*,^l which contains a prolix account of his life, is filled with narratives of a moft extraordinary kind, but ftrangely variegated and intermixed with poetical decorations. The incarnate Deity of the *Sanfcrit* romance was cradled, as it informs us, among *herdfmen*; but it adds, that he was educated among them, and paffed his youth in playing with a party of milkmaids. A tyrant, at the time of his birth, ordered all new-born males to be flain; yet this wonderful babe was preferved by biting the breaft, inftead of fucking the poifoned nipple, of a nurfe commiffioned to kill him. He performed amazing, but ridiculous, miracles in his infancy, and, at the age of feven years, held up a mountain on the tip of his little finger. He faved multitudes, partly by his arms, and partly by his miraculous powers. He raifed the dead, by defcending for that purpofe to the loweft regions. He was the meekeft and beft-tempered of beings, wafhed the feet of *he Brahmans*, and preached very nobly, indeed, and fublimely, but always in thek favor. He was pure and chalte in reality, but exhibited an appearance of exceffive libertinifm, and had wives or miftreffes too numerous to be counted. Laftly, foe was benevolent and tender, yet fomented and conducted

ducted a terrible war. This motley story must induce an opinion, that the spurious Gospels, which abounded in the first age of *Christianity*, had been brought to *India*, and the wildest parts of them repeated to the *Hindus*, who ingrafted them on the old fable of *Cefava*, the *Apollo* of *Greece*.

As to the general extension of our pure faith in *Hindujdn*, there are at present many sad obstacles to it. The *Mufelmans* are already a sort of heterodox *Christians*. They are *Christians*, if Locke reasons justly, because they firmly believe the immaculate conception, divine character, and miracles of the *Messiah*; but they are heterodox, in denying vehemently his character of Son, and his equality, as God, with the Father, of whose unity and attributes they entertain and express the most awful ideas; while they consider our doctrine as perfect blasphemy, and insist, that our copies of the Scriptures have been corrupted both by *Jews* and *Christians*. It will be inexplicably difficult to undeceive them, and scarce possible to diminish their veneration for *Mohammed* and *Ali*, who were both very extraordinary men, and the second a man of unexceptionable morals. The *Koran* shines, indeed, with a borrowed light, since most of its beauties are taken from our Scriptures; but it has great beauties, and the *Mufelmans* will not be convinced that they were borrowed. The *Hindus*, on the other hand, would readily admit the truth of the Gospel; but they contend, that it is perfectly consistent with their *Sastras*. The Deity, they say, has appeared innumerable times, in many parts of this world, and of all worlds, for the salvation of his creatures; and though we adore him in one appearance, and they in others, yet we adore, they say, the same God, to whom our several worships, though different in form, are equally acceptable, if they be sincere in substance. We may allure ourselves, that neither *Mufelmans* nor *Hindus* will ever be converted by any million from the Church of *Rome*, or from any

other Church; and the only human mode, perhaps, of causing so great a revolution, will be to translate into *Sanskrit* and *Persian*, such chapters of the Prophets, particularly of *Isaiah*, as are indisputably Evangelical, together with one of the Gospels; and a plain prefatory discourse, containing full evidence of the very distant ages, in which the predictions themselves, and the history of the Divine Person predicted, were severally made publick; and then quietly to disperse the work among the well-educated natives; with whom, if, in due time, it failed of producing very salutary fruit by its natural influence, we could only lament more than ever the strength of prejudice, and the weakness of unaffected reason.

X.

A DESCRIPTION

OF A

CAVE NEAR GYA.

By JOHN HERBERT HARRINGTON, ESQ.

A KNOWLEDGE of the Antiquities of *Hindoestan* forming one of the feveral objects propofed by the intititution of our Society, with the hope of communicating fomething acceptable on this head, I took the opportunity of a late excurfion up the country, to fee the *Cave* which Mr. *Hodgekis* a few years fince attempted to vifit, at the defire, I believe, of the late Governor General, but was affaffinated in his way to it by the followers of one of the rebellious allies of *Cheynt Sing*. On my describing it to the Prefident, whom I had the pleafure to accompany, I was encouraged by him to think that a particular account of it would be curious, and ufeful; and in confequence made a fecond vifit to it from *Gyd*, when I took the following meafurements, and, by the means of my *Moonfhee*, a copy of the infcription on it, which I had defpaired of presenting to you, but in its original language, (a *Pandit* at *Bendris* having attempted in vain to get it read during thefe laft three months,) till the kind affiftance of Mr, *Wilkins* enabled me to add the accompanying tranflation and remarks, to what would otherwise have given little fatisfaction.

The hill, or rather rock, from which the cavern is dug, lies about fourteen miles north of the ancient city
of

of Gya, and seems to be one of the fourth-eastern hills of the chain of mountains called by *Rennel*, *Caramfah*, both being a short distance to the west of the *Phulgo*.

It is now distinguished by the name of *Nagurjinee* ; but this may perhaps be a modern appellation, no mention of it being made in the inscription. Its texture is a kind of granite, called by the *Mohammedan* natives, *Sung Khareh*, which composes the whole rock, of a moderate height, very craggy and uneven, and steep in its ascent.

The cave is situated on the southern declivity, about two thirds from the summit: a tree immediately before it prevents its being seen from the bottom. It has only one narrow entrance, from the fourth, two feet and a half in breadth, six feet high, and of thickness exactly equal. This leads to a room of an oval form, with a vaulted roof, which I measured twice, and found to be forty-four feet in length from east to west, eighteen feet and a half in breadth, and ten feet and a quarter in height at the centre. This immense cavity is dug entirely out of the solid rock, and is exceedingly well polished, but without any ornament. The same stone extends much farther than the excavated part, on each side of it, and is altogether, I imagine, full an hundred feet in length. The inhabitants near know nothing of its history, or age; but I learnt from a chief of the neighbouring village, that a tradition is extant, of a *Mohammedan*, named *Minhaj-u-deeri*) having performed his *cheleh*, or forty days devotion, in this cavern ; and, that he was cotemporary with *Mukhdoom Sherf-u-deen*, a venerated *welee*, who died in *Bchdr* in the 590th year of the *Hijree*; and he even went so far as to aver, that he himself was descended from *Minhaj u-deen*, and had records at *Patna* of his family's genealogy to the present time. What credit is due to this I will not pretend to say; but the room is certainly now frequented
by

by *Mohammedans*, and has been for some time, as there are the remains of an old mosque close before it; and within a raised terrace, such as the *Mohammedan* devotees are used to construct for their religious retirement. There are two inscriptions, one on each side of the interior part of the entrance; impressions of both which my *Moonfhee* took off in the course of three days, with much trouble, and sufficient accuracy, to enable Mr. *Wilkins* to understand and explain the whole of one; though many *Pandits*, I was informed, who had seen the original engraving, had attempted in vain to decipher it. The other, which consists of one line only, is unfortunately of a different character, and remains still unintelligible.

The following letter and remarks, which Mr. *Wilkins* has favored me with, make it unnecessary for me to say any thing of the contents of the inscription. I can only regret with him that the date is yet undiscovered; as what is now but a gratification of curiosity, might then have been a valuable clue to the illustration of obscure events in ancient history. There are, however, several other caves in the adjoining hills, which I likewise visited, but had not time to take the inscriptions; and from these, I hope, a date will be discovered.

Were any other testimony, besides the inscriptions, wanted, to show that these caves were religious temples, the remains of three defaced images near another, which I visited, called *Curram Choffar*, would be sufficient proof of it. A third, the name of which I could not learn, has its entrance very curiously wrought with elephants, and other ornaments, of which I hope in a short time to present a drawing to the Society.

A LETTER
FROM
CHARLES WILKINS, ESQ.
TO
THE SECRETARY.

DEAR SIR,

HAVING been so fortunate as to make out the whole of the very curious Infcription you were so obliging as to lend me, I herewith return it, accompanied by an exact Copy, in a reduced fize, interlined with each correponding letter in the modern *Dewnagar* charader; and also a Copy of my Tranflation, which is as literal as the idioms would admit it to be.

The character is undoubtedly the moft ancient of any that have hitherto come under my infpedion. It is not only diffimilar to that which is now in ufe, but even very materially different from that we find in infcriptions of eighteen hundred years ago. But though the writing be not modem, the language is pure *Samfkreet*, written in a long verfe, called *Sardoola-veekree-reeta*, and confifts of four paufes, of nineteen fyllables each, in this form;

- - - o o - o - o - o - o - - o - - o - 1 - - - o o - o - o o o - - o - - o -
- - - o - o - o - o - o - o - - o - - o - 1 - - - o o - o - o o - - o - - o -

The metre was no fmall help in decyphering the vowels.

The

The first lines of the first verse allude to the story of *Bhawanee's* killing the evil spirit *Maheefhafoor*, who, in the disguise of a buffalo, as the name imports, had fought with *Eendra*, and his celestial bands, for a hundred years, defeated him, and usurped his throne. The story is to be found at large in a little book called *Chandee*. The vanquished spirits, being banished the heavens, and doomed to wander the earth, after a while assemble, with their chief *Eendra* at their head, and resolve to lay their grievances before *Veefhnoo* and *Seev*. Conducted by *Brahma*, they repair into the presence of those Deities, who heard their complaints with compassion; and their anger was so violent against *Maheefhafoor*, that a kind of flame issued from their mouths, and from the mouths of the rest of the principal Gods, of which was formed a Goddess of inexpressible beauty with ten arms, and each hand holding a different weapon. This was a transfiguration of *Bhawanee*, the consort of *Seev*, under which she is generally called *Doorga*. She is sent against the usurper. She mounts her lion, the gift of the mountain *Heemalay*, (*snowy*.) and attacks the monster, who shifts his form repeatedly; till at length the Goddess *planteth her foot upon his head*, and cuts it off with a single stroke of her sword. Immediately the upper part of a human body issues through the neck of the headless buffalo, and aims a stroke, which being warded off by the Hon with his right paw, *Doorga* puts an end to the combat, by piercing him through the heart with a spear. I have in my possession a statue of the Goddess, with one foot on her lion, and the other on the monster, in the attitude here lastly described.

The want of a date disappointed my expectations, I had some hopes that it was contained in the single line, which you informed me was taken from another part of the *cave*; but, although I have not yet succeeded in making out the whole, I have discovered enough to convince me that it contains nothing but an invocation.

If

If you fhould be fo fortunate as to obtain correct copies of the reft of the Infcriptions that are to be found in the *Caves* of thofe mountains, I make no doubt but that we fhall meet with fome circumftance or other, that will guide us to a difcovery of their antiquity.

I have the pleafure to fubfcribe myfelf,

DEAR SIR,

Your very fincere Friend,

And obedient humble Servant,

CHARLES WILKINS,

Calcutta, 17th March, 1785,

A
TRANSLATION
OF A
SANSKRIT INSCRIPTION,

WHEN the foot of the Goddefs (*a*) was, with its tinkling ornaments, planted upon the head of *Maheefhasoor*, (*b*) all the bloffom of the new-blown flower of the fountain (*c*) was difperfed with difgrace by its fuperior beauty. May that foot, radiant with a fringe of refulgent beams iffuing from its pure bright nails, endue you with a fteady and an unexampled devotion, offered up with fruits, and (hew you the way to dignity and wealth!

The illuftrious *Yagna Varma* was a Prince whose greatnefs confided in free-will offerings. His reputation was as unfullied as the moon. He was renowned amongst the Martial Tribes; and although he was, by defcent, by wifdom, courage, charity, and other qualities, the fore-leader of the royal line; yet, from the natural humility of his temper, he difturbed not the powerful ocean.

His aufpicious fon, *Sardoola Varma*, a Prince whose magnificence flowed, as it were, from the tree of imagination, (*d*) difplayed the enfigh of royalty in facrifices,
and

(*a*) *Bhawanec* the wife of *Seev*.

(*b*) The name of an evil Spirit.

(*c*) Epithet of the lotus.

(*d*) In the original *Kalpa-taroo*, a fabulous tree which **yielded every thing that was** demanded,

And the world was subdued by his infinite renown. He gratified the hopes of relations, friends, and dependants; and honor was achieved from the deed of death (e) near the uprising ocean.

By his pious son, called *Ananta Varma* because of his infinite renown, the holy abode of us contemplative men, who are always studious for his good, and employed in his service, hath been increased, and rendered famous, as long as the Earth, the Sun, and Moon, and starry Heaven, shall endure; and *Katyayanee* (f) having taken sanctuary, and being placed, in this cavern of the wonderful *Veen'dya* (g) mountains.

The holy Prince gave unto *Bhawanee*, in perpetuity, the village————(h) and its hilly lands, by whose lofty mountain-tops the sunny beams are cast in shade. Its filth and impurities are washed away by the precious stores of the *Makanada*, (i) and it is refreshed by the breezes from the waving *Preeyangoos* (k) and *Bakoolas* (l) of its groves

X 2 TRANSLATION

(e) He was probably carried to *Ganga-Sagar* to die.

(f) One of the names of *Doorga* or *Bowanee*.

(g) The name of the chain of mountains which commences at *Chunar*.

(h) The name, which consisted of two long syllables, is want* **rag** in the original,

(i) Probably the river called the *Mahonah* in RENNEL'S Map of South *Bahar*.

(k) Probably the *Champ*.

(l) *Moulecrec*,

XI.

TRANSLATION

OF A

SANSKRIT INSCRIPTION,

COPIED FROM A STONE AT BOODDHA GAYA,

BY MR. WILMOT, 1785.

Translated by CHARLES WILKINS, Esq.

IN the midst of a wild and dreadful forest, flourishing with trees of sweet-scented flowers, and abounding in fruits and roots, infested with lions and tigers, destitute of human society, and frequented by the *Moonees*, resided *Bood-dha*, the Author of Happiness, and a portion of *Narayan*. This Deity *Haree* who is the Lord *Hareefa*, the possessor of all, appeared in this ocean of natural Beings at the close of the *Devapara*, and beginning of the *Kalee Yoog*. He who is omnipresent, and everlastingly to be contemplated, the Supreme Being, the Eternal One, the Divinity worthy to be adored by the most praise-worthy of mankind, appeared here with a portion of his divine nature.

Once upon a time the illustrious *Amtira*, renowned amongst men, coming here, discovered the place of the Supreme Being, *Bood-dha*, in the great forest. The wife *A mara* endeavoured to render the God *Bood-dha* propitious by superior service; and he remained in the forest for the space of twelve years, feeding upon roots and fruits, and sleeping upon the bare earth; and he performed the vow of a *Moonee*, and was without transgression.

greffion. He performed acts of fevere mortification, for he was a man of infinite resolution, with a companionate heart. One night he had a vision, and heard a voice saying, " Name whatever boon thou wantest." *Amara Deva*, having heard this, was astonished, and with due reverence replied, " First, give me a visitation, and then " grant me such a boon." He had another dream in the night, and the voice said, " How can there be an " apparition in the *Kalee Yoog* ? The same reward may " be obtained from the sight of an image, or from the " worship of an image, as may be derived from the " immediate visitation of a Deity." Having heard this, he caused an image of the Supreme Spirit *Bood-dha* to be made, and he worshipped it, according to the law, with perfumes, incense, and the like; and he thus glorified the name of that Supreme Being, the incarnation of a portion of *Veeshnoo* : " Reverence be unto thee in " the form of *Bood-dha* ! Reverence be unto the Lord " of the Earth ? Reverence be unto thee, an incarnation " of the Deity and the Eternal One! Reverence be unto " thee, O God, in the form of the God of Mercy : the " dispeller of pain and trouble, the Lord of all things, " the Deity who overcometh the sins of the *Kalee Yoog*) " the Guardian of the Universe, the Emblem of Mercy " toward those who serve thee—O'm ! the possessor of all " things in vital form! Thou art *Brahma*, *Veeshnoo*, and " *Mahefa* ! Thou art Lord of the Universe! Thou art, " under the proper form of all things, moveable and " immoveable, the possessor of the whole ! and thus I " adore thee. Reverence be unto the Bestower of Sal- " vation, and *Reshcekefa*, the Ruler of the Faculties! " Reverence be unto thee (*Kefava*) the Destroyer of the " Evil Spirit *Kefee* ! O, *Damordara*, shew me favour ! " Thou art he who resteth upon the face of the milky " ocean, and who lyeth upon the serpent *Sefa*. Thou " art *Treeviekrama*, who at three strides compassed the " Earth ! I adore thee, who art celebrated by a thousand " names, and under various forms, in the shape of

"*Bood-dha*, the God of Mercy! Be propitious, O Moft
" High God!"

Having thus worshipped the Guardian of Mankind, *he* became like one of the juft. He joyfully caufed a holy temple to be built, of a wonderful conftruction, and therein were fet up the divine foot of *Veefhnoo*, for ever purifier of the fins of mankind, the images of the *Pandobs*, and of the defcents of *Veefhnoo* : and in like man-jier of *Brahma*, and the reft of the Divinities.

This place is renowned; and it is celebrated by the name of *Bhood-dha Gaya*. The forefathers of him who fhall perform the ceremony of the *Sradha* at this place fhall obtain falvation. The great virtue of the *Sradha* performed here, is to be found in the book called *Vayee-poorana* an Epitome of which hath by me been engraved upon ftone,

Veekramadeetya was certainly a king renowned in the world. So in his court there were nine learned men, celebrated under the epithet of the *Nava-ratnanee*, or *nine jewels* ; one of whom was *Amara Deva*, who was the king's chief counfellor, a man of great genius and profound learning, and the greateft favourite of his prince. He it certainly was who built the holy temple, which deftroyeth fin, inaplacein *Jamboodweep*, where the mind being fteady, it obtains its wifhes; and in a place where it may obtain falvation, reputation, and enjoyment, even in the country of *Bharata*, and the province of *Keekata*, where the place of *Bood-dha*, purifier of the finful, is renowned. A crime of an hundred-fold fhall undoubtedly be expiated from a fight thereof, of a thoufand-fold from a touch thereof, and of a hundred thoufand fold from worshipping thereof. But where is the ufe of faying fo much of the great virtues of this place ? Even the hofts of heaven worfhip with joyful fervice both day and night.

That

That it may be known to learned men, that he verily erected the house of *Bood-dha*, I have recorded, upon a stone, the authority of the place, as a self-evident testimony, on Friday, the fourth day of the new moon, in the month of *Madhoo*, when in the seventh or mansion of *Ganifa*, and in the year of the *Era of Veekramadeetya* 1005.

XII.

To ———

SECRETARY TO the ASIATICK SOCIETY.

S I R ,

BEFORE I left *Calcutta*, a Gentleman, with whom I chanced to be difcourfing of that fect of people who are diftinguifhed from the worfhippers of *Brahma*, and the followers of *Mahommed*, by the appellation *Seek*, informed me that there was a confiderable number of them fettled in the city of *Patna*, where they had a College for teaching the tenets of their philofophy, , As *Patna* was in my way to *Banaris*, I no fooner arrived there, than I inquired after the College, and I was prefently conduced to it; and I now request you will pleafe to lay before the Society the few Obfervations and Inquiries which a fingle vifit of about two hours would admit of my making. If, fuch as they are, they fhould hereafter be found ufeful, either as a clue to guide another in his refearches in the fame path, or to add to fome future account to render it more complete, my end in troubling you to lay it before the Society is fully answered.

I have the honour to fubfcribe myfelf,

S I R ,

Your moft obedient humble Servant,

CHARLES WILKINS.

Banaris, 1ft March, 1781;

Obfervations on the Seels and their College.

T F O U N D the College of the Seeks fituated in one of the narrow ftreets of *Patna*, at no very confiderable diftance from the Cuftom-houfe. I was permitted to enter the outward gate; but as foon as I came to the fteps which led up into the Chapel, or public hall, I was civilly accofted by two of the Society. I alked them if I might afcend into the hall. They faid it was a place of worfhip, open to me and to all men; but, at the fame time, intimated, that I muft take off my fhoes. As I confidered this ceremony in the fame light as uncovering my head upon entering any of our temples dedicated to the Deity, I did not hefitate to comply; and I was then politely conduced into the hall, and feated upon a carpet in the midft of the afsembly, which was fo numerous as almoft to fill the room. The whole building forms a fquare of about forty feet, raifed from the ground about fix or eight fteps. The hall is in the center, divided from four other apartments by wooden arches, upon pillars of the fame materials, all neatly carved. This room is rather longer than it is broad. The floor was covered with a neat carpet, and furnifhed with fix or feven low defks, on which flood as many of the books of their law; and the walls, above the arches, were hung with European looking-glaffes in gold frames, and piftures of *Muffulman* Princes and *Hindoo* Deities. A little room, which, as you enter, is fituated at the left-hand end of the hall, is the chancel, and is furnifhed with an altar covered with a cloth of gold, upon which was laid a round black fhield over a long broad-fword, and on either fide a *ehowry* of peacock's feathers, mounted in a filver handle. The altar was raifed a little above the ground, in a declining pofition. Before it flood a low kind of throne, plated with filver; but rather too fmall to be ufeful; about it were fe-

veral filver flower-pots and rofe-water bottles; and on the left hand flood three fmall *urns*, which appeared to be copper, fumifhed with notches to receive the donations of the charitable. There flood alfo near the altar, on a low defk, a great book, of a folio fize, from which fome portions are daily read in their divine fervice. It was covered over with a blue mantle, on which were printed, in filver letters, fome felect paffages of their law.

After I had had a long converfation with two of the congregation, who had politely feated themfelves on each fide of me on the carpet, and whom I found very intelligent, notice was given that it was noon, and the hour of divine fervice. The congregation arranged themfelves upon the carpet, on each fide of the hall, fo as to leave a fpace before the altar from end to end. The great book, defk, and all, was brought with fome little ceremony from the altar, and placed at the oppolite extremity of the hall. An old man, with a reverend filver beard, kneeled down before the defk with his face towards the altar; and on one fide of him fat a man with a fmall drum, and two or three with cymbals. The book was now opened, and the old man began to chant to the time of the drum and the cymbals; and, at the conclufion of every verfe, moft of the congregation joined chorus in a refponfe, with countenances exhibiting great marks of joy. Their tones were by no means harfh; the time was quick : and I learnt that the fubject was a Hymn in praife of the unity, the omniprefence, and the omnipotence, of the Deity. I was fingularly delighted with the geftures of the old man ; I never faw a countenance fo expreffive of infelt joy, whilft he turned About from one to the other, as it were, befpeaking their affents to thofe truths which his very foul feemed to be engaged in chanting forth. The Hymn being concluded, which confifted of about twenty verfes, the whole congregation got up, and prefented their
faces

faces with joined hands towards the altar, in the attitude of prayer. A young man now flood forth; and, with a loud voice and distinct accent, solemnly pronounced a long prayer, or kind of liturgy, at certain periods of which all the people joined in a general response, saying, *Wa Gooroo !* They prayed against temptation; for grace to do good; for the general good of mankind : a particular blessing to the *Seeks*; and for the safety of those who at that time were on their travels. This prayer was followed by a short blessing from the old man, and an invitation to the assembly to partake of a friendly feast. The book was then closed, and returned to its place at the altar; and the people being seated as before, two men entered, bearing a large iron caldron, called a *curray*, just taken from the fire, and placed it in the center of the hall upon a low stool. These were followed by others with five or six dishes, some of which were of silver, and a large pile of leaves, sewed together with fibres, in the form of plates. One of these plates was given to each of the company without distinction; and the dishes being filled from the caldron, their "contents were served out till every one had got his share. Myself was not forgotten ; and, as I was resolved not to give them the smallest occasion for offence, I ate up my portion. It was a kind of sweet-meat, of the confidence of soft brown sugar, composed of flower and sugar mixed up with clarified butter, which is called *ghee*. Had not the *ghee* been rancid, I should have relished it better. We were next served with a few sugar plums; and here ended the feast, and the ceremonies of the day. They told me the religious part of the ceremony was daily repeated five times. I now took my leave, inviting some of the principal men amongst them, who were about to return to their own country through *Banaris*, to pay me a visit.

In the course of the conversation I was engaged in with the two *Seeks* before the service, I Was able to
gather

gather the following circumstances. That the founder of their faith was called *Naneek Sah*, who flourished about four hundred years ago at *Punjab*, and who, before his apotheosis, was a *Hindoo* of the *Kfhetry*, or military tribe; and that his body disappeared as the *Hindoos* and the *Muffulmans* were disputing for it; for upon their removing the cloth which covered it, it was gone. That he left behind him a book, composed by himself, in verse, and the language of *Punjab*, (but a character partly of his own invention,) which teaches the doctrines of the faith he had established. That they call this character, in honour of their founder, *Gooroo-Mookhee* : " *from the mouth of the preceptor*" That this book, of which that standing near the altar, and several others in the hall, were copies, teaches that there is but one God, omnipotent and omnipresent; filling all space, and pervading all matter; and that he is to be worshipped and invoked. That there will be a day of retribution, when virtue will be rewarded and vice punished (I forgot to ask in what manner.) That it not only commands universal toleration, but forbids disputes with those of another persuasion. That it forbids murder, theft, and such other deeds as are, by the majority of mankind, esteemed crimes against society; and inculcates the practice of all the virtues, but particularly an universal philanthropy, and a general hospitality to strangers and travellers. This is all my short visit would permit me to learn of this book. It is a folio volume, containing about four or five hundred pages.

They told me further, that some years after this book of *Naneek Sah* had been promulgated, another made its appearance, now held in almost as much esteem as the former. The name of the author has escaped my memory; but they favoured me with an extract from the book itself in praise of the Deity. The passage had struck my ear on my first entering the hall, when the

itudeuu

Undents were all engaged in reading. From the fimi-larky of the language to the *Hindhnpvee*, and many *Shanfcrit* words, I was able to underftand a good deal of it; and I hope, at fome future period, to have the honour of laying a Tranflation of it before the Society. They told me I might have copies of both their books, if I would be at the expenfe of transcribing them.

I next inquired why they were called *Seth*, and they told me it was a word borrowed from one of the com-mandments of their founder, which fignifies, " *Learn* " *thou*;" and that it was adopted to dittinguifh the fed foon after he difappeared. The word, as is well known, has the fame import in the *Hindoovee*.

I afked them what were the ceremonies ufed in ad-mitting a profelyte. A perfon having fhewn a fincere inclination to renounce his former opinions to any five or more *Seeks* affembled together, in any place, as well on the highway as in a houfe of worfhip, they fend to the firft fhop where fweetmeats are fold, and procure a fmall quantity of a particular fort, which is very com-ilon, and, as I recolleft, they call *Batafa*; and having diluted it in pure water, they fprinkle fome of it on the body, and into the eyes of the .convert; whilft one of the beft inftructed repeats to him, in any language with which he is converfant, the chief canons of their faith, exacting from him a folemn promife to abide by them the reft of his life. This is the whole of the ceremony. The new convert may then choofe a *Gooroo*, or precep-tor, to teach him the language of their fcriptures, who firft gives him the alphabet to learn, and fo leads him on, by How degrees, until he wants no further instruc-tion., They offered to admit me into their Society; but I d^lined the honour; contenting myfelf with the alphabet; which they told me to guard as the apple of

my eye, as it was a facred character. I find it differs but little from the *Dewnagur*: the number, order, and powers of the letters are exactly the fame. The language itfelf is a mixture of *Perfian*, *Arabick*, and fome *Shanfcrit*, grafted upon the provincial dialect of *Punjabj* which is a kind of *Hindoovee*, or, as it is vulgarly* called by us, *Moors*.

XIII.

AN EXTRACT OF A LETTER

FROM

FRANCIS FOWKE, ESQ,

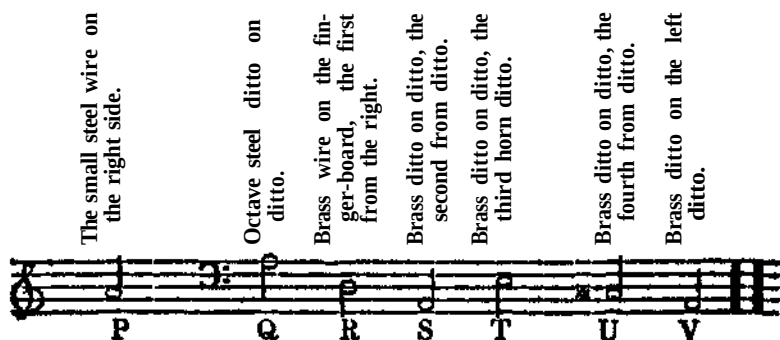
TO THE PRESIDENT.

THE drawings of *Jeewun Shah* and the *Been* will be difpatched in a fmall boat to-morrow. You wifhed to have had the two attendant muficians in the fame drawing with *Jeewun Shah* ; but the draftfman was not equal to the perpective of this: he would have run all the figures one into the other: and as he has fucceeded tolerably well with the principal figures, I thought it was better to be fure of that, efpecially as the other figures can eafily be added by a *European* artift. I have a double pleafure in fending you the enclafed account of the *Been*. In obliging you, I look forward to the inftru&ive amufement I fliall fliare with the public at large in the refult of your refearches into this fubject of *Indian* mufic; and I am exceedingly happy, by furnifhing you with facts, highly necelfary indeed, but the mere work of care and observation, to give you greater leifure for the contemplation of the whole. You may abfolutely depend upon the accuracy of all that I have faid refpecting the conftruftion and fcale of this inftrument: it has been done by meafurement: and, with regard to the intervals, I would not depend upon my ear, but had the *Been* tuned to the harpfichord, and compared the inftruments carefully, note by note, more than once. What I myfelf am aware of, will certainly pot efcape your penetration, that there may be a little of the bias of hypothefis, or an opinion pretty ftrongly eftabiifhed, in what I have faid of the confined modulation of the *Indian* mufic. But it is eafy to feparate my experiments and conjectures; and my prejudices

cannot

cannot mislead you ; though they may possibly suggest a useful hint, as half errors often do.

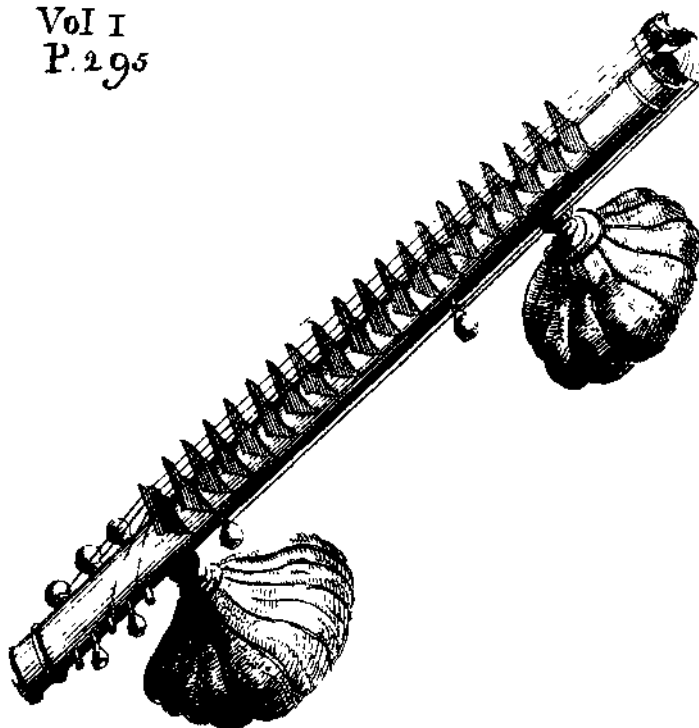
The *Been* is a fretted instrument of the guitar kind. The finger-board is $21\frac{6}{8}$ ths inches long. A little beyond each end of the finger-board are two large goards, and beyond these are the pegs and tail-piece which hold the wires. The whole length of the instrument is three feet seven inches. The first gourd is fixed at ten inches from the top, and the second is about two feet $11\frac{1}{2}$. The gourds are very large, about fourteen inches diameter, and have a round piece cut out of the bottom, about five inches diameter. The finger-board is about two inches wide. The wires are seven in number, and consist of two steel ones, very close together, in the right side; four brass ones on the finger-board ; and one brass one on the left side. They are tuned in the following manner. '



The great Angularity of this instrument is the height of the frets; that nearest the nut is one inch $\frac{1}{8}$, and that at the other extremity about $\frac{7}{8}$ ths of an inch, and the decrease is pretty gradual. By this means the finger never touches the finger-board itself. The frets are fixed on with wax by the performer himself, which he does entirely by ear. This was asserted by *Pear Cawn*, the brother of *Jecwun Shah*, who was ill at the time:



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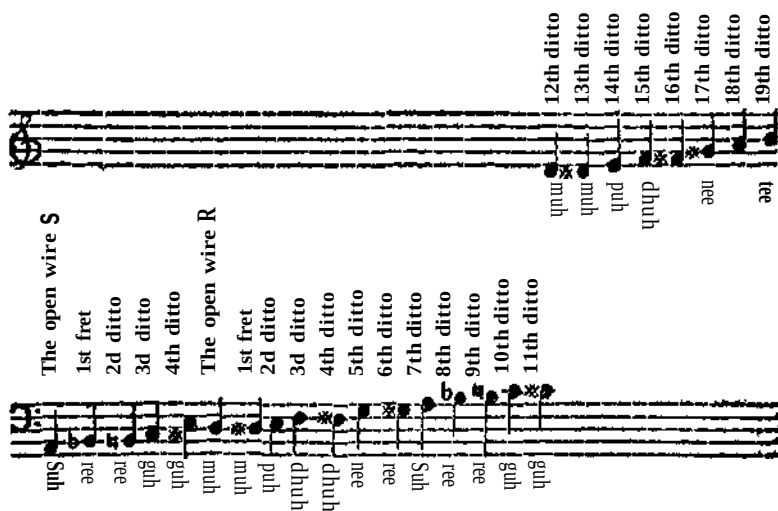
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but *Pear Cawn* is a performer very little, if at all, inferior to *Jeewun Shah*. The frets of *Pear Cawn's* instrument were tolerably exact. Any little difference is easily corrected by the pressure of the finger. Indeed, the performers are fond, on any note that is at all long, of pressing the string very hard, and letting it return immediately to its natural tension, which produces a sound something like the clove shake on the violin; but not with so agreeable an effect; for it appears sometimes to alter the sound half a tone.

The frets are nineteen in number. The notes that they give will appear on the following scale. I have added below the names which the performer himself gives to the notes in his own language. It is very observable, that the semitones change their names on the same semitone as in the *European* scale.



On the wires R and S, which are those principally used, there is an extent of two octaves, a whole note with all the half notes complete in the first octave, but the g and b wanting in the second. The performer's apology

logy for this was, that he could eafily get thofe notes by prefling the firing a little hard upon the frets *f* and *a* , which is very true from the height of the frets; but he afferted that this was no defeft in his particular inftrument, but that all *Beens* were made fo. The wires *TU* are feldom ufed, except open.

The *Been* is held over the left fhoulder, the upper gourd refting on that fhoulder, and the lower one on the right knee.

The frets are flopped with the left-hand; the firft and fecond fingers are principally ufed. The little finger of the hand is fometimes ufed to ftrike the note *V*. The third finger is feldom ufed, the hand fhifting up and down the finger-board with great rapidity. The fingers of the right hand are ufed to ftrike the firings of this hand; the third finger is never ufed. The two firft fingers ftrike the wires on the finger-board, and the little finger ftrikes the two wires. The two firft fingers of this hand are defended by a piece of wire put on the tops of them in the manner of a thimble : when the performer plays ftrong, this caufes a very jarring difagreeable found; whereas, when he plays foftly, the tone of the inftrument is remarkably pleafing.

The flyle of mufic on this inftrument is in general that of great execution. I could hardly ever difcover any regular air or fubjeft. The mufick feems to confift of a number of detached paffages, fome very regular in their afcent and defcent; and thofe that are played foftly, are moft of them both uncommon and pleating.

The open wires are flruck from time to time, in a
manner

manner that, I think, prepares the ear for a change of modulation, to which the uncommonly full and fine tones of these notes greatly contribute; but the ear *is*, I think, always disappointed : and if there is ever any transition from the principal key, I am inclined to think it is very short. Were there any other circumstances respecting the *Indian* music, which led to suppose that it has, at some period, been much superior to the present practice, the style, scale and antiquity of this instrument, would, I think, greatly confirm the supposition.

XIV.

