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ASIATIC RESEARCHES;

OR,

TRANSACTIONS

OF THE

SOCIETY

INSTITUTED IN BENGAL,

FOR INQUIRING INTO THE

HISTORY AND ANTIQUITIES, THE ARTS, SCIENCES, AND LITERATURE.

OF

A S I A.

VOLUME THE SECOND

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1799.

ADVERTISEMENT.

IT may greatly conduce to the advancement of uſeful knowledge, if the learned Societies eſtabliſhed in *Europe* will tranſmit to the Secretary of the Society in *Bengal* a collection of ſhort and preciſe Queries on every branch of *Aſiatic* Hiſtory, Natural and Civil, on the Philoſophy, Mathematics, Antiquities, and Polite Literature of *Aſia*, and on eaſtern Arts, both liberal and mechanic; ſince it is hoped that accurate anſwers may in due time be procured to any queſtions that can be propoſed on thoſe ſubjects; which muſt in all events be curious and intereſting, and may prove in the higheſt degree beneficial to mankind.

ASIATIC RESEARCHES.

I.

THE FOURTH

ANNIVERSARY DISCOURSE,

DELIVERED 15 FEBRUARY, 1787.

BY THE PRESIDENT

GENTLEMEN,

I HAD the honour laſt year of opening to you my intention to diſcourſe at our annual meetings on the *five* principal nations who have peopled the continent and iſlands of *Aſia*; ſo as to trace, by an hiſtorical and philological analyſis, the number of ancient ſtems from which thoſe five branches have ſeverally ſprung, and the central region from which they appear to have proceeded: you may therefore expect that, having ſubmitted to your conſideration a few general remarks on the old inhabitants of *India*, I ſhould now offer my ſentiments on ſome other nation, who, from a ſimilarity of *language*, *religion*, *arts*, and *manners*, may be ſuppoſed to have had an early connection with the *Hindus*. But ſince we find ſome *Aſiatic* nations totally diſſimilar to them in all or moſt of thoſe particulars; and ſince the difference will ſtrike you more forcibly by an immediate and cloſe compariſon, I deſign at preſent to give a ſhort account of a wonderful people, who ſeem in every reſpect ſo ſtrongly contraſted to the original natives of this country, that they muſt have been for ages a diſtinct and ſeparate race.

For the purpoſe of theſe diſcourſes, I conſidered *India* on its largeſt ſcale, deſcribing it as lying between *Perſia* and *China*, *Tartary*, and *Java*; and for the ſame purpoſe, I now apply the name of *Arabia*, as the *Arabian* Geographers often apply it to that extenſive peninſula which the *Red Sea* divides from *Africa*, the great *Aſſyrian* river from *Iran*, and of which the *Erythrean Sea* waſhes the baſe, without excluding any part of its weſtern ſide, which would be completely maritime, if no iſthmus intervened between the *Mediterranean*, and the *Sea of Kolzum*: that country, in ſhort, I call *Arabia*, in which the *Arabic* language and letters, or ſuch as have a near affinity to them, have been immemorially current.

Arabia, thus divided from *India* by a vaſt ocean, or at leaſt by a broad bay, could hardly have been connected in any degree with this country, until navigation and commerce had been conſiderably improved: yet as the *Hindus* and the people of *Yemen* were both commercial nations in a very early age, they were probably the firſt inſtruments of conveying to the weſtern world the gold, ivory, and perfumes of *India*, as well as the fragrant wood, called *álluwwa* in *Arabic*, and *aguru* in *Sanſcrit*, which grows in the greateſt perfection in *Anam* or *Cochinchina*. It is poſſible too, that a part of the *Arabian* idolatry might have been derived from the ſame ſource with that of the *Hindus*; but ſuch an intercourſe may be conſidered as partial and accidental only; nor am I more convinced than I was fifteen years ago, when I took the liberty to animadvert on a paſſage in the Hiſtory of Prince Kantemir, that the *Turks* have any juſt reaſon for holding the coaſt of *Yemen* to be a part of *India*, and calling its inhabitants *Yellow Indians*.

The *Arabs* have never been entirely ſubdued; nor has any impreſſion been

been made on them, except on their borders; where, indeed, the *Phenicians*, *Perſians*, *Ethiopians*, *Egyptians*, and, in modern times, the *Othmàn Tartars*, have ſeverally acquired ſettlements; but, with theſe exceptions, the natives of *Hejàz* and *Yemen* have preſerved for ages the ſole dominion of their deſerts and paſtures, their mountains and fertile valleys: thus, apart from the reſt of mankind, this extraordinary people have retained their primitive manners and language, features and character, as long and as remarkably as the *Hindus* themſelves. All the genuine *Arabs* of *Syria* whom I knew in *Europe*, thoſe of *Yemen*, whom I ſaw in *the Iſle of Hinzuàn*, whither many had come from *Maſkat* for the purpoſe of trade, and thoſe of *Hejàz*, whom I have met in *Bengal*, form a ſtriking contraſt to the *Hindu* inhabitants of thoſe provinces: their eyes are full of vivacity, their ſpeech voluble and articulate, their deportment manly and dignified, their apprehenſion quick, their minds always preſent and attentive; with a ſpirit of independence appearing in the countenances even of the loweſt among them. Men will always differ in their ideas of civilization, each meaſuring it by the habits and prejudices of his own country; but, if courteſy and urbanity, a love of poetry and eloquence, and the practice of exalted virtues, be a juſter meaſure of perfect ſociety, we have certain proof that the people of *Arabia*, both on plains and cities, in republican and monarchical ſtates, were eminently civilized for many ages before their conqueſt of *Perſia*.

It is deplorable that the Ancient Hiſtory of this majeſtic race ſhould be as little known in detail before the time of *Dhú Yezen* as that of the *Hindus* before *Vicramaditya*; for although the vaſt hiſtorical work of *Alnuwairì*, and the *Murújuldhahab*, or *Golden Meadows*, of *Almaſúdì*, contain chapters on the kings of *Himyar*, *Ghaſan* and *Hirah*, with liſts of them,

and ſketches of their ſeveral reigns; and although Genealogical Tables, from which chronology might be better aſcertained, are prefixed to many compoſitions of the old *Arabian* Poets, yet moſt manuſcripts are ſo incorrect, and ſo many contradictions are found in the beſt of them, that we can ſcarce lean upon tradition with ſecurity, and muſt have recourſe to the ſame media for inveſtigating the hiſtory of the *Arabs*, that I before adopted in regard to that of the *Indians*; namely, their *language*, *letters*, and *religion*, their ancient *monuments*, and the certain remains of their *arts*; on each of which heads I ſhall touch very conciſely, having premiſed, that my obſervations will in general be confined to the ſtate of *Arabia* before that ſingular revolution at the beginning of the *ſeventh century*, the effects of which we feel at this day from the *Pyrenean Mountains* and the *Danube*, to the fartheſt parts of the *Indian Empire*, and even to the *Eaſtern Iſlands*.

I. For the knowledge which any *European* who pleaſes may attain of the *Arabian* language, we are principally indebted to the univerſity of *Leyden*; for, though ſeveral *Indians* have aſſiduouſly laboured in the ſame wide field, yet the fruit of their labours has been rendered almoſt uſeleſs by more commodious and more accurate works printed in *Holland*; and, though Pocock certainly accompliſhed much, and was able to accompliſh any thing, yet the *academical* eaſe which he enjoyed, and his theological purſuits, induced him to leave unfiniſhed the valuable work of *Maidàni*, which he had prepared for publication; nor even, if that rich mine of *Arabian* philology had ſeen the light, would it have borne any compariſon with the fifty diſſertations of *Hariri*, which the firſt Albert Schultens tranſlated and explained, though he ſent abroad but few of them, and has left his worthy grandſon, from whom perhaps *Maidàni* alſo may be expected the honour of publiſhing the reſt: but the palm of glory in this branch of litera-

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ture is due to GOLIUS, whoſe works are equally profound and elegant; ſo perſpicuous in method, that they may always be conſulted without fatigue, and read without languor; yet ſo abundant in matter, that any man, who ſhall begin with his noble edition of the Grammar compiled by his maſter ERPENIUS, and proceed, with the help of his incomparable Dictionary, to ſtudy his Hiſtory of *Taimûr* by *Ibni Arabſhâh*, and ſhall make himſelf complete maſter of that ſublime work, will underſtand the learned *Arabic* better than the deepeſt ſcholar at *Conſtantinople* or at *Mecca*. The *Arabic* language, therefore, is almoſt wholly in our power; and, as it is unqueſtionably one of the moſt ancient in the world, ſo it yields to none ever ſpoken by mortals in the number of its words and the preciſion of its phraſes; but it is equally true and wonderful that it bears not the leaſt reſemblance, either in words or the ſtructure of them, to the *Sanſcrit*, or great parent of the *Indian* dialects; of which diſſimilarity I will mention two remarkable inſtances; the *Sanſcrit*, like the *Greek*, *Perſian*, and *German*, delights in compounds, but in a much higher degree, and indeed to ſuch exceſs, that I could produce words of more than twenty ſyllables, not formed ludicrouſly, like that by which the buffoon in ARISTOPHANES deſcribes a feaſt, but with perfect ſeriouſneſs, on the moſt ſolemn occaſions, and in the moſt elegant works; while the *Arabic*, on the other hand, and all its ſiſter dialects, abhor the compoſition of words, and invariably expreſs very complex ideas by circumlocution; ſo that, if a compound word be found in any genuine language of the *Arabian* peninſula (*zenmerdah* for inſtance, which occurs in the *Hamâſah*) it may at once be pronounced an exotic. Again: It is the genius of the *Sanſcrit*, and other languages of the ſame ſtock, that the roots of verbs be almoſt univerſally *biliteral*, ſo that *five-and-twenty hundred* ſuch roots might be formed by the compoſition of the

fifty

fifty Indian letters; but the *Arabic* roots are as univerſally *triliteral*; ſo that the compoſition of the *twenty-eight Arabian* letters would give near *two-and-twenty thouſand elements* of the language: and this will demonſtrate the ſurpriſing extent of it; for, although great numbers of its roots are confeſſedly loſt, and ſome, perhaps, were never in uſe, yet, if we ſuppoſe ten thouſand of them (without reckoning *quadriliterals)* to exiſt, and each of them to admit only *five* variations, one with another, in forming *derivative nouns*, even then a perfect *Arabic* dictionary ought to contain *fifty thouſand* words, each of which may receive a multitude of changes by the rules of grammar. The derivatives in *Sanſcrit* are conſiderably more numerous; but a farther compariſon between the two languages is here unneceſſary; ſince, in whatever light we view them, they ſeem totally diſtinct, and muſt have been invented by two different races of men; nor do I recollect a ſingle word in common between them, except *Suruj*, the plural of *Siráj*, meaning both a *lamp* and the *ſun*, the *Sanſcrit* name of which is, in *Bengal*, pronounced *Súrja*; and even this reſemblance may be purely accidental. We may eaſily believe with the *Hindus*, that *not even* INDRA *himſelf and his heavenly bands, much leſs any mortal, ever comprehended in his mind ſuch an ocean of words as their ſacred language contains*; and with the *Arabs*, that no man uninſpired was ever a complete maſter of *Arabic*. In fact no perſon, I believe, now living in *Europe* or *Aſia*, can read without ſtudy an hundred couplets together in any collection of ancient *Arabian* poems: and we are told, that the great author of the *Kámús* learned by accident from the mouth of a child, in a village of *Arabia*, the meaning of three words, which he had long ſought in vain from grammarians, and from books, of the higheſt reputation. It is by approximation alone that a knowledge of theſe two venerable languages can be acquired; and, with moderate atten-

attention, enough of them both may be known, to delight and inſtruct us in an infinite degree. I conclude this head with remarking, that the nature of the *Ethiopic* dialect ſeems to prove an early eſtabliſhment of the *Arabs* in part of *Ethiopia*, from which they were afterwards expelled, and attacked even in their own country by the *Abyſſinians*, who had been invited over as auxiliaries againſt the tyrant of *Yemen*, about a century before the birth of MUHAMMED.