A DESCRIPTION

OF THE

M A H W A H T R E E ,

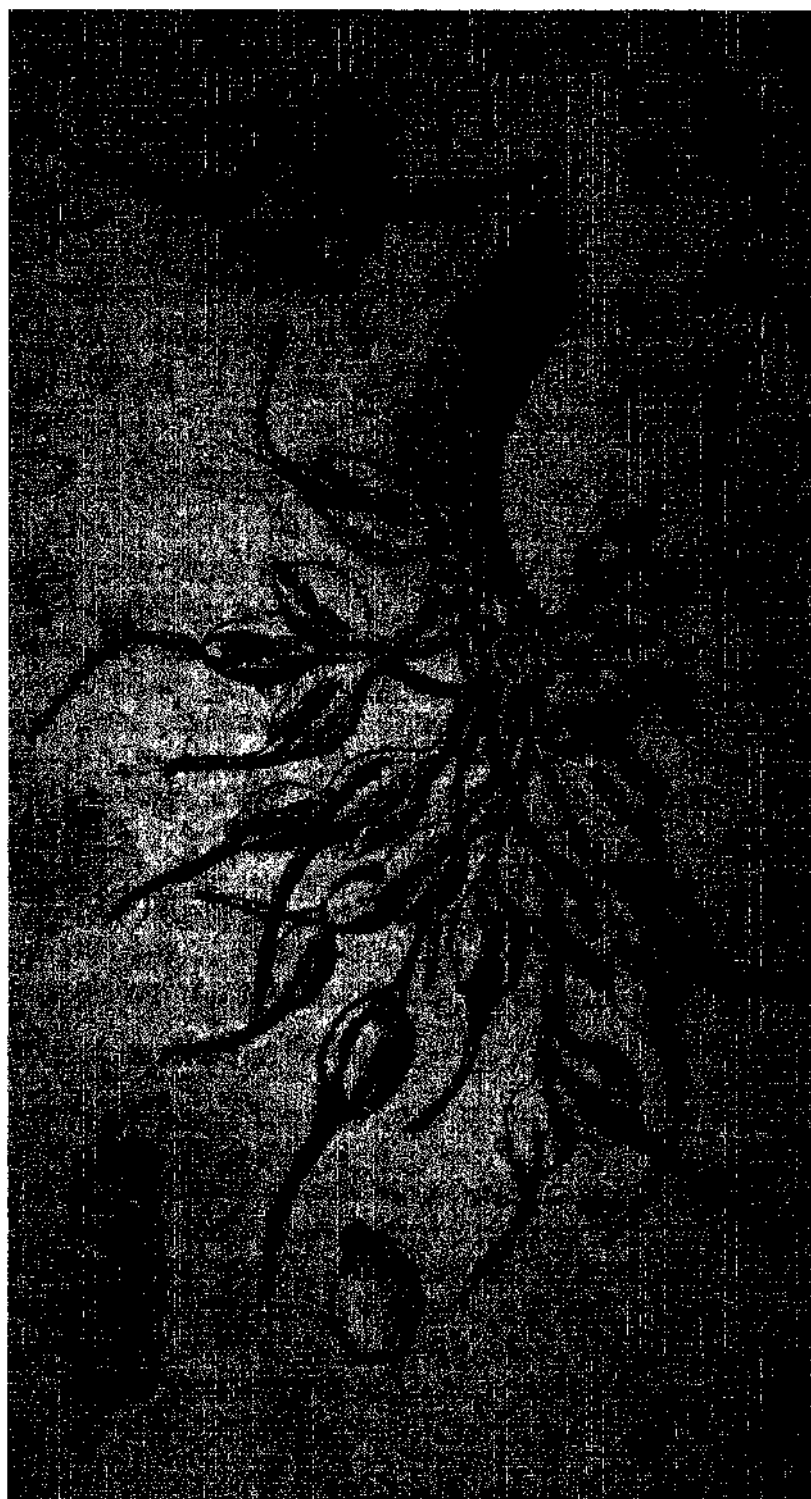
By Lieut. CHARLES HAMILTON.

THERE is a very curious and useful tree, called, by the natives of *Bahar*, and the neighbouring countries, the *Mahwah*) or *Mawee*: but the *Sanjcrit* name is *Madhuca*, or *Madhudruma*.

It is of the class of the Polyandria Monogynia of *Linnaeus*, but of a genus not described by him.

The *calyx* is monophyllous, quadrifid, half divided, and imbricated in its divided part; the two opposite and *outer* covering, in part, the two opposite and *inner* parts.

The *corolla* is monopetalous, having an inflated tube for its lower part, of near an inch long, thick, fleshy, and of a cream colour; from this arise nine small leaves, as it were, like petals, from a calyx, that are imbricated and twisted one over the other, from right to left, clasping the lower part of the style in a point by which they seem to serve, in some respect, like forceps, to detach the whole *corolla* at the season of its dropping.



There are no filaments: but the *anthtra*, which are in number mod commonly twenty-fix, long, fcabrous, and fpear-headed, are inferted in rows, on the infide and upper part of the tube of the *corolla*.

The *flyle* is long, round, and tapering, and projefts about an inch beyond the *corolla*. It is fucceeded by a drupe, with a thick pericarpium, bilocular, containing two feeds or kernels, covered with a dark brown fkin. There are often, however, *three* of thefe'in three feparate divifions.

The flowers rife in bunches from the extremities of the fmaller branches, and have each a pedicle of about an inch and a half long. Thefe are moitly turned downwards, whence the corollas more eafily drop off.

The tree, when full grown, is about the fize of a common *mango-tree*, with a bufhy head, and oval leaves, a little pointed. Its roots fpreading horizontally, are funk but little in the earth. The trunk, which is often of a xonfiderable thicknefs, rifes feldom to any great height, without giving off branches: it is, however, not uncommon to fee it fhoot up clear to the length of eight or ten feet. The wood itfelf is moderately hard, finegrained^ and of a reddifh colour.

By incifion, the tree affords a refinous *gum* from the bark.

The flowers are of a nature very extraordinary, differing effentially from thofe of any other plant with which I am acquainted, as they have not in any refpeQ; the ufual appearance of fuch, but rather refemble *berries*; and I, like many others, had long conceived them to be the *fruit* of the *Mahwah*. The tree drops its leaves in the month of February; and early in March thefe
flowers

flowers begin to come in clutters of thirty, forty, or fifty, from the Extremity of every small branch; and from this period till the latter end of April, as the flowers come to maturity, (for they never open or expand,) they continue falling off, with their *antheros*, in the mornings, a little after fun-rise, when they are gathered; and afterwards; dried by an expofure of a few days in the fun. When thus prepared, they very much refemble a dried *grape*, both in tafte and flavour.

Immediately after the flowers drop off, frefh fhoots are made for the new leaves, which foon make their appearance, coming prefently to their full growth.

The fruit (*properly* fo called) is of two forts in fhape; the one refembling a small *walnut*; the other fomewhat larger, and pointed. It is ripe towards the middle of May, and continues dropping from the tree till the whole fall; which is generally about the beginning, or towards the middle, of June. The outer covering, or *pericarpium*, which is of a foft texture, commonly burfts in the fall, fo that the feeds are very eafily fqueezed out of it. The feeds are fomewhat of the fhape, but longer than an *olive*,

Thefe feeds are replete with a thick *oil*, of the confiftence of *butter* or *ghee*, which is obtained by expreflion.

From this defcription it may eafily be conceived that the *Mdhwah-tree*, and its productions, are of Angular and general ufe, efpecially in thofe dry and barren countries which, from the nature of their fituation, are not fo well calculated for producing in plenty, or perfection, the other neceffaries of life.

The *corolla*, or flowers, after being dried as before described, are eaten by the natives raw, or dressed with their *cutties*; and, when eveii (imply boiled with rice, they afford a strengthening and wholesome nourishment. They are, indeed, often applied to a less laudable purpose; for being fomented, they yield, by distillation, a strong spirit, which the people here sell so very cheap, that for *one pice* (about a halfpenny) may be purchased no less than a *cutcha-feer*, (above a pint *English*;) with which any man may get completely drunk. These flowers, make an article of trade; being exported from this country to *Patna*, and a few here, in no inconsiderable quantities.

The *oil* yielded by the fruit, as before-mentioned, resembles *ghee* so much, that, being cheaper, the natives often mix it with that commodity. They use it, the same as *ghee*, in their victuals, and in the composition of some sorts of sweetmeats; and burn it in their lamps. It is also regarded as a salutary remedy, applied exteriorly to wounds, and all cutaneous eruptions. It is, at first, of the confidence of common *oil*, but soon coagulates. After being kept for some time, it acquires a bitterish taste and rancid smell, which renders it somewhat less agreeable as an article of food; but this is an inconvenience, which, by the *oil* being properly clarified, and prepared at first, might be perhaps avoided. This *oil* is also exported, both in its adulterated and original state, to *Patna*, and other parts of the low country.

I do not know any purpose to which the *gum* has ever been applied; but if found, upon trial, to be of use, it might be collected in large quantities. The best seasons for this would be in the months of March and April, about the time the flowers came out, when the

tree *fetms* to be most replete with it. Such an operation, indeed, would probably diminish its produce in the fruit and flower; but, where it was sufficiently cultivated, the loss in those could be but little felt.

The wood, from what has been already said of it, cannot be expected to be often had in beams of any considerable length, so as to make it so very useful in building, as it would otherwise be, from its not being liable to be eat by the white ants. Mr. Keif, however, tells me that, when he was at *Chowfee*, (a village upon the *Caramnaffa*, near *Buxar*,) he had beams of it, which were, to the best of his remembrance, above twenty feet long. But in many other respects it is a most useful wood; and, as it is tough, and of a strong texture, it might, perhaps, be employed to advantage in ship-building, in which case, if properly cultivated in many grounds that seem well adapted for it, and fit for little else, it might thus in time become a valuable article in that branch at *Calcutta*, whither it could easily be transported during the rainy season, from almost any part of these countries, by several rivers that are then sufficiently full to float it down.

The tree, I am told, will grow in the most barren ground, even amongst stones and gravel, where there is the least appearance of a soil; and it seems to destroy all the smaller trees and brushwood about it; yet it does not refuse a rich soil either: Mr. Keir having observed to me, that the few he had seen about *Buxar*, where it is certainly very good, were both taller, and seemed to thrive much better, than any he had ever met within *Ramgur*. It does not require much moisture, seeming to produce nearly as well in the driest as in most favorable years; and in every situation; and is therefore admirably fitted for the convenience of the inhabitants of these
hilly

hilly countries, which are peculiarly subject to long and severe droughts during the hot months.

Yet, notwithstanding its utility, and the immense quantity of ground that seems so well adapted to the growth of it, both here, and in the neighbouring provinces of *Catak*, *Packed*, *Rotas*, &c. (the greatest part of which, indeed, seems fit for no other useful production,) I have myself never observed, nor can I find any of my acquaintance who ever have remarked, one single tree in its infant state. We can see, every where, *full grown* trees in great abundance; but never meeting with any young plants, both I, and all whom I have spoken to on the subject, are at some loss to conceive how they should have come here. Neither can the country people themselves, of whom I have enquired, give any rational account of this: although it appears pretty evident that numbers of them must have been cultivated some time or other, every village having many of them growing about it.

This is a circumstance which sufficiently marks the true character of the lower order of natives in their morose indolence and sloth; owing chiefly, perhaps, to the ignorant and stupid rapacity of their *Rajahs*, *Zimeendars*, and other *landholders*, and their total inattention to the welfare of those dejected wretches, from whom they derive their consequence and power. Of their base indifference to the interests of those whom they thus affect to hold beneath their regard, many striking instances occurred to me in the course of my enquiries upon this very subject; and it was not long ago that, asking some questions concerning the *Mahwah* of a *Zimeendar* in this neighbourhood, he answered, that "it was the food of the poor people, and how should he know any thing about it!"

It was this strange neglect of the culture of it, and a knowledge of its usefulness, which first led me to enquire into the nature of this tree, from which the bulk of the people hereabouts already draw such great benefits; in order to know whether they might not increase it without any great trouble to themselves; and whether thereby the revenue might not also be increased, and a certain provision be made against famines, from which the natives often suffer severely in these higher districts.

To effect this, it would be necessary to give the *ryots* every possible encouragement to raise the tree from the seeds; but as the torpid apathy of these people, whether natural or acquired, will ever prevent their being moved to any exertion by a prospect, however alluring, of distant advantage, I apprehend the only way of bringing this about, would be making the planting and raising of a certain number of *Mahwahs* (in proportion to the value of the tenure) an article in their *Kabuleats*, or agreements.

The tree, as has been already observed, will grow almost any where. It ought to be sown about the beginning of the rains, either in beds (to be afterwards transplanted) or at about thirty or forty feet distance, in the ground designed for it. It is said that, in seven years, the trees will give flowers and fruit; in ten, they will yield about half their common produce; and that in twenty years they come to their full growth; after which, if my information be good, they will last near one hundred years. This account, I acknowledge, must necessarily be very vague and uncertain, as I never have met with a single person who appeared to have had either opportunity or inclination to observe its progress. Such, however, is what the country people say of it.

I am told that a good tree will easily give four *puckha maunds* (about three hundred weight averdupois) of dried flowers, which will sell here for about two *rupees*; and of seeds it will afford about two *maunds*; and this of oil will yield twenty-six *Jeers puckha* weight, (near 60lb.) which, in a year like this, when oil is cheap, will sell at this place for two *rupees* more. It is to be observed, however, that every tree will not give so much; neither are the flowers and oil so clear in any part of the hills as at *Chatra*; but, allowing only *half* of this, or less, to be the product of each tree, (though it might be rendered still much greater by the very least care and industry in the cultivation of it,) within the space of twenty years, a subsistence might be raised to the inhabitants, and a considerable revenue to the proprietors of the lands, throughout an immense tract of country; the greatest part of which, in its present state, is little better than a barren waste, and cannot pay one single *anna* to the *Zimeendar* or the Government. That such an advantage might be derived from it, may be proved by the most moderate calculation; for, supposing the trees to be sown at about forty feet distance from each other, on each *begah* (about the third of an acre) might stand eight trees; and, supposing the product of each tree to be only *half a rupee*, there would be *four rupees* of annual value on a *begah* of ground; half of which going to the proprietor, it would thus give a far better rent than the generality of the best grounds in these parts; and the labourer would have a produce, without any other trouble than that of sowing the seed, and fencing the ground whilst the trees were young; and that of annually gathering the flowers, and preparing the *oil*, when they arrive at their proper size; and they would probably begin to give a produce within less than ten years after the sowing.

As this tree will yield nearly its usual quantity of flowers and fruit in seasons when, for want of rain,
every

every other crop fails, if thus cultivated, it would afford the inhabitants a sure and certain resource, under the most dreadful, and what has hitherto been, to them, the most destructive, of all calamities, famine. It is well known that the rice, and other sorts of grain, which form the chief part of their sustenance, require a considerable degree of moisture to bring them to perfection. An unusually dry season destroys the harvest: in those articles, and reduces the ryots in general to the utmost misery; a predicament into which they could hardly fall, even in the severest dearth of grain, whilst they had plenty of the flowers and fruit of the *Mahwah* to depend upon.

It may be here not improper to observe, that Mr. *Keir* is now sowing a few acres with the seed of this useful tree, and means to fence it; which may, perhaps, in time, tempt others to follow so good an example.

Chatra, Ramgur, July 6, 1785.

XV.

OF THE

METHOD OF DISTILLING

As PRACTISED BY THE NATIVES AT CHATRA
IN RAMGUR, AND IN THE OTHER PROVIN-
CES, PERHAPS WITH BUT LITTLE VARIA-
TION.

BY ARCHIBALD KEIR, ESQ.

THE body of the still they use is a common, large, unglazed, earthen water jar, nearly globular, of about twenty-five inches diameter at the widest part of it, and twenty-two inches deep to the neck, which neck rises two inches more, and is eleven inches wide in the opening. Such, at least, was the size of the one I measured; which they filled about a half with fomented *Mdhwah* flowers, that swim in the liquor to be distilled.

The jar they placed in a furnace, not the most artificial, though seemingly not ill adapted to give a great heat with but very little fuel. This they made by digging a round hole in the ground, about twenty inches wide, and full three feet deep; cutting an opening in the front, sloping down to the bottom, on the side perpendicular, of about nine inches wide, and fifteen long, reckoning from the circle where the jar was to come, to serve to throw in the wood at, and for a passage to the air. On the side too they cut another small opening, of about four inches by three; the jar when placed, forming one side of it, to serve as a chimney for the smoke to go out at. The bottom of the earth was rounded up like a cup. Placing then placed the jar in this as far as it would go down, they covered it above,
all

all round, with clay, except at the two openings, till within about a fifth of its height; when their furnace was completed.

In this way I reckon there was a full third of the surface of the body of the still, or jar, exposed to the flame, when the fire came to be lighted; and its bottom, not reaching to within two feet of where the fuel was, left a capacious hollow between them, whence the wood, that was short and dry, when lighted, being mostly converted into flame, and circulating on so great a surface of the still, gave a much stronger heat than could else have been produced from so very little fuel; a condensation well worth the attention of a manufacturer, in our country more especially, where firing is so dear. There, indeed, and particularly as coal is used, it would be better, no doubt, to have a grate, and that the air should enter from below. As to the benefit resulting from the body of the still being of earthen-ware, I am not quite so clear in it. Yet, as lighter substances are well known to transmit heat more gradually and slowly than the more solid, such as metals, may not earthen vessels, on this account, be less apt to burn their contents, so as to communicate an empyreumatick taste and smell to the liquor that is distilled, so often, and so justly, complained of with us? At any rate, in this country, where pots are made so cheap, I should think them greatly preferable, as, at least, much less expensive than those which the Gentlemen engaged in this mariu-fahire most commonly employ: though of this they are best able to judge.

Having thus made their furnace, and placed the body of the still in it, as above described, they to this luted on, with moistened clay, to its neck, at the opening, what they here call an *adkur*; forming with it, at once, a cover for the body of the still, with a suitable perforation in it to let the vapour rise through, and the under part of the alembick. The *adkur* was
made

made with two earthen pans, having round holes in their middles, of about four inches diameter; and, their bottoms being turned opposite the one to the other, they were cemented together with clay; forming a neck of junction thus of about three inches, with the small rifing on the upper pan. The lower neck of this was more shallow, and about eleven inches wide, so as to cover exactly the opening at the neck of the jar, to which they luted it on with clay. The upper and opposite of this was about four inches deep, and fourteen inches wide, with a ledge round its perforation in the middle, rifing, as is already said, from the inner side of the neck, of about half an inch high, by which a gutter was formed to collect the condensed spirit as it fell down; and from this there was a hole in the pan to let it run off by; to which hole they occasionally luted on a small hollow *bamboo*, of about two feet and a half in length, to convey it to the receiver below. The upper pan had also another hole in it, of about an inch square, at near a quarter of its circumference from the one below just spoken of, that served to let off the water employed in cooling; as shall be mentioned presently.

Their *adkur* being thus fitted to the jar, they completed the alembick by taking a copper pot, such as we use in our kitchens, of about five inches deep, eight wide at the mouth, and ten at the bottom, which was rather flattish; and turning its mouth downward, over the opening in the *adkur*, luted it down on the inside of the jar with clay.

For their cooler they raised a feat, close upon, and at the back part of the furnace, about a foot higher than the bottom of the copper pot. On this they placed a two or three gallon pot, with a round hole, of about half an inch in the side of it; and 'to this hole, before

Before they lighted their fire, they luted on a fhort tube of a like bore; placing the pot, and directing its fpout fo as that, when filled with water, it threw a conftant and uniform fteam of it, from about a foot high, or near the center of the bottom of the copper-pot, where it was diffused pretty completely over its whole furface; and the water falling down into the upper part of the pan of the *adkur*, it thence was conveyed through the fquare hole, already mentioned, by a trough luted on to it for that purpofe, to a cooling receiver a few feet from the furnace; from which they took it up again to fupply the upper pot, as occafion required.

As their flock of water, however, in this fort of circulation, was much fmaller than it feemingly ought to have been, being fcarcely more than fix or eight gallons, it too foon became hot; yet, in fpite of this difadvantage, that fo eafily might have been remedied, and the fhortnefs of the conducting tube, which had nothing but the common air to cool it, there ran a fteam of liquor from the ftill; and but very little vapour rifing from it; beyond any thing I had ever feen from Itills of a much larger fize, fitted with a worm and cooler. In about three hours time, indeed, from their lighting of the fire, they drew off full fifteen bottles of fpirit; which is more by a great deal, I believe, than could have been done in our way from a ftill of twice the dimenfions.

The convenience of a worm and cooler, which art no fmall expence either, I have myfelf often experienced; and if thefe could be avoided in fo fimple a way that might eafily be improved, the hints that are here offered may be of fome ufe. The thin metal head is certainly well adapted, I think, to tranfmit the heat to the water, which is confantly renewed; and which, if cold, as it ought to be, muft abforb the fafteft polfiuble; whereas, in our way, the water being confined
in

in a tub, that, from the nature of its porous substance, in a great degree rather retains than lets the heats pass away, it soon accumulates in it, and becomes very hot; and, though renewed pretty often, never answers the purpose of cooling the vapour in the worm so expeditiously and effectually, as is done by their more simple and less expensive apparatus. In this country, more especially, where labour and earthen-wares are so cheap, for as many *rupees*, and less, twenty furnaces, with stills, and every thing belonging to them, independent of the copper-pots, might very well be erected, that would yield above a hundred gallons of spirits a day; allowing each still to be worked only twice. So very cheap, indeed, is arrack here, to the great comfort of my miners, and of many thoughtless people beside, that for one single *peyfa* (not two farthings sterling) they can get a whole *cutcha feer* of it in the *bazar*, or above a full *English* pint, and enough to make them completely intoxicated; objects often painful to be seen.

Of the superior excellence of metal in giving out heat from itself, and from vapour contained *in* it, we have a very clear proof in what is daily performed on the cylinder of the steam engine: for cold water being thrown on it when loaded, the contained vapour is constantly condensed; whence, on a vacuum being thus formed, and the weight of the atmosphere acting on the surface of the piston attached to the arm of the balance, it is made to descend, and to raise the other arm that is fixed to the pump; while this being somewhat heavier, immediately sinks again, which carries up the piston, while the cylinder is again filled; and thus by alternately cooling and filling it, is the machine kept in motion; the power exerted in raising the pump-arm being always in proportion to the diameter of the cylinder, or to the surface of the piston, which is exactly fitted to it, and on which the pressure acts.

The contrivance too, of having the under part of the alembick, where the condenfed vapour is collected, or upper part of what they call the *adkur*, of earthen-ware, of fo great a thicknefs, and of courfe at fo great a diftance from the heat in the body of the (till, is well imagined to keep the fpirits the cooleft poffible, when collected, and running off.

By thus cooling andcondenfinf the vapour, likewife, fo fuddenly as it rifes, there is in a great meafure a conftant vacuum made, or as much as poffibly can be; but, that both {team arifes falter, and that water boils with much lefs heat, when the preffure is taken away from its furface, is an axiom in chemiftry too well known to need any illuftration; it boiling in vacuum, when the heat is only ninety or ninety-five by Farenheit's thermometer; whereas in the open air, under the prefure of the atmofphere, it requires no lefs than that of two hundred and twelve ere it can be brought to the boiling point.

I muft further obferve, that the fuperior excellence of condenling the vapour fo effectually and fpeedily in the alembick, to our method of doing it in a worm and cooler, is greatly on the fide of the former; both from the reafons I have already adduced, and becaufe of the fmall fteam of vapour that can be only forced into the worm, where it is condenfed gradually as it defcends; but, above all, from the nature of vapour itfelf, with refpect to the heat contained in it, which of late has been proved, by the very ingenious Dr. *Black*, to be greater by far than, before his difcoveries, was imagined. For vapour he has (hewn to be it) the ftate of a new fluid, where water is diflblved by heat; with the affiftance, perhaps, if I may be allowed a conjecture, of the air which it contains: and all fluids, as he has clearly demonitrated, on their becoming fueh, abforb

a certain quantity of heat, which becomes what he very properly calls latent heat; it being heat not appearing either to the senses, or to the thermometer, while they remain in that liquid state; but shewing itself immediately by its effects on whatever is near it, upon their changing their form from fluid to solid; as on water becoming ice, or metals fixing, and the like. In the solution of salts, also, there is an absorption of heat, as we daily experience in the cooling of our liquors by dissolving salt-petre in water; and this he has found to be the case with water itself, and other fluids, when passing into a state of vapour by boiling. From the most accurate and judicious experiments, indeed, he infers, and with the greatest appearance of truth, that the heat thus concealed in vapour raised by boiling, from any given bulk of water, would be fully sufficient, if collected in a piece of iron of the like size, to make it perfectly red hot. What then must be the effect of so much heat communicated in our way of distilling to the worm, and to the water in the tub, will be sufficiently evident from what has been said to prove, I think, that we have hitherto employed a worse and more defective method than we might have done with respect to cooling at least, both in the making of spirits, and in other distillations of the like kind, where a similar mode is adopted.

The poor ignorant *Indian*, indeed, while he with wonder surveys the vast apparatus of *European* distillers, in their immense large stills, worms, tubs, and expensive furnaces, and finds that spirits thus made by them are more valued, and sell much dearer than his own, may very naturally conclude, and will have his competitors join with him in opinion, that this must alone be owing to their better and more judicious manner of distilling with all those ingenious and expensive contrivances, which he can no ways emulate; but in this, it would appear, they are both equally mistaken;

imputing the effects, which need not be controverted, perhaps, to a cause from which they by no means proceed; the superiority of their spirits not at all arising from the superior excellence of these stills and furnaces, nor from their better mode of conducting the distillation in any respect; but chiefly rather from their greater (skill and care in the right choice, and proper management, of the materials they employ in fermentation; and, above all, as I apprehend, from the vast convenience they have in casks, by which, and from their abilities in point of stock, they are enabled, and do, in fact, in general, keep their spirits for a certain time, whence they are mellowed, and improved surprisingly both in taste and palatability.

With respect to the latter improvement, I mention it more particularly here; and the more willingly also, as in general it seems to have been but too little attended to, where a due attention to it might be of the greatest use. For of all things that have been found grateful to the human palate, there was none ever used, I believe, more hurtful to the body, and to the nerves especially, than fresh drawn ardent spirits; and this owing evidently to the principle of inflammability, of which, with water, they are mostly made up; being then, in a more loose and detached state, less assimilated with the other principles than it afterwards becomes with time. By time, indeed, it is gradually not only more assimilated, but at length changes its nature altogether; so as to become, what was at first so pernicious, a benign, cooling liquor. When the spirit is strong, the change, it is true, goes on more slow and imperceptibly; yet, as a partial alteration is only wanted to mellow it for use, a few years keeping would be sufficient to answer the purpose here; and whether or no it could be possible to prevent any other from being sold than that which had been kept a certain time, is well worth the consideration of the Legislature.

That

That the great noxious quality of fresh drawn spirits is chiefly owing to the cause I have assigned, a little attention, and comparing of the effects that are uniformly produced by the principle of inflammability, wherever it is met with in a loose and weakly combined state, as it is in them, will easily convince us of: whereas, when fully assimilated either in spirits, or with any other body, it becomes entirely inert, and useful, more or less, either for food or physic, according to what it happens to be united with. Thus we find it in putrid animal substances, where it lately formed part of a healthy body, being now detached, or but weakly united with air, exhibiting a most offensive and pernicious poison: though this absorbed again by a living plant, is presently changed into good and wholesome nourishment: to the vegetable immediately, and to any animal who may afterwards choose to eat it. In like manner sulphur, which is a compound of this principle alone, united to a pure acid, the most destructive to all animal and vegetable substances, yet, it being here perfectly inert also, may be taken into the body with safety: when, if loosened either by heat, or by an alkaline salt uniting with the acid, its noxious quality is presently made perceivable to whoever comes within its reach.

Many other instances of a like nature might easily be added, and some too more apposite, perhaps, than those I have here mentioned; but every one's own experience, with what I have already said, will sufficiently evince the propriety and utility of putting an entire stop, if possible, to the sale of what ought to be so justly prohibited; and this, in its consequences, may even help to lead to other more effectual means of correcting, in a great measure, the cruel abuse of spirits in general, that has been long so loudly and so justly complained of amongst the soldiers, lower *Europeans*, and our servants in this country; where the very worst, and, indeed.

deed, poifonous, fort of them is daily fold at fo very cheap a rate;

All I need further add with refpeft to dillillation, and on the fupenor advantages in the mode of conducing it here, to that we have been in ufe to employ, for the raifing of fpirits, fimple waters, and the like, is only to obferve, I have no fort of doubt, but that the intelligent chemical operators at horns, if ever they fhould get a hint of it, will make no manner of fcruple to ufe it alfo, and to improve upon it greatly by a few ingenious contrivances, which their knowledge and experience will fo eafily fuggeft. The principles on which it feems founded, indeed, efpecially with regard to their way of cooling, are fo linking and juft, that in many other diftillations befides thofe of fpirits and waters, they may be employed, I apprehend, with very great profit and advantage. I fhall now, however, confine myfelf to mention only the benefit that may refult from a like procefs in the raifing of the finer aromatics, while the heat contrived, as in our way, befides impeding the diftillation, muft, from its long aflion on fuch fubtile bodies, probably injure them greatly in the effential quality on which their excellence depends: and upon this very account I am apt to imagine, that the greater quantity obtained, and the fuperior quality of the *oil of rofes* made in this country, to that made from *rofes* with us, is owing chiefly, if not entirely, to their better and more judicious manner of extracting it here. For with us, the ftill, being made of metal, may, in the firft inftance, impart too great and too fudden a degree of heat; and next, the *oil* continuing fo long in the vapour, and that much compreffed, may, in fo delicate a fubjeft, not only entirely almoft unite it with the water, fo as to render the feparation impracticable; but may at the fame time alter its effence fo completely, as that it can no longer appear in the ftate it otherwife might have been found in, had the operation been better

ter conducted, or in the way they do here. A very few trials, however, would much better certify this, than all I can possibly say on the subject, or, in fact, than all the reasoning in the world. Therefore, as to my own particular opinion of the flavour and quality of the *rofes* at home being equal, if not superior, to that of those in this country, I may be entirely silent; the rules and reasoning in chemistry, though serving greatly to enlarge and improve our understanding, being what of themselves can never be depended upon, till confirmed by facts and experiments; where many things often turn out very different from what, from our best and most plausible arguments, we had the greatest reason to expect. Or, if it should be found to be really true, what I have often heard asserted, by those however who had it only from others, but not of their own particular knowledge, that, in distilling their *oil of rofes* at the places where they make it the best, they use also with their *rofes*, *fandal wood*, and some other aromatics, no *rofes* whatsoever, it is plain, could ever of themselves be made to afford a like *oil*; nor without such an addition as they employ. A circumstance, by the bye, that might possibly easily be certified by some one of the many ingenious correspondents of the Society who may happen to reside where it is made: and a knowledge of the real truth of it would certainly be of use.

Chaira, December 24, 1786.

XVI.

A METHOD OF CALCULATING

THE

MOON's PARALLAXES

IN

LATITUDE AND LONGITUDE.

By Mr. REUBEN BURROW.

IN the Nautical Almanack for 1781, among other Problems published by authority of the Board of Longitude, there is one for calculating the Place of the Nonagefimal Degree; which is expressly recommended to Astronomers as "superior to all other Methods for calculating Eclipses of the Sun, and Occultations of the Stars." Now, as a considerable part of that method is erroneous, and particularly in South Latitudes, and between the Tropics, (which include the most of *India*,) the error may therefore be of consequence; and the more so, as it is published under the sanction of *Dr. Maskelyne*, the Astronomer Royal. I have, therefore, taken the liberty of giving the following rule to supply its place; and, in imitation of the methods of the *Hindoo*s, have endeavoured to express it so plainly, that any person may calculate by it without knowing much of the subject.

P R O B L E M .

Given the apparent time at any given place ; to and the longitude and altitude of the nonagefimal degree, and also the parallaxes in latitude and longitude.

1 . Turn the difference of longitude from *Greenwich* into time, and add it to the apparent time, if the place be to the well

west of *Greenwich*; but subtract if the place be to the east; and the sum, or remainder, will be the apparent time at *Greenwich*.

2. To this time calculate the sun's right ascension in time, and add it to the apparent time at the given place; the sum is the right ascension of the meridian in time.

3. From the latitude of the place by observation, subtract the correction taken from page L X X V of *Mayer's Tables*; the remainder is the latitude in the spheroid.

4. Call the right ascension of the meridian in degrees AR; and, if the right ascension of the meridian be

Between $\left\{ \begin{array}{l} 0^\circ \text{ \& } 90^\circ \\ 90^\circ \text{ \& } 270^\circ \\ 270^\circ \text{ \& } 360^\circ \end{array} \right\}$ then $\left\{ \begin{array}{l} \text{AR} + 90 \\ 270 - \text{AR} \\ \text{AR} - 270 \end{array} \right\}$ is an Arc $\left\{ \begin{array}{l} \text{but} \\ \text{in S.} \\ \text{Lat.} \end{array} \right\} \left\{ \begin{array}{l} 90 - \text{AR} \\ \text{AR} - 90 \\ 450 - \text{AR} \end{array} \right\}$ is the Arc A.

5. Let half the sum of the colatitude of the place, and the obliquity of the ecliptic, be called C, and half their difference D; then add the secant of C, the cosine of D, and the cotangent of half A, together; the sum (rejecting twice radius) is the tangent of an arc M: then add the cosecant of C, the sine of D, and the cotangent of half A, together; the sum (rejecting twice radius) is the tangent of an arc N: then if the colatitude of the place be greater than the obliquity of the ecliptic, the sum of M and N is an angle, whose complement call B; but if the colatitude be less than the obliquity, let the complement of the difference of M and N be called B.

6. Add

6. Add the fecant of B, the fine of A, and the cofine of the latitude of the place, together; the fum (rejecting twice radius) is the fine of the altitude of the nonagefimal degree.

7. Add the tangent of the latitude to the tangent of the obliquity of the ecliptic ; the fum is the fine of an angle, which call X.

8. When the right afcenfion of the meridian is

$$\text{Between } \left\{ \begin{array}{l} 360 - X \& 90 \\ 90 \& 180 + X \\ 180 + X \& 270 \\ 270 \& 360 - X \end{array} \right\} \text{ in Lat. } \left\{ \begin{array}{l} X \& 90 \\ 90 \& 180 - X \\ 180 - X \& 270 \\ 270 \& X \end{array} \right\} \text{ in Lat. } \left\{ \begin{array}{l} B \\ 180 - B \\ 180 + B \\ 360 - B \end{array} \right\} \text{ is the Lon.}$$

of the nonagefimal degree.

g. Add the moon's latitude to 90° when it is of a contrary name to the latitude of the place; but fubtraft it from 90° when it is of the fame name; the fum or remainder is the moon's polar diftance. Alfo take the difference between the moon's longitude and the longitude of the nonagefimal degree, which difference call P : alfo let half the fum of the moon's polar diftance and altitude of the nonagefimal degree be called Q, and half their difference R.

10. Add the fecant of Q, the cofine of R, and the cotangent of half P, together; the fum is the tangent of an arc *m*: alfo add the cofecant of Q, the fine of R, and the cotangent of half P together; the fum is the tangent of an arc *n*.

11. If

11. If the altitude of the nonagefimal degree be greater than the moon's polar distance, take the sum of the arcs m and n for the parallactic angle; but if it be less, take their difference.

12. Add the cofecant of the parallactic angle, the sine of P , and the sine of the altitude of the nonagefimal degree, together; the sum (rejecting twice radius) is the sine of the moon's true zenith distance.

13. To the sine of the moon's true zenith distance add the logarithm of the horizontal parallax; the sum (rejecting radius) is the logarithm of the parallax in altitude nearly: add the parallax, thus found, to the true zenith distance, and the sum will be the corrected zenith distance,

14. Add the sine of the corrected zenith distance, the cosine of the parallactic angle, and the logarithm of the horizontal parallax, together; the sum (rejecting twice radius) is the logarithm of the parallax in latitude.

15. Add the logarithm of the parallax in latitude, the tangent of the parallactic angle, and the secant of the moon's latitude, together; the sum (rejecting twice radius) is the logarithm of the parallax in longitude

E X A M P L E.

" What is the altitude and longitude of the nonagefimal degree at Ludlow, whose latitude is $52^{\circ} 23'$ north, and longitude $0^{\text{h}} 11^{\text{m}}$. west of *Greenwich*, 7th February, 1778, at $10^{\text{h}}. 56. 11$ app. time, being the time of an occultation of α geminorum?"

Not

Not having the Almanack for 1778, I fhall affume
the Moon's Latitude to be $0^{\circ} 51'$ S. and her Longitude

10 56 11 ap. time 21 27 14 0 AR
0 11 0 diff. long. 10 56 11

11 7 11 ap. t. *Greenxu.* 8 23 25 AR of Merid.

52 23 latitude 125 51 15 = A R
o 14 correction **270**

52 9 reduced lat. 1 '' 8 45 = A
37 51 colat.

18 55 half colat. tang, of latitude 10.11319
11 '' half obliq. tang, of obliq. 9-63761

Sine of $34^{\circ}. 18' = X$ 9.75080
C = 30 39 fecant 10.06535 cofecant 10.29261
D = 7 11 cofine 9.99658 fine 9.09706
 $\frac{1}{2} A = 72 4$ cotan. **9.51005** cotang. 9.51005

M = 20 28 tan. M 9-57198 tang. N. 8.89972
N = 4 3²

B = 25 o A = 1 '' . 9 fin. 9-76765
65 o Lat. 52. 9 cos. 9.78788
180 o B 65 o fee. 10.37405

115 o long, nonag. deg.
altitude of ditto 58 15 S 9.92958
45 26 = half)'s polardistance
29 8 = half alt. non. degree

Q = 74 34 fecant 10-57493 cofec. 10.01595
R = 16 18 cofine 9.98218 fine 9. '' 819
 $\frac{1}{2} P$ 11 32 cotan. 10.69025 cotan. 10.69025
m = 86 46 tan, m 11.24736 tan. n 10.15439
n = 54 58

parallactic angle	= 3 1 48	cofecant	10.27823
alt. non. degree	58 15	- fine	9.92958
	P = 23 3	- fine	9.59277
moon's true zen.d.	39 11	fine	9.80058
horizon, parallax	3488	log.	3.54258
par. in alt. nearly	2204	log.	3.34316
Corrected zen. dift,	39 47 "	fine	9.80628!
hor par,		log.	3.54258
arallactic angle		cofine	9.92936
parallax in latitude—	1898	log.	3.27822
parallactic angle		tangent	9.79241
moon's latitude	0 5 1	fecant	10.00023
parallax in Ion.	1177	log.	3.07086

When the moon is very near the ecliptic, as *in* eclipses, the following method will be nearly exact

1. Add the cofine of the altitude of the nonagefimal degree to the logarithm of the horizontal parallax; the sum (rejecting radius) is the logarithm of the parallax of latitude nearly: add this parallax to the complement of the altitude of the nonagefimal degree, and call the sum the complement of the altitude of the nonagefimal degree corrected.