OF the characters in which the old compoſitions of *Arabia* were written, we know but little, except that the *Korân* originally appeared in thoſe of *Cúfah*, from which the modern *Arabian* letters, with all their elegant variations, were derived, and which unqueſtionably had a common origin with the *Hebrew* or *Chaldaic*; but, as to the *Himyarick* letters, or thoſe which we ſee mentioned by the name of *Almuſnad*, we are ſtill in total darkneſs; the traveller NIEBUHR having been unfortunately prevented from viſiting ſome ancient monuments in *Yemen*, which are ſaid to have inſcriptions on them. If thoſe letters bear a ſtrong reſemblance to the *Nagarì*; and if a ſtory current in *India* be true, that ſome *Hindu* merchants heard the *Sanſcrit* language ſpoken in *Arabia the Happy*, we might be confirmed in our opinion, that an intercourſe formerly ſubſiſted between the two nations of oppoſite coaſts, but ſhould have no reaſon to believe that they ſprang from the ſame immediate ſtock. The firſt ſyllable of *Himyar*, as many *Europeans* write it, might perhaps induce an etymologiſt to derive the *Arabs* of *Yemen* from the great anceſtor of the *Indians*; but we muſt obſerve, that *Himyar* is the proper appellation of thoſe *Arabs*; and many reaſons concur to prove, that the word is purely *Arabic*. The ſimilarity of ſome proper names on the borders of *India* to thoſe of *Arabia*, as the river *Arabius*, a place called *Aruba*, a people named

Aribes

Aribes or *Arabies*, and another called *Sabai*, is indeed remarkable, and may hereafter furniſh me with obſervations of ſome importance, but not at all inconſiſtent with my preſent ideas.

II. It is generally aſſerted, that the old religion of the *Arabs* was entire *Sabian*; but I can offer ſo little accurate information concerning the *Sabian* faith, or even the meaning of the word, that I dare not yet ſpeak on the ſubject with confidence. This at leaſt is certain, that the people of *Yemen* very ſoon fell into the common, but fatal error of adoring the Sun and the Firmament; for even the *third* in deſcent from YOKTAN, who was conſequently as old as NAHOR, took the ſurname of ABDUSHAMS, or *Servant of the Sun*; and his family, we are aſſured, paid particular honours to that luminary. Other tribes worſhipped the planets and fixed ſtars; but the religion of the poets at leaſt ſeems to have been pure Theiſm; and this we know with certainty, becauſe we have *Arabian* verſes of unſuſpected antiquity, which contain pious and elevated ſentiments on the goodneſs and juſtice, the power and omnipreſence of ALLAH, or THE GOD. If an inſcription, ſaid to have been found on marble in *Yemen*, be authentic, the ancient inhabitants of that country preſerved the religion of EBER, and profeſſed a belief *in miracles and a future ſtate*.

WE are alſo told, that a ſtrong reſemblance may be found between the religions of the pagan *Arabs* and the *Hindus*; but, though this may be true, yet an agreement in worſhipping the ſun and ſtars will not prove an affinity between the two nations: the *powers* of God repreſented as *female* deities, the adoration of *ſtones*, and the name of the idol WUDD, may lead us indeed to ſuſpect that ſome of the *Hindu* ſuperſtitions had found their way into *Arabia*; and though we have no traces in *Arabian* Hiſtory

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of ſuch a conqueror or legiſlator as the great SESAC, who is ſaid to have raiſed pillars in *Yemen* as well as at the mouth of the *Ganges*: yet ſince we know that SA'CYA is a title of BUDDHA, whom I ſuppoſe to be WODEN, ſince BUDDHA was not a native of *India*, and ſince the age of SESAC perfectly agrees with that of SA'CYA, we may form a plauſible conjecture that they were in fact the ſame perſon who travelled eaſtward from *Ethiopia*, either as a warrior or as a lawgiver, about a thouſand years before CHRIST; and whoſe rites we now ſee extended as far as the country of *Niſon*, or, as the *Chineſe* call it, *Japuen*; both words ſignifying the *Riſing Sun*. SA'CYA may be derived from a word meaning *power*, or from another denoting *vegetable food*; ſo that this epithet will not determine whether he was a hero or a philoſopher; but the title BUDDHA, or *wiſe*, may induce us to believe that he was rather a benefactor than a deſtroyer of his ſpecies. If his religion however was really introduced into any part of *Arabia*, it could not have been general in that country; and we may ſafely pronounce, that before the *Mohammedan* revolution, the noble and learned *Arabs* were Theiſts, but that a ſtupid idolatry prevailed among the lower orders of the people.

I FIND no trace among them, till their emigration, of any philoſophy but *ethics*; and even their ſyſtem of morals, generous and enlarged as it ſeems to have been in the minds of a few illuſtrious chieftains, was, on the whole, miſerably depraved for a century at leaſt before MUHAMMED. The diſtinguiſhing virtues, which they boaſted of inculcating and practiſing, were a contempt of riches, and even of death; but, in the age of the *Seven Poets*, their liberality had deviated into mad profuſion, their courage into ferocity, and their patience into an obſtinate ſpirit of encountering fruitleſs dangers; but I forbear to expatiate on the manners of the

Arabs in that age, becauſe the poems, entitled *Almoallakát*, which have appeared in our own language, exhibit an exact picture of their virtues and their vices, their wiſdom and their folly; and ſhow what may be conſtantly expected from men of open hearts and boiling paſſions, with no law to controul, and little religion to reſtrain them.