2. Add the cofecant of the complement of the altitude of the nonagefimal degree, the fine of the complement of the altitude of the nonagefimal degree corrected, and logarithm of the parallax of latitude, nearly together; the

mefum (rejecting twice radius) is the logarithm of the parallax in latitude corrected.

3. Add the logarithm of the parallax in latitude corrected, the sine of P, and the tangent of the altitude of the nonagefimal degree, together; the sum (rejecting twice radius) is the logarithm of the parallax in longitude.

Scholium. The method of applying the parallaxes usually given, requires no other correction than the following. When the pole of the ecliptic of the same name as the latitude is under the horizon, to the cotangent of the altitude of the nonagefimal degree add the cotangent of the moon's latitude; the sum is the cosine of an angle; which added to, and subtracted from, the longitude of nonagefimal degree, give two longitudes, between which the moon's latitude of a contrary name to the elevated pole is to be increased for the apparent latitude; but beyond those longitudes the moon's true latitude is to be increased by the parallax in latitude to have the apparent latitude.

R E M A R K S

ON

ARTIFICIAL HORIZONS, &c.

By Mr. REUBEN BURROW.

THE utility of a perfect horizon, and the liability of a quicksilver to be disturbed by the lead wind, have induced numbers of people to invent artificial horizons of different kinds, and many of them very complicated. Some time ago, having occasion to determine the situation of several places by astronomical observations, and there being no astronomical quadrant belonging to the Company in the settlement, I was under a necessity of determining the latitudes by a sextant, and that at a time when the sun passed so near the zenith as to make it impossible to get meridian altitudes : I therefore collected all the different artificial horizons and glass roofs, and other contrivances for that purpose, I could meet with; but, though they appeared correct, the results were very erroneous. I examined them by bringing the two limbs of the sun, seen by direct vision, to touch apparently in the telescope of a sextant, and then observed the reflected images in quicksilver, which still appeared to touch as before; but, on examining the reflected images in the rest of the artificial horizons, none of them appeared to touch ; and the error in many was very considerable. I tried a number of other methods with little success, as they were mostly combinations of glasses. At last, accidentally hearing some officers speaking of " Tents that would neither turn sun or rain," I considered that the rays of the sun would pass through cloth unrefracted; and in consequence

quence of this idea I applied some thin musquito * curtains as a covering to the quicksilver, and found it effectually excluded the wind, and admitted the sun; and what is of equal consequence in this country, it totally kept away those minute insects that disturb the surface of the quicksilver in observing. In short, it formed so complete a horizon, that I could not before have hoped for any thing so perfect; and it is equally applicable to the sun and stars.

For taking very great or very small elevations of the sun, (which with the common horizon sextants are impracticable in the direct method,) a polished metalline instrument might be made in the form of part of a hollow obtuse cone: this might have its axis set perpendicular to the horizon at any time *by means of screws* in a variety of methods; and observations might be made by it with great exactness.

In finding the latitude, when meridian observations cannot be taken, either there is an opportunity of taking altitudes on both sides of the meridian, or not. When there is not, the best method is to calculate the latitude from two altitudes, and the time between, exactly by spherical trigonometry, (first correcting the declination to the beginning and end of each interval,) as the approximating methods of *Dowes*, and others, are totally inefficient. When observations can be taken both before and after noon, it is best to take a number of altitudes in both, and then make out the equal altitudes by proportion; then having found the true time of noon by the usual method, correct the two intervals, and the declination to each time, and the latitude may be found as follows.

ADD

* A kind of silk gauze as close as book-muslin and perfectly transparent. It is to be stretched over a hoop, which stands without touching the vessel containing the mercury.

ARTIFICIAL HORIZONS, &c.

Add the cofine the angle from noon, to the cotangent of the declination ; the fum is the cotangent of an arch A.

Add the fine pf A, the fine of the altitude, and the arithmetical complement of the fine of the declination together ; the fum is the cofine of an arch B.

Then the fum or difference of A and B is the latitude.

As every fingle altitude gives an independent latitude, it is evident the latitude may be thus found to great exactnefs.

An inftrument might eafily be contrived to meafure the fun's angle of pofition to great exactnefs, from whence the latitude might readily be deduced; a fmall addition to the common theodolite would be fufficient. The variation, of the azimuth near the meridian may alfo be advantageoufly applied for the fame purpofe.

DEMONSTRATION

OF A

THEOREM

Concerning the INTERSECTIONS of CURVES.

BY REUBEN BURROW, ESQ.

IN *Stone's Mathematical Dictionary* is the following paragraph : " Two geometrical lines of any order, " will cut one another in as many points as the number " expreffes which is produced by the multiplication of " the two numbers expreffing thofe orders." And Mr. *Braikonridge*, in the Preface to his *Exercitatio Geometrica de Defcriptione Curvarum*, fays, " Mr. George " *Campbell*, now Clerk of the Stores at Woolwich, has " got a neat demonftration of the fame, which I hope " hewillpublih." As it does not appear that Mr. *Campbell* ever publifhed any thing, except a paper on the roots of equations, and a fmall treatife on the plagiarifms of *Maclaurin*, it is very probable his demonftration is loft, and therefore it may not be improper to publifh the following.

The equation of a line of the firft order has one root, or function of the abfcifs, for the ordinate; of the fecond order, two; and fo on.

In equations for two right lines, the roots may fo vary and accommodate themfelves to each other, that the quantities expreffing the ordinates may be equal; and as there is only one cafe where this may happen, therefore two right lines can only interfect in one' point.

If a line of the firft order be compared with a line of the fecond, or an equation of one root with an equation of two, the root of the firft, and a Tingle root of the fecond,

cond, may fo vary as to becotpe equal to each other, or to form an interfection. By the fame reafon, the fingle root of the firft,' and the remaining root of the fecond, may each fo vary as to become equal, or to form another interfection; and therefore a right line cuts a line of the fecond order in two points.

If a line of the firft order be compared with a line of the n order, it is alfo evident that the fingle root of the firft line may in the fame manner be fo varied with each of the n roots of the fecondrline as to become equal; and therefore a right line may cut a line of the n order in n points.

Let a line of the m order be now compared with a line of the order n ; then as each fingle root of the firft line may become equal, in the fame manner, to every root in the fecond, it therefore follows, that for every unit in m there may be n interferons; and as there are m units, there confequently will be mn interferons.

The fame method may be applied to the determination of the points, lines, and furfaces, that arife from the interferons of lines, furfaces, and folids; by confidering that the number of times that p may be taken from m , and q at the fame time from n , will be

$$\begin{array}{r} =m.m— 1...p, X n.n--1....g \\ 1 \bullet \& . 3 \bullet .. p, X 1 \bullet 2 . 3. .. q \end{array}$$

XVII.

THE

PROCESS OF MAKING ATTAR,

OR

ESSENTIAL OIL OF ROSES.

BY

LIEUTENANT COLONEL POLIER.

T H E *attar* is obtained from the roses by simple distillation, and the following is the mode in which I have made it. A quantity of fresh roses (for example forty pounds) are put in a still with sixty pounds of water, the roses being left as they are with their calyxes, but with the stems cut close. The mass is then well mixed together with the hands, and a gentle fire is made under the still. When the water begins to grow hot, and fumes to rise, the cap of the still is put on, and the pipe fixed: the joints are then well luted with paste, and cold water put on the refrigerator at the top. The receiver is also adapted at the end of the pipe; and the fire is continued under the still, neither too violent nor too weak. When the impregnated water begins to come over, and the still is very hot, the fire is lessened by gentle degrees, and the distillation continued till thirty pounds of water are come over, which is generally done in about four or five hours. This rose-water is to be poured again on a fresh quantity (forty pounds)

of roses; and from fifteen to twenty pounds 'of water are to be drawn by distillation, following the same process as before. The rose-water thus made and cohobated, will be found, if the roses were good and fresh, and the distillation carefully performed, highly scented with the roses. It is then poured into pans either of earthen-ware or of tinned metal, and left exposed to the fresh air for the night. The *attar*, or *essence*, will be found in the morning congealed, and swimming on the top of the water. This is to be carefully separated, and collected, either with a thin shell or a skimmer, and poured into a vial. When a certain quantity has thus been obtained, the water and feces must be separated from the clear essence, which, with respect to the first, will not be difficult to do, as the essence congeals with a flight cold, and the water may then be made to run off. If, after that, the essence is kept fluid by heat, the feces will subside, and may be separated; but if the operation has been neatly performed, these will be little or none. The feces are as highly perfumed as the essence, and must be kept after as much of the essence has been skimmed from the rose-water as could be. The remaining water should be used for fresh distillations, instead of common water; at least as far as it will go.

The above is the whole process of making genuine *attar* of roses. But, as the roses of this country give but a very small quantity of essence, and it is in high esteem, various ways have been thought of to augment the quantity, though at the expense of the quality. In this country it is usual to add to the roses, when put in the still, a quantity of fandal-wood raspings, some more, some less, from one to five *tolahs*, or half ounces. The fandal contains a deal of essential oil, which comes over freely in the common distillation, and mixing with the rose-water and essence, becomes strongly impregnated with their perfume. The imposition, however, cannot be concealed: the essential oil of fandal will not congeal in common cold; and its smell cannot be kept under,
but

but will be apparent and predominate, in spite of every art. In *Cafhemire* they seldom use sandal to adulterate the *attar*; but I have been informed, to increase the quantity, they distil with the roses a sweet-scented graft, which does not communicate any unpleasant scent, and gives the *attar* a high clear green colour. This essence also does not congeal in a flight cold, as that of roses.

Many other ways of adulteration have been practised, but all so gross and palpable, that I shall say nothing of them.

The quantity of essential oil to be obtained from the roses is very precarious and uncertain, as it depends not only on the skill of the distiller, but also on the quality of the roses, and the favourableness of the season. Even in Europe, where the chemists are so perfect in their business, some, as *Tachenius*, obtained only half an ounce of oil from one hundred pounds of roses. *Hamberg* obtained one ounce from the same quantity; and *Hoffman* above two ounces. (N. B. The roses in those instances were stripped of their calyxes, and only the leaves used,) In this country nothing like either can be had; and to obtain four *ma/lis* (about one drachm and a half) from eighty pounds, which, deducting the calyxes, comes to some thing less than three drachms per hundred pounds of rose-leaves, the season must be very favourable, and the operation carefully performed.

In the present year, 1787, I had only sixteen *tolahs* of *attar* from fifty-four *maunds*, twenty-three *feers*, of roses, produced from a field of thirty-three *biggahs*, or eleven *English* acres; which comes to about two drachms per 100 pounds. The colour of the *attar* of roses is no criterion of its goodness, quality, or country, I have had, this year, *attar* of a fine emerald green, of a bright yellow, and of a reddish hue, from the same ground, and obtained by the same process, only of roses collected on different days.

The

The calyxes do not in any fhape diminifh the quality of the *attar*, rtor impart any green colour to it; though perhaps they may augment the quantity; but the trouble neceffary to ftrip them muft, and oughty to prevent its being ever put in practice.

Lucknow, May, 1787.

MR. MACDONALD,
WITH
A SPECIMEN OF GOLD.

THE country of *Limong*, on the Ifland of *Sumatra*, immediately contiguous to the Prefidency of *Fort Marlborough*, and between feventy and eighty miles inland, produces the fineft gold and gold-duft on that ifland. The *Limong* gold merchants repair annually to *Marlborough* for the purchafe of *opium*, and fuch other articles as they may be in want of; in exchange for which they give gold of fo pure a nature as to contain little or no alloy. The gold is found fometimes in duft, and often lodged in a very hard ftone. It is of a whitifh colour,, and refembles that in which the veins run in the gold mines of *Tiltill* in *Chili*. The gold is extrafted by beating the compound mafs in order to difengage it from the ftone, which flies off in fplinters, and leaves the gold cleared of it. This is the mode lifed by a rude people ; by which a part of the gold muft be loft in the fplinters of the ftone which fly off in beating the mafs. They are totally ignorant of the advantage of grinding it to a grofs powder, mixing it with quickfilver, and feparating the earthy and ftony particles from thofe of the gold, by the attior to Fa ream of water on this pafte, carrying off the former, and leaving the latter precipitated to the bottom by then greater weight. They are almoft entirely ignorant pf the principles of affaying and amalgamation, but are extremely expert in feparating parricles of foreign metals from gold-duft, by a very fuperior acutenefs of vifion no doubt arifing from experience, and not a pecaliar gift. They have people among them who are gold cleaners

[illegible]

cleaners by occupation. The gold is found in a species of earth composed of a clayified-loam; On digging the earth is found to consist of strata (under the loam of the surface, commonly called soil) of irregular shaped stones of a mouldering nature, mixed with a red clay, and Hard pebbles mixed with a pale red clay, of a more dense consistency than that of the first stratum. The first stratum extends to a depth of three feet and a half, and the second to somewhat less. The consistency under these strata is formed of either hard rock, or of gravel nearly approaching to it. The gold is found mixed with a stone of a hard nature, and capable of sustaining a polish. It is found near the surface, and generally in a soil free from solid rock.

The merchants, who bring the gold for sale, are not themselves the finders or gatherers of it, but receive it, for merchandise, from the *Malays* inhabiting the interior parts of the country. The native indolence of the *Malay* disposition prevents them from collecting more than is sufficient to supply the few and simple wants of a race of men as yet unenlightened by civilization and science, and ignorant of the full extent of the advantages of the country inhabited by them. We have not, to this hour, explored a country, which, we have reason to suppose, produces more, or as much, gold as either *Peru* or *Mexico*. This may be attributed partly to the difficulties incident to the undertaking, and partly to a want of curiosity, that, indulged, might have been productive of great national and private advantages. The roads leading to this golden country are almost impervious, affording only a scanty path to a ittle traveller, where whole nights must be passed in the open air, exposed to the malignant influence of a hostile climate, in a country infested by the most ferocious wild beasts. These are circumstances that have hitherto checked curiosity ; but perseverance, and contrived precaution, will surmount the obstacles they furnish ; and such

fach difcoveries might be made, as would amply compenfate for the difficulties leading to them. The gold-merchants who come from the neighbouring and lefs rich countries, give us fuch accounts of the facility of procuring gold as border nearly on the marvellous, and -would be altogether incredible, if the great quantities of that metal produced by them, did not, in a great meafure, evince the certainty of their accounts. I have feen an imperfect chart of apart of the interior country, made by an intelligent native, on the fcale of the rate of his walking, and from the refpective fituations of the fun in regard to his pofition. It contained a chain of what he called Gold Mines, extending in latitude, nearly, not much lefs than three degrees. This chart is in the poffeffion of Mr. *Miller*, of the Council of *Fort Marlborough*, who did me the favour of explaining it. After making allowances for the licenfe of a traveller, fome credit may be given to this chart, more efpecially, as we are well affured that that part of *Sumatra* produces large quantities of fine gold. The refult of the whole is, that it would be a very laudable object to explore thofe rich countries, and to eftablifh the working of gold-mines in them, as it could be done under a certain profpect of advantage. The expence arifing from clearing the country, procuring intelligence, making roads, eftablifhing and forming pofts of communication, and of employing profeffional men, would, undoubtedly, be at firft very confiderable, but the refulting advantages would defray thefe, and render it a matter of furprife, that a meafure attended with fuch obvious utility had not been adopted at an earlier period.

It is more than probable that *Sumatra* muft have been the *Ophir* of *Solomon's* time. This conjecture derives no fmall force from the word *ophir* being really a *Malay* fubftantive of a compound fenfe, fignifying, *a mountain containing gold*. The natives have no oral or written tradition on the fubject, excepting that the ifland has in former times afforded gold for exportation; whether to

the east ward or west ward, remains an uncertainty. We have certain accounts that the vessels that imported this article were long detained, or did not return in much less than a year. It is therefore probable that they wintered, during the violence of the SW, monsoon, either at *Ceylon*, or on the north-east coast, and completed their voyages during the moderate part of the other monsoon.

xviii.

ON THE

Efetitilre of the Hindus, from the Sanfcrit

COMMUNICATED BY

G O V E R D H A N C A U L ,

With a fhort Commentary.

THE TEXT.

THERE are eighteen *Vidyas*, or Parts of *true Knowledge*, and fome branches of knowledge *falfely Jo called*, of both which a fhort account fhall here be exhibited.

The firft *four* are the immortal *Veda's*, evidently revealed by GOD ; which are entitled, in one compound word, *Rigyajuhfamat harva*, or, in feparate words, *Rich*, *Yajufh*, *Saman*, and *At'harvan*. The *Rigveda* confifts of *Jive* fections; the *Yajurveda*, of *eighty-fix* ; the *Samuveda*, of a *thoujand*; and the *ACHarvaveda*, of *nine* ; with eleven hundred *sac'ha's*, or branches, in various divifions and fubdivifions. The *Vedas*, in truth, are infinite; but were reduced by *Vyafa* to this number and order : the principal part of them is that which explains the duties of man in a methodical arrangement; and in the *Jourth* is a fyitem of divine ordinances,

Frorcrtthcfe are deduced the four *Upavedas*, namely, *Ayufh*, *Gandharva*, *Dhanufh*, and *St'hdpatty* ; the firft of which, or *Ayurveda*, was delivered to mankind by *Brahma*, *Indra*, *Dhanwantari*, and five other Deities; and comprifes the theory of diforders and medicines, with the practical methods of curing difeafes. The fecond, or *mufick*, was invented and explained by *Bharaia* ; it is chiefly ufeful in raifing the mind by
2 devotion

Upaveda was composed by Vifwamitra, on the fabrication and use of arms and implements handle in war by the tribe of *Gfhatriya's*. *Viswacarman* revealed the *fourth* in various fcreatifes on *fifty-four* mechanical arts, for the improvement of fuch as exercife them.

Six Anga's, or *bodies of learnings* are alfo derived from the fame fource : their names are, *Sicfha*, *Calpa*, *Vyacarana*, *Ch handas*, *Jyotith*, and *Niructi*. The *firft* was written by *Panini*, an infpired faint, on the *pronunciation*, of vocal founds; the *facond* contains a detail of religious acts and ceremonies from the firft to the laft; and from the branches of thefe works a variety of rules have been framed by *Aswalayana*, and others. The *third*, or the grammar, entitled *Paniniya*, confifting of eight lectures, or chapters, (*Vridhdhirdдай*, and fo Forth,) was the production of the three *Rifhis*, or holy men, and teaches the proper difcriminations of words in conftruction; but other lefs abftrufe grammars, compiled merely for popular ufe, are not considered as *Anga's*. The *fourth*, or *profody*, was taught by a *Muni*, named *Pingala*, and treats of charms and incantations, in Verfes aptly framed, and varioufly meafured; fuch as the *Gayatri*, and a thoufand others. *Aflronomy* is the *fifth* of the *Viddnga's*, as it was delivered by *Surya*, and other divine perfons: it is necelfary in calculations of time. The *fixth*, or *Niructi*, was composed by *Yafca*, (fo is the manufcript; but perhaps, it fhould be *Vyafa*.) on the fignification of difficult words and phrafes in the *Veda's*.

Laftly, there are four *Upanga's*, Called *Purdna*, *Nyaya*, *Mimanfa*, and *Dherma faftra*. Eighteen *Purdna's* (that of *Brahma* and the reft) were composed by *Vyafa* for the inftruction and entertainment of mankind in general.

Nyaya

Nyaya is derived from the root *ni*, to acquire or apprehend; and, in this sense, the books on *apprehension, reasoning, and judgment*, are called *Nyaya*. The principal of these are the work of *Gautama*, in five chapters; and that of *Canada*, in ten; both teaching the meaning of sacred texts, the difference between just and unjust, right and wrong, and the principles of knowledge, all arranged under *twenty-three* heads. *Mimamsa* is also *two-fold*; both shewing what acts are pure or impure, what objects are to be desired or avoided, and by what means the soul may ascend to the First Principle. The *former*, or *Carma Mimamsa*, comprised in twelve chapters, was written by *Jaimini*, and discusses questions of moral duties and law. Next follows the *Upasana Cauda*, in four lectures, (*Sancar-fiana* and the rest,) containing a survey of religious duties ; to which part belong the rules of *Sandilya*, and others, on devotion, and duty to GOD. Such are the contents of the *Purva*, or *former*, *Mimamsa*. The *Uttara*, or *latter*, abounding in questions on the Divine Nature, and other sublime speculations, was composed by *Vyasa*, in *four* chapters and *fixteen* sections: it may be considered as the brain and spring of all the *Anga's* ; it exposes the heretical opinions of *Ramanuja*, *Madhwa*, *Vallabha*, and other sophists ; and, in a manner suited to the comprehension of adepts, it treats on the true nature of *Ganesh*, *Bhagava*, or the Sun, *Nilacanta*, *Lakshmi*, and other forms of One Divine Being. A similar work was written by *Srzsancara*, demonstrating the supreme power, goodness and eternity of GOD,

The Body of Law, called *Smriti*, consists of *eighteen* books, each divided under three general heads, the duties of *religion*, the administration of *justice*, and the punishment or *expiation* of crimes. They were delivered, for the instruction of the human species, by *Menu*, and other sacred personages.

As

OF THE HINDUS.

As to Ethichs, the *Vida's* contain all that relates to the duties of kings; the *Purana's*, what belongs to the relation of husband and wife; and the duties of friendship and society (which complete the triple division) are taught succinctly in both: this double division of *Anga's* and *Upanga's*, may be considered as denoting the double benefit arising from them in *theory* and *practice*.

The *Bharata* and *Ramayana*, which are both epic poems, comprise the most valuable part of ancient history.

For the information of the lower classes in religious knowledge, the *Pafupata*, the *Pancharatra*, and other works, fit for nightly meditation, were composed by *Siva*, and others, in a hundred and ninety-two parts, on different subjects.

What follow are not really divine, but contain infinite contradictions. *Sanc'hya* is twofold; that with *Iswara*, and that without *Iswara*. The former is entitled *Patanjala*, in one chapter of four sections, and is useful in removing doubts by pious contemplation: the second, or *Ccpila*, is in six chapters, on the production of all things by the union of *Pracriti*, or nature, and *Purusha*, or the first male: it comprises also, in eight parts, rules for devotion, thoughts on the invisible power, and other topics. Both these works contain a studied and accurate enumeration of natural bodies and their principles; whence this philosophy is named *Sanc'hya*. Others hold, that it was so called from its reckoning three sorts of pain.

3'' ON THE LITERATURE

The *Mimanfa*, therefore, is in two parts, the *Nyaya* in two, and the *Sanchya* in two; and these fix schools comprehend all the doctrine of the theists.

Last of all appears a work written by *Buddha* : and there are also fix atheistical systems of philosophy, entitled *Yo'gdchdra*, *Saudhanta*, *Vaibhdfhica*, *Madhyamica*, *Digambara*, and *Charvac* ; all full of indeterminate phrases, errors in sense, confusion between distinct qualities, incomprehensible notions, opinions not duly weighed, tenets destructive of natural equality, containing a jumble of atheism and ethics; distributed, like our orthodox books, into a number of sections, which omit what ought to be expressed, and express what ought to be omitted; abounding in false propositions, idle propositions, impertinent proportions. Some assert; that the heterodox schools have no *Updnga's*; others, that they have fix *Anga's*, and as many *Sanga's*, or *Bodies*, and other *Appendices*,

Such is the analysis of ununiversal knowledge, *practical* and *speculative*,

THE COMMENTARY,

The first chapter of a rare *Sanscrit* Book, entitled, *Vidydderfa*, or a *View of Learnings* is written in so close and concise a style, that some parts of it are very obscure, and the whole requires an explanation. From the beginning of it we learn that the *Veda's* are confirmed by the *Hindus* as the fountain of all knowledge, human and divine; whence the verses of them are said
in

in the *Gild* to be the *leaves* of that holy tree, to which the Almighty himself is compared :

[yam

*ttrdhwa mutant adhah sac'ham as watt'ham prahuravya-
ch'handanfi yafya pernani yaflam veda fa vedavit.*

" The wife have called the Incorruptible One an As*
" *watt'ha*, with its roots above and its branches below;
" the leaves of which are 'the facred meafures. He
" who knows this tree knows the *Veda's*."

All the *Pandits* infift that *Aswatt'ha* means the *Pip-pala*, or *religious fig tree*, with heart-fliaped, pointed, and tremulous leaves; but the comparifon of heavenly knowledge, defcending and taking root on earth, to the *Vaia*, or *great Indian fig-tree*, which has moft confpi-cuoufly its roots on high, or at leaft has radicating branches, would have been far more exact and ftriking.

The *Veda's* *sconhft*. of three *Cahdd's*, or *General Heads* ; namely, *Carma*, *Jnyana*, *Upd'fana*; or *Works*, *Faith*, and *Worship* : to the firft of which the author of the *Vidyder/a* wifely gives the preference, as *Menu* himfelf prefers *universal benevolence* to the *ceremonies* of religion:

*Japyenaiva tu fan fiddhyedbrahmano ndtra janjayah ;
Curyddanyatravd curydnmaitrd brdharma uchyate.*

That is, " By filent adoration undoubtedly a *Brah-*
" *man* attains holinefs; but every *benevolent man*? whe-
" ther he perform or omit that ceremony, is juftly;
VOL I. B b " ft'yled

It led a *Brihman*." this triple division of the *Veda's* may seem at first to throw light on a very obscure line in the *Gita*:

Traigunyavishayak veda nistraigunya, bhavarjuna :

Or, " The *Veda's* are attended with three qualities: " be not thou a man of *three* qualities, O, *Arjuna* !"

But several *Pandits* are of opinion, that the phrase must relate to the three *Guna's*, or *qualities* of the mind; that of *excellence*, that of *passion*, and that of *darkness* ; from the last of which a man should be wholly exempt; though examples of it occur in the *Veda's*, where animals are ordered to be *sacrificed*, and where horrid incantations are inserted for the *destruction* of enemies.

It is extremely Angular, as Mr. *Wilkins* has already observed, that, notwithstanding the fable of *Brahma's* four mouths, each of which uttered a *Veda*, yet most ancient Writers mention only *three* *Veda's*, in the order as they occur in the compound word *Rigyajuh sama* ; whence it is inferred, that the *Attharvan* was written or collected after the three first; and the two following arguments, which are entirely new, will strongly confirm this inference. In the eleventh book of *Menu*, a work ascribed to the first age of mankind, and certainly of high antiquity, the *Attharvan* is mentioned by name, and styled the *Veda* of *Veda's*; a phrase which Countenances the fiction of *Dara Shacub*, who asserts, in the preface to his *Upa-nijhat*, that " the *three* first *Veda's* are named separately, " because the *Attharvan* is a corollary from them all, and " contains the quintessence of them." But this verse of *Menu*, which occurs in a modern copy of the work

2 brought

brought from *Bndres*, and which would support the antiquity and excellence of the *fourth Veda*, is entirely omitted in the best copies, and particularly in a very fine one written at *Gaya*, where it was accurately collated by a learned *Brahman*; so that, as *Menu* himself, in other places, names only three *Veda*'s, we must believe this line to be an interpolation by some admirer of the *At'harvan*: and such an artifice overthrows the very doctrine which it was intended to sustain.

The next argument is yet stronger, since it arises from *internal evidence* ; and of this we are now enabled to judge by the noble zeal of Colonel *Polier* in collecting *Indian* curiosities; which has been so judiciously applied, and so happily exerted, that he now possesses a complete copy of the *four Veda*'s in eleven large volumes.

On a cursory inspection of those books it appears, that even a learner of *Sanskrit* may read a considerable part of the *At'harvaveda* without a dictionary; but that the style of the other *three* is so obsolete, as to seem almost a different dialect. When we are informed, therefore, but that a few *Brahmans* at *Banares* can understand any part of the *Veda*'s, we must presume, that none are meant, but the *Rich*, *Yajur*, and *Saman*, with an exception of the *At'harvan*, the language of which is comparatively modern; as the learned will perceive from the following specimen :

*Yatra brahmavido yanti dicshaya tapasafaha agnirmah.
tatra nayatwagnirmedhan dedhdtume, agnaye fwaha
vayurman tatra nayatu vdyuh pranan dedhatu me, va-
yuwe fwaha, furyo man tatra nayatu chachhuh fyryo
dedhatu me, furyaya fwaha; chahdro man tatra nayatu
manafchandro dedhatu me, chandraya fwaha. fomo*
B b 2 man

man tatra nayatu payah fomo dedhatu me, fomaya fwaha. Indro man tatra nayatu halamindro dedhdtu me, indraya fwaha. apo man tatra nayatwamritammopatifhtatu, adbhyah fwaha. yatra brahmavido yanti dicfhaya tapafa faha, brahma man tatra nayatu brahma brahma dedhatu me, brahmane fwaha.

That is, " Where they, who know the Great One, go
 " through holy rites, and through piety, thither may fire
 " raise me ! May fire receive my sacrifices ! Myfterious
 " praise to fire ! May air waft me thither ! May
 " air increase my spirits ! Myfterious praise to air !
 " May the *Sun* draw me thither ! May the sun enlighten
 " my eye ! Myfterious praise to the sun ! May the
 " *Moon* bear me thither ! May the moon receive my
 " mind ! Myfterious praise to the moon ! May the
 " plant *Soma* lead me thither ! May *Soma* bestow on
 " me its hallowed milk ! Myfterious praise to *Soma* !
 * May *Indra*, of the *firmament*, carry me thither ! May
 " *Indra* give me strength ! Myfterious praise to *Indra* !
 " May *-water* bear me thither ! May water bring me
 " the stream of immortality ! Myfterious praise to the
 " waters ! Where they, who know the Great One, go,
 " through holy rites, and through piety, thither may
 " *Brahma* conduct me ! May *Brahma* lead me to the
 " Great One ! Myfterious praise to *Brahma* !"

Several other passages might have been cited from the first book of the *Al'harvan*, particularly a tremendous *incantation* with consecrated grafts, called *Darbbha*, and a sublime hymn to *Cala*, or Time; but a single passage will suffice to show the style and language of this extraordinary work. It would not be so easy to produce a genuine extract from the other *Veda's*. Indeed, in a book, entitled *Sivavedanta*, written in *Sanfcrit*, but in *Cashmirian* letters, a stanza from the *Yajurveda*, is introduced, which deserves, for its sublimity, to be quoted here;

here ; though the regular cadence of the verses, and the polished elegance of the language, cannot but induce a supposition, that it is a more modern paraphrase of some text in the ancient scripture .

natatra furyo bhati nacha chandra taracau, nana vidyuta bhanti cuta eva vahni : tameva bhantam anubhanti fervam, tasya bhava fervamidam vibhati.

That is, " There the sun shines not, nor the moon and stars. These lightnings flash not *in that place*: how should even fire blaze *there* ? God irradiates all this bright substance; and by its effulgence the universe is enlightened."

After all, the books on *Divine Knowledge*, called *Veda*, or what is *known*, and *Sruti*, or what has been *heard*, from revelation, are still supposed to be very numerous; and *the/our* here mentioned are thought to have been believed as containing all the information necessary for man. *Mohani Fani*, the very candid and ingenious author of the *Dabistan*, describes in his first chapter a race of old *Persian* sages, who appear from the whole of his account to have been *Hindus*: and we cannot doubt that the book of *Mahabad*, or *Menu*, which was written, he says, *in a celestial dialect* means the *Veda* ; so that, as *Zerdusht* was only a reformer, we find in *India* the true source of the ancient *Persian* religion. To this head belong the numerous *Tantra*, *Mantra*, *Agama*, and *Nigama*, *Sastra's* which consist of *incantations* and other texts of the *Veda's*, with remarks on the occasions on which they may be successfully applied. It must not be omitted, that the *Commentaries* on the *Hindu Scriptures*, among which that of *Vafishta* seems to be reputed the most excellent, are innumerable; but, while we have

aecefs to the fountains, we need not wafte our time in gracing the rivulets.

From the *Vedas* are immediately deduced the practical arts of *Chirurgery* and *Medicine*, *Mufick* and *Dancing*; *Archery*, which comprifes the whole art of war; and *Architecture*, under which the fyftem of *Mechanical Arts* is included. According to the *Pandits*, who intrufted *Abu'lfazl*, each of the four Scriptures gave rife to one of the *Upaveda's*, or *Sub-fcriptures*, in the order in which they have been mentioned; but this exactnefs of analogy feems to favour of refinement.

Infinite advantage may be derived by *Europeans* from the various *Medical* books in *Sanfcrit*, which contain) the names and defcriptions of *Indian* plants and minerals, with their ufes, difcoverect by experience in curing diforders. There is a vaft collection of them from the *Cheraca*, which is confidered as a work of *Siva*, to the *Roganirupana* and the *Nidana*, which are comparatively modern. A number of books, in profe and verfe, have been written on *Mufick*, with fpecimens of *Hindu* airs in a very elegant notation; but the *Silpa fafta*, or Body of Treatifes on *Mechanical Arts*, is believed to be loft.

Next in order to thefe are the fix *Vedanga's*, three of which belong to *Grammar*. One relates to religious Ceremonies; a fifth, to the whole compafs of *Mathematicks*, in which the author of *Lilawati* was eftemed the moft fkilful man of his time; and the *fixth*, to the explanation of obfeure words or phrafes in the *Vedas*. The grammatical work of *Panini*, a writer fuppofedlo have been infpired, is entitled *Siddhanta Caumudi*, and is fo abftrufe as to require the lucubrations of many years

years before it can be perfectly understood. When *Casinat'ha Serman*, who attended Mr. Wilkins, was asked what he thought of the *Paniniya*, he answered very expressively, that " it was a far east;" but, since grammar is only an instrument, not the end, of true knowledge, there can be little occasion to travel over so rough and gloomy a path; which contains, however, probably, some acute speculations in *Metaphysics*. The *Sanskrit* Profody is easy and beautiful; the learned will find in it almost all the measures of the *Greeks*; and it is remarkable, that the language of the *Brahmans* runs very naturally into *Sapphics*, *Alcaicks*, and *Iambicks*. Astronomical works in this language are exceedingly numerous; seventy-nine of them are specified in one list; and if they contain the names of the principal stars visible in *India*, with observations on their positions in different ages, what discoveries may be made in science, and what certainty attained in ancient chronology !

Subordinate to these *Anga's* (though the reason of the arrangement is not obvious) are the series of *Sacred Poems*, the *Body of Law*, and the six Philosophical *sastras*, which the author of our text reduces to two, each consisting of two parts; and rejects a *third*, in two parts also, as not perfectly *orthodox*: that is, not strictly conformable to his own principles.

The first *Indian* Poet was *Valmici*, author of the *Ramayana*, a complete epic poem on one continued, interesting, and heroic action: and the next in celebrity, if it be not superior in reputation for holiness, was the *Mahabharata* of *Vyasa*. To him are ascribed the sacred *Puranas*, which are called, for their excellence, the *Eighteen*, and which have the following titles; *Brahme*, or the *Great One*; *Pedma*, or the *Lotos*; *Brahmanda*, or the *Mundane Egg*; and *Agni*, or *Fire*; (these four relate to

the *Creation*;) *Vifhnu*, or the *Pervader* : *Garuda*, or his *Eagle*; the *Transformations of Brahma*, *Siva*, *Linga* ; *Nareda*, fon of *Brahma*; *Scania*, fon of *Siva*; *Marcan-deya*, or the *Immortal Man*; and *Bhawifhya*, or the *Prediction of Futurity* ; (theſe nine belong to the attributes and powers of the Deity;) and four others, *Matfya*, *Vardha*, *Curma*, *Vamena*, or as many incarnations of the Great One in his character of *Preferver* ; all containing ancient traditions, embellifhed by poetry, ordifguifed by fable. The *eighteenth* is the *Bhagawata*, or *Life of Crijhna*, with which the fame Poet is by Tome imagined to have crowned the whole ſeries; though others, with more reaſon, affign them different compoſers

The fyſtem of *Hindu* law, beſides the fine work called *Menujmriti*, " or what is remembered from *Menu*," that of *Yajnyawalcy*a, and thoſe of fixteen other *Muni*'s, with *Commentaries* on them all, conſiſts of many tracts in high eſtimation, among which thoſe current in *Bengal* are an excellent Treatiſe on *Inheritances*, by *Jimuta Vſhana*; and a complete *Digeſt*, in twenty-ſeven volumes, compiled a few centuries ago by *Raghunandan*, the *Tribonian of India*, whoſe work is the grand repository of all that can be known on a ſubjeſt ſo curious in itſelf, and ſo intereſting to the *Britiſh* Government,

Of the *Philofophical Schools* it will be ſufficient here to remark, that the firſt *Nyaya* ſeems analogous to the *Peripatetick* ; the ſecond, ſometimes called *Vaiſzfhica*, to the *Ionick* ; the two *Mimdnſa*'s, of which the ſecond is often diſtinguiſhed by the name of *Vedanta*, to the *Platonick* ; the firſt *Sanc'hya* to the *Italick* ; and the ſecond, or *Patanjala*, to the *Stoick*, *Philofophy* : ſo that *Gautama* correſponds with *Ariſtotle*, *Canada* with *Thales*, *Jaimini* with *Socrates*, *Vyaſa* with *Plato*, *Capila*

with *Pythagoras*, and *Patanjali* with *Zeno* : but an accurate comparison between the *Grecian* and *Indian* Schools would require a considerable volume. The original works of those Philosophers are very difficult; but, like all the other *Sastras*, they are explained, or obscured, by the *Upaderfana*, or *Commentaries*, without end. One of the finest compositions on the Philosophy of the *Vedanta* is entitled *Yoga Vasishtha*, and contains the instructions of the great *Vasishtha* to his pupil, *Rama*, king of *Ayodhya*.