III. FEW monuments of antiquity are preſerved in *Arabia*, and of thoſe few, the beſt accounts are very uncertain; but we are aſſured that inſcriptions on rocks and mountains are ſtill ſeen in various parts of the peninſula; which, if they are in any known language, and if correct copies of them can be procured, may be decyphered by eaſy and infallible rules.

THE firſt ALBERT SCHULTENS has preſerved in his Ancient Memorials of *Arabia*, the moſt pleaſing of all his works, two little poems in an elegiac ſtrain, which are ſaid to have been found, about the middle of the ſeventh century, on ſome fragments of ruined edifices in *Hadramût*, near *Aden*, and are ſuppoſed to be of an indefinite, but very remote age. It may naturally be aſked,—In what characters were they written? Who decyphered them? Why were not the original letters preſerved in the book where the verſes are cited? What became of the marbles which *Abdurrahman*, then Governor of *Yemen*, moſt probably ſent to the *Khalifah* at *Bagdad*? If they be genuine, they prove the people of *Yemen* to have been 'herdſmen and warriors, inhabiting a fertile and well-watered country, 'full of game, and near a fine ſea abounding with fiſh, under a monarch-'ical government, and dreſſed in green ſilk, or veſts of needlework,' either of their own manufacture, or imported from *India*. The meaſure of theſe verſes is perfectly regular, and the dialect undiſtinguiſhable, at leaſt by me, from that of *Kuraiſh*; ſo that, if the *Arabian* writers were much addicted

addicted to literary impoſtures, I ſhould ſtrongly ſuſpect them to be modern compoſitions on the inſtability of human greatneſs, and the conſequences of irreligion, illuſtrated by the example of the *Himyarick* princes; and the ſame may be ſuſpected of the firſt poem quoted by SCHULTENS, which he aſcribes to an *Arab* in the age of SOLOMON.

THE ſuppoſed houſes of the people called *Thamùd* are alſo ſtill to be ſeen in excavations of rocks; and, in the time of TABRIZI the Grammarian, a caſtle was extant in *Yemen*, which bore the name of ALADRAT, an old bard and warrior, who firſt, we are told, formed his army, thence called *Alkhamis*, in *five* parts; by which arrangement he defeated the troops of *Himyar* in an expedition againſt *Sanà*.

OF pillars erected by SESAC, after his invaſion of *Yemen*, we find no mention in *Arabian* hiſtories; and, perhaps, the ſtory has no more foundation than another told by the *Greeks* and adopted by NEWTON, that the *Arabs* worſhipped URANIA, and even BACCHUS by name, which, they ſay, means *great* in *Arabic*; but where they found ſuch a word we cannot diſcover. It is true that *Becca* ſignifies *a great and tumultuous crowd*, and, in this ſenſe, is one name of the ſacred city commonly called *Mecca*.

THE *Cábah*, or *quadrangular* edifice at *Mecca*, is indiſputably ſo ancient, that its original uſe, and the name of its builder, are loſt in a cloud of idle traditions. An *Arab* told me gravely, that it was raiſed by ABRAHAM, who, as I aſſured him, was never there: others aſcribe it, with more probability, to ISMAIL, or one of his immediate deſcendants; but whether it was built as a place of divine worſhip, as a fortreſs, as a ſepulchre, or as a monument of the treaty between the old poſſeſſors of *Arabia* and the

ſons of KIDAR, antiquaries may diſpute, but no mortal can determine. It is thought by RELAND to have been *the manſion of ſome ancient patriarch, and revered on that account by his poſterity*; but the room, in which we now are aſſembled, would contain the whole *Arabian* edifice; and, if it were large enough for the dwelling-houſe of a patriarchal family, it would ſeem ill adapted to the paſtoral manners of the *Kedarites*. A *Perſian* author inſiſts, that the true name of *Mecca* is *Mahcadah*, or the *Temple of the Moon*; but, although we may ſmile at his etymology, we cannot but think it probable that the *Cábah* was originally deſigned for religious purpoſes. Three couplets are cited in an *Arabic* Hiſtory of this building, which, from their extreme ſimplicity, have leſs appearance of impoſture than other verſes of the ſame kind: they are aſcribed to ASAD, a *Tobbá*, or king *by ſucceſſion*, who is generally allowed to have reigned in *Yemen* an hundred and twenty-eight years before CHRIST's birth; and they commemorate, without any poetical imagery, the magnificence of the prince *in covering the holy temple with ſtriped cloth and fine linen, and in making keys for its gate*. This temple, however, the ſanctity of which was reſtored by MUHAMMED, had been ſtrangely profaned at the time of his birth, when it was uſual to decorate its walls with poems on all ſubjects, and often on the triumphs of *Arabian* gallantry and the praiſes of *Grecian* wine, which the merchants of *Syria* brought for ſale into the deſerts.

FROM the want of materials on the ſubject of *Arabian* antiquity, we find it very difficult to fix the chronology of the *Iſmailites* with accuracy beyond the time of ADNAN, from whom the impoſtor was deſcended in the *twenty-firſt* degree; and, although we have genealogies of ALKAMAH and other *Himyarick* bards as high as the *thirtieth* degree, or for a period of

nine

nine hundred years at leaſt, yet we can hardly depend on them ſo far, as to eſtabliſh a complete chronological ſyſtem: by reaſoning downwards, however, we may aſcertain ſome points of conſiderable importance. The univerſal tradition of *Yemen* is, that YOKTAN, the ſon of EBER, firſt ſettled his family in that country; which ſettlement, by the computation admitted in *Europe*, muſt have been above *three thouſand ſix hundred* years ago, and nearly at the time when the *Hindus*, under the conduct of RAMA, were ſubduing the firſt inhabitants of theſe regions, and extending the *Indian* Empire from *Ayodhyà*, or *Audh*, as far as the *Iſle of Sinhal*, or *Silàn*. According to this calculation, NUUMAN, king of *Yemen* in the *ninth* generation from EBER, was cotemporary with JOSEPH; and if a verſe compoſed by that prince, and quoted by ABULFEDA, was really preſerved, as it might eaſily have been, by oral tradition, it proves the great antiquity of the *Arabian* language and metre. This is a literal verſion of the couplet: 'When thou, who art in power, conducteſt affairs with courteſy, 'thou attaineſt the high honours of thoſe who are moſt exalted, *and* 'whoſe mandates are obeyed.' We are told, that, from an elegant verb in this diſtich, the royal poet acquired the ſurname of *Almuáfer*, or the *Courteous*. Now the reaſons for believing this verſe genuine are its brevity, which made it eaſy to be remembered, and the good ſenſe compriſed in it, which made it become proverbial; to which we may add, that the dialect is apparently old, and differs in three words from the idiom of *Hejaz*: the reaſons for doubting are, that ſentences and verſes of indefinite antiquity are ſometimes aſcribed by the *Arabs* to particular perſons of eminence; and they even go ſo far as to cite a pathetic elegy of ADAM himſelf on the death of ABEL, but in very good *Arabic* and correct meaſure. Such are the doubts which neceſſarily muſt ariſe on ſuch a ſubject; yet we have no need of ancient monuments or traditions to prove all that our

analyſis

analyſis requires, namely, that the *Arabs*, both of *Hejàz* and *Yemen*, ſprang from a ſtock entirely different from that of the *Hindus*, and that their firſt eſtabliſhments in the reſpective countries, where we now find them, were nearly coeval.

I CANNOT finiſh this article without obſerving, that, when the King of *Denmark*'s miniſters inſtructed the *Daniſh* travellers to collect *hiſtorical* books in *Arabic*, but not to buſy themſelves with procuring *Arabian poems*, they certainly were ignorant that the only monuments of old *Arabian* Hiſtory are collections of poetical pieces, and the commentaries on them; that all memorable tranſactions in *Arabia* were recorded in verſe; and that more certain facts may be known by reading the *Hamiſah*, the *Diwàn* of *Hudhail*, and the valuable work of *Obaidullah*, than by turning over a hundred volumes in proſe, unleſs indeed thoſe poems are cited by the hiſtorians as their authorities.

IV. THE manners of the *Hejàzi Arabs*, which have continued, we know, from the time of SOLOMON to the preſent age, were by no means favourable to the cultivation of *arts*; and, as to *ſciences*, we have no reaſon to believe that they were acquainted with any; for the mere amuſement of giving names to ſtars, which were uſeful to them in their paſtoral or predatory rambles through the deſerts, and in their obſervations on the weather, can hardly be conſidered as a material part of aſtronomy. The only arts in which they pretended to excellence (I except horſemanſhip and military accompliſhments) were *poetry* and *rhetoric*. That we have none of their compoſitions in proſe before the *Koràn*, may be aſcribed, perhaps, to the little ſkill which they ſeem to have had in writing; to their predilection in favour of poetical meaſure, and to the facility with which verſes

ſes are committed to memory; but all their ſtories prove, that they were eloquent in a high degree, and poſſeſſed wonderful powers of ſpeaking without preparation in flowing and forcible periods. I have never been able to diſcover what was meant by their books, called *Rowáſim*; but ſuppoſe that they were collections of their common, or cuſtomary law. Writing was ſo little practiſed among them, that their old poems which are now acceſſible to us, may almoſt be conſidered as originally unwritten; and I am inclined to think that SAMUEL JHONSON's reaſoning on the extreme imperfection of unwritten languages, was too general; ſince a language that is only ſpoken, may nevertheleſs be highly poliſhed by a people who, like the ancient *Arabs*, make the improvement of their idiom a national concern, appoint ſolemn aſſemblies for the purpoſe of diſplaying their poetical talents, and hold it a duty to exerciſe their children in getting by heart their moſt approved compoſitions.

THE people of *Yemen* had poſſibly more *mechanical arts*, and perhaps more *ſcience*; but, although their ports muſt have been the emporia of conſiderable commerce between *Egypt* and *India*, or part of *Perſia*, yet we have no certain proofs of their proficiency in navigation, or even in manufactures. That the *Arabs* of the deſert had muſical inſtruments, and names for the different notes, and that they were greatly delighted with melody, we know from themſelves; but their lutes and pipes were probably very ſimple, and their muſic, I ſuſpect, was little more than a natural and tuneful recitation of their elegiac verſes and love-ſongs. The ſingular property of their language, in ſhunning compound words, may be urged, according to BACON's idea, as a proof that they had made no progreſs in *arts*; 'which require, ſays he, a variety of combinations to expreſs the 'complex notions ariſing from them;' but the ſingularity may perhaps be imputed

imputed wholly to the genius of the language, and the taſte of thoſe who ſpoke it; ſince the old *Germans* who knew no art, appear to have delighted in compound words, which poetry and oratory, one would conceive, might require as much as any meaner art whatſoever.

So great, on the whole, was the ſtrength of parts or capacity, either natural or acquired from habit, for which the *Arabs* were ever diſtinguiſhed, that we cannot be ſurprized when we ſee that blaze of genius which they diſplayed, as far as their arms extended, when they burſt, like their own dyke of *Arim*, through their ancient limits, and ſpread, like an inundation, over the great empire of *Iran*. That a race of *Tázis*, or *Courſers*, as the *Perſians* call them, 'who drank the milk of camels and fed on li-'zards, ſhould entertain a thought of ſubduing the kingdom of FERIDUN', was conſidered by the General of YEZDEGIRD's army as the ſtrongeſt inſtance of fortune's levity and mutability; but FIRDAUSI, a complete maſter of *Aſiatic* manners, and ſingularly impartial, repreſents the *Arabs*, even in the age of FERIDUN, as 'diſclaiming any kind of dependence 'on that monarch, exulting in their liberty, delighting in eloquence, acts 'of liberality, and martial achievements, and thus making the whole earth, ſays the poet, red as wine with the blood of their foes, and the air like a 'foreſt of canes with their tall ſpears.' With ſuch a character they were likely to conquer any country that they could invade; and, if ALEXANDER had invaded their dominions, they would unqueſtionably have made an obſtinate, and probably a ſucceſsful, reſiſtance.