It results from this analysis of *Hindu* Literature, that the *Veda*, *Upaveda*, *Vedanga*, *Purana*, *Dharma*, and *Deri ana*, are the Six great *Sastras*, in which all knowledge, divine and human, is supposed to be comprehended. And here we must not forget, that the word *Sastra*, derived from a root signifying *to ordain*, means generally an *ordinance*, and particularly a *sacred ordinance*, delivered by inspiration. Properly, therefore, this word is applied only to *sacred literature*, of which the text exhibits an accurate sketch.

The *Sudra's*, or *fourth* class of *Hindus*, are not permitted to study the *fix* proper *Sastra's* before enumerated; but an ample field remains for them in the study of *profane literature*, comprised in a multitude of *popular* books, which correspond with the several *Sastra's*, and abound with beauties of every kind. All the tracts on *Medicine* must, indeed, be studied by the *Vaidya's*, or, those who are born physicians; and they have often more learning, with far less pride, than any of the *Brahmans*. They are usually poets, grammarians, rhetoricians, moralists; and may be esteemed in general the most virtuous and amiable of the *Hindus*. Instead of the *Veda's*, they study the *Rajaniti*, or *Instruction of Princes*; and, instead of *Law*, the *Nitisastra*, or general System of *Ethics*. Their *Sahitia*, or *Cavya Sastra*, consists of innumerable poems, written chiefly by the *medical* tribe, and supplying the place of the *Purana's*, since they

they contain all the stories of the *Ramayam*, *Bharata*, and *Bhagawata*. They have access to many treatises of *Alancara*, or Rhetorick, with a variety of works in modulated Prose. To *Upac'hudna*, or Civil History, called also *Rajatarangini*; to the *Nataka*, which answers to the *Gandharvaveda*, confiding of regular Dramatick pieces in *Sanfcrit* and *Pracrit*: besides which, they commonly get by heart some entire dictionary and grammar. The best lexicon or vocabulary was composed in verse, for the assistance of the memory, by the illustrious *Amarasinha*; but there are seventeen others in great repute. The best grammar is the *Mugdhabodha*, or the *Beauty of Knowledge*, written by a *Gadwami*, named *Vadadeva*, and comprehending, in two hundred short pages, all that a learner of the language can have occasion to know. To the *Cofha*'s, or dictionaries, are usually annexed very ample *Ticd*'s, or *Etymological Commentaries*.

We need say no more of the heterodox writings, than that those on the religion and philosophy of *Buddha*, seem to be connected with some of the most curious parts of *Asiatick* History, and contain, perhaps, all that could be found in the *Pali*, or *sacred language*, of the Eastern *Indian* Peninsula. It is aliened in *Bengal*, that *Amarasinha* himself was a *Baudha*; but he seems to have been a theft of tolerant principles, and, like *Abu'lfaiz*, desirous of reconciling the different religions of *India*.

Wherever we direct our attention to *Hindu* Literature, the notion of *infinity* presents itself; and the longest life would not be sufficient for the perusal of near five hundred thousand fanzas in the *Purdnas*, with a million more perhaps in the other works before mentioned. We may, however, select the best from each *Sastra*, and gather the fruits of science, without loading ourselves with the leaves and branches; while we have the pleasure

pleasure to find, that the learned *Hindus*, encouraged by the mildness of our government and manners, are at least as eager to communicate their knowledge of all kinds as we can be to receive it. Since *Europeans* are indebted to the *Dutch* for almost all they know of *Arabick*, and to the *French* for all they know of *Chinese*, let them now receive from our nation the first accurate knowledge of *Sanscrit*, and of the valuable works composed in it. But, if they wish to form a correct idea of *Indian* religion and literature, let them begin with forgetting all that has been written on the subject, by ancients or moderns, before the publication of the *Gita*.

To the PRESIDENT.

MY DEAR SIR,

I HEREWITH fend you fix ancient Copper-Plates, fattened together by a Ring in two Parcels, each containing Three. They were found in digging for some new Works at the Fort of *Tanna*, the Capital of *Salfet*. The Governor of *Bombay* informed me, none of the *Gujerat Brahmins* could explain the Inscriptions. I obtained Permission to bring them round with me, being desirous of submitting them to the investigation of the *Afiatick Society*, under the Promise of restoring them to the Proprietor.

I have the honour to be with great Respect,

Dear SIR WILLIAM,

Your most faithful humble Servant,

J. CARNAC.

February 15th, 1787.

XIX.

AN INDIAN GRANT OF LAND

IN Y. C. 1018.

Literally Translated from the Sanfcrit,

AS EXPLAINED BY RA'MALO'CHAN PANDIT.

COMMUNICATED BY

GENERAL CARNAC.

O'M. VICTORY and ELEVATION !

STANZAS.

MAY He, who in all affairs claims precedence in adoration; may that *Gan anayaca*, averting calamity, preserve you from danger !

2. May that *Siva* constantly preserve you, on whose head shines (*Gangd*) the daughter of *Jahnu*, resembling the pure-crescent-rising-from-the-summit-of-*Sumeru* !
(A compound word of sixteen syllables.)

3. May that God, the cause of success, the cause of felicity, who keeps, placed even by himself on his forehead a reflection of the-moon-with-cool-beams, drawn-in-the-form-of-a-line-resembling-that-in-the-infinitely-bright-spike-of-a-fresh-blown-Cetaca (who is) adorned with a - grove-of-thick-red-locks-tied-with-the-Prince-of-Serpents, be always present and favourable to you !

4. The

AN INDIAN GRANT OF LAND

4. The son of *Jimutacetu*, ever affectionate, named *Jimutavdhana*, who, surely, preserved (the Serpent) *sanc'hachuda* from *Garuda*, (the Eagle of *Vishnu*,) was famed in the three worlds, having neglected his own body, as if it had been grafts, for the sake of others.

5. (Two couplets in rhyme.) In his family was a monarch (named *J Capardin*, (or, with thick hair, a title of *Mahdieva*,) chief of the race of *Sildra*, repelling the insolence of his foes : and from him came a son, named *Putaiacti*) equal in increasing glory to the sun's bright circle.

6. When that son of *Capardin* was a new-born infant, through fear of him, homage was paid by all his collected enemies, with water held aloft in their hand, to the delight of his realm,

7. From him came a son, the only warrior on earth, named *Srivappuvanna*, a hero in the theatre of battle.

8. His son, called *Sri Jhanjha*, was highly celebrated, and the preserver of his country. He afterwards became the Sovereign of *Gogni*: he had a beautiful form.

8. From him came a son, whose renown was far extended and who confounded the mind with his wonderful acts, the fortunate *Bajjada Deva*. He was a monarch, a gem in the diadem of the world's circumference; who used only the forcible weapon of his two arms readily on the plain of combat; and in whose bosom the Fortune of Kings herself amorously played, as in the bosom of the foe of *Mura*, (or *Vishnu*.)

9. Like

9. Like *Jayanta*, *fon* to the foe of *Vritta*, (or *ndraj* like *Shanmuc'ha*, (or *Cartiteya*,) *fon* to *Purdri*, (or *Mahadeva*,) then sprang from him a fortunate *fon*, with a true heart, invincible ;

10. Who in liberality was *Carna* before our eyes, in truth even *Yudhishthira*, in glory a blazing Sun, and the rod of *Cala* (or *Yama*, judge of 'the infernal regions') to his enemies.

11. By whom the great counsellors, who were under his protection, and others near him, are preserved in this world, He is a conqueror, named with propriety *Saranagata Vajrafanjaradava*.

12. By whom when this world was over-shadowed with-continual-presents-of-gold, for his liberality he was named *Jagadathi*, (or *Enriching the World*,) in the midst of the three regions of the universe.

13. Those Kings afluredly, whoever they may be, who are endued with minds capable of ruling their respective dominions, praise him for the greatness of his veracity, generosity, and valour; and to those Princes who are deprived of their domains, and seek his protection, he allots a firm settlement. May he, the grandfather of the *Raya*, be victorious! He is the spiritual guide of his counsellors, and they are his pupils. Yet farther,

14. He, by whom the title of *Gommaya* was conferred on a person who attained the object of his desire; by whom the realm, shaken by a man named *Eyapadeva*, was even made firm; and by whom, being the Prince of *Mamalambuva*, (I suppose, *Mambei*, or *Bombay*,) fecurity

curity from fear was given to me broken *with affliction*. He was the King, named *Sri Virudanca*. How can he be other wife painted ? (*Here fix syllables are effaced in one of the Grants; and this verse is not in the other.*)

15. His son was named *Bajjadadeva*, a gem on the forehead of monarchs, eminently skilled in morality; whose deep thoughts all the people, clad in horrid armour, praise even to this day.

16. Then was born his brother, the Prince *Aricefari*, (a lion among his foes,) the best of good men; who, by overthrowing the strong mountain of his proud enemies, did the act of a thunder-bolt; having formed great designs even in his childhood, and having seen the Lord of the Moon (*Mahddeva*) standing before him, he marched by his father's order, attended by his troops, and by valour subdued the world.

Yet more

17. Having raised up his slain foe on his sharp sword, he so afflicted the women in the hostile palaces, that their forelocks fell disordered, their garlands of bright flowers dropped from their necks on the vases of their breasts, and the black lustre of their eyes disappeared.

18. A warrior, the plant of whose fame grows up over the temple of *Brahma's Egg*, (the universe,) from-the-repeated-watering-of-it-with-the-drops-that-fell-from-the-eyes-of-the-wives-of-his-slaughtered-foe.

Afterwards by the multitude of his innate virtues (*then follows a compound word of a hundred and fifty-two syllables*)

yllables)the-fortunate-Aricefari-*Devardja-Lord-of-the-great-circle-adorned-with-all-the-company-of-princes-*

an-elephant's-hook-in-the-forehead-of-the-world-pleaf-
ed-with-encreafing-vice-a-Flamingo-bird-in-the-pool-
decked-with-flowers-like-thofe-of-paradife-and-with-
Aditya-Pandita-chief-of - the - diftricts - of - the - world-
through-the-liberality-of-the-Lord-of-the-Weftern-Sea-
holder-of-innate-knowledge-who-bears-a-golden-eagle-
on-his-ftandard-defcended-from-the-ftock-of-Jimutava
hana-king-of-the-race--of-5^r«Sovereign-of-the--city-
of- Tagara-Supreme-ruler-of-exalted-counfellors - af-
fembled-when-extended-fame-had - been - attained (*the*
monarch thus defcribed) governs-the-whole-region-of-
Concana-confifting-of-fourteen-hundred-viilages-with-
cities - and - other - places - comprehended-in-many- dif-
trifts-acquired-by-his-arm. Thus he fupports the bur-
den of thought concerning this domain. The Chief-
Minifter *sri Vafapaiya*, and the very-religioufly-puri-
fied *sri Vdrdhiyapaiya*, being at this time prefent, he,
the fortunate *Aricefaridevardja*, Sovereign of the Great
Circle, *thus addreffes* even all who inhabit-the-city-*sri*
Sthanaca, (*or the Manfion of Lacfhmi*,) his-own-kinf-
men -and -others-therc-affembled, princes-counfellors-
priefts-minifters-fuperiors-inferiors-fubject-to-his-com-
mands,alfothe-lords-of-diftricts-the-governors-of-towns-
chiefs-of-villages-the-mafters-of-families-employed-or-
unemployed-fervants-of-the-King-and-his-countrymen.
Thus he greets all-the-holy-men-and-others-inhabiting-
the-*city-of-Hanyamana* : Reverence be to you, as it is
becoming, with all the marks of refpect, falutation, and
praife!

S T A N Z A.

Wealth is inconftant; youth, deftroyed in an infant;
and life,placed between the teeth of *Critanta*, (*or Yama*,
before mentioned,)

VOL.

I.

C c

Nevertheless,

Nevertheless, neglect; *is frown* to the felicity of departed ancestors. Oh! how astonishing are the efforts of men!

And thus.—Youth is publicly-fwallowed-up-by-the-giantefs Old-Age-admitted-into-its-inner-manfion; and the bodily-frame-is-equally-obnoxious-to-the-affault-of-death-of-age-and-the-mifery-born-with-man-of-feparation-between-united-friends-like-falling-from - heaven-into-the-lower-regions. Riches and life are two things more-moveable than-a-drop-of-water-trembling-on*the«r leaf-of-a-lotos-fhaken-by-the-wind: and the world is like-the-firft delicate-foliage-of-a-plantain-tree. Considering this in fecret with a firm difpaffionate under-Handing, and alfo the fruit of liberal donations mentioned *by the wife, I called to mind thefe*

S T A N Z A S .

1. In the *Satya*, *Tretā* and *Dwāpār* Ages, great piety was celebrated: but in this *Caliyuga*, the *Muni's* have nothing to commend but liberality.

2. Not fo productive of fruit is learning, not fo productive is piety, as liberality, fay the *Muni's*, in this *Cali* Age. And thus was it faid by the Divine *Vyāja*.

3. Gold was the firft offspring of Fire j the Earth is the daughter of *Viflinu*, and kine are the children of the Sun: the three worlds, *therefore*, are affuredly given by Him, who makes a gift of gold, earth, and cattle.

4. Our deceased fathers clap their hands, *our* grandfathers exult; *faying*, " A donor of land is born in our " family : he will redeem us."

5. A donation of land to good perfons, for holy pilgrimages, and on the (five) folemn days of the moon, is the mean of palling over the deep boundlefs ocean of the world.

6. White parafols, and elephants Triad with pride, (the *infignia* of royalty,) are the flowers of a grant of land : the fruit is *Indra* in heaven.

Thus, confirming the declaration of the-ancient-Muni's - learned-in-the-diftinction-between-juftice-and* injufiice, for the fake of benefit to my mother, my fattier, and myfelf, on the fifteenth of the bright moon of *Cartway* in the middle of the year *Pingala*, (perhaps of the *Serpent*,) when nine hundred and forty years, fave one, are reckoned as paff from the time of King *Saca*, or in figures, the year 939, of the bright moon of *Cartica* 15; (that is, 1708—939 = 2 769 years ago from Y. C. 1787,) The moon being then full and eclifed, I having bathed in the oppofite fea refembling-the-girdies-round-the-waift-of-the-female-Earth, tinged-with-a-variety-of-rays-like-many-exceedingly^bright-rubies-pearls-and-other-gems, with-water-whofe-mud-was-become - mufk -through - the-frequent-batbing-of-the-fragrant -bofom- of- beautiful-Goddeffes-rifing-up-after^having-dived-in-it;-and having offered to the fun, the divine luminary, the-gem-of-one-cirde-of-heaven, eyer of-the-three-worlds, Lord-of-the lotos, a difh embel-lihed-with-flowers-of-various-forts, (this difh is filled with the plant *Darbha*, rice in the hufk, different flowers, and fandal.) have granted to him, who has viewed the preceptor of the Gods and of Demons, who has adored the Sovereign Deity, the-hufband-of-Amdica,(br *Durga*, has facrificed-caufed-others-to-facrifice,-has-read-caufed-others-to-read-and-has-performed-the-reft-of-the-fix(facerdotal)functions; who-is-eminently-fkillful-in.the-whole-bufinefs-of-performing-facrifices,who-

has - held - up - the - root-and-ftalk-of-the-facred-Iotos ; who4nhabits-the-city-Sri *St'hanaca*, (or *abode of Fortune*,) defcended from *Jamadagni*; who-performs-due-rites - in - the - holy-ftream ; who-diftinctly-knows-the-tnyfterious-branches, (of the *Vedas*,) the domeftick prieft, the reader, *Sri Ticcapaiya*, fon of *Sri Chch'hintapaiya*, the aftronomer, for-the-purpofe-of.facrificing-.taufing-others-to-facrifice-reading-caufing-others-to-read - and - difcharging-the-reft-of-the-fix (facerdotal-J duties, of performing-the (daily fervice of) *Vaiswadeva* with offerings of rice, milk, and materials of facrifice, and-of-completing-with due-folemnity the facrifice-of-fire- of-doing- fuch-acts-as-muft-continually-be-done₅ and fuch-as-muft-occafionally be-performed, of paying-due-honours to guefts and ftrangers, and-of-fupporting his-own-family, the village of *Chavindra-ftanding-at-the-extremity of-the-territory of Vاتفardja*, and the boundaries of which *are*, to the eaft, the village of *Puagambd*, and a water-fall-fro m a mountain; to the fouth, the villages of *Nagdmba* and *Mulddangarica* ; to the weft, the river *Sambarapallica*; to the north, the villages of *Sambive* and *Catiyalaca*; and befides this the full (*diftrict*) of *Tocabala Pallica*, the boundaries of which *are* to the eaft, *Sidabali*; to the fouth, the river *Mot'hala* ; to the weft, *Cacadeva*, *Hallapallica*, and *Badaviraca*; to the north, *Taldvali Pallica*; and alfo the village of *Aulaciya*, the boundaries of which (are) to the eaft, *Tadaga* ; to the fouth, *Govini*; to the weft, *Charted* ; to the north, *Calibald-yacholi*: (that land) thus furveyed-on-the-four-quarters-and limited-to-its-proper-bounds, with-its-herbage-wood-and-water, and with power-of-punifhing-for-the-ten-crimes, except that before given as the portion of *Deva*, or of *Brahma*, I have hereby releafed, and limited-by-the-duration-of-the-fun-the-moon-and-mountains, confirmed-with-the-peremony-of adoration,with a copious effufion of water, and with the higheft acts-of-worfhup; *and the fame land* fhall be enjoyed by his lineal-and-collateral-heirs, or caufed-to-be-enjoyed,norihall difturbance be given by

any perfon whatever; fince it is thus declared by great *Muni's*.

S T A N Z A S.

1. The earth is enjoyed by many kings, by *Sagar*, and by others: to whomfoever the foil at any time belongs, to him at that time belong the fruits of it.

2. A speedy gift is attended with no fatigue; a continued fupport, with great trouble: therefore even the *Rifhi's* declare, that a continuance of fupport is better than a fingle gift.

3. Exalted Emperors, of good difpofitions, have given land, as *Ramabhadra* advifes, again and again ; this is the true bridge of juftice for fovereigns : from time to time (O Kings) that bridge muft be repaired by you.

4. Thofe poffeffions here below, which have been granted in former times by fovereigns, given for-the-fake-of-religion-increase-of-wealth-or-of-fame, are exactly equal to flowers, which have been offered to a Deity : what good man would *refume fuch gifts* ?

Thus, confirming the precepts of ancient *Muni's*, all future kings muft gather the fruit-of-obferving-religious-duties; and let not the ftain-of-the-crime-of-deftroying-*this-grant* be borne henceforth by any-one; fince, whatever *prince*, being fupplicated, fhall, through avarice, having-his-mind-wholly-furrounded-with-the-gloom-of-ignorance-contemptuoufly-difmifs-the-injured-fuppliant, he, being guilty of five great and five fmall crimes,

Crimes, fhall long in darknefs inhabit *Raurava*, *Mahd-raurava*, *Andha*, *Tamifra*, and the other places, of puniftiment. And thus it is declared by the divine *Vyafa* ;

S T A N Z A S .

1. He who feizes land, given-by-himself, or by-another, (fovereign,) will rot among worms, himfelf a worm, in the midft of ordure.

2. They who feize granted-land, are born again, living with great fear in dry cavities of trees in the unwatered forefts on the *Vinddhian* (mountains.)

3. By feizing one cow, one vefture, or even one nail's breadth of ground, a *king* continues in hell till an univerfal deftruftion of the world has happened.

4. By (a gift of) a thoufand gardens, and by (a gift of) a hundred pools of water, by (giving) a hundred *lac* of oxen, a diffeifor of (granted) land is not cleared from offence.

5. A grantor of land remains in heaven fixty thoufand years; a diffeifor, and he who refufes to do juftice, continues as many (years) in hell.

And, agreeably to this, in what is written by the hand of the Secretary, (the King) having ordered it, declares his own intention ; as it is written by the command of me, Sovereign of the Great Circle, the fortunate *Aricefari Devardja*, fon of the Sovereign of the Great Circle, the Fortunate-, Invincible, *Devardja*.
And

And this is written, by order of the Fortunate King, by me *Jo-uba* the brother's-fon-of in *Nagalaiva-the-great-Bard,-dwelling-in* the royal palace: engraved-on-plates-of-copper by *Vedapaiya's* fon *Mana Dhara Paiya*. Thus (it ends,)

Whatever herein (maybe) defective in-one-fyllable, or have-one-fyllable-redundant, all that is (neverthelefs) complete evidence (of the grant.) Thus (ends the whole.)

COPY OF A LETTER, & C.

TO THE PRESIDENT,

DEAR SIR,

I DO myself the honour to fend you a few Remarks on, *Tagara*, and beg leave to fubmit them to your Judgment. Inquiries of that kind are generally very, dry; and unluckily I have no talent for amplification. I have collected all I could find in the ancient authors, and endeavoured, by bringing the whole together, to elucidate a fubject which muft be interefting to the *Afiatick Society*; and this, I hope, will fecure me their indulgence, I have been as fparing as poffible of *Greek* quotations; I am not fond of them: however, I have ventured a few, which I thought abfolutely neceffary. With refpect to the *hijlorical* part, you will find, I am pot converfant with the *Hindu* Antiquities; indeed, J have no time to ftudy languages,

I am,

DEAR SIR,

Your moft obedient humble Servant,

F. WILFORD,

Ruffapugla, June 10, 1787.

REMARKS

REMARKS

ON THE

CITY OF TAGARA.

By Lieut. FRANCIS WILFORD.

THE expedition of *Alexander* having made the *Greeks* acquainted with the riches of *India*, they soon discovered the way by sea into that country; and, having entered into a commercial correspondence with the natives, they found it so beneficial, that they attempted a trade hither.

Ptolemy Philadelphus, king of *Egypt*, in order to render the means easy to merchants, sent one *Dionysius* into the southern parts of *India*, to inquire into the nature of that country, its produce and manufactures.

It was then *Tagara* began to be known to the *Greeks*, about 2050 years ago.

Arrian, in his *Periplus Maris Erythræi*, says it was a large city, and that the produce of the country, at that early period, consisted chiefly of coarse *Dungarees* (*Othonium vulgare*,) of which vast quantities were exported; muslins of all sorts, (*Sindones omnis generis*,) and a kind of cotton fluff, dyed of a whitish purple, and very much of the colour of the flowers of mallows, whence called *Molochyna*.

All kinds of mercantile goods throughout the *DetKan* were brought to *Tagara*, and from thence conveyed on carts to *Baroach*, (*Barygaza*.)

Arrian

Arrian informs us, that *Tagara* was about ten days journey to the eastward of another famous mart, called *Plithana*, or *Pluthana*.

That *Pluthana* was twenty days journey to the southward of *Baroacly* Alfo,

That the road was through the *Bala-gaut* mountains.

And here we must observe, that the *Latin* translation of the *Periplus* * by *Stuckius* is very inaccurate, and often erroneous; as in the following passage, where *Arrian*, speaking of *Tagara*, says

“Καταγεται δε εξ αυτων πορειαις αμαξων και ανοδοις μεγισταις εις την Βαρυγαζαν:”

which *Stuckius* translates thus :

" Ex his autem emporiis, per loca invia et difficillima,
" res Barygazam plaultris convehuntur."

But it should be,

" Ex his autem emporiis, per maximos ascensus, res
" Barygazam deorsum feruntur"

* *Καταγω* signifies *deorsumferre*, (to bring down,) not *convehere*.

Ανοδιαι μεγισται should be translated per *maximos ascensus** *Ανοδια*, or *ανodos*, in this place, signifies an ascent, a road over hills ; and this meaning is plainly pointed out by the words *καταγεται* and *μεγισταις*.

In

In short, *αυοδιαι μεγαισαι* is the true translation of the Hindoo word *Bala-gaut*, the name of the mountains through which the goods from *Tagara* to *Baroach* used to be conveyed.

This passage in *Arrian* is the more interesting, as it fixes the times when the *Bala-gaut* Mountains were first heard of in *Europe**

The bearing from *Tagara* to *PUtthana* is expressly mentioned by *Arrian*, (*προς ανατολην*;) but is left out by *Stuckius*.

Pluthana is an important point to be settled, as it regulates the situation of *Tagara*.

It still exists, and goes nearly by the same name, being called to this day *Pullanah*. It is situated on the southern bank of the *Goddvery*, about 217 British miles to the southward of *Baroach*.

These 217 miles being divided by twenty, the number of days travellers were between *Pultanah* and *Baroach*, according to *Arrian*, give nearly eleven miles per day, or five fars, which is the usual rate of travelling with heavy loaded carts.

The onyx, and several other precious stones, are still found in the neighbourhood of *Pultanah*, as related by *Arrian*; being washed down by torrents from the hills during the rains, according to *Pliny*.

Arrian informs us, that the famous town of *Tagara* was about ten days journey to the eastward of *Pultanah*.

According

According to the above proportion, these ten days (or rather somewhat less *) are equal to about 100 British miles; and consequently *Tagara*, by its bearing and distance from *Pultanah*, falls at *Deoghir*, a place of great antiquity, and famous through all *India*, on account of the *Pagodas* of *Eloura*. It is now called *Doulet-abad*, and about four coss N. W. of *Aurungabad*.

Ptolemy agrees very well with *Arrian*, with respect to distances and bearings, if we admit that he has mistaken *Baithana*, or *Paithana*, for *Plithana*; and this, I am pretty sure, is really the case, and may be easily accounted for, as there is very little difference between ΠΑΙΘΑΝΑ and ΠΛΙΘΑΝΑ in the *Greek* character.

Paithana, now *Pattan*, or *Puttan*, is about half way between *Tagara* and *Plithana*.

According to *Ptolemy*, *Tagara* and *Pattan* were situated to the northward of the *Baund-Ganga*, (*Binda* or *Bynda* river,) commonly called *Goddvery*; and here *Ptolemy* is very right.

In *M. Buffi's* marches, *Pattan* is placed to the southward of the *Goddvery*; but it is a mistake.

It appears from *Arrian's Periplos*, that, on the arrival of the *Greeks* into the *Deccan*, above 2000 years ago, *Tagara* was the *metropolis* of a large district called *Ariaca*, which comprehended the greatest part of *Subah Aurungabad*, and the southern part of *Concan*; for the northern part of that district, including *Damaun Callian*, the *Island of Salfet*, *Bombay*, &c. belonged to the *Rajah*
of

* Ως ἡμερῶν δέκα quasi dies decem.

† *Patinm* Tab, *Peutinger*. *Patinm* Anonym, *Ravenn*.

CITY OF TAGARA.

of *Larikeh*, or *Lar*, according to *Arrim* and *Ein Said al Magrebi*.

It is necessary to observe here, that, though the author of the *Patriplus* is supposed to have lived about the year 160 of the present era, yet the materials he made use of in compiling his directory are far more ancient : for, in speaking of *Tagara*, he says that the *Greeks* were prohibited from landing at *Callian*, and other harbours on that coast. Now it is well known that, after the conquest of *Egypt*, the *Romans* had monopolized the whole trade to *India*, and would allow no foreigners to enter the Red Sea; and consequently this passage has reference to an earlier period, previous to the conquest of *Egypt* by the *Romans*.

About the middle of the first century, *Tagara* was no longer the capital of *Ariaca*, *Rajah Salbahan* having removed the seat of the empire to *Pattan*.

Ptolemy informs us, that *Paithana*, or *Pattan*, had been the residence of a prince of that country, whose name the *Greeks* have strangely disfigured : we find it variously spelt, in different MSS. of *Ptolemy*, *Siripokmocus*, *Siropolemceus*, *Siroptolcmceus*, &c.

Yet, when we consider that, whenever *Pattan* is mentioned by the *Hindoos*, they generally add, it was the residence of *Rajah Salbahan*,* who, in the dialect of the *Deccan*, is called *Salivanam*, or *Salibanam*, I cannot help thinking that the *Greeks* have disfigured this last word *Salibanam* into *Saripalam*, from which they have made *Siripolemceas*, *Siroptolemceus*, &c

Bickermajit ruled for some time over the northern parts of the *Deccan*; but the *Rajahs*, headed by *Salbahan*,
having

* Making use of the very words of *Ptolemy*,

REMARKS ON THE

having, revolted, they gave him battle, and he was slain. *Tagara* became again the metropolis of *Ariaca* ; at least it was so towards the latter end of the eleventh century, as appears from a grant of some lands in *Cancan*, made by a *Rajah* of *Tagara*: this grant still exists, and was communicated to the *Asiatick Society* by General *Carnac*.

When the *Mujfulmans* carried their arms into the *Deccan* about the year .1293, *Tagara*, or *Deoghir*, was still the residence of a powerful *Rajah*, and remained so till the time of *Shah- Jehan*, when the district belonging to it became a *Subah* of the *Mogul* Empire. Then *Tagara* was deserted; and *Kerkhi*, four cofs to the south-east of it, became the capital. This place is now called *Aurungabaci*.

Thus was destroyed the ancient kingdom or *Rajajhip* of *Tagara*, after it had existed with little interruption above 2000 years; that is to say, as far as we can trace back its antiquity.

It may appear astonishing, that though the *Rajah* of *Tagara* was possessed of a large trade on the sea-coast, yet all trade was carried on by land.

Formerly it was not so. On the arrival of the *Greeks* into the *Deccan*, goods were brought to *Callian*, near *Bombay*, and then shipped off. However, a *Rajah* of *Larikeh*, or *Lar*, called *Sand ants*, according to *Arrian*, would no longer allow the *Greeks* to trade either at *Callian*, or at the harbours belonging to him on that coast, except *Baroach* ; and whenever any of them were found at *Callian*, or in the neighbourhood, they were confined, and sent to *Baroach* under a strong guard. *Arrian*, being a *Greek* himself, has not thought proper to inform us what could induce the *Rajah* to behave in this manner to the *Greeks*; but his silence is a convinc-

Ing proof that they had behaved amifs; and it is likely enough, that they had attempted to make a fettlement in the Ifland of *Salfet*, in order to make themfelves independent, and facilitate their conquelts into the *Deccan*.

The fears of the *Rajah* were not groundlefs; for the *Greek* kings of *Bactriana* were poffeffed of the *Punjah*, *Cabul*, &c. in the North of *India*.

There were other harbours, to the fouth of *Callian*, belonging to the *Rajah* of *Tagara*, but they were not frequented on account of *pirates*, who, according to *Pliny*, *Arrian*, and *Ptolemy*, infefted thefe countries ill the very fame manner they do now.

XX.

ON THE PANGOLIN OF BAHARI

BY

MATTHEW LESLIE, Esq.

THE lingular animal which M. *Buffon* describes by the name of *Pangolin*, is well known in *Europe* since the publication of his *Natural History*, and *Goldsmith's* elegant *Abridgment* of it; but, if the figure exhibited by *Buffon* was accurately delineated from the three animals, the spoils of which he had examined, we must consider that which has been lately brought from *Caracdia* to *Chitra*, and sent thence to the Presidency, as a remarkable variety, if not a different species, of the *Pangolin*. Ours has hardly any neck; and, though some filaments are discernible between the scales, they can scarce be called bridles. But the principal difference is in the tail; that of *Buffon's* animal being long, and tapering almost to a point; while that of ours is much shorter, ends obtusely, and resembles, in form and flexibility, the tail of a lobster. In other respects, as far as we can judge from the dead subject, it has all the characters of *Buffon's Pangolin*; a name derived from that by which the animal is distinguished in *Java*, and consequently preferable to *Manis*, or *Pholidotus*, or any other appellation deduced from an *European* language. As to the *scaly lizard*, the *scaled armadillo*, and the *five-nailed ant-eater*, they are manifestly improper designations of this animal; which is neither a *lizard*, nor an *armadillo*, in the common acceptation; and, though it be an *ant-eater*, yet it essentially differs from the hairy quadruped usually known by that general description. We are told that the *Malabar* name of this animal is *Alungu*. The natives of *Bahar* call it *Bajar-cit*, or, as they explain the word, *ftont-vermine* :



THE VAJRACITA

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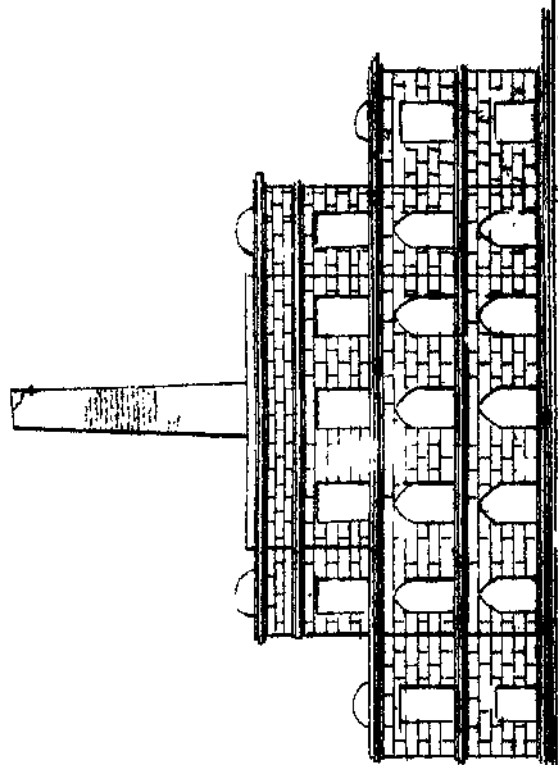
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vermlne ; and in the stomach of the animal before us was found about a teacupful of small stones, which had probably been swallowed for the purpose of facilitating digestion : but the name alludes, I believe, to the hardness of the scales; for *Vajracita* means, in *Sanscrit* the *diamond* or *thunderbolt reptile* ; and *Vajra* is a common figure in the *Indian* poetry for any thing excessively hard. The *Vajracita* is believed by the *Pandits* to be the animal which gnaws their *sacred stone*, called *Salgramasila* ; but the *pangolin* has apparently no teeth; and the *Salgrams*, many of which look as if they had been worm-eaten, are perhaps only decayed in part by exposure to the air.

This animal had a long tongue, shaped like that of a camelion; and if it was nearly adult, as we may conclude from the young one found in it, the dimensions of it were much less than those which *Buffon* alligns generally to his *pangolin*; for he describes its length as six, seven, or eight feet, including the tail, which is almost, he says, as long as the body, when it has attained its full growth ; whereas ours is but thirty-four inches long, from the extremity of the tail to the point of the snout, and the length of the tail is fourteen inches; but, exclusively of the head, which is five inches long, the tail and body are, indeed, nearly of the same length ; and the small difference between them may show, if *Buffon* be correct in this point, that the animal was young. The circumference of its body in the thickest part is twenty inches, and that of the tail only twelve.

We cannot venture to say more of this extraordinary creature, which seems to constitute the first step from the quadruped to the reptile, until we have examined it alive, and observed its different instincts; but as we are assured that it is common in the country round

Khanpur, and at *Chdtigdm*, where the native *Mufelmans* call it the *land-carp*, we fhall poffibly be able to give, on fome future occafion, a fuller account of it. There are in our *Indian* provinces many animals, and many hundreds of medicinal plants, which have either not been defcribed at all, or, what is worfe, ill defcribed, by the naturalifts of Europe : and, to procure perfect defcriptions of them from aftual examination, with accounts of their feveral ufes in medicine, diet, or manufactures, appears to be one of the moft important objects of our intititution.



THE STAFF OF ERÚZSHAH.

XXI.

INSCRIPTIONS

ON THE

STAFF OF FIRUZ SHAH.

TRANSLATED FROM THE SANSCRIT.

As explained by RADHACANTA SARMA.

ON a very Angular monument near *Dehli*, an outline of which is here exhibited, and which the natives call the *Staff of Firuz Shah*, are several old Inscriptions, partly in ancient *Nagari* letters, and partly in a character yet unknown; and Lieutenant Colonel *Poller*, having procured exact impressions of them, presents the Society with an accurate copy of all the Inscriptions. Five of them are in *Sanscrit*, and, for the most part, intelligible; but it will require great attention and leisure to decypher the others. If the language be *Sanscrit*, the powers of the unknown letters may, perhaps, hereafter be discovered by the usual mode of decyphering; and that mode, carefully applied, even at first, may lead to a discovery of the language. In the mean time, a literal version of the legible Inscriptions is laid before you. They are, on the whole, sufficiently clear; but the sense of one or two passages is at present inexplicable.

I.

The first, on the south-west side of the pillar, is perfectly detached from the rest : it is about seventeen feet from the base, and two feet higher than the other inscriptions.

O'M.

In the year 1230, on the first day of the bright half of the month *Vaifdlich* (a monument) of the Fortunate-*Vifala-Deva-fo*n of *the-Fortunate-Amilla-Deva,-King-*ot-*Sacamhari*.

II.

The next, which is engraved as a specimen of the character, consists of two stanzas in four lines; but each hemistich is imperfect at the end, the two first wanting *seven*, and the two last *five*, *syllables*. The word *Sacambhari* in the former inscription, enables us to supply the clofe of the *third* hemistich,

O'M.

As far as *Vindhya*, as far as *Himadri*, (the Mountain of Snow,) he was not deficient in celebrity. making *Aryaverta* (the Land of Virtue, or *India*) even once more what its name signifies. He having departed, *Pativahamda Tilaca* (is) king of *Sacambhart*; (*Sacam* only remains on the monument.) By us (the region between) *Himawat* and *Vindhya* has been made tributary.

In the year from *Sri Vicramdditya* 123, in the bright half of the month *Vaifach'h*. . . . at that time the *Raja-putra Sri Sallaca* was Prime Minister.