BUT I have detained you too long, gentlemen, with a nation who have ever been my favourites; and hope at our next anniverſary meeting to travel with you over a part of *Aſia*, which exhibits a race of men diſtinct both from

from the *Hindus* and from the *Arabs*. In the mean time, it ſhall be my care to ſuperintend the publication of your Tranſactions; in which, if the learned in *Europe* have not raiſed their expectations too high, they will not, I believe, be diſappointed: my own imperfect eſſays I always except; but though my other engagements have prevented my attendance on your Society for the greateſt part of laſt year, and I have ſet an example of that freedom from reſtraint, without which no ſociety can flouriſh, yet, as my few hours of leiſure will now be devoted to *Sanſcrit* literature, I cannot but hope, though my chief object be a knowledge of *Hindu* Law, to make ſome diſcovery in other ſciences, which I ſhall impart with humility, and which you will, I doubt not, receive with indulgence.

II.

THE FIFTH

ANNIVERSARY DISCOURSE,

DELIVERED 21 FEBRUARY, 1788.

BY THE PRESIDENT.

AT the close of my last address to you, Gentlemen, I declared my design of introducing to your notice a people of *Asia*, who seemed as different in most respects from the *Hindus* and *Arabs* as those two nations had been shown to differ from each other; I meaned the people whom we call *Tartars*: but I enter with extreme diffidence on my present subject, because I have little knowledge of the *Tartarian* dialects; and the gross errors of *European* writers on *Asiatic* literature have long convinced me that no satisfactory account can be given of any nation with whose language we are not perfectly acquainted. Such evidence, however, as I have procured by attentive reading and scrupulous inquiries, I will now lay before you, interspersing such remarks as I could not but make on that evidence, and submitting the whole to your impartial decision.

CONFORMABLY to the method before adopted in describing *Arabia* and *India*, I consider *Tartary* also, for the purpose of this discourse, on its most extensive scale, and request your attention whilst I trace the largest boundaries that are assignable to it. Conceive a line drawn from the *Mouth*

of the Oby to that of the *Dnieper*, and, bringing it back eaſtward acroſs the *Euxine*, ſo as to include the peninſula of *Krim*, extend it along the foot of *Caucaſus*, by the rivers *Cur* and *Aras*, to the *Caſpian Lake*, from the oppoſite ſhore of which follow the courſe of the *Jaihun* and the chain of *Caucaſean* hills as far as thoſe of *Imaus*; whence continue the line beyond the *Chineſe Wall* to the *White Mountain*, and the country of *Yetſo*; ſkirting the borders of *Perſia*, *India*, *China*, *Corea*, but including part of *Ruſſia*, with all the diſtricts which lie between the *Glacial Sea* and that of *Japan*. M. De Guignes, whoſe great work on the *Huns* abounds more in ſolid learning than in rhetorical ornaments, preſents us, however, with a magnificent image of this wide region; deſcribing it as a ſtupendous edifice, the beams and pillars of which are many ranges of lofty hills, and the dome one prodigious mountain, to which the *Chineſe* give the epithet of *Celeſtial*, with a conſiderable number of broad rivers flowing down its ſides. If the manſion be ſo amazingly ſublime, the land around it is proportionably extended, but more wonderfully diverſified; for ſome parts of it are incruſted with ice, others parched with inflamed air, and covered with a kind of lava: here we meet with immenſe tracks of ſandy deſerts and foreſts, almoſt impenetrable; there, with gardens, groves, and meadows, perfumed with muſk, watered by numberleſs rivulets, and abounding in fruits and flowers; and from eaſt to weſt lie many conſiderable provinces, which appear as valleys in compariſon of the hills towering above them; but in truth are the flat ſummits of the higheſt mountains in the world, or at leaſt the higheſt in *Aſia*. Near one-fourth in latitude of this extraordinary region is in the ſame charming climate with *Greece*, *Italy*, and *Provence*; and another fourth in that of *England*, *Germany*, and the northern parts of *France*; but the *Hyperborean* countries can have few beauties to recommend them, at leaſt in the preſent ſtate of the earth's temperature. To

the ſouth, on the frontiers of *Irân* are the beautiful vales of *Soghd*, with the celebrated cities of *Samarkand* and *Bokhâra*; on thoſe of *Thibet* are the territories of *Caſhghar*, *Khoten*, *Chegil*, and *Khitâ*, all famed for perfumes and for the beauty of their inhabitants; and on thoſe of *China* lies the country of *Chin*, anciently a powerful kingdom; which name, like that of *Khitâ*, has in modern times been given to the whole *Chineſe* empire, where ſuch an appellation would be thought an inſult. We muſt not omit the fine territory of *Tancût*, which was known to the *Greeks* by the name of *Serica*, and conſidered by them as the fartheſt eaſtern extremity of the habitable globe.

SCYTHIA ſeems to be the general name which the ancient *Europeans* gave to as much as they knew of the country thus bounded and deſcribed; but whether that word be derived, as PLINY ſeems to intimate, from *Sacæ*, a people known by a ſimilar name to the *Greeks* and *Perſians*, or, as BRYANT imagines, from *Cuthia*, or, as Colonel VALLANCEY believes, from words denoting *navigation*, or, as it might have been ſuppoſed, from a *Greek* root implying *wrath* and ferocity, this at leaſt is certain, that, as *India*, *China*, *Perſia*, *Japan*, are not appellations of thoſe countries in the languages of the nations who inhabit them, ſo neither *Scythia* nor *Tartary* are names by which the inhabitants of the country, now under our conſideration have ever diſtinguiſhed themſelves. *Tâtâriſtân* is, indeed, a word uſed by the *Perſians* for the ſouth-weſtern part of *Scythia*, where the muſk-deer is ſaid to be common; and the name *Tártar* is by ſome conſidered as that of a particular tribe; by others, as that of a ſmall river only; while *Thrân*, as oppoſed to *Irân*, ſeems to mean the ancient dominion of AFRASIA'B to the north and eaſt of the *Oxus*. There is nothing more idle than a debate concerning names,

names, which, after all, are of little conſequence when our ideas are diſtinct without them. Having given, therefore, a correct notion of the country which I propoſed to examine, I ſhall not ſcruple to call it by the general name of *Tartary*; though I am conſcious of uſing a term equally improper in the pronunciation and the application of it.