The second stanza, supplied partly from the last inscription, and partly by conjecture, will run thus :

*vritte fa prativahamana tilacah sacambharibhupatih
afmabhih caradam vyadhayi himawadvindhyataviman-
dalam*

The

९। आ विंशदादिभ्याः ष्विभविभूटा
 आ यौवर्द्धयथार्वं न न पिहं न वा ।
 ब्राह्म सं प्र निंयादुभा न निन कः ० या कं
 ऊ आह्निक् च दृष्टमपि दि म व दिष्ट्या
 सिं व दृष्ट्यौ विद्वद्भादिभ्यश्च वि शा य शु वि
 व क्ष मय मदा नदी वा रु द्य च श्रीम न्न व

The date 123 is here perfectly clear; at least it is clear that only *three* figures are written, without even room for a cypher after them; whence we may guess that the double circle in the former inscription was only an ornament, or the neutral termination *am* ; if so, the date of *both* is the year of CHRIST *Sixty-seven* : but if the double circle be a *zero*, the monument of *Vifala Deva* is as modern as the year 1174, or *nineteen* years before the conquest of *Dehli* by *Shihab-ud-din*.

III. and IV.

The two next Inscriptions were in the same words; but the stanzas, which in the fourth are extremely mutilated, are tolerably perfect in the third, wanting only a few syllables at the beginning of the hemidichs :

yah cshivefhu praharta nripatifhu vinamdtcandharfifhu
 prafannah
 —vahsambipurindrahjagativijayate vifala cshonipalah
 . . . da fajnya efha vijayi fantanajanatmajah
 . . punan cshemaftu bruvatamudyogas unyanmanah

He, who is repentful to kings intoxicated with pride, indulgent to those whose necks are humbled, an *Indra* in the city of *Causambi*, (I suspect *Causambi*; a city near *Haftinapur*, to be the true reading,) who is victorious in the world, *Visala*, sovereign of the earth; he gives . . . his commands being obeyed, he is a conqueror, the son of *Santdnajdna*, whole mind, when his foes say, " Let there be mercy," is free from further hostility.

This inscription was engraved, in the presence of *Sri Talaca Raja*, by *Sripati*, the son of *Mahava*, a *Cayastha*, of a family in *Gauda*, or *Bengal*

V.

The fifth seems to be an elegy on the death of a king named *Vigraha*, who is represented as only (lumbering, The last hemistich is hardly legible, and very obscure; but the sense of both stanzas appears to be this,

O'M.

1. An offence to the eyes of (thy) enemy's comfort (thou) by-whom-fortune-was-given-to-every suppliant, thy fame, joined to extensive dominion, shines, as we desire, before us: the heart of (thy) foes was vacant, even as a path in a desert, where men are hindered from passing, O fortunate *Vigraha Rajadeva*, in the jubilee occasioned by thy march.

2. May thy abode, O *Vigraha*, sovereign of the world, be fixed, as in reason, (it ought,) in the bosoms, embellished with Love's allurements, and full of dignity, of the women with beautiful eyebrows, who were married to thy enemies! Whether thou art *Indra*, or *Vishni*, or *Siva*, there is even no deciding; thy foes (are) fallen, like descending water. Oh! why dost thou through delusion continue sleeping?

XXII.

A

CONVERSATION

WITH

ABRAM, AN ABYSSINIAN,

CONCERNING THE

*City of GWENDER and the SOURCES Of the NILE.**By the PRESIDENT.*

HAVING been informed that a native of *Abyffinia* was in *Calcutta*, who spoke *Arabick* with tolerable fluency, I sent for and examined him attentively on several subjects with which he seemed likely to be acquainted. His answers were so simple and precise, and his whole demeanor so remote from any suspicious of falsehood, that I made a minute of his examination, which may not perhaps be unacceptable to the Society. *Gwender*, which *Bemier* had long ago pronounced a capital city, though *Ludolf* asserted it to be only a military station, and conjectured, that in a few years it would wholly disappear, is certainly, according to *Abram*, the Metropolis of *Abyffinia*. He says, that it is nearly as large and as populous as *Mifra*, or *Kahera*, which he saw on his pilgrimage to *Jerusalem* ; that it lies between two broad and deep rivers, named *Caha* and *Ancrīb*, both which flow into the *Nile* at the distance of about fifteen days journey; that all the walls of the houses are of a red stone, and the roofs of thatch; that the streets are like those of *Calcutta*, but that the ways by which the king passes are very spacious; that the palace, which has a plastered roof, resembles a fortress, and stands in the heart of the city; that the markets of the town abound in pulse, and have also

also wheat and barley, but no rice ; that fheep and goats are in plenty among them, and that the inhabitants are extremely fond of milk, cheefe, and whey; but that *the country people* and *foldiery* make no fcruple of drinking the blood, and eating the raw flefh, of an ox, which they cut without caring whether he is dead or alive; that this favage diet is, however, by no means general. Almonds, he fays, and dates, are not found in his country; but grapes and peaches ripen there; and in fome of the diftant provinces, efpecially at *Carudar*, wine is made in abundance; but a kind of mead is the common inebriating liquor of the *Abyffinians*. The late King was *Tilca Mahut*, (the firft of which words means *root* or *origin* ;) and the prefent his brother, *Tilca Jerjis*. He reprefents the royal forces at *Gwender* as confiderable ; and afferts, perhaps at random, that near forty thoufand horfe are on that ftation. The troops are armed, he fays, with mufkets, lances, bows and arrows, cimcters, and hangers. The council of ftate confifts, by his account, of about forty Minifters, to whom almoft all the executive part of government is committed. He was once in the fervice of a *Vazir*, in whofe train he went to fee the fountains of the *Nile* or *Abey*, ufually called *Alawy*, about eight days journey from *Gwender*. He faw three fprings, one of which rifes from the ground with a great noife, that may be heard at the diftance of five or fix miles. I fhewed him the defcription of the *Nile* by *Gregory of Amhara*, which *Ludolf* has printed in *Ethiopick*. He both read and explained it with great facility; whilft I compared his explanation with the *Latin* verfion, and found it perfectly exaft. He afferted of his own accord, that the defcription was conformable to all that he had feen and heard in *Ethiopia*; and for that reafon I annex it, When I interrogated him on the languages and learning of his country, he answered, that fix or feven tongues at leaft were fpoken there; that the moft elegant idiom, which the King ufed, was the *Ambarick*; that the *Ethiopick* contained, as it is well known, many *Arabick* words ; that, befides

their fatred books, as the Prophecy of *Enoch*, and others, they had Hiftories of *Abyffinia*, and various literary compofitions; that their language was taught in fchools and colleges, of which there were feveral in the Metropolis. He faid, that no *Abyfftnian* doubted the exiftence of the royal prifon called *Wahinin*, fituated on a very lofty mountain, in which the fons and daughters of their Kings were confined ; but that, from the nature of the thing, a particular defcription of it could not be obtained. " All thefe matters (faid he) are explained, I fuppofe, in the writings of *Yakuts* whom " I faw thirteen years ago in *Gwender*. He was a " phyfician, and had attended the King's brother, who " was alfo a *Vazir*, in his laft illnefs. The prince died; " yet the King loved *Yakub*; and, indeed, all the court " and people loved him. The King received him in " his palace as a gueft, fupplied him with every thing " that he could want; and, when he went to fee the " fources of the *Nile*, and other curiofities, (for he was " extremely curious,) he received every poffibleaffiftance " and accommodation from the royal favour. He underftood the languages, and wrote and "collected many " books, which he carried with him," It was impoffible for me to doubt (efpecially when he defcribed the perfon of *Yakub*) that he meant *James Bruce*, Efq. who travelled in the dreffofa Syrian phyfician, and probably affumed with judgment a name well known in *Abyffinia*. He is ftill revered on *Mount Sinai* for his fagauty in difcovering a fpring, of which the Monaftery was in great need. He was known at *Jedda* by *Mir Mohamed Hujjain*, one of the moil intelligent *Mahometans* in *India*; and I have feen him mentioned with great regard in a letter from an *Arabian* merchant at *Mokha*. It is probable that he entered *Abyffinia* by the way of *Mufuwwa*, a town in the poffeffion of the *Mufelmans*, and returned through the defert mentioned by *Gregory* in his defcription of the *Nile*. We may hope that Mr. *Bruce* will publifh an account of his interefting travels, with verfion of the Book of *Enoch*) which no man but his

self can give us with fidelity. By the help of *Ahyjfmian* records, great light may be thrown on the History of *Yemen* before the time of *Muhammed* ; since it is generally known that four *Ethiop* kings successively reigned in that country, having been invited over by the natives to oppose the tyrant *Dhu Nawas* ; and that they were, in their turn, expelled by the arms of the *Himyarick* Princes, with the aid of *Anufhirvan*, king of *Perfia*, who did not fail, as it usually happens, to keep in subjection the people whom he had consented to relieve. If the annals of this period can be restored, it must be through the histories of *Abyffinia*, which will also correct the many errors of the best *Asiatick* writers on the *Nile*, and the countries which it fertilizes.

ON THE COURSE OF THE NILE.

THE Nile, which the *Abyffinians* know by the names of *Abey*, and *Alawy*, or the *Giant*, gushes from several springs at a place called *Sucut*, lying on the highest part of *Dengala*, near *Gojjam*. to the west of *Bajemdir*, and the lake of *Dara* or *Wed*, into which it runs with so strong and rapid a current, that it mixes not with the other waters, but rides or swims, as it were, above them.

All the rains that fall in *Abyffinia*, and descend in torrents from the hills, all streams and rivers, small and great, except the *Hanazo*, which waters the plains of *Hengot*, and the *Hawafn*, which flows by *Dewdr* and *Fetgar*, are collected by this king of waters, and, like vassals, attend his march. Thus enforced, he rushes, like a hero exulting in his strength, and hastens to fertilize the land of *Egypt*, on which no rain falls. We must except also those *Ethiopian* rivers which rise in countries bordering on the ocean, as the kingdoms of *Cambdt*, *Gurajy*, *Wafy*, *Nariyah*, *Gafy*, *Wej*, and *Zinjiro*, whose waters are disembogued into the sea.

When the *Alawy* has passed the Lake, it proceeds between *Gojjam* and *Bajemdir*, and leaving them to the west and east, pursues a direct course towards *Amhara*, the skirts of which it bathes, and then turns again to the west, touching the borders of *Walaka*; whence it rolls along *Mugdr* and *Shawai*, and passing *Bazawa* and *Gongd*, descends into the low lands of *Shankila*, the country of the Blacks: thus it forms a sort of spiral round the province of *Gojjam*, which it keeps for the most part on its right.

Here

Here it bends a little to the east, from which quarter, before it reaches the districts of *Sennar*, it receives two large rivers; one called *Tacazzy*, which runs from *Tegri*; and the other, *Gwangue*, which comes from *Dembeia*.

After it has visited *Sennar*, it washes the land of *Dongola*, and proceeds thence to *Nubia*, where it again turns eastward, and reaches a country named *Abrim*, where no vessels can be navigated, by reason of the rocks and crags which obstruct the channel. The inhabitants of *Sennar* and *Nubia* may constantly drink of its water, which lies to the east of them like a strong bulwark; but the merchants of *Abyssinia*, who travel to *Egypt*, leave the *Nile* on their right, as soon as they have passed *Nubia*, and are obliged to traverse a desert of sand and gravel, in which for fifteen days they find neither wood nor water. They meet it again in the country of *Retf*, or *Upper Egypt*, where they find boats on the river, or ride on its banks, refreshing themselves with its salutary streams.

It is asserted by some travellers, that, when the *Alawy* has passed *Senndr* and *Dongola*, but before it enters *Nubia*, it divides itself; that the great body of water flows entire into *Egypt*, where the smaller branch (the *Niger*) runs westward, not so as to reach *Barbary*, but towards the country of *Alwah*, whence it rushes into the Great Sea. The truth of this fact I have verified, partly by my own observations, and partly by my inquiries among intelligent men; whose answers seemed the more credible, because, if so prodigious a mass of water were to roll over *Egypt* with all its wintry increase, not the land only, but the houses and towns, of the *Egyptians* must be overflowed.

XXIII

ON THE

TRIAL BY ORDEAL

AMONG THE

HINDUS.

BY A'LI IBRA'HI'M KHA'N,
CHIEF MAGISTRATE AT BANARES.

Communicated by WARREN HASTINGS, Esq.

THE modes of trying offenders by an appeal to the Deity, which are described at large in the *Mitac-Paradox* Comment on the *Dherma Saflra*, in the *Chapter of Oaths*, and other ancient books of *Hindu Law*, are here sufficiently explained, according to the interpretation of learned *Pandits*, by the well-wisher to mankind, *Ali Ibrahim Khan*.

The word *Divya*, in *Sanfcrit*, signifies the fame with *Partcfha*, or *Parikhya*, in *Bhafha*, *Kafam* in *Arabick*, and *Saucand* in *Perfian* ; that is, *an oath* ; or the form of invoking the Supreme Being to attest the truth of an allegation ; but it is generally understood to mean the trial by *ordeal*, or the form of appealing to the *immediate*, interposition of the Divine Power.

Now this trial may be conducted in *nine* ways, First, by the *balance*; fecondly, by *fire*; thirdly, by *water*; fourthly, by *poifon*; fifthly, by the *Cofha*, or water in which an idol has been wafhed; fixthly, by *rice*; leventhly, by *boiling oil*; eighthly, by *red-hot iron*; ninthly, by *images*.

I. Ordeal

I. Ordeal by the *balance* is thus performed. The beam having been previously adjusted, the cord fixed, and both scales made perfectly even, the person accused and a *Pandit* fast a whole day; then, after the accused has been bathed in sacred water, the *homa*, or *oblation*, presented to fire, and the deities worshipped, he is carefully weighed; and, when he is taken out of the scale, the *Pandits* prostrate themselves before it, pronounce a certain *mentra*, or *incantation*, agreeably to the *Sastras*, and, having written the substance of the accusation on a piece of paper, bind it on his head. Six minutes after they place him again in the scale; and if he weigh more than before, he is held guilty; if less, innocent: if exactly the same, he must be weighed a third time; when, as it is written in the *Mitacshera*, there will certainly be a difference in his weight. Should the balance, though well fixed, break down, this would be considered as a proof of his guilt.

I t . For the *fire-order* an excavation, nine hands long, two spans broad, and one span deep, is made in the ground, and filled with a fire of *pippal* wood : into this the person accused must walk barefooted; and if his foot be unhurt, they hold him blameless; if burned, guilty*

I I I . *Water-ordeal* is performed by causing the person accused to stand in a sufficient depth of water, either flowing or stagnant, to reach his navel; but care should be taken that no ravenous animal be in it, and that it be not moved by much air. A *Brahman* is then directed to go into the water, holding a staff in his hand; and a soldier shoots three arrows on dry ground from a bow of cane. A man is next dispatched to bring the arrow which has been shot farthest; and, after he has taken it up, another is ordered to run from the edge of the water; at which instant the person accused is told to grasp the bottom or the staff of the *Brahman*, who stands near him in the water, and immediately to dive into it.

He

He muft remain under water till the two men who went to fetch the arrows are returned; for if he raife his head or body above the furface before the arrows are brought back, his guilt is confidered as fully proved. In the village near *Bandres*, it is the practice for the perfon, who is to be tried by this kind of *ordeal*, to ftand in water up to his navel, and then, holding the foot of a *Brahman*, to dive under it as long as a man can walk fifty paces very gently. If before the man has walked thus far the accufed rife above the water, he is condemned; if not, acquitted.

IV. There are two forts of trial by *poifon*. Firft, the *Pandits* having performed their *homa*, and the perfon accufed his ablution, two *retti's* and a half, or feven barley-corns, of *vifhanaga*, a poifonous root, or of *tfr-c'hya*, (that is, white arfenick,) are mixed in eight; *mafha's*, or fixty-four *retti's*, of clarified *butter*, which the accufed muft cat from the hand of a *Brahman*. If the poifon produce no vifible effect, he is abfolved; otherwife, condemned. Secondly, the hooded fnake, called *naga*, is thrown into a deep earthen pot, into which is dropped a ring, a feal, or a coin. This the perfon accufed is ordered to take out with his hand; and if the ferpent bite him, he is pronounced guilty; if not, innocent.

V. Trial by the *Cofha* is as follows: The accufed is made to drink three draughts of the water in which the images of the *Sun*, of *Devi*, and other Deities, have been wafhed for that purpofe; and if within fourteen days he has any ficknefs or indifpofition, his crime is confidered as proved.

VI. When feveral perfons are fufpected of theft, fome dry rice is weighed with the facred ftone called *falgram*; or certain flocas are read over it; after which the fufpected perfons are fevcrally ordered to chew a quantity

quantity of it: as soon as they have chewed it, they are to throw it on some leaves of *pippal*, or, if none be at hand, on some *b'hurja patra*, or bark of a tree from Nepal or *Cashmir*. The man from whose mouth the rice comes dry, or stained with blood, is holden guilty the rest are acquitted.

VII. The ordeal by *hot oil* is very simple: when it is heated sufficiently, the accused thrusts his hand into it; and if he be not burned, is held innocent.

VIII. In the same manner they make an *iron ball*, or the *head of a lance*, red hot, and place it in the hands of the person accused; who, if it burn him not, is judged guiltless.

IX. To perform the ordeal by *dharmach*, which is the name of the *floca* appropriated to this mode of trial, either an image, named *Dharma*, or the Genius of Justice, is made of silver, and another, called *Adharma*, of clay or iron, both of which are thrown into a large earthen jar; and the accused, having thrust his hand into it, is acquitted if he bring out the silver image, but condemned if he draw forth the iron. Or the figure of a deity is painted on white cloth, and another on black; the first of which they name *Dharma*, and the second, *Adharma*. These are severally rolled up in cow-dung, and thrown into a large jar, without having ever been shown to the accused; who must put his hand into the jar, and is acquitted or convicted, as he draws out the figure on white or on black cloth.

It is written in the comment on the *Dharma Sastra*, that each of the four principal casts has a sort of ordeal appropriated

appropriated to it; that a *Brahman* muft be tried by the *balance*, a *Cfhatriya* by *fire*, a *Vaifya* by *water*, and a *Sudra* by *poifon*: but fome have decided that any ordeal, except that by *poifon*, may be performed by a *Brdhman*, and that a man of any caft may be tried by the *balance*. It has been determined, that a woman may have any trial, except thofe by *poifon* and by *water*.\

Certain months and days alfo are limited in the *Mitacfhera* for the different fpecies of ordeal; as *Agrahan*, *Paufh*, *Magh*, *P'halgun*, *Srawan*, and *B'hadr*, for that by *fire*; *A'fwin*, *Cartic*, *Jaiſht*, and *A'fhadh*, for that by *water*; *Paufh*, *Magh*, and *P'halgun*, for that by *poifon*; and regularly there fhould be no *water-ordeal* on the *Afiemi*, or *eighth*; the *Cheturdasi*, or *fourteenth* day of the new or full moon, in the intercalary month, in the month of *B'hadar*; on *Sanaifcher*, or *Saturday*; and on *Mangal*, or *Tueſday*: but, whenever the magiftrate decides that there fhall be an ordeal, the regular appointment of months and days needs not be regarded.

The *Mitacfhera* contains alfo the following diftinc-tions. In cafes of theft or fraud to the amount of a *hundred* gold mohrs, the trial by *poifon* is proper; if *eighty* mohrs be ftole, the fufpected perfon may be tried by *fire*; if *forty*, by the *balance*; if from *thirty* to *ten*, by the *image-water*; if *two* only, by *rice*.

An infpired legiflator, named *Catyayana*, was of opinion, that though a theft or fraud could be proved by witneſſes, the party accuſed might be tried by ordeal. He ſays too, that, where a thouſand *panas* are ftole, or fraudulently with-held, the proper trial is by *poifon*; where *feven hundred and fifty*, by *fire*; where *fix hundred and fixty-fix*, and a fraction, by *water*; where *five hundred*,

by the *balance*; where *four hundred*, by *hot oil*; where *three hundred*, by *rice*; where an *hundred and fifty*, by the *Cofha*; and where *one hundred*, by the *dharmarch*, or images of filver and iron.

The mode of conducing the ordeal by *red-hot balls*, or *heads of fpears*, is thus particularly defcribed in the Commentary on *Yagyawelcya*.

At daybreak the place where the ceremony is to be performed, is cleared and wafhed in the cuftomary form; and at fun-rife the *Pandits*, having paid their adoration to *Ganefa*, the God of Wifdom, draw nine circles on the ground with cow-dung, at intervals of fifteen lingers; each circle containing fifteen fingers of each, but the ninth either fmaller or larger than the reft. Then they worfhip the deities in the mode prefcribed by the *Sajira*- prefent oblations to the fire, and, having a fecond time worfhipped the Gods, read the appointed *meniras*. The perfon to be tried then performs an ablution, puts on moift clothes, and, turning his face to the eaft, ftands in the *firft* ring, with both his hands fixed in his girdle. After this the prefiding magiftrate and *Pandits* order him to rub fome rice in the hulk between his hands, which they carefully infpect; and, if the fear of a former wound, a mole, or other mark, appear on either of them, they ftain it with a dye, that, after trial, it may be diltinguifhed from any new mark. They next order him to hold both his hands open and clofe together; and, having put into them *feven* leaves of the trembling tree, or *pippal*, feven of the *fami*, or *jend*, (even blades of *darbha* grafs, a little barley moiftened with curds, and a few flowers, they fatten the leaves on his hand with feven threads of raw cotton. The *Pandits* then read the *flocas* which are appointed for the occaifion;

occafion; and, having written a ftate of the cafe, and the point in Hfue, on a Palmyra-leaf, together with the *mentra* prefcribed in the *Veda*, they tie the leaf on the head of the accused. All being prepared, they heat an iron ball, or the head of a lance, weighing two *ser* and a half, or five *pounds*, and throw it into water ; they heat it again, and again cool it in the fame manner. The third time they keep it in the fire till it is red hot; then they make the perfon accused ftand in the firft circle ; and, having taken the iron from the fire, and read the ufual incantation over it, the *Pandits* place it with tongs in his hands. He muft ftep gradually from circle to circle, his feet being constantly within one of them, and when he has reached the *eighth*, he muft throw the iron into the *ninth*, fo as to burn fome grafs, which muft be left in it for that purpofe. This being performed, the magiftrate and *Pandits* again command him to rub fome rice in the hulk between both his hands, which they afterwards examine; and if any mark of burning appear on either of them, he is convicted; if not, his innocence is confideredas proved. If his hand fhake through fear, and by his trembling any other part of his body is burned, his veracity remains unimpeached ; but, if he let the iron drop before he reach the *eighth* circle, and doubt arife in the minds of the fpectators whether it had burned him, he muft repeat the whole ceremony from the beginning.

In the year of the *Meffiah* 1783, a man was tried by the *hot ball* at *Benares*, in the prefence of me *Ali Ibrahim Khan*, on the following occafion. A man had accused one *Sancar* of larceny, who pleaded that he was not guilty; and as the theft could not be proved by legal evidence, the trial by *fire-ordeal* was tendered to the appellee, and accepted by him. This well-wifher to mankind advifed the learned magiftrates and *Pandits*, to prevent the decifion of the queftion by a mode not

conformable to the practice of the Company's Government, and recommended an oath by the water of the *Ganges*, and the leaves of *tulafi*, in a little vefsel of brafs, or by the book *Herivanfa*, or the ftone *Salgram*, or by the hallowed ponds or bafons; all which oaths are ufed at *Benares*. When the parties obftinately refufed to try the iffue by any one of the modes recommended, and infilled on a trial by the hot ball, the magiftrates and *Pandits* of the court were ordered to gratify their wifhes; and, fetting afide thofe forms of trial in which there could be only a diftant fear of death, or lofs of property, as the juft punifhment of perjury by the fure, yet flow, judgment of heaven, to perform the ceremony of ordeal agreeably to the *Dherma Safta* : but it was not till after mature deliberation for four months, that a regular mandate iffued for trial by the red-hot ball; and this was at length granted for four reafons : firft, becaufe there was no other way of condemning or abfolving the perfon accused; fecondly, becaufe both parties were *Hindus*, and this mode of trial was fpecially appointed in the *Dherma Sajtra* by the ancient lawgivers ; thirdly, becaufe this ordeal is practifed in the dominions of the *Hindu Rajas*; and fourthly, becaufe it might be ufeul to inquire how it was poffible for the heat of fire to be refitted, and for the hand that held it to avoid being burned. An order was accordingly fent to the *Pandits* of the court, and of *Benares*, to this effect: " Since the parties accufing and accused are both *Hindus*, and will not confent to any trial but that by the " hot ball, let the ordeal defired be duly performed in " the manner prefcribed by the *Mitacfhra*, or Com- " mentary on *Yagyawalcya*."

When preparations were made for the trial, this well-wifher to Mankind, attended by all the learned profefors, by the officers of the court, the *Sipahis* of Captain *Megan's* battalion, and many inhabitants of *Benares*,
went

went to the place prepared, and endeavoured to diffuade the appellor from requiring the accused to be tried by fire, adding " if his hand be not burned, you fhall certainly be imprifoned." The accufer, not deterred by this menace, perfifted in demanding the trial. The ceremony, therefore, was thus conducted in the prefence of me, *Ali Ibrahim Khan*.

The *Pandits* of the court and the city, having worhipped the God of *Knowledge*, and prefented their oblation of clarified butter to the fire, formed nine circles of cow-dung on the ground ; and, having bathed the appellee in the *Ganges*, brought him with his clothes wet; when, to remove all fufpicion of deceit, they wafhed his hands with pure water : then, having written a flate of the cafe, and the words of the *mentra*, on a Palmyra leaf, they tied it on his head; and put into his hands, which they opened and joined together, feven leaves of *pippal*, feven of *jend*, feven blades of *darbha* grafs, a few flowers, and fome barley moiftened with curds, which they faftened with feven threads of raw white cotton. After this they made the iron ball red hot, and, taking it up with tongs, placed it in his hands. He walked with it, ftep by ftep, the fpace of three *gaz* and a half, through each of the *feven* intermediate rings, and threw the ball into the *ninths* where it burnt the grafs that had been left in it. He next, to prove his veracity, rubbed fome rice in the hufk between his hands; which were afterwards examined, and were fo far from being burned, that not even a blifter was raifed on either of them. Since it is the nature of fire to bum, the officers of the court, and people of *Benares*, near five hundred of whom attended the ceremony, were aftonifhed at the event; and this weli-wifher to mankind was perfectly amazed. It occurred to his weak apprehenfion, that probably the frefh leaves, and other things, which, as it has been roentionedj were placed on the hands of the accused, had

had prevented their being burned; besides that the time was but fhort between his taking the ball and throwing it down; yet it is pofitively declared in the *Dherma Saftra*, and in the written opinions of the moft refpectable *Pandits*, that the hand of a man who fpeaks truth cannot be burned; and *Ali Ibrahim Khan* certainly faw with his own eyes, as many others alfo faw with theirs, that the hands of the appellee in this caufe were unhurt by the fire. He was confequently difcharged. But, that men might in future be deterred from demanding the trial by ordeal, the appellor was committed for a week. After all, if fuch a trial could be feen once or twice by feveral intelligent men, acquainted with natural philofophy, they might be able to affign the true reafon why a man's hand may be burned in fome cafes, and not in others.

Ordeal by the veffel of *hot oil*, according to the Comment on the *Dherma Saftra*, is thus performed. The ground appointed for the trial is cleared, and rubbed with cow-dung; and the next day, at fun-rife, the *Pandit* worfhips *Ganefa*, prefents his oblations, and pays adoration to other deities, conformably to the *Saftra* ; then, having read the incantation prefcribed, he places a round pan of gold, filver, copper, iron, or clay, with a diameter of fixteen fingers, and four fingers deep; and throws into it one *ser*, or eighty *ficca* weight, of clarified butter, or oil of *fefamum*. After this a ring of gold, or filver, or iron, is cleaned, and wafhed with water, and caft into the oil, which they proceed to heat; and when it is very hot, put into it a frefh leaf of *pippala*, or of *bilwa* ; when the leaf is burned, the oil is known to be fufficiently hot. Then, having pronounced a *mentra* over the oil, they order the party accufed to take the ring out of the pan ; and if he take it out without being burned, or without a blifter on his hand, his innocence is confidered as proved ; if not, his guilt.

A Brahman,

A *Brahman*, named *Rifhifwara Bhatta*, accused one *Ramdayal*, a linen painter, of having stolen his goods. *Ramdayal* pleaded not guilty; and, after much altercation, consented to be tried, as it had been proposed, by the vessel of oil. This well-wisher to mankind advised the *Pandits* of the court to prevent, if possible, that mode of trial; but since the parties insisted on it, an ordeal by hot oil, according to the *Sastra*, was awarded for the same reasons which prevailed in regard to the trial by the ball. The *Pandits*, who assisted at the ceremony, were *Bhishma Bhatta*, *Nanapat'hac*, *Manirama Pat'haca*, *Menirama Bhatta*, *Siva*, *Anantrama Bhatta*, *Criparama*, *Vishnuheri*, *Crishnachandra*, *Ramendra*, *Govindarama*, *Hericrishna Bhatta*, *Calidasa* : The three last were *Pandits* of the court. When *Ganefa* had been worshipped, and the *homa* presented, according to the *Sastra*, they sent for this well-wisher to mankind; who, attended by the two *Daraghas* of the *Devani* and *Faujdari* courts, the *Cotwal* of the town, the other officers of the court, and most of the inhabitants of *Benares*, went to the place of trial; where he laboured to dissuade *Ramdayal*, and his father, from submitting to the ordeal; and apprised them, that if the hand of the accused should be burned, he would be compelled to pay the value of the goods stolen, and his character would be disgraced in every company. *Ramdayal* would not desist : he thrust his hand into the vessel, and was burned. The opinion of the *Pandits* was then taken; and they were unanimous, that, by the burning of his hand, his guilt was established, and he bound to pay *Rifhifwara Bhatta* the price of what he had stolen; but if the sum exceeded five hundred *afhrasis*, his hand must be cut off by an express law in the *Sastra* ; and a mulct also must be imposed on him according to his circumstances.

The chief magistrate, therefore, caused *Ramdayal* to pay *Rifhifwara* seven hundred rupees in return for

the goods which had been ftolen; but, as amercements in fuch cafes are not ufual in the courts of judicature at *Benares*, the mulct was remitted, and the prifoner discharged.

The record of this conviction was tranfmitted to *Calcutta* in the year of the *Meffiah* 1783; and in the month of *April*, 1784, the Governor-General, *Imadu'd-daulah Jeladet Jang Behader*, having feen the preceding account of trials by ordeal, put many queftions concerning the meaning of *Sanfcrit* words, and the cafes here reported; to which he received respectful anfwers. He firft defired to know the precise meaning of *homa*, and was informed that it meant the oblations made to pleafe the deities, and comprifed a variety of things. Thus in the *agni homa*, they throw into the fire feveral forts of wood and grafs, as *palas* wood, *c'hadira* wood, *rafla chandan*, or red fandal, *pippal*-wood *fami*, and *cufha* grafs, together with fome forts of grain, fruit, and other ingredients, as *black fefamum*, *barley*, *rice*, *fugarcane*, *clarified butter*, *almonds*, *dates*, and *gvgal*, or *bdellium*. To his next queftion, "how many fpecies of *homa* there " were," it was anfwered, that different fpecies were adopted on different occasions; but that, in the ordeals by hot iron, and hot oil, the fame fort of oblation was lifed. When he defired to know the meaning of the word *mentra*, he was refpectfully told, that in the language of the *Pandits* there were three fuch words, *mentra*, *yantra*, and *tantra*; that the *firft* meant a paffage from one of the *Vidas*, in which the names of certain deities occurred; the fecond, a fcheme of figures, which they write with a belief that their wifhes will be accomplifhed by it; and the third, a jnedical preparation, by the ufe of which all injuries may be avoided; for they are faid to rub it on their hands, and afterwards to touch red-hot iron without being burned. He then alked how much barley, moiftened with curds, was put into the hands of the accufed perfon; and the anfwer was, *nine grains*.

His other questions were thus answered : " That the leaves of *pippala* were spread about in the hands of the accused, not heaped one above another; that the man, who performed the ordeal, was not much agitated, but seemed in full possession of his faculties; that the person tried by hot oil was at first afraid, but persisted, after he was burned, in denying the theft ; nevertheless, as he previously had entered into a written agreement, that, if his hand should be hurt, he would pay the value of the goods, the magistrate for that reason thought himself justified in compelling payment; that, when the before mentioned ingredients of the *homa* were thrown into the fire, the *Pandits*, sitting round the hearth, sung the *Slocas* prescribed in the *Saflra*. That the form of the hearth is established in the *Veda* and in the *Dherma Saflra*; and this fire-place is also called *Vedi*; that, for the smaller oblations, they raise a little ground for the hearth, and kindle fire on it; for the higher oblations, they sink the ground, to receive the fire where they perform the *homa*, and this sacred hearth they call *cunda*." The Governor then asked, why the trials by fire, by the hot ball, and the vessel of oil, if there be no essential difference between them, are not all called fire-ordeals; and it was humbly answered, that according to some *Pandits*, they were all three different; whilst others insisted, that the trial by fire was distinct from that by the vessel, though the trial by the hot ball, and the head of a lance, was the same ; but that, in the apprehension of his respectful servant, they were all *ordeals* by fire.

THE INDIAN LAW OF ORDEAL,

Verbally tranſlated from Yagyawalcyā.

1. T H E balance, fire, water, poiſon, the idol—

 Theſe are the ordeals uſed below for the proof of innocence, when the accuſations are heavy, and when the accuſer offers to hazard a mulct, (if he ſhould fail.)

2. Or one party may be tried, if he pleaſe, by ordeal, and the other muſt then riſque an amercement. But the trial may take place even without any wager, if the crime committed be injurious to the prince.

3. The ſovereign, having ſummoned the accuſed, while his clothes are yet moiſt from bathing, at ſunriſe, before he has broken his faſt, ſhall cauſe all trials by ordeal to be conducted in the preſence of *Brahmans*.

4. The balance is for women, children, old men, the blind, the lame, *Brahmans*, and the ſick; for the *Sudra*, fire or water, or ſeven barley-corns of poiſon.

5. Unleſs the loſs of the accuſer amount to a thouſand pieces of ſilver, the accuſed muſt not be tried by the red-hot ball, nor by poiſon, nor by the ſcales; but, if the offence be againſt the king, or if the crime be heinous, he muſt acquit himſelf by one of thoſe trials in all caſes,

6. He

6. He who his recourse to the balance, muft be attended by perfons experienced in weighing, and go down into one fcale, with an equal weight placed in the other, and a groove (with water in it) marked on the beam.

7. " Thou, O balance, art the manfion of truth ; thou waft anciently contrived by deities: declare the truth, therefore, O giver of fuccets, and clear me from all fufpicion.

8. " If I am guilty, O venerable as my own mother, then fink me down; but if innocent, raife me aloft." Thus fhall he addrefs the balance.

9. If he fink, he is convicted, or if the fcales be broken; but if the firing be not broken, and he rife aloft, he mud be acquitted.

10. On the trial by fire, let both hands of the accused be rubbed with rice in the hulk, and well examined; then let feven leaves of the *Afwatt'ha* (the religious fig-tree) be placed on them, and bound with feven threads.

11. " Thou, O fire, pervadeft all beings; O caufe of purity, who givest evidence of virtue and of fin, declare the truth in this my hand."

12. When he has pronounced this, the prieft fhall place in both hands an iron ball, red hot, and weighing fifty * *pala's*.

13. Having taken it, he fhall ftep gradually into feven circles, each with a diameter of fixteen fingers, and feperated from the next by the fame fpace.

14. IF,

* A *pala* is four *carsha's*, and a *carsha*, eighty *ractica's*, or seeds of the *Gunja* creeper, each weighing above a grain and a quarter, or correctly, Igr. 5-16ths,

14. If, having caft away the hot ball, he fhall again have his hands rubbed with rice in the hufk, and fhall fhew them unburned, he will prove his innocence. Should the iron fall during the trial, or fhould a doubt arife (on the regularity of the proceedings) he muft be tried again.

15. " Preferve me, O, *Varuna*, by declaring the truth." Thus having invoked the God of Waters, the accused fhall plunge his head into the river or pool, and hold both thighs of a man, who fhall ftand in it up to his navel.

16. A fwift runner fhall then haften to fetch an arrow fhut at the moment of his plunging; and if, while the runner is gone, the prieft fhall fee the head of the accused under water, he muft be difcharged as innocent.

17. "Thou, O poifon, art the child of *Brahma*, fted-
" faft in juftice and in truth: clear me then from this
" heavy charge, and, if I have fpoken truly, become
" neftar to me."

18. Saying this, he fhall fwallow the poifon *Sarnga*, from the tree which grows on the mountain *Himalaya* ; and if he digeft it without any inflammation, the prince fhall pronounce him guiltlefs.

19. Or the prieft fhall perform rites to the image of fome tremendous deity, and, having bathed the idol, fhall make the accused to drink three handfuls of the water that has dropped from it;

20. If, in fourteen days after, he fuffer no dreadful calamity from the aft of the deity, or of the king, he muft indubitably be acquitted.

XXIV.

THE

SECOND ANNIVERSARY DISCOURSE,

Delivered 24th FEBRUARY, 1785,

BY

THE PRESIDENT.

GENTLEMEN,

IF the Deity of the *Hindus*, by whom all their juft requests are believed to be granted with lingular indulgence, had propofed laft year to gratify my warmeft wifhes, I could have defired nothing more ardently than the fuccefs of your Inftitution ; becaufe I can defire nothing in preference to the general good, which your plan feems calculated to promote, by bringing to light many ufeful and interesting trails, which, being too lhort for feparate publication, might lie many years concealed, or, perhaps, irrecoverably perifh. My wifhes are accomplifhed, without an invocation to *Camadhenu*; and your Society, having already paffed its infant ftate, is advancing to maturity with every mark of a healthy and robuft conftitution. When I reflekt, indeed, on the variety of fubjects which have been difcuffed before you, concerning the hiftory, laws, manners, arts, and antiquities, of *Afia*, I am unable to decide whether my pleafure or my furprife be the greater; for I will not diffemble, that your progrefs has far exceeded my expectations ; and, though we mull ferioufly deplore the

lofs of thofe excellent men who have lately departed from this capital, yet there is a profpeft full of large contributions to your flock of *Afiatick* learning, which, I am perfuaded, will continually increafe. My late journey to *Benares* has enabled me to allure you, that many of your members, who refide at a diftance, employ a part of their leifure in preparing additions to your archives; and, unlefs I am too fanguine, you will foon receive light from them on feveral topicks entirely new in the republick of letters.

It was principally with a defign to open fources of fuch information, that I long had meditated an expedition up the *Ganges* during the fufpenfion of my bufinefs; but, although I had the fatisfa&ion of vifiting two ancient feats of *Hindu* fuperftition and literature, yet, illnefs having detained me a confiderable time in the way, it was not in my power to continue in them long enough to purfue my inquiries; and I left them, as *Æneas* is feigned to have left the fhades, when his guide made him recoiled *the fwift flight of irrevocable time*, with a curiofity raifed to the height, and a regret not eafily to be defcribed.

Whoever travels in *Afta*, efpecially if he be converfant with the literature of the countries through which he paffes, muft naturally remark the fuperiority of *European* talents. The obfervation, indeed, is at leaft as old as *Alexander*: And though we cannot agree with the fage preceptor of that ambitious Prince, that "the *Afiaticks* are born to be flaves," yet the *Athenian* poet feems perfectly in the right, when he reprefents *Europe* as *afvvereign Princefs*, and *Afia* as *her Handmaid*: But, if the miftrefs be tranfeendently majeftick, it cannot be denied that the attendant has many beauties.

ves, and some advantages peculiar to herself. The ancients were accustomed to pronounce *panegyrics* on their own countrymen at the expence of all other nations; with a political view, perhaps, of stimulating them by praise, and exciting them to still greater exertions; but such arts are here unnecessary; nor would they, indeed, become a Society, who seek nothing but truth unadorned by rhetoric; and, although we must be conscious of our superior advancement in all kinds of useful knowledge, yet we ought not therefore to condemn the people of *Afia*, from whose researches into nature, works of art, and inventions of fancy, many valuable hints may be derived for our own improvement and advantage. If that, indeed, were not the principal object of your Institution, little else could arise from it, but the mere gratification of curiosity; and I should not receive so much delight from the humble share which you have allowed me to take in promoting it.

To form an exact parallel between the works and actions of the Western and Eastern Worlds, would require a tract of no inconsiderable length; but we may decide, on the whole, that reason and taste are the grand prerogatives of *European* minds, while the *Afiatics* have soared to loftier heights in the sphere of imagination. The civil history of their vast empires, and of *India* in particular, must be highly interesting to our common country; but we have a still nearer interest in knowing all former modes of ruling *these inestimable provinces*, on the prosperity of which so much of our national welfare and individual benefit seems to depend. A minute *geographical* knowledge, not only of *Bengal* and *Bahar*, but, for evident reasons, of *all the kingdoms bordering on them*, is closely connected with an account of their many revolutions: but the *natural* productions of these territories, especially in the *vegetable* and *mineral* systems, are

are momentous objects of research to an *imperial*, but which is a character of equal dignity, a *commercial*, people.

If *botany* may be described by metaphors drawn from the science itself, we may justly pronounce a minute acquaintance with *plants*, their *claffes*, *orders*, *kinds*, and *fpecies*, to be its *flowers*, which can only produce *fruit* by an application of that knowledge to the purposes of life, particularly to *diet*, by which diseases may be avoided; and to *medicine*, by which they may be remedied. For the improvement of the last mentioned art, than which none surely can be more beneficial to mankind, the virtues of *minerals* also should be accurately known. So highly has medical skill been prized by the ancient *Indians*, that one of the *fourteen Retna's*, of *precious things*, which their gods are believed to have produced by churning the ocean with the mountain *Mandara*, was a *learned physician*. What their old books contain on this subject we ought certainly to discover, and that without loss of time; lest the venerable, but abstruse, language in which they are composed, should cease to be perfectly intelligible, even to the best educated natives, through a want of powerful invitation to study it. *Bermer*, who was himself of the faculty, mentions approved medical books in *Sanfcrit*, and cites a few aphorisms, which appear judicious and rational; but we can expect nothing so important from the works of *Hindu* or *Mufelman* physicians, as the knowledge, which experience must have given them, of *fimple medicines*. I have seen an *Indian* prescription of *fifty four*, and another of *fifty-fix*, ingredients; but such compositions are always to be suspected, since the effect of one ingredient may destroy that of another; and it were better to find certain accounts of a single leaf or berry, than to be acquainted with the most elaborate compounds, unless they too have been proved by a multi-

tude of fuciefsful experiments. The noble deobftluent oil extracted from the *eranda* nut, the whole family of *Balfams*, the incomparable ftomachick root from *Coiumbo*, the fine aftringent ridiculoufly called *Japan* earth, but *in* truth produced by the decoction of an *Indian* plant, have long been ufed in *Afia* ; and who can foretel what glorious difcoveries of other oils, roots, and falutary juices, may be made by your Society ? If it be doubtful whether the *Peruvian* bark be *always* efficacious in this country, its place rtiay, perhaps, be fupplied by fome indigenous vegetable equally antifep-tick, and more congenial to the climate. Whether any treatifes on *Agriculture* have been written by experienced natives of thefe provinces, I am not yet informed; but fince the court of *Spain* expeñi to find ufeul remarks in an *Arabick* tract: preferved in the *Efcurial*, on the cultivation of land in that kingdom, we fhould inquire for fimilar compofitions, and examine the contents of fuch as we can procure,

The fublime fcience of Chemiltry, which I was oft the point of calling *divine*, mult be added as a key to the richeft treafuries of nature; and it is impoffible to forefee how greatly it may improve our *manufactures*, efpecially if it can fix thofe brilliant *dyes*, which want nothing of perfect beauty, but a longer continuance of their fplendor; or how far it may lead to new methods of *fluxing and compounding metals*, which the *Indians*, as well as the *Chinefe*, are thought to have practifed in higher perfection than ourfelves.

In thofe elegant arts which are called fine and *liberal*, though of lefs general utility than the labours of the mechanick, it is really wonderful how much a fingle nation has excelled the whole world: I mean the ancient *Greeks*, *whofe fculpture*, of which we have exquisite re-

mains, both on gems and on marble, no modern tool can equal; whole *architecture* we can only imitate at a fervile distance, but are unable to make one addition to it, without destroying its graceful simplicity; whose *poetry* still delights us in youth, and amuses us at a maturer age; and of whose *painting and music*, we have the concurrent relations of so many grave authors, that it would be strange incredulity to doubt their excellence. *Painting*, as an art belonging to the powers of the imagination, or what is commonly called *genius*, appears to be yet in its infancy among the people of the east : but the *Hindu* system of *music* has, I believe, been formed on truer principles than our own; and all the skill of the native composers is directed to the great object of their art, *the natural expression of strong passions*, to which *melody*, indeed, is often sacrificed; though some of their tunes are pleasing even to an *European* ear. Nearly the same may be truly asserted of the *Arabian* or *Persian* system; and, by a correct explanation of the best books on that subject, much of the old *Grecian* theory may probably be recovered.

The *poetical* works of the *Arabs* and *Persians*, which differ surprisingly in their style and form, are here pretty generally known ; and though tastes, concerning which, there can be no disputing, are divided in regard to their merit, yet we may safely say of them, what *Abulfazl* pronounces of the *Mahabharat*, that, " although they abound with extravagant images and ' descriptions, they are in the highest degree entertaining and instructive." Poets of the greatest genius, *Pindar*, *Æschylus*, *Dante*, *Petrarch*, *Shakespeare*, *Spenser*, have most abounded in images not far from the brink of absurdity ; but if their luxuriant fancies, or those of *Aoulola*, *Firdausi*, *Nizami*, were pruned away at the hazard of their strength and majesty, we should lose many pleasures by the amputation. If we may form a

juft Opinion of the *Sanfcrit* poetry from the fpecimens affeayd exhibited, (though we can only judge perfectly by confulting the originals,) we cannot but thirft for the whole work of *Vyafa*, with which a member of our Society, whofe prefence deters me from faying more of him, will in due time gratify the publick. The poetry of *Mathura*, which is the *Parnaffian* land of the *Hindus*, has a fofter and lefs elevated ftrain; but, fince the inhabitants of the diftricts near *Agra*, and principally of the *Duab*, are faid to furpafs all other *Indians* in eloquence, and to have compofed many agreeable tales and love-fongs, which are ftill extant, the *Bhafha*, or vernacular idiom of *Vraja*, in which they are written, fhould not be neglected. No fpecimens of genuine oratory can be expected from nations, among whom the form of government precludes even the idea of popular eloquence • but the art of writing, in elegant and modulated periods, has been cultivated in *Afia* from the earlieft ages; the *Veda's*, as well as the *Alkoran*, are written in meafured profe; and the compofitions of *Ifocrates* are not more highly polifhed than thofe of the belt *Arabian* and *Perfian* authors.

Of the *Hindu* and *Mufelman* architecture there are yet many noble remains in *Bahar*, and fome in the vicinity of *Malda*; nor am I unwilling to believe, that even thofe ruins, of which you will, I truft, be'prefented with correft delineations, may fuffitify our own architects with new ideas of beauty and fublimity.

Permit me now to add a few words on the *fciences*, properly fo named; in which it muft be admitted, that the *Afiaticks*, if compared with our *Western* nations, are mere children. One of the moft fagacious men in this age, who continues, I hope, to improve and adorn it, *Samuel Johnfon*, remaked in my hearing, that, " if

" *Newton* had flourished in ancient *Greece*, he would " have been worshipped as a divinity." How zealously then would he be adored in *Hindustan*, if his incomparable writings could be read and comprehended by the *Pandits* of *Cashmir* or *Benares* ! I have seen a mathematical book in *Sanfcrit* of the highest antiquity ; but soon perceived, from the diagrams, that it contained only simple elements. There may, indeed, have been in the favourable atmosphere of *Afia*, some diligent observers of the celestial bodies; and such observations as are recorded should indisputably be made public; but let us not expect any new *methods*, or the analysis of new *curves*, from the geometricians of *Iran*, *Turkistan*, or *India*. Could the works of *Archimedes*, the *Newton* of *Sicily*, be restored to their genuine purity by the help of *Arabick* versions, we might then have reason to triumph on the success of our scientific inquiries; or could the successful improvements and various rules of *algebra*, be traced through *Arabian* channels, to which *Cardan* boasted that he had access, the modern history of *Mathematics* would receive considerable illustration.

The jurisprudence of the *Hindus* and *Mujelmans* will produce more immediate advantage; and if some standard *law-tracts* were accurately translated from the *Sanfcrit* and *Arabick*, we might hope in time to see to complete a Digest of *Indian* Laws, that all disputes among the natives might be decided without *uncertainty*, which is, in truth, a disgrace, though fatirically called a *glory*, to the forensic science.

All these objects of inquiry must appear to you. Gentlemen, in so strong a light, that bare intimations of them, will be sufficient: nor is it necessary to make use of *emulation* as an incentive to an ardent pursuit of them : yet I cannot forbear expressing a wish that the activity

activity of the *French* in the same pursuits may not be superior to ours; and that the researches of *M. Sonnerat*, whom the court of *Verfailles* employed for seven years in these climates, merely to collect such materials as we are seeking, may kindle, instead of abating, our own curiosity and zeal. If you assent, as I flatter myself you do, to these opinions, you will also concur in promoting the object of them; and a few ideas having presented themselves to my mind, I presume to lay them before you, with an entire submission to your judgment.

No contributions, except those of the literary land, will be requisite for the support of the Society : but if each of us were occasionally to contribute a succinct description of such manuscripts as he had perused, or inspected, with their dates, and the names of their owners, and to propose for solution, such *questions* as had occurred to him concerning *Asiatick* Art, Science, and History, natural or civil, we should possess without labour, and almost by imperceptible degrees, a fuller catalogue of Oriental Books than has hitherto been exhibited; and our correspondents should be apprised of those points to which we chiefly direct our investigations. Much may, I am confident, be expected from the communications of *learned natives*, whether lawyers, physicians, or private scholars, who would eagerly, on the first invitation, send us their *Mekamat and Rifdlahs* on a variety of subjects; some for the sake of advancing general knowledge; but most of them from a desire, neither uncommon nor unreasonable, of attracting notice, and recommending themselves to favour. With a view to avail ourselves of this disposition, and to bring their latent science under our inspection, it might be advisable to print and circulate a short memorial, in *Persian* and *Hindi*, setting forth, in a style accommodated to their own habits and prejudices,

judices, the design of our institution. Nor would it be improper hereafter, to give ajsiedal annually, with inscriptions in *Perfian* on one side, and on the reverse in *Sanfcrit*, as the prize of merit, to the writer of the best essay or dissertation. To instruct others is the prescribed duty of learned *Brahmans*; and if they be men of substance, without reward; but they would all be flattered with an honorary mark of distinction; and the *Mahopiedans* have not only the permission, but the positive command of their law-giver, *tofearchfor learning even in the remoteft parts of the globe*. It were superfluous to fuggett, with how much correctness and facility their compositions might be translated for our use, since their languages are now more generally and perfectly understood than they have ever been by any nation of *Europe*.

I have detained you, I fear, too long by this address; though it has been my endeavour to reconcile comprehensiveness with brevity. The subjects, which I have lightly sketched, would be found, if minutely examined, to be inexhaustible; and, since no limits can be set to your researches, but the boundaries of *Afia* itself, I may not improperly conclude with wishing for your Society, what the Commentator on the Laws prays for the constitution of our country, that *it may be perpetual*,

XXV.

THE
THIRD ANNIVERSARY DISCOURSE,

Delivered 2 FEBRUARY, 1786,

BY

THE PRESIDENT.

IN the former difcourfes which I had the honour of addreffing to you, Gentlemen, on the *inftitution* and *objects* of our Society, I confined myfelf purpofely to general topicks; giving in the firft, a diftant profpect of the vaft career on which we were entering; and, in the fecond, exhibiting a more diffufe, but ftill fuperficial, fltetch of the various difcoveries in Hiftory, Science, and Art, which we might juftly expect from our inquiries into the Literature of *Afia*. I now propofe to fill up that outline fo comprehenfively as to omit nothing effential, yet fo concifely as to avoid being tedious; and, if the ftate of my health fhall fuffer me to continue long enough in this climate, it is my defign, with your permiffion, to prepare for our annual meetings, a feries of fhort difsertations, uncotinefted in their titles and fubjefh, but all tending to a common point of no fmall importance in the purfuit of interefting truths.

Of all the works which have been publifhed in our own age, or, perhaps, in any other# on the Hiftory of the
3 Ancient

Ancient World, and *the population of this habitable globe*, that of Mr. Jacob Bryant, whom I name with reverence and affection, has the best claim to the praise of deep erudition ingeniously applied; and new theories, happily illustrated by an assemblage of numberless converging rays from a most extensive circumference : it falls, nevertheless every human work must fall, short of perfection; and the least satisfactory part of it seems to be that which relates to the derivation of words from Asiatic languages. Etymology has, no doubt, some use in historical researches; but it is a medium of proof so very fallacious, that, where it elucidates one fact, it obscures a thousand; and more frequently borders on the ridiculous, than leads to any solid conclusion. It rarely carries with it any *internal* power of conviction, from a resemblance of sounds or similarity of letters; yet often, where it is wholly unaffected by those advantages, it may be indisputably proved by *extrinsic* evidence. We know *a posteriori*, that both *father* and *son*, by the nature of two several dialects, are derived from *filius*; that *uncle* comes from *avus*, and *stranger* from *extra*; that *jour* is deducible, through the *Italian*, from *dies*; and *refrain* from *lufcinia*, or the *finger in groves*; that *sciuro*, *ecureuil*, and *squirrel*, are compounded of two *Greek* words descriptive of the animal; which etymologies, though they could not have been demonstrated *a priori*, might serve to confirm, if any such confirmation were necessary, the proofs of a connexion between the members of one great empire; but, when we derive our *hanger*, or *short pendant sword*, from the *Persian* because ignorant travellers thus mis-spell the word *khanjar*, which, in truth, means a different weapon, or *fandalwood* from the *Greek*, because we suppose that *fandal* were sometimes made of it, we gain no ground in proving the affinity of nations, and only weaken arguments which might otherwise be firmly supported. That *Cm*, then, or, as it certainly is written in one ancient dialect, *Cut*, and in others, probably, *Cas*, enters into the com-

position of many proper names, we may very reasonably believe; and that *Algeziras* takes its name from the *Arabkk* word for an *ifland*, cannot be doubted; but, when we are told from *Europe*, that places and provinces in *India* were clearly denominated from those words, we cannot but observe, in the first instance, that the town in which we now are assembled is properly written and pronounced *Calicata* ; that both *Cata* and *Cut* unquestionably mean *places of strength*, or, in general, any *inclosures*; and that *Gujerat* is at least as remote from *Jezirah* in sound as it is in situation.

Another exception (and a third could hardly be discovered by any candid criticism) to the *Analysis of Ancient Mythology* is, that the *method* of reasoning, and arrangement of topics, adopted in that learned work, are not quite agreeable to the title, but almost wholly *synthetical* ; and, though *synthesis* may be the better mode in pure science, where the principles are undeniable, yet it seems less calculated to give complete satisfaction in historical disquisitions, where every postulatium will, perhaps, be refused, and every definition controverted. This may seem a flight objection; but the subject is in itself so interesting, and the full conviction of all reasonable men so desirable, that it may not be lost labour to discuss the same or a similar theory in a method purely analytical, and, after beginning with facts of general notoriety, or undisputed evidence, to investigate such truths as are at first unknown, or very imperfectly discerned.

The five principal nations who have in different ages divided among themselves, as a kind of inheritance, the vast continent of *Asia*, with the many islands depending on it, are the *Indians*, the *Chinese*, the *Tartars*, the *Arabs*, **and** the *Persians*: who they severally were, whence and when

when they came, where they now are fetred and what *advantage* a more perfect knowledge of *them* all may bring to our *European* World, will be fhown, I truſt, in *five* diſtinct eſſays; the laſt of which will demonſtrate the connexion or diverſity between them, and ſolve the great problem, whether they had *any* common origin, and whether that origin was *the ſame* which we generally aſcribe to them.

I begin with *India*: not becauſe I find reaſon to believe it the true center of population, or of knowledge, but becauſe it is the country which we now inhabit, and from which we may beſt ſurvey the regions around us; as, in popular language, we ſpeak of the *rifing* fun, and of his *progrefs through the Zodiack*, although it had long ago been imagined, and is now demonſtrated, that he is himſelf the center of our planetary ſyſtem. Let me here premise, that, in all theſe inquiries concerning the Hiſtory of *India*, I ſhall confine my reſearches downwards to the *Mohammedan* conqueſts at the beginning of the *eleventh* century, but extend them upwards as high as poſſible, to the earlieſt authentic records of the human ſpecies.

India then, on its moſt enlarged ſcale, is which the ancients appear to have underſtood it, comprizes an area of near *forty* degrees on each ſide, including a ſpace moſt as large as *All Europe*; being divided on the weſt *om Perſia* by the *Arachofian* mountains, limited on the eaſt by the *Chineſe* part of the farther Peninſula, confined on the north by the wilds of *Tartary*, and extending to the ſouth as far as the iſles of *Java*. This trapezium, therefore, comprehends the ſtupendous hills of *Potyid* or *Tibet*, the beautiful valley of *Cafhmir*, and all the domains of the old *Indoſcythians*, the countries of *Nepal* and *Butant*, *Camrup* or *Aſam*, together with *Siam*, *Ava*,
Racan,

Racan, and the bordering kingdoms, as far as the *China* of the *Hindus*, of *Sin* of the *Arabian* Geographers; not to mention the whole Western Peninsula, with the celebrated island of *Sinhala*, or *Lion-like Men*, at its southern extremity. By *India*, in short, I mean that whole extent of country in which the primitive religion and languages of the *Hindus* prevail at this day with more or less of their ancient purity, and in which the *Nagari* letters are still used with more or less deviation from their original form.

The *Hindus* themselves believe their own country, to which they give the vain epithets of *Medhyama*, or *Central*, and *Punyabhumi*, or the *Land of Virtues*, to have been the portion of *Bharat*, one of *nine* brothers, whose father had the dominion of the whole earth; and they represent the mountains of *Himalaya* as lying to the north; and to the west, those of *Vindhya*, called also *Vindian* by the *Greeks*; beyond which the *Sindhu* runs in several branches to the sea, and meets it nearly opposite to the point of *Dwdracd*, the celebrated feat of their Shepherd God. In the *fourth-east* they place the great river *Saravaty*; by which they probably mean that of *Ava*, called also *Airdvati* in part of its course, and giving perhaps its ancient name to the gulf of *Sahara*. This domain of *Bharat* they consider as the middle of the *Jambudwipa*, which the *Tibetians* also call the Land of *Zambu*; and the appellation is extremely remarkable for *Jambu* is the *Sanskrit* name of a delicate fruit, called *jaman* by the *Mufelmans*, and by us *rose-apple*; but the largest and richest sort is named *Amrita*, or *immortal* and the Mythologists of *Tibet* apply the same word to a celestial tree bearing *ambrosial fruit*, and add to *four* vast rocks, from which as many sacred rivers derive their several streams.

The inhabitants of this extensive tract are by Mr. Lord with great exactness, and

trifefque elegance peculiar to our ancient language:
 " A people (fays he) prefented themfelves to mine eyes,
 " clothed in linen garments, fomewhat low descending;
 " of a gefture and garb, as I may fay, maidenly, and well
 " nigheffeminate; of a countenance fhy, and fomewhat
 " eftranged, yet fmiling out a giozed and bafhful fami-
 " liarity." Mr. *Orme*, the Hiftorian of *India*, who
 unites an exquisife tafte for every fine art with an accu-
 rate knowledge of *Afiatick* manners, obferves, in his
 elegant preliminary Differtation, that this " country
 " has been inhabited, from the earlieft antiquity, by a
 " people who have no refemblance, either in their figure
 " or manner, with any of the nations contiguous to
 " them ;" and that, " although conquerors have efta-
 " blifhed themfelves at different times in different parts
 " of *India*, yet the original inhabitants have loft very
 " little of their original character." The ancients, in
 faft, give a defcription of them, which our early travel-
 lers confirmed, and our own perfonal knowledge of
 them nearly verifies; as you will perceive from a paf-
 fage in the Geographical Poem of *Dionyfius*, which the
 Analyft of Ancient Mythology has translated with great
 fpirit;

" To th* east a lovely country wide extends,
 " *Ind* whose borders the wide ocean bounds;
 " On this the sun, new rising from the main,
 " Smiles pleas'd, and sheds his early orient beam.
 " Th' inhabitants are swart, and in their locks
 betray the tints of the dark hyacinth'
 various their functions; some the rock explore,
 nd from the mine extract the latent gold;
 le labour at the woof with cunning skill,
 manufacture linen ; others shape

" And

" And polish iv'ry with the nicest caret
 " Many retire to rivers shoal, and plunge
 " To seek the beryl flaming in its bed,
 " Or glittering di'mond. Oft the jasper's found
 " Green, but diaphanous; the topaz too,
 " Of ray serene and pleasing; last of all,
 " The lovely amethyst, in which combine
 " All the mild shades of purple. The rich soil,
 " Wash'd by a thousand rivers, from all sides
 Pours on the natives wealth without controul,"

Their sources of wealth are still abundant, even after so many revolutions and conquests: in their manufactures of cotton they still furnish all the world; and their features have, most probably, remained unaltered since the time of *Dionysius*: nor can we reasonably doubt, how degenerate and abased so ever the *Hindus* may now appear, that in some early age they were splendid in arts and arms, happy in government, wise in legislation, and eminent in various knowledge; but since their civil history, beyond the middle of the *nineteenth* century from the present time, is involved in a cloud of fables, we seem to possess only *four* general media of satisfying our curiosity concerning it; namely, first, their *Languages* and *Letters*; secondly, their *Philosophy* and *Religion*; thirdly, the actual remains of their, old *Sculpture* and *Architecture*; and fourthly, the written memorials of their *Sciences* and *Arts*.

I, It is much to be lamented that neither the *Greeks*, who attended *Alexander* into *India*, nor those who were long connected with it under the *Bactrian* Princes, have left us any means of knowing with accuracy, what ver-
 macular

nacular languages they found on their arrival in this Empire. The *Mohammedans*, we know, heard the people of proper *Hinduстан*, or *India* on a limited tale, speaking a *Bhaffa*, or living tongue, of a very Angular construction, the purest dialect of which was current in the districts round *Agra*, and chiefly on the poetical ground of *Maſhur*; and this is commonly called the idiom of *Vraja*. Five words in fix, perhaps, of this language were derived from the *Sanſcrit*, in which books of religion and ſcience were compoſed, and which appears to have been formed by an exquisite grammatical arrangement, as the name itſelf implies, from ſome unpoliſhed idiom; but the baſis of the *Hinduſtani*, particularly the inflexions and regimen of verbs, differed as widely from both thoſe tongues, as *Arabick* differs from *Perſian*, or *German* from *Greek*. Now the general effect; of conqueſt is to leave the current language of the conquered people unchanged, or very little altered, in its ground-work, but to blend with it a conſiderable number of exotiſk names, both for things and for actions; as it has happened in every country, that I can recollect, where the conquerors have not preferred their own tongue unmixed with that of the natives, like the *Turks* in *Greece*, and the *Saxons* in *Britain*; and this analogy might induce us to believe, that the pure *Hindi*, whether of *Tartarian* or *Chaldean* origin, was primeval in Upper *India*, into which the *Sanſcrit* was introduced by conquerors from other kingdoms in ſome very remote age; for we cannot doubt that the language of the *Veda's* was uſed in the great extent of country which has before been delineated, as long as the religion of *Brahma* has prevailed in it.

The *Sanſcrit* language, whatever be its antiquity, is of a wonderful firuſture; more perfect than the *Greek*, more copious than the *Latin*, and more exquisitely refined than either; yet bearing to both of them a ſtronger affinity,

affinity, both in the roots of verbs, and in the forms of grammar, than could possibly have been produced by accent; so strong, indeed, that no philologer could examine them all three without believing them to have sprang from some common source, which, perhaps, no longer exists. There is a similar reason, though not quite so forcible, for supposing that both the *Gothick* and the *Celtick*, though blended with a very different idiom, had the same origin with the *Sanskrit*; and the old *Per/tan* might be added to the same family, if this were the place for discussing any question concerning the antiquities of *Perfia*.

The *characters*, in which the languages of *India* were Originally written, are called *Nagari*, from *Nagara*^ a city, with the word *Deva* sometimes prefixed, because they are believed to have been taught by the Divinity himself, who prescribed the artificial order of them in a voice from heaven. These letters, with no greater variation in their form, by the change of straight lines to curves, or conversely, than the *Cufick* alphabet has received in its way to *India*, are it ill adopted in more than twenty kingdoms and states, from the borders of *Cashgar* and *Khoten*, to *Rama's Bridge*, and from the *Sindhu* to the river of *Siam*. Nor can I help believing, although the polished and elegant *Devanagari* may not be so ancient as the monumental characters in the caverns of *Jarafandha*, that the square *Chaldiack* letters, in which most *Hebrew* books are copied, were originally the same, or derived from the same prototype, both with the *Indian* and *Arabian* characters. That the *Pkenician*, from which the *Greek* and *Roman* alphabets were formed by various changes and inversions, had a similar origin, there can be little doubt: and the inscriptions at *Canarah*, of which you now possess a most accurate copy, seem to be compounded of *Nagari* and *Ethiopick* letters, which bear a close relation to each other,

other, both in the mode of writing from the left hand and in the fingular manner of connecting the vowels with the cofonants. Thefe remarks may favosa? an opinion entertained by many, that all the fymbols of *founds* which at firft, probably, were only rude outlines of the different organs of fpeech, had a common origin. The fymbols of *ideas*, now ufed in *China* and *Japan** and formerly, perhaps, in *Egypt* and *Mexico*, are quite of a diftinct nature; but it is very remarkable, that the order of *founds* in the *Chincfe* grammars correffonds nearly with that obferved in *Tibet*, and hardly differs from that which the *Hindus* confider as the invention of their Gods.

II. Of the *Indian* Religion and Philofophy I fhall here fay but little; becaufe a full account of each would require a feparate volume. It will be fufficient in this diflertation to affume, what might be proved beyond controverfy, that we now live among the adorers of thofe very Deities who were worffipped under different names in old *Greece* and *Italy*; and amojag the profeffors of thofe philofophical tenets, which the *lonick* and *AtMck* writers illuftrated with all the beauties of their melodious language. On one hand we fee the trident of *Neptune*, the eagle of *Jupiter*, the ftlyrs of *Bacchus*, the bow of *Cupid*, and the chariot of the *Sun*; on another we hear the cymbals of *Rhea*, the fongs of the *Mufes*, and the paftoral tales of *Apollo Nomius*. In more retired fcenes, in groves, and in feminaries of learning, we may perceive the *Brahmans*, and the *Sarmanes*, mentioned by *Clemens*, difputing in the fprms of *logick*, or difcourfing on the vanity of human enjoyments, on the immortality of the foul, her emanation from the eternal mind, her debafeqpent, wanderings, and final union with her.fource* the *fix* philofophical fchools, whofe principles are explained in the *Derfana Safta*, comprife all the metaphyicks,

metaphysics of the old *Academy*, the *Stoa*, the *Lyceum*; nor is it possible to read the *Vedānta*, or the many fine compositions in illustration of it, without believing that *Pythagoras* and *Plato* derived their sublime theories from the same fountain with the fables of *India*. The *Scythian* and *Hyperborean* doctrines and mythology, may also be traced in every part of these eastern regions; nor can we doubt that *Wod*, or *Oden*, whose religion, as the northern historians admit, was introduced into *Scandinavia* by a foreign race, was the same with *Buddh*, whose rites were probably imported into *India* nearly at the same time, though received much later by the *Chinese*, who often his name into FO'-

This may be a proper place to ascertain an important point in the Chronology of the *Hindus*; for the priests of *Buddha* left in *Tibet* and *China*, the precise epoch of his appearance, real or imagined, in this Empire; and their information, which had been preserved in writing, was compared by the *Christian* missionaries and scholars with our own era. *Couplet*, *De Guignes*, *Giorgi*, and *Bailly*, differ a little in their accounts of this epoch; but that of *Couplet* seems the most correct. On taking, however, the medium of the four several dates, we may fix the time of *Buddha*, or the ninth great incarnation of *Vishnu*, in the year one thousand and fourteen before the birth of *Christ*, or two thousand seven hundred and ninety-nine years ago. Now the *Cashmirians*, who boast of his descent in their kingdom, assert that he appeared on earth about two centuries after *Crishna*, the *Indian Apollo*, who took so decided a part in the war of the *Madhabdrat*; and if an etymologist were to suppose that the *Athenians* had embellished their poetical history of *Pandion's* expulsion, and the restoration of *Ægeus*, with the Asiatic tale of the *Pandus* and *Yudhishthir*, neither of which words they could have articu-

lated, I should not haftily deride his conjecture: certain it is, that *Pdndumandel* is called by the *Greeks* the country of *Pandion*. We have, therefore, determined another interefting epoch, by fixing the age of *Chriſhna* near the *three thousandth* year from the preſent time ; and, as the three firſt *Avatars*, or deſcents of *Vijhnu*, relate no leſs clearly to an Univerſal Deluge, in which eight perſons only were ſaved, than the *fourth* and *fiſth* do to the *puniſhment of impiety*, and the *humiliation of the proud*, we may for the preſent aſſume, that the *ſecond*, or *fiher*, age of the *Hindus* was ſubſequent to the diſperſion from *Babel*; ſo that we have only a dark interval of about a *thouſand* years, which were employed in the fettlement of nations, the foundation of ſtates or empires, and the cultivation of civil ſociety. The great incarnate Gods of this intermediate age are both named *Rama*, but with different epithets; one of whom bears a wonderful reſemblance to the *Indian Bacchus*, and his wars are the ſubjeſt of ſeveral heroic poems. He is repreſented as a deſcendant from *Surya*, or the *Sun*; as the huſband of *Sita*, and the ſon of a princeſs named *Cauſeyld*. It is very remarkable, that the *Peruvians*, whoſe *Incas* boaſted of the ſame deſcent, ſtyled their greateſt feſtival *Ramajiioa* ; whence we may ſuppoſethat *South America* was peopled by the ſame race, who imported into the fartheſt parts of *Aſia*, the rites and fabulous hiſtory of *Rama*. Theſe rites, and this hiſtory, are extremely curious; and although I cannot believe, with *Newton*, that ancient mythology was nothing but hiſtorical truth in a poetical dreſs; nor, with *Bacon*, that it conſiſted ſolely of moral and metaphyſical allegories; nor, with *Bryant*, that all the heathen Divinities are only different attributes and repreſentations of the *Sun*, or of deceaſed progenitors} but conceive that the whole ſyſtem of religious fables roſe, like the *Nile*, from ſeveral diſtinct ſources; yet I cannot but agree that one great ſpring and fountain of all idolatry, in the four quarters of the globe, was the

veneration paid by men to the vast body of fire which
 " looks from his sole dominion like the God of this
 " world :" and another, the immoderate respect shewn
 to the memory of powerful or virtuous ancestors, especially the
 founders of kingdoms, legislators, and warriors, of whom the *Sun*
 or the *Moon* were wildly supposed to be the parents,

III. The remains of *Architecture* and *Sculpture* in
Indict, which I mention here as mere monuments of
 antiquity, not as specimens of ancient art, seem to
 prove an early connection between this country and
Africa. The pyramids of *Egypt*, the colossal statues
 described by *Pausanias* and others, the Sphinx, and the
Hermes Canis, (which last bears a great resemblance to
 the *Vardhvatdr*, or the incarnation of *Vishnu* in the
 form of a *Boar*;) indicate the style and mythology of
 the same indefatigable workmen who formed the vast
 excavations of *Candahar*, the various temples and images
 of *Buddha*, and the idols which are continually dug up
 at *Gaya*, or in its vicinity. The letters on many of
 these monuments appear, as I have before intimated,
 partly of *Indian*, and partly of *Abyssinian* or *Ethiopic*,
 origin; and all these indubitable facts may induce no
 ill-grounded opinion, that *Ethiopia* and *Hindujdn* were
 peopled or colonized by the same extraordinary race;
 in confirmation of which, it may be added, that the
 mountaineers of *Bengal* and *Bahdr* can hardly be distin-
 guished in some of their features, particularly their lips
 and noses, from the modern *Abyssinians*, whom the
Arabs call the children of *Cuffu*. And the ancient *Hin-*
dus, according to *Strabo*, differed in nothing from the
Africans, but in the straightness and smoothness of their
 hair, while that of the others was crisp or woolly; a
 difference proceeding chiefly, if not entirely, from the
 respective humidity or dryness of their atmospheres.
 Hence the people who received the first light of the rising

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fun., wecording to the limited knowledge of the ancients, are faid by *Apuleius*, to be the *Aru* and *Ethiopians*, by which he deafly meant certain nations of *India*; where we frequently fee figtires of *Buddha* with *curled hatr*, apparently defigned for a repreftation of it in its natural ftate.

IV. It is unfortunate that the *Silpi Saftra*, or *Collection of Treatifes on Arts and Manufactures*, which muft have contained a treafure of ufeul information on *dyings* *paintings* and *metallurgy*, has been fo long neglected, that few, if any, traces of it are to be found; but the labours of the *Indian* loom and needle have been univerfally celebrated; and *fine tinen* is not improbably fiippofed to have been called *Sindon*, from the name of the river near which it was wrought in the higheft perfection. The people of *Colchis* were alfo famed for this manufacture; and the *Egyptians* yet more, as we learn from feveral paffages in fcripture, and particularly from a beautiful chapter in *Ezekiel*, containing the moft authentic delineation of ancient commerce, of which *Tyre* had been the principal mart. Silk was fabricated immemorially by the *Indians*, though commonly afcribed to the people of *Serica*, or *Tancut*, among whom probably the word *Ser*, which the *Greeks* applied to the *filk-worm*, fignified *gold*; a fenfe which it now bears in *Tibet*. That the *Hindus* were in early ages a *commercial* people, we have many reafons to believe; and in the firft of their facred law trafts, which they fuppofe to have been revealed by *Menu* many *millions* of years ago. we find ft curious paffage on the legal *intereft* of money, and the limited rate of it in different cafes, with an exception in regard to *adventures at fea*; an exception which the fenfe of mankind approves, and which comtrce abfolutely requires; though it was not before the reign of *Charles I.* that our own jurifprudence fully admitted it in refpect to maritime contracts.

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We are told by the *Grecian* writers, that the *Indians* were the wisest of nations; and in moral wisdom they were certainly eminent. Their *Niti Sastra*, or *System of Ethics*, is yet preserved; and the *Fables of Vishnu-ferman*, whom we ridiculously call *Pilpay*, are the most beautiful, if not the most ancient, collection of apologies in the world. They were first translated from the *Sanskrit*, in the sixth century, by the order of *Buzerchumihir* or *Bright as the Sun*, the chief physician, and afterwards *Vezir*, of the great *Anu/hirevdu^nd* are extant under various names in more than twenty languages; but their original title is *Hitopadesa*, or *Amicable Instruction*: and, as the very existence of *Aesop*, whom the *Arabs* believe to have been an *Abyssinian*, appears rather doubtful, I am not disinclined to suppose that the first *moral fables* which appeared in *Europe* were of *Indian* or *Ethiopian* origin.