TARTARY then, which contained, according to PLINY, *an innumerable multitude of nations*, by whom the reſt of *Aſia* and all *Europe* has in different ages been over-run, is denominated, as various images have preſented themſelves to various fancies, the *great hive of the northern ſwarms*, the *nurſery of irreſiſtible legions*, and, by a ſtronger metaphor, the *foundery of the human race:* but M. BAILLY, a wonderfully ingenious man, and a very lively writer, ſeems firſt to have conſidered it as the *cradle of our ſpecies*, and to have ſupported an opinion, that the whole ancient world was enlightened by ſciences brought from the moſt northern parts of *Scythia*, particularly from the *Banks of the Jeniſea*, or from the *Hyperborean* regions. All the fables of old *Greece*, *Italy*, *Perſia*, *India*, he derives from the north; and it muſt be owned that he maintains his paradox with acuteneſs and learning. Great learning and great acuteneſs, together with the charms of a moſt engaging ſtyle, were indeed neceſſary to render even tolerable a ſyſtem which places an earthly paradiſe, the gardens of *Heſperus*, the iſlands of the *Macares*, the groves of *Elyſium*, if not of *Eden*, the heaven of INDRA, the *Periſtàn*, or fairy-land, of the *Perſian* poets, with its city of diamonds and its country of *Shideèm*, ſo named from *Pleaſure* and *Love*, not in any climate which the common ſenſe of mankind conſiders as the ſeat of delights, but beyond the *Mouth of the Oby*, in the *Frozen Sea*, in a region equalled only by that where the wild imagination of DANTE led him to fix the worſt of criminals in a

ſtate

ſtate of puniſhment after death, and of which *he could not*, he ſays, *even think without ſhivering*. A very curious paſſage, in a tract of PLUTARCH, on *the figure in the Moon's orb*, naturally induced M. BAILLY to place *Ogygia* in the north; and he concludes that iſland, as others have concluded rather fallaciouſly, to be the *Atlantis* of PLATO; but is at a loſs to determine whether it was *Iceland* or *Greenland*, *Spitzbergen* or *New Zembla*. Among ſo many charms, it was difficult indeed to give a preference; but our philoſopher, though as much perplexed by an option of beauties as the ſhepherd of *Ida*, ſeems on the whole to think *Zembla* the moſt worthy of the *golden fruit*; becauſe it is indiſputably an iſland, and lies oppoſite to a gulph near a continent, from which a great number of rivers deſcend into the ocean. He appears equally diſtreſſed among five nations, real and imaginary, to fix upon that which the *Greeks* named *Atlantes*; and his concluſion in both caſes muſt remind us of the ſhowman at *Eton*, who, having pointed out in his box all the crowned heads of the world, and being aſked by the ſchool-boys, who looked through the glaſs, which was the Emperor, which the Pope, which the Sultan, and which the Great Mogul, anſwered eagerly, 'which you pleaſe, young gentlemen, 'which you pleaſe.' His letters however to VOLTAIRE, in which he unfolds his new ſyſtem to his friend, whom he had not been able to convince, are by no means to be derided; and his general propoſition, that arts and ſciences had their ſource in *Tartary*, deſerves a longer examination than can be given to it in this diſcourſe.—I ſhall, nevertheleſs, with your permiſſion, ſhortly diſcuſs the queſtion, under the ſeveral heads that will preſent themſelves in order.

ALTHOUGH we may naturally ſuppoſe that the numberleſs communities of *Tartars*, ſome of whom are eſtabliſhed in great cities, and ſome encamped

encamped on plains in ambulatory manſions, which they remove from paſture to paſture, muſt be as different in their features as in their dialects; yet, among thoſe who have not emigrated into another country and mixed with another nation, we may diſcern a family-likeneſs, eſpecially in their eyes and countenance, and in that configuration of lineaments which we generally call a *Tartar-face*; but, without making anxious inquiries, whether all the inhabitants of the vaſt region before deſcribed have ſimilar features, we may conclude from thoſe whom we have ſeen, and from the original portraits of TAIMU'R and his deſcendants, that the *Tartars* in general differ wholly in complexion and countenance from the *Hindus* and from the *Arabs*: an obſervation which tends in ſome degree to confirm the account given by modern *Tartars* themſelves of their deſcent from a common anceſtor. Unhappily, their lineage cannot be proved by authentic pedigrees or hiſtorical monuments; for all their writings extant, even thoſe in the *Mogul* dialect, are long ſubſequent to the time of MUHAMMED; nor is it poſſible to diſtinguiſh their genuine traditions from thoſe of the *Arabs*, whoſe religious opinions they have in general adopted. At the beginning of the *fourteenth* century, *Khwájah* RASHI'D, ſurnamed FAD'LU'LLAH, a native of *Kazwín*, compiled his account of the *Turtars* and *Mongals* from the papers of one PU'LA'D, whom the great grandſon of HOLACU' had ſent into *Tátáriſtán*, for the ſole purpoſe of collecting hiſtorical information; and the commiſſion itſelf ſhows how little the *Turtarian* Princes really knew of their own origin. From this work of RASHI'D, and from other materials, ABU'LGHA'ZI', King of *Khwárezm*, compoſed in the *Mogul* language his *Genealogical Hiſtory*, which, having been purchaſed from a merchant of *Bokhárà* by ſome *Swediſh* officers, priſoners of war in *Siberia*, has found its way into ſeveral *European* tongues. It contains much