The *Hindus* are said to have boasted of *three* inventions, all of which, indeed, are admirable; the method of instructing by *Apologies*; the *decimal Scale*, adopted now by all civilized nations; and the game of *Chefs*, on which they have some curious treatises: but if their numerous works on Grammar, Logic, Rhetoric, Music, all which are extant and accessible, were explained in some language generally known, it would be found, that they had yet higher pretensions to the praise of a fertile and inventive genius. Their lighter poems are lively and elegant; their epick, magnificent and sublime in the highest degree. Their *Puranas* comprise a series of mythological Histories, in blank verse, from the *Creation* to the supposed incarnation of *Buddha*: at present the *Vedas*, as far as we can judge from that compendium of them which is called *Upanishat*, abound with noble Speculations in metaphysics, and fine discourses on the being and attributes of *God*. Their most ancient medical book, entitled *Chereca*, is believed to be
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the work of *Siva* : for each of the Diviinties in their *Triad* has at leaft *one facred* composition afcribed to him. But as to mere human works on *Hiftory* and *Geography*, though they are faid to be extant in *Cafhmir*, it has not been yet in my power to procure them. What their *aftronomical* and *mathematical* writings contain; will not, I truſt, remain long a ſecret : they are eaſily procured, and their importance cannot be doubted. The Philoſopher whoſe works are faid to include a Syſtem of the Univerſe, founded on the principle of *Attraction* and the *central* Poſition of the Sun, is named *Yavan Acharya*, becauſe he had travelled, we are told, into *Ionia*. If this be true, he might have been one of thoſe who conyerſed with *Pythagoras*. This at leaſt is undeniable, that a book on *Aftronomy*, in *Sanſcrit*, bears the title of *Yavana Jatica*, which may ſignify the *Ionick Sect*. Nor is it improbable, that the names of the Planets and *Zodiacal* Stars, which the *Arabs* borrowed from the *Greeks*, but which we find in the oldeſt *Indian* records, were originally deviſed by the ſame ingenious and enterprizing race, from whom both *Greece* and *India* were peopled; the race who, as *Dionyſius* deſcribes them,

 firſt aſſayed the deep,

' And waſted merchandize to coaſts unknown:

' Thoſe who digeſted firſt the ſtarry choir,

' Their motions mark'd, and call'd them by their names."

Of theſe curfory obſervations on the *Hindus*, which it would require volumes to expand and illuſtrite, this is the reſult; that they had an immemorial affinity with the old *perſians*, *Ethiofims*, and *Egyptians*; the *Phenicians*, *Greeks*, and *Tufcans*; the *Scythians*, or *Goths*, and *Celts*; the *Chineſe*, *Japanefe*, and *Peruvians* ; whence, as no reaſon appears for believing that they were a colony

lony from any one of those nations, or any of those nations from them, we may fairly conclude that they all proceeded from some *central* country, to investigate which will be the object of my future Discourses; and I have a sanguine hope that your collections, during the present year, will bring to light many useful discoveries; although the departure for *Europe* of a very ingenious member, who first opened the inexhaustible mine of *Sanskrit* literature, will often deprive us of accurate and solid information concerning the languages and antiquities of *India*.

XXV!.

CORRECTIONS

OF THE

kunar Method of findINg the Longitude,*My Mr. REUBEN BURROW.*

THE intent of the following remarks is to point out an error in the usual Practice of making the Lunar Observations^ and another in the Method of Computation.

It is well known that a little before and after the conjunction, the whole hemisphere of the Moon is visible, and the enlightened crescent seems to extend some distance beyond the dusky part. Now, having determined the longitude of a place from the eclipses of Jupiter's Satellites, I took several sets of distances of the Moon's limb from a Star near the time of the conjunction, both from the bright and the dusky parts of the circumference, and having calculated the results, I found that those taken from the dusky part were much nearer the truth than the others. The nature of the error evidently shewed, that the star had really been at some distance from the limb when it appeared to be in contact with it; and, as the error was a considerable part of a degree, I saw it would be of consequence to discover the cause of it; which, however, was obvious enough from *Newton's principles*, and may be explained as follows.

Let

Let AD be the diameter of the moon, and A the center of a star in contact with the moon's limb: now, as the enlightened part of the moon evidently appears to extend beyond the dusky part, let the concentric circle BC represent the moon's limb thus apparently magnified, and suppose the star to be equally magnified; then with the center A, and the distance DC, describe a circle, which consequently will touch the moon's apparent circumference inwardly: now, as this last is a consequence of supposing the center of the star to touch the circumference of the moon, exclusive of the deception, it follows, *that the proper method of taking the distance, is to make the star appear to touch the moon inwardly.*

But all the writers on this subject have particularly directed that the star be made to touch *outwardly*. Let B* therefore, be the point of contact, and *a* the center: the error then is Aa, or the sum of the apparent increase of the moon's radius, and the apparent radius of the star: this quantity, it is evident, will make a considerable error in the result; and errors arising from this source are the more to be attended to, as they are not of a kind to be lessened by increasing the number of observations. The same reasoning is applicable to the Sun and Moon, with very little alteration.

The distance of the Moon from the Sun or a Star, at each three hours, is given in the Nautical Ephemeris: and the method of inferring the time for any intermediate distance, is by simple proportion: this would be just if the Moon's motion was uniform; but as this is not the case, the velocity should be taken into the account, as well as the space, in determining the time taken by the Moon to move any given distance; and the proper measure of the velocity is such a quantity as has the same ratio to the space described, as three hours have to the time that has been actually taken to
move

MOVE the given diftance; to find this quantity correctly, would require interpolation; but it will *be* fufficient in practice to find the time firft by the common method, and then to correct the interval for three hours to that time, by taking a proportional part of the fecond diffeſence of the Moon's diftance at the beginning of each three hours; ſuppoſing the firſt differences to anſwer to the middle of each interval.

The laſt correction, though not ſo confiderable as the firſt, will often bring the reſult nearer to the truth by three, four, five, or fix miles, and ſometimes more, which in geographical determinations is of confequence; and, by paying attention to thoſe and ſome other cauſes of error, which ſhall be pointed out hereafter, the reſults in general will be much nearer to the truth than is uſually imagined. It is common to throw blame on the imperfections of the Lunar Tables, but it would be much more properly applied to bad inſtruments and bad obſervers.

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M E M B E R S

OF THE

ASIATICK SOCIETY,

From 15 January 1784, to 15 January 1789.

THOSE MARKED † ARE DECEASED.

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A P P E N D I X

TO THE

FIRST

VOLUME

of

ASIATICK RESEARCHES.

A

METEOROLOGICAL JOURNAL,

*Kept by Colonel T, P. PEARSE, from 1st March 178
to 28th February 1786.*

VOL. I. H h

Day.	Time.	Barometer.	Thermometer.		Cloud.		Wind.		Rain.
			In.	Out.	Kind.	Quant.	Quarter.	Force.	
17	12.59 7.15 A	29.887 29.887	80		thick	5	SE	1	,039
		2 F. Q.							(1)

(a) Last Friday the fog was excessive, and did not begin to clear till nine, Saturday the same, Sunday it began to clear about 7.

(b) The fog is gone off to day already : it was but flight.

(c) Much lightning in the NW. and distant thunder.

(b) Much lightning in the NW. A puff from the NW. but without rain or thunder.

(e) There was a very small sprinkling of rain just now,

(f) In the morning we had a thick fog, which formed into clouds, and went over to the N. and at 2 maffes were funnel there ; from whence at 4.50 we had a storm, which was over in half an hour ; and at Dumdum, about 10 miles off, they had heavy hail.

(g) Fog so thick that an object at a 100 yards is invisible.

(h) 6. A. foggy- A storm will come on in the evening. 4. P. Distant thunder. 5. 2. P. We have had a furious storm of hail with thunder and lightning, and SW to SSE 6. 5. 30. P. Loud thunder still continues in the ENE. where the mafs flow is.

(i) 6.45 A. Every thing hidden in fog, which will produce a storm at night. 8.25 P. Much lightning, and the expelled storm coming on.

(k) 7.40 A. The thunder rolled all night : excessive lightning.

(l). 7.15 A. A storm began to gather about 5 P, and we had much lightning about 10. Between 12 and 1 it began, and the wind very violent. The thunder clofe, and fo heavy, that it jarred the whole house like an earthquake, 2.30 P. It has been very gloomy at unra all day.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Zeph.	March 1785. Adjustment.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
17	2.30 P	29.828		84		thick	4	SSE	2		
18	6. A	29.915		80		thin	3	S	1		
	2. P	29.85		86		loose	3	S	4		
19	2.30 P	29.813		84		thin	9	W by S	2		
20	1.30 P	29.833		85		thin	2	SSW	3		
21	6.15 A	29.813		81		thick and thin	5	SW by S	2		
	2. P	29.80		86		thick loose	10	S by W	4		
22	6.30 A	29.825		82		thick	3	SW by S	3		(m)
	2. P	29.837		86		thin	7	SW by S	5		(m)
23	2. P	29.784		85.5		thick thunder	10	SSW	3	.084	(o)
	7.45 A	29.87		81.5		thick	7	W by S	5		
24	2. P	29.825		85		thick thunder	10		2	.001	
	9. P.										
	h. m.										
	16.02	Full									
25	6.15 A	29.859		82		thick	4	SSE	2		
	2. P	29.866		86		none		S	3		
26	5.45 A	29.915		82		thick loose	10	S	1		
	2.15 P	29.87		86.2					4		
27	7.15 A	29.865		82		thick	10	S			
	2.15 P	29.785		87					2		
28	6.45 A	29.795		81				S	1		(q)
	2.10 P	29.798		87.5				SSW	4		
29	6.45 A	29.862		81.5		thin	2	SW	1		(r)
	2.15 P	29.830		87.0				SSW	4		
30	6.45 A	29.822		81.5		thin	5	SW by W	3		
	1.30 P	29.848		83.5		thick	10	SE	1		(s)

Dep.	Time.	Baromet.	Thermometer.		L. & S. W.		Wind.		Rain.	March 1785, Mégallanai.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
31	7.15 A	29.862	79.0		thick	10	NNE	1		
	2. P	29.797	83.0		thick	9	NNW	1	.007	(t)
Total in March									.554	

(m) Great appearance of approaching rain and forms.

(n) 8. A. The rooming was very cloudy, and the wind strong; it prefiged a storm; and I full expect one before mid-night. At fun-fet it threatened, and at 7 P. the lightning began to be vivid in the WNW. It rained for about ten minutes. The thunder was very near.

(o) 8. A. The wind began about 11. P. and raged till past 1 o'clock with uncommon violence. 2. P. Exceedingly gloomy. 9. P. At 7 we had a thunder gust, which was soon over, with a sprinkling only.

(p) 5. 45 A. The clouds began to collect at 8 last night, and are very thick. 2. 15 P. The clouds continued very thick till past 10, and were not dispelled till past 1.

(q) 6- 45 A. Exceedingly thick fog. 2. 10 P. The true along-shore wind, which disorders the whole frame.

(r) 6. 45 A. Foggy. Last night the clouds were thick to at 11 P.

(s) 6.45 A. Foggy. It has been extremely gloomy ever since 7 o'clock, and about noon we had a few drops of rain.

(t) 7.15A. Wc had a small shower of rain about fun-rife, and there has been more at a distance from the feel of air.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	April 1783. Majdallan.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
1	6.45 A 2.10 P 10.16	29.866 29.816 D L. Q		79.5 82		thick thunder thick	10 10	WNW SE	2 1		(a)
2	6.45 A	29.828		77 83.7		thick scattered	3	E ½ S WNW	1 3		(b)
3	2. P	29.777		79 85.5		none		S by W WNW	1 2		(c)
4	6.45 A	29.765		80 86				SE by S WNW	1 1		(d)
5	2. P	29.785		86 78		thick	2	SE	2		(e)
6	6. A	29.763		86.7 80.5		thick gathered thick	3 5	S by E E	2 3		(f)
7	1.45 P 6.30 P	29.760 29.76		88 80		thick	1	SW ½ S	4		(g)
8	2. P	29.748		87.5	94	loose	4	SSW S by E SW ½ S	5 2 4		(h)
9	1.39 P 6.30 P	29.82 29.79 29.846 29.761 D New		87.5 81.5 87.5							(i)
10	2. P 7.45 A	29.75 29.76 29.718		88.5 84 88	81 96.5 92.2	thick loose	10 9	S S by W SSW	2 4 5		(j)
11	2. P 5.30 P 6.40 A	29.708 29.788 29.776		87 85 89.5 88	88 81.5 96.0 83.15	thick thin thin thick thunder	10 7 8	SSW SSW SSW by S SSW	5 5 2 3 3	.016	(k)

Days.	Time.	Barometer.	Thermometer.		Wind.		Rain.	April 1785. Nephtalensis.
			In.	Out.	Kind.	Quant.		
12	7.15 A	29.740	90.5	83	thick and thin	10		
	2.30 P	29.765	82	81	thick	10		
13	6.30 A	29.783	84	83.5	thick	9		(i)
	10. P	29.818	83	85	thick	10		
14	7. A	29.820	86	88	thick	10		(k)
	2.30 P	29.848	82	81	thick	10		
15	7. A	29.915	85	92	thick	10		(l)
	1.45 P	29.900						

(a) We had a sprinkling rain to-day of half an hour's duration.

(b) Excessively thick haze.

(c) Laft night the clouds were fo heavy that they feemed to threaten a florm.

(d) There were flying clouds from 8 till x to-day, but all are gone.

(e) Yefterday evening there was a mafs over Calcutta, and much lightning and fome thunder, and this morning we had a fog.

(f) There will be a florm to-day. 5 30 P. Diflant thunder. The bank is not yet formed.

(g) The wind was tempefluous the greateft part of the night, but we had not any rain. It is now foggy, and threatens.

(h) Yefterday there was every reafon to expect a violent (form, but it went off from us. To-day there was but little expe&attonj
fend, now it rains fowtly, and there has been a great deal of thunder; and all this without any change of wind.

(i) We had a fmail flower at 1, and another juft now. The wind was NE 2 all the afternoon.

(k) The wind changed fuddenly juft after laft obfervation to the S again, and we had a very windy night. 2.30 P. It has
been gloomy all day.

(l) A fprindling rain In very, diftant drops. The wind of the night was of fuch a kind, that it prevented the poffibility of
fleeping.

The morning rain, and a like fprinying fince, could not be meafured.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		C. wind.		Wind.		Rain.	April 1886. Majidharan.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
27	2- P	29.697	43	87.5	91	thick	9	S by E	4		
	7- P	29.711	43	83	86	thick thunder	10	NNE to NNW	7		
28	9.45 P	29.713	40	81.5	78	none		WNW	9	.170	
	6.45 A	29.723	44	87.5	93			SW by S	2	.270	
29	2- P	29.713	49	83.5	80.5	none		SW by S	2	.013	(w)
	6- A	29.753	37	87.5	93			SW by S	2		
30	2- A	29.79	50	83.5	84	none		W by S	2		(x)
	7- P	29.79	37.5	91	97.5	thick small scat.	2	SSW	4		
Total in April 4.308											

(m) It has been a blowing cold night; wind northerly, and it sprinkles rain. 6.15 A. An heavy flower juft over and drizzling fam full continues. 2.15 P. We have had more fpinkling rain.

(n) About 6 yefterday it began to rain in drops; before 9 it was fmart rain. It has continued all night, and fill rains 2.15 E. It has ramed inceffantly all day. It fill rains hard, and now the clouds begin to break a little. 8.20 P It fill fpinkies

(o) It began to thunder at a great diftance about 8, and by 12 it was near us; and this put an end to the "ram before 3 A.

(p) The morning was foggy.

(q) A fraall flower of rain, and the wind changed from S to NNE.

(r) At 12 P. a mafs formed in the NW. came on; and in a fhort time we had a form without thunder. It fpinkies to-day.

2. Produce of the fpinking.

(s) Very hazy and foul air. (t) Lightning laft night 5 and very foul air to-day.

(v) a regular noerthwefter laft night at 8 P. 7P. Springling rain begun. 8 P. The produce of the form, which has

abated: diftant thunder. 9.45 P. A very fevere form juft over, which began about 8.20. It fill thunders.

(w) This was, with produce of a fmall flower, about 10.30 P.

(x) The night very hot, and the air loaded with damp; the morning cool and pleafant.

A METEOROLOGICAL JOURNAL.

Day.	Time.	Baromet.	Hygromet.	Thermometer.		Clouds.		Wind.		Rain.	Max 1785, Min 1786.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
1	7.40 A	29.813	47.5	84	86			SW	3		
	2.10 P	29.762	32.5	90	98.5			W	3		
2	6.22 A	D L. Q									
	7.45 A	29.750	47.5	84	86.4	scattered	3	SW	4		
	2. P	29.710	38	89	98	ditto	1	SSW	3		
3	6. A	29.712	45	83.9	82			SSW	2		
	2. P	29.720	38	89	95	none		SSW	4		
4	6. A	29.735	39	83.8	82			S by W	2		
	2.20 P	29.780	36	88.5	93			SSW	4		
5	5.30 A	29.745	43	83.5	81.5	loose	9	S by W	2		
	2. P	29.746	37	89	94	ditto	3	S by W	5		
6	5.30 A	29.808	37	82	79.5			S by W	2		
	2. P	29.800	32	88	94.5	thin	2	S by W	5		
	8.45 P	29.997	28.5	82.5	78.5	thick thunder	10	NW by W	7		
	9. P	30.000	32.5	82	72	ditto	10	NW by W	3		
7	5.30 A	29.840	31.5	84.5	76.5	thin	8	NNW	1		
8	6. A	29.897	40	81	81	thick	5	S by W	1		
	2.30 A	29.900	32.5	88	94	thick	3	SSW	4		
	10.25 P	D New									
9	5.30 A	29.875	44	81.5	80	thin	7	S	1		
	2. P	29.882	34	88	95.5	thick	6	SW by S	4		
10	7. A	29.867	41	82.7	84.6	thin	3	SW by S	3		
	2. P	29.843	32.5	88	95.5	thick	5	S by W	4		
11	7. A	29.810	40	83.3		thick and thin	10				
	2. P	29.783	31.5	89	97.5	thick feat.	2	SSW	4		
	7.30 P	29.744	35.5	87.5	86.7	thunder	4	SSW	3		
	7.47 P	29.814		87		ditto	9	NW	5		
	7.55 P	29.814	31	87	82	thunder	9	NW	7		

(a)

(b)

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Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	May 1785. Middelland.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
11	8.25 P	29.808	35	83	73	ditto	10	NW by W	2	.325	
12	9. 5.40 P	29.754	36	79.5	74	ditto	10	ENE	2		
	2.20 P	29.718	41	82.5	81	thick	10	S by W	2		
13	7.30 A	29.752	32	89	96	thin	7	SSW	4		
	2.20 P	29.753	42	85	85	loose	8	S	4		
14	5. A	29.754	35.5	91.5	98.5	thick	3	S by E	3		(c)
15	5. A	29.785	35	82	78	thin	3	N by W	1		(d)
	2. P	29.797	39	81.9	81.3		2	E by S	2		
	7.10 P	29.752	26	90.5	96	thick thunder	9	NE	3		(e)
16	6.15 A	29.777	24	88.7	88.3	thin	2	W by S	3		
	8.54 A	B F. Q.	34	83	82.3			NE	1		
	2. P	29.740	17.5	89	93.5	thick thunder	4	WNW	2	.653	
								Carried forward			

(a) Much lightning last night, and a mafs in N and NW. from whence we had a blaf of wind at 10 P. 8.45 P. Sprinkling rain begun. 9. P. Very heavy thunder; a fmail flower juf: over.

(b) A heavy thunder mafs in NW. and much lightning, with diftant thunder. 7.47 P. The wind juf: changed, and the mafs reached the zenith. 7.53 P. Small rain begun. 8.25 P. Heavy rain over fmall rain continues.

(c) A very oppreffive heat to-day. The air does not carry off perfpiration, and makes the whole body calmy and comfortable.

(d) The heat produced thunder all the afternoon till near ten, with fqualls of wind from every quarter in turn, but without rain.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Raw.	Max 1785. Reduction.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
17	6.15 A	29.810	32.5	80.5	80.7	Brought forward, thick	7	ENE	2	,658	(f)
18	2.15 P	29.785	25	89.5	98.5	loose thunder thunder thick and thin thick and thin scattered hard	3	SW by W	4	,057	(g)
	7.30 A	29.868	37.5	82	84.5		10	E by S	3		
	10.30 A	29.895	36	85.8	87.7		10	SSW	4		
	11.5 A	29.886	36	81.7	78		4	ENE	3		
19	2.20 P	29.813	38	85	90	thick thin thick	5	SE	3	,558	(h)
	7.10 A	29.850	37.0	80	78.5		2	NW by W	3		
	2.15 P	29.763	30	85.7	94.5		3	WSW	3		
	7.5 A	29.713	36	83.5	85.3		3	NE	2		
20	2.10 P	29.677	28	90	95.5	thick thin thick	7	E	3	,003	(i)
	7.30 A	29.655	38	84	87		3	NE by E	2		
	2.10 P	29.613	27.5	89.3	95		6	NW	3		
	7.55 A	29.563	37	88	92		4	SW by S	4		
21	9.22 A	Full	22	92.3	101.0	scattered thunder ditto ditto thunder remains thin uniform thin thin	4	WNW	3	,240	(l)
	2. P	29.515	21	91.5	91.5		8	N	3		
	6.40 P	29.502	21	81.7	80.7		10	SSE	5		
	6.55 A	29.563	21	90	96		10	S by W	3		
22	7.40 A	29.573	37	80.5	74.8	thunder remains thin uniform thin thin	10	SSW	4	,303	(m)
	2. P	29.592	33	81	80		10	S by E	3		
	8.50 P	29.640	37.5	86.5	93		10	E by S	3		
	7.50 A	29.616	35	84	84		10	SSW	3		
23	2.40 P	29.650	45	82	76	thunder scattered thick	10	SSW	3	,562	(n)
	7. P	29.765	40	84	86.5		10	W by N	3		
	7.30 P	29.742	38	88.3	92.5		2	SSW	4		
	8.30 A	29.696	39	88.3	92.5		7	SSW	5		
24	2.23 P	29.696	39	88.3	92.5	thunder scattered thick	10	W by N	4	,336	(o)
	7.30 P	29.765	40	84	86.5		2	SSW	3		
	8.30 A	29.742	38	88.3	92.5		7	SSW	5		
	2.23 P	29.696	39	88.3	92.5		7	SSW	5		

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	May 1785. No. fallen.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
29	9.10 P	29.703	43.5	86	86	thunder	10	S	0		
	8.25 I	29.757	43.5	86	86	ditto	10	N by E	1		
30	6.40 A	29.710	47	84	83.5	thick and thin	5	SW by W	2	173	
	10.40 I	29.663	44	86.5	85.5	thunder	10	SSW	3		(p)
31	7.40 A	29.611	46	86.3	80	thunder	10	ESE	2	697	(q)
	11.57 A	L. O.									
	2.20 P	29.590	44	87	93	thick	7	SW	3		
Total in May - 3,690											

Cf) The clouds were 6 about 10, but are all gone.

(g) A small thunder flower at 7 P. yielded the water. It came from ENE. 10.30. A. A thunder flower juft over of about ten minutes duration. 11.5 A. A very heavy thunder storm juft over: it began immediately after laft observation.

(h) We had another storm in the night, with a sprinkling of rain.

(i) We had a mass of thunder clouds from NNW. laft night without rain. 2.10 P. The heat very oppreffive.

(k) We were almost suffocated laft night. I could not clofe my eyes till pad four.

(l) It rains, and there has been diftant thunder. 6.55 P. Thunder clofe and loud; heavy rain.

Em) Between 11 and 12 the storm came on again heavier than before. 2 P. The air does not carry off perfpiration, and therefore leaves the body clammy. 8.50 P. At 7 we had a most furious storm from N8; a torrent of rain, but of short duration; and all has been quiet this hour.

(n) After laft observation, it began to rain small rain, which continued some time.

(o) We had in town a very violent northwester, and it reached the gardens, where it produced this rain. 1.11 P. The day has been hot, and the sky covered with thin clouds; since 8 they have collected, and we had much lightning in the WNW. and now the storm has reached us.

(p) Much lightning in the NNE. and diftant thunder.

(f) It sprinkled rain soon after laft observation, but at 5 A, we had a tremendous thunder storm.

Day.	Time.	Baromet.	Hygromet.	Thermomet.		Clouds.		Wind.		Rain.	Time 1735, Moonlight.
				In.	Out.	Kind.	Quant.	Quart.	Force.		
1	7-10 A	29.570	47	84	86.5	thunder	5	SSW	3		(a)
	2-30 P	29.525	37	89	103.0	thunder		SSW	3		
	8-40 P	29.612	41	88.5	88	ditto	10	WNW	5		
2	9-15 A	29.637	38	85.2	77	thick	8	SSW	4	.665	(b)
	7-0 A	29.585	45	84	85	thick		S by E	3		
3	2-20 P	29.590	42	84	88	thick	10	S by E	3		
4	6-40 A	29.565	46	82	83	thin	3	SE	3		
5										.168	(c)
6	8-0 A	29.592	48	84	87	thick	6	ESE	2	.154	(d)
7	7-38 A	D New									(e)
8	8-20 A	29.616	51	83	84.5	thunder	10	SSE	3	.100	(f)
	8-20 A	29.621	52	83		thick	10	SE by S	4		
	2-20 P	29.580	48	83.5	88	thick	10	S by E	3	.503	(g)
9	8-40 A	29.657	47.5	80	77	thick loofe thun.	10	SSW	3	.700	(h)
	1-30 P	29.625	50	81	79.5	ditto	10	SSE	4	.469	
10	8-15 A	29.655	55	83	87	thick feat. loofe	5	S by E	4		(i)
	2-15 P	29.617	52.5	83.5	86	ditto	10	S by W	4	.036	(k)
11	7-30 A	29.655	57.5	83	88.5	scattered	4	S by E	3	.056	
	2-30 P	29.633	48.5	88	95	scattered	6	S by E	4		
12	7-30 A	29.653	53.0	84	87.5	loofe	7	S by E	4		
	2-23 P	29.580	45.0	86	96	loofe	5	S	4		
13	5-35 A	29.593	54	83	82	thin	5	S	2		(l)
14	5-25 A	29.500	50	83	81.5	thin	5	S	2	.478	
	2-28 A	D F. Q.									
15	7-25 A	29.420	51	83.5	82.5	thick and thin	9	NW	3	.006	(m)
	2-20 P	29.367	53	82.5	80.5	thick	10	NW	4	.1317	
16	7-40 A	29.472	52.5	80.5	78	thick loofe	10	WSW	3	.1700	(n)

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Bar.	June 1785. Miscellaneous.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
16	2.15 P	29.450	53	83	87	thick	10	SW by S	3	,188	(o) (p)
17	6.15 A	29.504	55	80	78	thick	10	SW by S	3	,477	
18	6.35 A									,1736	
	8.15 A	29.630	55	79	75.8	thick lo. fe	10	S by E	3	,200	
	2.15 P	29.581	55	82.5	85	thick	10	S by E	3	,150	
								Carried forward		10.104	

(a) There was a great deal of thunder last night. About 2 it was most oppressively fultry, being a dead calm. 8.40 P. After excessive lightning in the NW, the mists have reached us, and the storm is begun. 9.15 p. It fills rains (mainly); the thunder now approaches, but is very far off. This looks more like the mists than any thing we have yet had; and if wind veer to the south we may reasonably expect them.—(b) Produce of last night's storm.—(c) Produce of a thunder-storm at noon.—(d) Ditto, and at noon also.—(e) There was a storm at noon, and at dinner time, and the evening was fine.—(f) It has rained this morning with thunder: this water is yesterday's and to-day's.—(g) We had rain yesterday, and twice to-day, and this is the produce of it.—(h) It began to blow and thunder and lighten at 12.30, and before 1 A. we had a heavy shower. Ever since it has rained more or less, with much thunder. 1.50 P. It has rained without ceasing, more or less, ever since morning. (i) We have had a thunder shower from SW.—(k) There was a shower at day-break.—(l) At 6 P. yesterday a heavy shower from NW gave this water: and there was only a sprinkling in town.—(m) There was a fall (bower about 3, and another about 9 P. 2.20 P. Heavy showers began about 9, and still continue with short intervals.—(n) It has rained ever since last observation; at times only sprinkling; at others' smartly; and now moderately. 2.15 P. The rain abated gradually, and ceased before noon.—(o) At 9 P. a thunder storm from the W brought on rain again, and it continued till morning.—(p) It was running out through the air-hole. How long it had done so I cannot tell; but it rained all day yesterday; drizzling, and at times barely perceptible; heavily about 6 P. and drizzling till near day. Then hard again; and now it rains smartly, as it did when the water was measured: and there is some in the measure besides, 2.15 P. The rain ceased about to, and the fun (hone at noon.

Day.	Time.	Bar. meter.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	June 1789, M ^{rs} Calloway.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
19	8. A	29.558	58	81.5	84.3	Brought forward,	6	SSW	2	10.104	(q)
	2.30 P	29.528	52	83	82.8	feathered	10	W $\frac{1}{2}$ N	2	1375	
20	8. A	29.567	50	81.5	84.5	thin and thick	7	SSW	3	1156	(r)
	2.10 P	29.520	50	81.3	84.5	duo	6	S $\frac{1}{2}$ E	4	1004	
21	7.35 A	29.549	53	80	78.5	loose low thick	10	S $\frac{1}{2}$ W	2	1332	(s)
	2.15 P	29.522	48	83	89.7	feathered	5	SW by S	4	1132	
22	7.25 A	29.552	53	81.5	84.5	thick	10	W	2	1001	(t)
	8.11 A	D Full								1007	
23	2.25 P	29.525	51.5	83	90.5	thick feat.	7	S by W	2		
	8.50 A	29.539	55	82	79.5	loose	10	NW	1	3,250	(u)
	2.20 P	29.521	56.5	82	82.8	loose	10	S	3	1076	
	6.20 P	29.498	56			thick	10	S by E			
	6.55 P	29.516	56	83		thick loose low	10	S by E			
24	6.20 A	29.510	58.5	81.5	81.5	thin	10	SE	3	1,778	(w)
	11.45 P	29.524	58	82	81	thick feat.	8	SE	3	1,068	
25	7.20 A	29.512	59	83	84.5	thick	8	ESE	4		
	2.40 P	29.472	53	83	92.5	thick feat.	5	SSW	2		
26	7.35 A	29.508	56.5	83.5	83.5	thick	7	WNW	2	1,073	(x)
	2. P	29.582	52.5	84	87	thick	9	SW	2		
	6.20 P	29.471	56	83	83.5	thick	5	SW by S	3	1,507	(y)
27	7.15 A	29.490	59.5	84	84.5	thick low	10	SSW $\frac{1}{2}$ W	3		
28	9. A	29.472	57	81.5	79.5	thick low loose	10	SE	3	1,000	(z)
	2.15 P	29.428	58.5	83.5	87.5	thick low	10	SW by S	3	1,367	(aa)
29	7.20 A	29.446	56.5	83	86	thick loose gat.		S by W			
	2.25 P	29.406	51.5	85	91	thick	6	S by W $\frac{1}{2}$ W	3		
	4.21 P	D L. Q.					9		3		
30	7. A	29.224	50.5	83	82	thick	8	S $\frac{1}{2}$ W	3	1,169	(bb)

Day.	Rain.	June 1725, Mijailian-vent.
30	2.13	
	18,611	
	7,450	
Total in June,		26,061
		(cc)

(a) Between 10 and 11 P. there was a heavy flower, that produced 2 of this quantity; the reft fell this morning. 2.20 P. A flower juft over.—(r) This was the end of the laft flower. 2.10 P. A heavy flower about 11 o'clock in the forenoon.

(s) Mifty rain. 2.15 P. It cleared soon after laft obfervation.—(t) A flower about 4 o'clock this morning.

(v) About 1 it began to rain in torrents. At $\frac{1}{2}$ paft three 2 inches were meafured; at $6\frac{1}{2}$ this morning a third; the reft fell fince, and it fell fprinkles. There was exceffively heavy thunder, with mod vivid lightning, at 3, though but little wind. 2.20 P. Drizzling rain all day. 6.55 P. A fprinkling about 6.35. Diftant thunder.—(w) Soon after laft obfervation it began to drizzle, and the mercury rofe, but in a fhort time after fell again. The rain continued till in the morning, and for about two hours was very heavy. 1.45 P. This fell in the courfe of the day, about 9, and again 2 P.—(x) A fmall mower at 7 P. yefterday, and another juft over. 2 P. A mower in the forenoon. 6.20 P. A flower about 5 P. and the above produced this water.—(y)

The night was clear, and flaw bright.—(z) It was very gloomy at 9, with much lightning. About midnight it began to rain; towards morning more, and at 6 A. heavily, and ever fmce fmartly, and fo it fell rains. 2.15 P. It rained till near noon, and is about to rain more.

(aa) The morning has been bright.—(bb) The rain fell about 8 P. laft night in a fmart flower from SW . wind 5. 213. This rain fell about 6 P. and was heavy for the time it lafted.

(cc) Add this for the overflowing on the 10, 18, 23, and 24, when the garden was all under water.

Day.	Time.	Barometer.	Thermometer.		Clouds.		Wind.		Rem.	Total No. of observations.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
1	2.50 P.	29.436	85	92	thick	4	E $\frac{1}{2}$ N	3	(a)	
2	7.	29.483	83	85	thick	6	E $\frac{1}{2}$ N	4	(b)	,148
3	0.10 P.	29.510	83	84	thick loofe low	10	ESE	5		,300
4	9.20 A.	29.512	83	84	thick loofe	6	E $\frac{1}{2}$ N	6		,450
5	2.20 P.	29.480	83.3	85	ditto	7	S by E	4	(c)	,069
6	8.12 P.	29.556	82	84	thick	10	SW	4	(d)	,900
7	9.30 A.	29.586	83	84.5	thick loofe	10	WNW	3		,017
8	2.30 P.	29.528	82	83	thick hard	10	SW by S	2		
9	6.22 A.	29. New							(e)	,923
10	7.10 P.	29.486	81	78.5	thick loofe	10	NW	2		,150
11	2.45 P.	29.415	82	80.5	loofe	10	SW by S	3	(f)	,500
12	7.		81	78.7	ditto	9	SW	7	(g)	,359
13	6.40 A.	29.440			loofe		SW $\frac{1}{2}$ S	8		,300
14	8.	29.60	82	84	thin	6	SE	2		,186
15	7. A.	29.654	82	83.5	thick thun. col.	5	S	4		
16	0.15 P.	29.610	83.5	94	ditto	7	SSE	4	(h)	,036
17	7.30 A.	29.662	83	88.7	thick thunder	8	S $\frac{1}{2}$ E	4	(i)	,1500
18	2.30 P.	29.556	83.5	90.7	thick feat.	10	SW by S	3	(k)	,1,223
19	7.30 A.	29.516	83	82	thick	10	SW by S	3	(l)	,016
20	2.30 P.	29.460	83	86	loofe	10	SSW	3	(m)	
21	6.40 A.	29.494	81.3	80.7	thick	10	S by W	3		
22	7.28 A.	29. F. Q.			Carried forward,					7,077

- (a) The night very clofe and fuffocating. After 3 In the morning, thunder and lightning, and a little wind with rain made it poffible to fleep. o. 10 P. An heavy ftorm came oft ; the wind was NE. the greateft part of the forenoon, now has changed.
- (b) It rained all the afternoon and till near 8 P. a"nd about to rain again 2.20 P. Flying lhowers, five or fix fince laft obfervation.
- (c) The produce of feveral drizzling flying flowers after laft obfervation.
- (d) About 6 it began to rain, and there were ,400 at 9. It has rained almoft all night, and there were ,500 drawn off juft now ; it fill drizzles. The lightning fell clofe to the Bazar, that is about one-third of a mile from the houfe, but did not hurt any body.
- (e) Rain in the night with lightning. Heavy rain about day-break, and the flower but juft over. 2.45 P. Showers all the forenoon, and now fet in. 7. P. It has been a very rainy, windy afternoon, and it fill continues fo.
- (f) It has been tempeftuous at times, and rained in flying flowers all night.
- (g) The 7th in the evening, ,186 The 8 to 2 P. when it ceafed.
- (h) It has thundered at a diftance.
- (i) There was lightning about 10 P. but riot any rain.
- (k) This tain fell yefterday about 4 P. It has not rained fince.
- (l) It rained heavily laft night, abofit 11, and it has juft begun again gently, 2.36 P. The rain continued till paft is
- (m) The rain fell in the evening about 6.

Day.	Time.	Baromet.	Thermometer.		Clouds.		Wind.		Rain.	July 1785, Mills's man.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
15	8.40 P	29.660	83	87	Brought forward,	9	SSW	4	7.077	(n)
16	2.40 P	29.586	85	91	thick	10	SW by W	3	.072	
17	0.45 P	29.553	85	92	thick	7	SW by W	3	.184	(o)
18	2.20 P	29.442	83.3	85	thick	10	WSW	5	.340	(p)
19	7.20 A	29.468	81	78	thick loofe	10	SW by W	3	.291	(q)
21	10.20 P	29.296	83	82.5	thin	5	S½E	3	.430	(r)
22	5.20 A	29.296								
	6.15 A	29.586	82	81	thick loofe fog	9	S	2	.110	(s)
24	7. A	29.582	80.9	81	thick	9	E by N	4	.014	
	2.20 P	29.650	84	90	thick	3	ENE	2		
25	5.45 A	29.675	81	80	thick	8	SSE	2		
26	8.50 A	29.686	84	87.5	thick and thin	8	SSW	2		(t)
	2.30 P	29.627	85.6	91.5	thick	9	SE by S	3	1.700	
	8.25 P	29.636	84	80	thick	8	NW by N	2	0.007	(v)
27	7.20 A	29.641	83	87	thick	5	S	1	.025	
28	2.20 P	29.613	84	89.5	thunder	10	SE	4		
	6.30 A	29.612	82	84.5	loofe	3	S by E	2		
29	9.11 A	29.562	86	91.5	thick	8	ENE	3		
30	1.20 P	29.580	83.9	87	thick	9	SSE	2		
	8.10 A	29.580	86.5	93	thick	8	S by W	3		
31	2.40 P	29.512	86.5	80.7	thick	9	NE½E	3	.226	(w)
	7.15 A	29.528	82.3	79	thick	9	S	3		
	2. P	29.370	80		thick	10		4	.016	(x)

	Rain.	July 1785, Middletown.
Overflowing	10,392	(4)
	1,700	
	12,092	
Total in July, 12,192		

(r) This rain fell the 14th in the night, and not any since.

(o) Rain yesterday evening, and in the night before three o'clock.

(p) A very tempestuous morning, and rain to-day also.

(q) Sprinkling rain.

(r) ,4 fell on the 19th, the rest yesterday. Not any to-day. The forenoon was foggy and cloudy, very clofe and hot.

fsj This fell the day before yesterday. 2.20 P. A thunder flower at 11. Exceffive high tide to-day.

(t) A flower juft come on. 8.25 P. Two very heavy mowers since 7. P. about which time it began with very heavy thunder from SE. and varied to NW.

(v) The remainder of laft night's storm, which was over when the laft obfervation was entered. 2.20 P. A thunder flower about 12, and it now thunders, and more is coming on.

(w) It rains hard. The wind has veered all round the compafs at leaft twice fince morning, with flying **showcri** cf {**mall rain*** and diftant thunder, of deep and heavy found.

(x) The wind increafe4 to 8, and blew fo for above an hour, with rain, **of** which **this is the produce***

(y) **And this for overflowing on the 26, and it could not be lefts.**

Day.	Time.	Barometer.	Thermometer.		Clouds.		Wind.		Rain.	August 1784, Not observed.
			In.	Out.	Kind.	Quant.	Quanti.	Force.		
1	6. A	29.490	81	79.3	thick	3	S by E	3	0.005	(a)
2	6.10 A	29.515	81.7	81.3	thin and thick	4	SSW	2		
3	2. P	29.515	83.2	88.7	thick thunder	9	SE by S	3		
4	5.40 A	29.561	81.5	81.5	thin	2	S by E	2	.715	(b)
5	11. P									(c)
6	8. P	29.544	83	83	thick	5	SE by E	2		
7	7.26 A	D New								
8	11. P	29.578	82.2	80.9	thin	6	SE	2	.719	(d)
9	6.30 A	29.528	80.9	80.9	thick	9	E by N	2		
10	11. P	29.588	82.3	80.3	thin	5	SW by S	2	.271	(e)
11	8.30 A	29.580	82.3	83	thick	10	W by N	2		
12	2.15 P	29.520	83.7	90.2	thick	9	SSE $\frac{1}{2}$ E	3	.066	(f)
13	11. P	29.600	83.5	81	thick	10	S by W	2	1.000	(g)
14	6. A	29.592	80.5	78.5	thick	10	S $\frac{1}{2}$ W	2	.546	(h)
15	7.50 A	29.750	80	79	thick	10	SW	2		
16	0.50 P	29.735	80	86	thick hard	8	S	2	.293	
17	6.20 A	29.700	80.5	81	thick	3	S by E	2		
18	1.15 P	29.666	84.3	90.3	thick thunder	6	SSW	3		
19	9. A	29.638	83	86.3	thick	5	SSW	3		
20	2.15 P	29.574	86	92.5	thunder	7	S by W	3		
21	7.50 A	29.608	83.6	87.3	thick	8	S $\frac{1}{2}$ E	2		
22	2.15 P	29.564	86.5	91.5	thunder	10	S $\frac{1}{2}$ W	2	.070	(i)
23	7. A	29.606	81.5	82.2	thick	9	WNW	3	.014	(k)
24	11.24 A	D F. Q.								
25	2.15 P	29.550	82.8	86.5	thick thunder	10	S by E	2	.400	(l)
26	7.45 A	29.544	81.5	82	thick	10	NW	2	.196	
27	2.20 P	29.466	84.5	89.5	thick	8	E $\frac{1}{2}$ N	1		
28	7.45 A	29.498	82.7	84	thick	6	SSE	3		

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	Average 1785, Michigan.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
16	7- 7-45 A 2-15 P	29-468 29-528 29-460	61-5 65 57-5	83-5 82-8 85	86 83-2 87-3	thick thunder	10	E by N	2	143	(m)
17	7- 2-10 P	29-472 29-493	64 61-5	81 84-5	80-2 88-2	thick loofe	10	NNE	3		(n)
18	6-15 A	29-580	63	80-5	78-5	thick loofe	10	NE SW by S S Carried forward	4 2 5 3	475 1025 583	(o) (p)

(a) About 1. P. it rained very heavily in town ; and very little here ; the quantity is noted. 2. P. Diffant thunder.

(b) This fell in a very short time. In town there was only a sprinkling.

(c) It was very gloomy in town all the forenoon ; and we had two small flowers, but not any at the gardens.

(d) Of the water 5 fell last night, the rest in the forenoon to-day.

(e) It rained almost the whole day small rain.

(f) Rain in the forenoon. 11. P. And still raining hard.

(g) It has rained almost incessantly all night long ; and still rains, though it is going off,

(h) It rains very heavily. The mercury is in a falling state, so that it has been higher.

(i) This fell in the night about 15. P. and we have had a sprinkling about 11 this forenoon besides.

(k) This fell about 2 in the morning, with a gulf of wind and some lightning. 2.15 P. Two or three thunder mowers (since 9, and it now thunders.

(l) Yesterday afternoon and in the night it rained.

(m) 2. P. several small (borders with thunder.

(n) 2.15. P. Thunder at a distance.

(o) Thunder showers yesterday afternoon, and in the flight, and rain this morning. 2. 10 P. Showers all the forenoon of very small rain, and short duration.

(p) It has been a very tempestuous night, with frequent showers. It still rains, and the wind was in general 6 and 7 in the night.

Day	Time	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	Atmospheric Pressure.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
19	6.50 A	29.578	67	83	84	Brought forward,	5	SSW	4	5.521	(g)
	8.30 P	29.564	49	88	90.5	scattered	5	SW by W	2	1.42	
20	7. A	29.580	63	83	85	thin	9	SW by S	3		
	1.41 P	D Full									
21	2.20 P	29.566	40	90	93	thick	4	SW by W	4		
	6.10 A	29.576	54	83	80	ditto	5	N	1		
	1. P	29.525	52.5	85	85	thunder	10	NE by E	3		
	2.15 P	29.578	54	84	83	ditto.	10	ESE	2		
22	6. A	29.588	58	83	81	thick	9	W by N	1	.015	(r)
	2.15 P	29.556	54	85	90	ditto	8	NE by N	4	.05	(s)
23	6.30 A	29.570	61	83	81	thick thunder	9	N	1	.248	(t)
	2.15 P	29.576	59	83.5	86.8	thick	8	S½E	5	.053	
24	7. A	29.596	60	82	82	ditto	7	E by S	3	.030	
	2.15 P	29.598	59.5	84	86	thunder	9	S by E	3	.084	(v)
25	6.30 A	29.646	62	82.5	81.5	thick and thin	9	SSW	2		
	2.15 P	29.640	55	85	86.5	thick	9	ESE	2		
26	7. A	29.690	61	82.8	83	thin	9	S½E	2	.186	
	2.15 P	29.642	58	84	81.9	thunder	9		2		
27	4.03 A	L. Q.									
	6.15 A	29.700	61	82.5	80	thin and thick	7	SSE	3	.017	(w)
28	2.25 P	29.688	57.5	84.5	88.9	thick	9	S by E	3	.004	
29	7. A	29.758	61	82.0	80.9	loose	10	SE by E	2	.200	(x)
	7. A	29.696	61	81.8	81.8	thick	6	S by E	2	.214	(y)
30	7.10 A	29.704	63	83	83.2	thin	10	SW by S	2	.055	(z)
	2.25 P	29.628	58	85.4	88.5	thunder	9	S by W	2		
31	5.30 A	29.610	61	82	80.7	thick loose	10	WNW	1		

Day.	Time.	Baromet.	Hygrometr.	Thermometer.		Cloud.		Wind.		Rain.	August 1785, Myoclenemus.
				In.	Out.	Knd.	Quant.	Quart.	Dir.		
31	2.15 P	29.600	63	82.5	81	thunder	1000	WSW	2	1,707	(aa)
	7. P							Overflow.		1,700	(bb)
								Total in August,		338	(cc)
										10,661	

(g) Rain about noon yesterday, and after it ; and the conclusion of the shower yesterday morning.

(h) 1. P. Thunder at a distance; frmkling rain began. 2.15 P. Thunder over.

(s) 2.15 P. Rain about 8 A.

(t) Thunder showers fmce lali obfervation. 2.15 P. Several mowers of fhort duration fmce lall obfervation. Tides high.

(v) 2.15 P. Several fmall fhowers with thunder.

(w) Rain with thunder yesterday afternoon. 2.25 P. A fmall fhower juft over.

(x) Rain now falling, and fume fell in the afternoon yefcliday.

(y) Rain yefcliday before fun-fet.

(z) Rain in the night. 2.35 P. It has thundered this forenoon ; and being then dead calm, the heat was almoft infupportable. 2.25 P. The gage cittern holds only that quantity ; how much fell I know not, but I think as much more.

(aa) The water meafured to-day fell in about an hour. To-day I meafured the ciftern, and it holds only 1,707 ; and through the air-hole there runs tut one-tenth in 40". It is impoffible, therefore, to afcertain what did fall to-day ; but that it had run oilt was evident ; and from circumftances I judge the quantity was as much as was meafured.

(bb) Add 1,700, it could not be lefs as there was a great deal of water in the garden ; and beftdes, I know from a canal that its water roie 34. Yesterday it was 1.5 below the drain ; this afternoon the water ran through the drain two inches deep, and yet only, three-tenths of rain fell in the afternoon.

(ee) This fell in the afternoon.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	September 1785. Majdummas.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
1	5.30 A	29.60 [*]	68	81.5	80	thick	5	S by W	2	.052	(a)
2	7.40 A	29.70	66.5	82	82.5	thick	5	S	3	.156	
3	2.30 P	29.67	68	83.5	85	thick	10	SSE	3		
	5.30 A	29.712	71	81.5	79.9	thick	8	SSE	1		
	2.30 P	29.700	65	83	86	thick	6	S by W 1/2 W	3		
	10.51 P	New									
4	6. A	29.748	69	82	79.9	thin	5	S by W	1		
	2.30 P	29.730	5.05	85	92	thick	6	S by W	2		
6	6.15 A	29.772	55.5	83.5	82	thick feat.	6	SSW	2		
	2.25 P	29.734	46.5	88	91	thunder	7	SW by W	4		(b)
7	5.40 A	29.720	55	84	82.2	thin and thick	6	SSW	3		
	2.30 P	29.714	45	87.5	89	thunder	9	SSW	3		(c)
8	5.40 A	29.716	55	84	81	thin	3	S by W	2		(d)
	2.30 P	29.740	55	83	82	thin	3	S 1/2 W	1		
9	5.40 A	29.730	45	87.5	92	thunder	5	SW by W	2		(e)
	2.10 P	29.820	54	84.8	85	thin and thick	6	S by E	2		(f)
10	7.30 A	29.784	48	88	92	thunder	9	SSW [*]	3		
11	2.25 P	29.782	5.55	88	92	thick	9	N by E 1/2 N	2		
	7. P	29.754	50.5	83	81.5	thunder	10	SW by S	3		(g)
	2. P	29.754		86	88.5						
12	1.55 A	29.720	55	83.5	80.2	thunder	6	SW 1/2 S	2	.582	(h)
	6.10 A	29.668	53.5	86	92	thick	9	S	2	.185	*
13	2.10 P	29.650	57	84	82	ditto	7	S by W	2		(i)
	5.55 A	29.592	56	87	93	thick heavy	9	SSE	2		
14	1.20 P	29.655	56.5	83.3	81.9	foggy	10	ESE	2	.010	(k)
	7.10 A	29.608	52	86	89.5	thunder	8	SE by S	4	.002	(l)
15	2.10 P	29.600	56.5	82	80	loose	7	E by N	3	.001	
16	5.50 A	29.648	56.5	82	81	thin	4	E by S 1/2 S	3	.128	(m)
	7.15 A			82							

Day.	Time.	Baromet.	Hygromet.	Thermomet.		Cloud.		Wind.		Rain.	September 1785. Mifflinensis.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
16	2. P	29,616	54	84	86	thunder	5	E $\frac{1}{2}$ S	2	1,590	(n)
	8 40 P	29,659		83	82		5	SE by E	3	1,110	
17	6. A	29,630	59	82	80	thin	9	SE by E	2	1,003	
	2.25 P	29,628	54	85	82,5	thick	10	E by N $\frac{1}{2}$ N	1	1,001	
Carried forward,										1,820	

(a) A flower about 1 in the morning, with violent wind, 2.30 P. A flower about 10.

(b) Diffiant thunder.

(c) 2.30 P. We had a sprinkling of rain at ti, and some thunder since.

(d) Yesterday it rained hard at Dumtum, and to-day there was a very smart flower in Calcutta : only a sprinkling here,

(e) 2.10 P.- Diffiant thunder, but approaching from the SW to SSE.

(f) About and until fun-fet we had a double rainbow, but the rain was only in scattered drops.

(g) 2 P. Loud thunder in the NE.

(h) At $\frac{1}{2}$ past 4 we had heavy rain from the SW. with lightning. 2.10 P. Rain about 9 o'clock.

(i) A sprinkling juft over.

(h) We had a great deal of thunder laft night, fprinkling rain and dead calm till day-break. 2.10 P. We had two or three fprinklings, and fome thunder.

(i) A fprinkling in the afternoon about 3 P.

(m) This water fell yesterday, and it did not rain in town. 2 P. At $\frac{1}{2}$ past 12 a very heavy flower gave this water in lefs than 20 from SE 5. 8.40 P. This water fell about fun-fet, from which time the fly began to clear.

(n) This fell in the night. 2.2c P. A fprinkling in the forenoon.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Quarter.	Force.	Rain.	Remarks.
				In.	Out.	Kn't.	Quant.	Kn't.	Quant.				
18	6. A	29.648	58	81	80.5	Brought forward,	8	E by N	1 1/2		2	1.820	(o)
	7. A	29.664	58	81	80	ditto	10	ditto			2		
	2.30 P	29.613	56	84	85	ditto	10	S by E			3	.056	
19	9.57 P	D Full											
	6. A	29.590	59	81	80	thick loofe	10	E by S			2	.003	(p)
	2.15 P	29.588	61	83	87.2	thick heavy	10	S by W			2	.002	
20	6. A	29.580	62	81	80	thick loofe	10	SE			2	.081	(q)
	2. P	29.576	59	84.5	89	thick	8	S by E			3	.163	
21	7.50 A	29.587	61	81	81.5	thick	9	E by S			4	.387	(r)
	2.25 P	29.666	60.5	84.3	87	thick	10	SE by S			4	.084	
22	6. A	29.754	62	81	79.8	thick	3	E by N			4	.016	(s)
23	7. A	29.756	62	80	80.8	thick	4	NE			1	.270	(t)
	1.30 P	29.728	58	84.7	88.8	thick	6	NW			1		
24	8.15 A	29.723	62	83	84.5	thick	9	NW			3		
	2.15 P	29.636	55	86	89.5	thick	8	NNW			3		
25	8.50 A	29.668	58	83	84	thick	5	E by S			4		
	2.15 P	29.583	53	84.3	86	thick	7	ESE			4	.154	(v)
26	2.21 P	D L. Q.											
	8. A	29.666	58	80.8	81.2	thick loofe	5	ENE			3	.395	(w)
	2. P	29.608	58	82	84	thick	9	SE varying to S by W			5	.292	
27	7.45 A	29.641	61	81	81.8	thin	5	SE			3	.018	(x)
	2.25 P	29.573	59	82	81	thick	10	SW			3	.130	
28	7.20 A	29.600	60	81	81	ditto	9	SE by S			5	.130	(y)
	2.15 P	29.556	62	83	85.5	ditto	10	SSE			5	.009	
29	6.30 A	29.638	63	81	79.5	ditto	10	S by E			2	.640	(z)

Day.	Time.	Baromet.	Hygromet.	Thermomet.		Clouds.		Wind.		Rain.	September 1785, Mjöllerensmet.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
30	6.30 A 12. P	29.680	61	78.2	79.9	thick hard	4	SW $\frac{1}{2}$ W	3	.182 .001	(aa)
Total in September,										7.052	

(o) 7 A. A fraall rain. 2.20 P. Rain in the forenoon, fveral final! flowers.

(p) This fell yeflerday before fun-fet. 2.15 P. Rain in a fhört fprinkling this forenoon.

(q) Rain yeflerday evening, and in the nigh*; it fill rains fcattered large drops. 2 P. Rain in the forenoon.

(r) Rain with thunder at 5 P. again in the night twice, and fince day alfo, 2.25 P. Two or three flowers fince laft obfervation*

(s) Rain the afternoon yeflerday. Rain twice to-day.

(t) 1.30 P. The wind has varied round and round, though hardly perceptible.

(v) The night was dead calm till about an hour before dawn, and then we had a form from NE with lightning. 2.15 P. A, flower juft over.

(w) Rain at 4 A. and again at fun-rife. 2 P. Flying flowers all the forenoon.

(x) Rain yeflerday afternoon. 2.25 P. Several fmart flowers fince lad obfervation.

(y) A very flormy night, with frequent flowers. 2.15 P. Two or three flowers fince morning, but all momentary, and fmall.

(z) Before 11 o'clock P. we had Tain 15. Between 12 and 1 there came on a violent rain, attended with-thunder, lightning, and wind, which varied round and round: it produced 1325; before 3 1,20, and the ref fince. It fill lowers and threatens.

(aa) Several flowers yeflerday, and one in the night. 12 P. A fprinkling to-day.

Day.	Time.	Barometer.	Thermometer.		Clouds.		Wind.		Rain.	Other 1983, Admittance.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
1	8. A	29.826	81.2	84.5	thin	4	WNW	2		
2	2.10 P	29.770	84	87.5	ditto	2	W by S	3		
	7.45 A	29.840	80.5	80.5			SW by S	2		
	2.20 P	29.797	83	86			WNW	3		
3	6.15 A	29.790	80.5	82	thin	7	SW by S	2		
	3.54 P	D New								
4	5.30 P	29.764	84	84.5	thunder	5	WNW	3		(a)
	7.15 A	29.845	81	80	thick feat.	4	NW	2		
	2.20 P	29.824	84.3	87.3	thick	6	WNW	2		(b)
5	7.30 A	29.875	82	81.5	thin	2	SE by S	2		
6	2.15 P	29.833	86	90.5	thick	6	SSW	2		
7	6.50 A	29.910	82	79	thin	1	S	1		
	6. A			78.5						
	7.40 A	29.872	82	81.5			SW			
8	2.30 P	29.790	86	80.5	thick	6	WNW	2		
	7.15 A	29.858	81	78	thunder	8	E by N	1	.381	(c)
	2.30 P	29.773	85	88.5	thick thunder	8	NE	2	.335	(d)
9	6. A	29.86	80.5	78	thick	3	S by E	2	.268	
	2.25 P	29.799	81.7	87.5	thunder	9		3	.455	(e)
	10.30 P								.002	
10	5.35 A	29.873	78.2	75.5	thick	4	ENE	2		
11	6.15 A	29.907	80.5	78.6	thick feathered	7	E	2		
	2.20 P	29.863	84	88.5	thick	6	NNE	3		
	2.46 P	D F. Q.								

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.		Officer VRS. Regulations.
				In.	Out.	Kind.	Quant.	Quarter.	Force.			
12	7.15 A	29.902	55	81.2	81	thin	2	W $\frac{1}{2}$ N	1			(f)
	2.15 P	29.868	47	84.3	87.5	thick	6	NW	1			
13	6.30 A	29.905	53	81.5	79	thin	2	NW $\frac{1}{2}$ W	2			
14	7. A	29.894	53	81.5	80			W by S	2			
	2.20 P	29.848	46	84	88.9	thick	8	WNW	2			(g)
15	7. A	29.892	53	82	79.9	thunder	3	NW by W	2			
	2.15 P	29.878	45	86	89	thick thunder	6	NW $\frac{1}{2}$ N	3			
16	6.45 A	29.848	52	81.5	80	thin	4	N	2			
	2.25 P	29.897	46	86	88.5	thick	6	N	3			
Carried forward, 1,391												

(a) 5'30 P. Rain in the north.

(b) 2.20 P. Very fultry.

(c) There was much lightning in the north, with distant thunder, and at 4 we had a thunder shower.

(d) A thunder shower about fun-fee. 2.25 P. Rain began at 3, and continued till near 9: it came from the NE. with a very sudden change.

(e) Whether this was rain or dew I do not know.

(f) At 6.30 A. The thermometer out of doors 78.7.

(g) Thunder at a distance twice this morning.

Days	Time	Barometer.	Thermometer.		Clouds.		Wind.		Rain.	Oskar 1755, Mjölkdammen.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
17	6.20 A	29.928	80.7	78.2	Brought forward,		N by E $\frac{1}{2}$ E	2	1.891	(h)
18	2.5 P	29.885	85	86.5			N	4		(i)
	6.46 A	D Full					N	1		
19	6.50 A	29.914	79				N	3		
	2.30 P	29.878	86				NNE	2		
	6.30 A	29.872	79				N	1		
20	2.30 P	29.856	86				N	2		
	7.30 A	29.900	86		thick	10	N	1		
21	2. A	29.832	86		thin	5	N	2		
	8. A	29.92	84.7		ditto	3	N Eaily	3		
22	2.30 P	29.864	87.5		thick and feat.	5	N	4		
	6.20 A	29.884	78				N	3		
23	2.40 P	29.828	87				NNE	4		
	6.20 A	29.892	77.5		thin	4	N	3		
24	2. A	29.864	87		thin	3	NE	3		
	7.10 A	29.936	79.5		thin	6	NNE	2		
25	2. A	29.903	83.5		thin	4	NNE	2		
	4.45 A	D L. Q.								
	6.30 P	29.913	78.5		thin	4	NE	9		
26	2.10 P	29.900	88		thick feat.	3	N	2		
	6.40 A	29.874	80.5		thick and thin	4	NE	2		
	1. P	29.860	88		thunder	8	SE	1		
	1.25 P	29.866	86		ditto	9	SE	4		
	1.40 P				ditto	10	SE	6		
27	7. A	29.840	78.5		thick loofe	10	NNE	1	1.920	(m)
	2. P	29.780	83		thick	10	NE	2	1.456	
28	7. A	29.724	77		loofe foggy	9	NNE	3		

Day.	Rain.	Oct. 1785, Mijollanewu.
30		
31		
Total in October, 2,863		
	1,084	(n)
	1,018	(o)

(h) 2.5 P. Qu'tted the gardens this evening.

(i) Firft obfervation at Calcutta.

(k) The clouds began to collect yefterday about 9 A.

(l) Foggy. 1 P. Diftant thunder. 1.25 P. Ditto, and rain coming on. 1.40 P. Rain began in large drops.

(m) The in fell heavily, and continued till about 3, and produced the water above at the gardens. It has rained in the night, and I heard it at day-break, and it drizzles now. 2 P, Smart rain. This water was meafured in the morning.

(n) Rain at day-break.

(o) Rain at noon.

Day.	Time.	Barometer.	Thermometer.		Wind.		Ram.	Number of Ss. Miscellaneous.
			In.	Out.	Kind.	Quant.		
2	7.15 A	29.947	80		thick	4		
	9.33 A	D New						
3	2.30 P	29.912	85.5		thick	8		(a)
4	8.30 A	29.964	80					
	8.15 A	29.936	79.3		thick	6		
5	2.30 P	29.940	81.7		thick	8		(b)
	9.40 A	29.924	78.3		thick	10		
6	2.20 P	29.802	82.3		thick	8		(c)
	6.40 A	29.850	78		thick	10		
7	2.20 P	29.820	81.8		thick	10		
	7.40 A	29.914	78.3		Budded	6		
8	2.15 P	29.900	83		thick	8		(d)
	7.10 A	29.932	78.8		thick	10		
9	2.10 P	29.881	79.5		thick	10		(e)
	7.10 A	29.940	74.3		thick	9		
10	1.43 A	D F. Q	77		thick	8	1,000	
	7.40 A	29.936	73		none			
11	2.10 P	29.936	77.8		white feat.	3		
	7.10 A	30.022	74					
12	2.10 P	29.988	80		thick white feat.	6		(f)
	8.10 A	30.118	75		thick	3		
13	2.30 P	30.036	79.3		thick	4		
	8.10 A	30.118	74.3		thick	3		
14	2.10 P	30.062	79		feathered	3		
	7.10 A	30.082	71					

Day.	Time.	Barometer.	Thermometer.		Liquor.		Wind.		Rain.	Remarks.
			In.	Out.	Min.	Max.	Quarter.	Force.		
14	2.25 P	30.024	78				NNW	3		
15	7.35 A	30.005	70.5				NW	3		
Carried forward									1.023	

(a) A small flower at the gardens,

(b) Small rain : the produce at the gardens,

(c) It rained last night, and the water was measured this morning at the gardens, 2. 20 P. At noon there was a smart shower of rain.

(d) Very gloomy, and about to rain, '2.10 P. It began to rain about 8 o'clock, and it continued till near 2, The sky begins to brighten a little.

(e) Yesterday at 3 P. it began to rain, and about 4 P. to blow, and the wind increased to great violence from the N. and NE. About 7 P. a blast broke the pipe of the water-gage, at which time there was 0.5 in the cistern ; and the quantity that fell afterwards was estimated at 0.5. The rain was heavy at times, and continued till 1 the next morning,

(f) Thick fog going off.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	November 1795, Miscellaneous.
				In.	Out.	Kind.	Quant.	Quarter.	Force.		
16	6.40 A	29.944		69.7		Brought forward.				1.023	(g)
17	4.44 P	D Full		71.3	72.3			NW	2		(h)
18	7.30 A	29.960		78.3				NW	2		
18	2.20 P	29.96		72.5				N	2		
18	7.45 A	30.036		78				E	2		
19	2.15 P	30.018		72		thin	3	WNW	2		
19	7.20 A	30.078		78.5		feathered	4	W	2		
20	2.10 P	30.023		77.7		thick and thin	7	WNW	3		
20	2.15 P	30.040		71.3		thin	4	NW	3		
21	7.20 A	30.072		78		thick	3	N	2		
22	2.10 P	30.020		71.5		thick	6	E	2		
22	6.40 A	30.038		78		thick	9	ENE	4		(i)
23	1.50 P	30.020		72	67	feathered	7	ENE	3		
23	7.11.06 P	29.986		72		thin	3	N	2		
24	8. A	29.976		73		thick	10	NE	3		
25	2. P	29.920		79.5		thin	6	N	2		
26	7.30 A	29.942		72		thin	4	N	3		
28	6.20 A			66.2	59.7			N	4		(m)
29	7.10 A	30.050		59.3		thin, a stripe in the east		N	4		
29	2. P	30.000		73	68	none		N	3		(n)
29	7.25 A	30.022		66.5		none		N	3		
29	7.10 P	29.963		75.5		none		N	3		

Day. & 30	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.
				In.	Out.	Kind.	Quant.	Direction.	Force.	
	6.40 A	29.977		66	59			N	8	
	2.30 P	29.940		77.3				NNW	3	
Total in November,										1.023
November 35										Mississippi.

(g) The thermometer was in the sun.

(h) Thin fog.

(i) This morning Was very cold, but I did not observe.

(kj) It rained about 3 in the morning.

(l) Very sharp wind abroad.

(m) One very small cloud. 7.10 A. Foul sky in the West. 2 P. Not a single cloud to be seen; the small clouds well off before 8, and the whole day has been delightfully pleasant.

(n) Yesterday ended as delightful as it was at noon; and to-day promises to be just as fair and pleasant.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	December 1785. Miscellaneous.
				In.	Out.	Kind.	Quant.	Direction.	Force.		
1	6.45 A	29.988		66.5	61	thin	2	W	2		
2	2.29 P	29.976		78.2		scattered	3	NW	2		
3	2.42 A	D New				thick & thin scat.	5	W	2		
4	7.15 A	29.956		67	62			WNW	4		
5	2. A	29.944		77.5	64	thin	4	WNW	2		
6	7. A	30.00		69	59	thin		N	2		
7	2.20 P	29.86		77	59			N	2		
8	7. A	30.032		66.4	74			WNW	2		(a)
9	7. P			65				WSW	2		(b)
10	7.10 A	29.070		68	67.5			WSW	2		(c)
11	6.40 A				68			WSW	3		(d)
12	6.30 A				52			WNW	2		(e)
13	10.46 A	D F. Q.							3		
14	2.20 P	30.044		79.5	77.5			WNW			
15	6.30 A	29.966		57	51						
16	11. P	30.060		58							
17	4.30 A	D Full									
18	6. A	30.050		53	48.5			NNW	3		(f)
19	2. P	30.040		76.3	74.8	thick	8	W	1		
20	6. A	29.977		62	53	thick	5	NW	2		
21	2. A			67	73	thin	5	NW	2		
22	6. A	29.963		62		thin	5	N	2		
23	2. P	29.944		67	52	thin	6	ENE	3		
24	2.20 P	29.976		78	* 78	thin and thick	6	E	3		(g)
25	7. A	30.00		77	78	thick	4		3		(h)

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Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	December 1885. Milestones.
				In.	Opp.	Kind.	Quant.	Quarter.	Force.		
22	2. P 6.30 A	29.944 30.012		78.5 57.8	77.5 58	thick	8	NE N	2 2		
23	1. P 7.20 A 2.35 P 8.01 P	30.025 30.003 29.965 D L. Q	45	79.5 64.5 72	76 61 75	thick none	9	N NNE NNW	3 4 2		
24	7. A	30.024	43	67	60			NW by N NNE NW	3 3 2		
25	6.04 A			59.5	55			WNW WNW	2 2		
26	6.30 A			55	55			NW by W WNW	3 2		
27	2.30 P	29.734		69	59			WNW	3		
29	8. A	30.888		71.2	74.7			WNW	3		
31	2.40 P 6.31 P	30.002 D New									

(a) At Purree Baugh.

(d) At Dum Dum in tents; thermometer wet with the dew.

(e) Very thick fog.

(f) Last night the wind was South of the West. At the gardens.

(g) In the morning it was E. 4.

(h) Excessive fog, but going off.

(i) At the gardens.

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Cloud.		Wind.		Force.	Rain.	Remarks, &c.
				In.	Out.	Kind.	Quant.	Quarter.	Force.			
1	7.	A 30.128		72.5	60			WNW		2		(a)
2	8.	A 30.116		70	63.5			W 1/2 S		2		
3	8.	A 30.114		69.7	62.5			W by N		2		
4	1.10 P	A 30.064		71.5	74	thin	5	WNW		2		
5	8.48 A	A 30.144		69.5	66.5	thin	6	NW		2		
6	8.	A 30.212		69	61			N		3		
7	2.30 P	A 30.172		75.5	75			N 1/2 W		4		
	8.10 A	A 30.248		68.5	59			NNW		3		
11	2.	P 30.042		69.5	73.5			N		3		(b)
12	9.	A 30.107		64	61	thin	2	NW		3		
13	3.	A 30.004		72	73	thick	3	NW by N		2		
	8.30 A	A 30.078		59.5	66.5	none		NW		3		
14	2.15 P	A 30.098		69	73			WNW		2		
	8.	A 30.124		67.6	57			NW		3		
15	2.15 P	A 30.074		70	72.5			WNW		3		
	6.30 P	Full		66	56.5			NW 1/2 N		3		
16	7.30 A	A 30.124		70.5	72.3			NW by N		3		
	6.	A 30.050			52			NW		3		
17	2.20 P	A 30.050			78			NW		3		
18	6.	A 30.050			50			NNW		3		
19	6.	A 30.050			79			NW		3		
	7.	A 30.040		66.5	49			NW		0		
20	2.20 P	A 30.040			56.5			NW		2		
	6.30 P	A 30.040			82			WNW		4		
	2.	A 30.040			50			W		4		
					80			W		4		

Day.	Time.	Barometer.	Hygrometer.	Thermometer.		Clouds.		Wind.		Rain.	Remarks.
				In.	Out.	Km.	Feet.	Quarter.	Force.		
22	5.42 P	D L. Q.			47			N	3		(f)
23	6. A				50			ENE	2		
24	6. A				60			S	2		
25	6. A				68			NW	2		
26	7. A	D New			84						(g)
27	2. P				64			W	1		
28	8. A				87			NE	3		
29	7.45 P				65			NNE	3		
30	2.50 P	D New			85						(h)
	8.00 A							WSW	1		
	8.32 A				64			NNE	4		
	2.35 P				83	thick scattered					

- (a) A fog so thick hardly any thing is visible.
 (b) To-day at day-break it was 52 at Dura Dum,
 (c) Foggy, and piercing by cold.
 (d) Fog, and thermometer wet: the air mild to the feeling,
 (e) Foggy.
 (f) Thermometer wet with dew.
 (g) Thermometer wet with dew,
 (h) Sun eclipsed, going off,

Day.	Time.	Barometer.	Thermometer.		Clouds.		Wind.		Rain.	February 1785, Middletown.
			In.	Out.	Kind.	Quant.	Direction.	Force.		
1	7.15 A	29.994	72.3	67	thick	3	SW	2		(a)
2	6.50 A	29.927	69.5	66			SSW	3		(b)
3	7.45 P	30.036	67.5	63.5			N by W	3		
4	2.30 A	30.009	76	75			NW	4		
5	6.30 A	30.047	67	55			WNW	3		
6	2.30 P	30.060	77	75			NW by W	4		
	2.22 A	D F. Q								
	6.40 A	30.100	67	58.5			W	3		
7	2.50 P	30.078	78	77			NW	4		
8	7.00 A	30.078	66	57.5			NW by N	3		
9	3.30 P	30.020	73	77.5			NW by N	3		
10	7.15 A	30.068	66	59			NW by N	3		
11	6.50 A	30.084	68	58			WNW	3		
12	2.40 P	30.087	79	79.3			W by N	3		(c)
13	6.50 A	30.094	69	59			W by N	3		(d)
	2.30 P	30.026	71	80.7			E by S	3		
	7.50 A	30.000	69.3	65.5			N	2		
	10.35 A	D Full	73.2	68.3			SW by S	2		
14	2. 5.50 A	29.956	85.0,	81.3			SW	2		(e)
15	1.40 P	29.970	71.5	66			S by E	2		(f)
16	7. 2.10 P		76	64			ESE	4		(g)
	6. 6. 2.10 P	29.914		79.5			SSW	2		
17	9.50 A	29.952	70.3	64.3	thick	10			1600	(h)
18	7.40 A	29.992	65.5	61.3	thick feat.	5	SE	5	1200	(i)
19	8.10 A	30.02	65	65			NNE	3	1750	
							WNW	4		

Day.	Time.	Barometer.	Thermometer.		Clouds.		Wind.		Rain.	February, 1786, Miscellaneous.
			In.	Out.	Kind.	Quant.	Quarter.	Force.		
21	7.40 A	29.892	69	65.4			SW $\frac{1}{2}$ S	3		(k)
22	2.11 P	29.882					S	3		(l)
23	6. A	29.970	77	77	thick thunder	7	SSW	3		(m)
24	2.30 P	29.982	74	75	thick	10	NW	3		
25	8. A	30.062	76	80.8		6	S by E	2		
26	2.30 P	30.000	74	73.5	thick	4	ENE in	2		(n)
27	7.15 A	30.076	78	9.3	thick	10	NNW	2		
28	2.30 P	30.065	78.5	80.5	thick	10	W by E	3		
	1.10 A	30.095	72.5	70.3	thick	10	NW	2		
	2.20 P	30.058	77	85	thunder	6	W	2		(o)
	8.20 P	D New								
Total in February,									93.60	

(a) Excessive fog.—(h) Thick fog rifing into clouds.—(c) Foggy. (d) Excessive fog.—(e) Excessive fog.

(f) The clouds have been thick 9, and it looked as if it was about to ram.—(g) Foggy, at Dum Dura, 2.1.cfl\ (At the gardens) thunder coming on, and drawing near. 6 P. Rain ad began in drops when last observation was made.—There wanhunder, but not any thunder gulf.—(h) It has been a very tempefluous night, with exceffively heavy thunder, and of very long continuance; the thunder flook the whole houfe feveral times.—(i) This fell in the laft night.—(k) The wind has been S. 6 the greateft part of the day... (l) It lightened a deal till 8 P. and then cleared fuddenly.—(m) This water fell in a thunder flower lad night, from W and NW, with much lightning, though but little* wind.—(n) Much lightning in the former part of the night, and a gulf of wind from N about 11. (o) Very heavy fog this morning, and a mafs forming.

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