much valuable matter, but, like all MUHAMMEDAN hiſtories, exhibits tribes or nations as individual ſovereigns; and if Baron DE TOTT had not ſtrangely neglected to procure a copy of the *Tartarian* Hiſtory, for the orignal of which he unneceſſarily offered a large ſum, we ſhould probably have found that it begins with an account of the deluge, taken from the *Korán*, and proceeds to rank TURC, CHI'N, TATA'R, and MONGAL, among the ſons of YA'FET. The genuine traditional hiſtory of the *Tartars*, in all the books that I have inſpected, ſeems to begin with OGHU'Z, as that of the *Hindus* does with RA'MA: they place their miraculous Hero and Patriarch *four thouſand* years before CHENGIZ KHA'N, who was born in the year 1164, and with whoſe reign their hiſtorical period commences: It is rather ſurprizing that M. BAILLY, who makes frequent appeals to etymological arguments, has not derived OGYGES from OGHU'Z, and ATLAS from *Altai*, or the *Golden Mountain* of *Tartary*: the *Greek* terminations might have been rejected from both words; and a mere tranſpoſition of letters is no difficulty with an etymologiſt.

MY remarks in this addreſs, Gentlemen, will be confined to the period preceding CHENGIZ; and, although the learned labours of M. DE GUIGNES, and the fathers VISDELOU, DEMAILLA, and GAUBIL, who have made an incomparable uſe of their *Chineſe* literature, exhibit probable accounts of the *Tartars* from a very early age, yet the old hiſtorians of *China* were not only foreign, but generally hoſtile to them; and for both thoſe reaſons, either through ignorance or malignity, may be ſuſpected of miſrepreſenting their tranſactions. If they ſpeak truth, the ancient hiſtory of the *Tartars* preſents us, like moſt other hiſtories, with a ſeries of aſſaſſinations, plots, treaſons, maſſacres, and all the natural fruits of ſelfiſh ambition. I ſhould have no inclination to give you a ſketch of ſuch horrors,

even if the occaſion called for it; and will barely obſerve that the firſt king of the *Hyumnus*, or *Huns*, began his reign, according to VISDELOU, about *three thouſand five hundred and ſixty years ago*, not long after the time fixed in my former diſcourſes for the firſt regular eſtabliſhments of the *Hindus* and *Arabs* in their ſeveral countries.

I. OUR firſt inquiry concerning the *languages* and *letters* of the *Tartars*, preſents us with a deplorable void, or with a proſpect as barren and dreary as that of their deſerts. The *Tartars*, in general, had no literature (in this point all authorities appear to concur); the *Turcs* had no letters; the *Huns*, according to PROCOPIUS, had not even heard of them; the magnificent CHENGIZ, whoſe empire included an area of near eighty ſquare degrees, could find none of his own *Mongals*, as the beſt authors inform us, able to write his diſpatches; and TAI'MU'R, a ſavage of ſtrong natural parts and paſſionately fond of hearing hiſtories read to him, could himſelf neither write nor read. It is true that IBNU ARABSHAH mentions a ſet of characters called *Dilberjin*, which were uſed in *Khátà*: "he had ſeen them," he ſays, "and found them to conſiſt of *forty-* "*one* letters, a diſtinct ſymbol being appropriated to each long and ſhort "vowel, and to each conſonant hard or ſoft, or otherwiſe varied in pro- "nunciation;" but *Khátà* was in *Southern Tartary*, on the confines of *India*; and, from his deſcription of the characters there in uſe, we cannot but ſuſpect them to have been thoſe of *Thibet*, which are manifeſtly *Indian*, bearing a greater reſemblance to thoſe of *Bengal* than to *Dévanágarì*. The learned and eloquent *Arab* adds, "that the *Tatàrs* of *Khátà* write, in "the *Dilberjin* letters, all their tales and hiſtories, their journals, poems, "and miſcellanies, their diplomas, records of ſtate and juſtice, the laws of "CHENGIZ, their public regiſters, and their compoſitions of every ſpecies."

If

If this be true, the people of *Khitá* muſt have been a poliſhed and even a lettered nation; and it may be true, without affecting the *general* poſition, that the *Tartars* were illiterate; but IBNU ARABSHA'H was a profeſſed rhetorician, and it is impoſſible to read the original paſſage without full conviction that his object in writing it was to diſplay his power of words in a flowing and modulated period. He ſays further, that in *Jughatái* the people of *Oighúr*, as he calls them, "have a ſyſtem of *fourteen* "letters only, denominated from themſelves *Oighúri*;" and thoſe are the characters which the *Mougals* are ſuppoſed by moſt authors to have borrowed. ABU'LGHAZI tells us only, that CHENGIZ employed the natives of *Eighúr* as excellent penmen; but the *Chineſe* aſſert, that he was forced to employ them, becauſe he had no writers at all among his natural-born ſubjects; and we are aſſured by many, that KUBLAIKHA'N ordered letter to be invented for his nation by a *Thibetian*, whom he rewarded with the dignity of Chief *Lama*. The ſmall number of *Eighúri* letters might induce us to believe that they were *Zend* or *Pahlavi*, which muſt have been current in that country when it was governed by the ſons of FERIDU'N; and if the alphabet aſcribed to the *Eighurians* by M. DES HAUTESRAYES be correct, we may ſafely decide, that in many of its letters it reſembles both the *Zend* and the *Syriac*, with a remarkable difference in the mode of connecting them; but as we can ſcarce hope to ſee a genuine ſpecimen of them, our doubt muſt remain in regard to their form and origin. The page exhibited by HYDE as *Khatáyan* writing, is evidently a ſort of broken *Cúfick*; and the fine manuſcript at *Oxford*, from which it was taken, is more probably a *Mendean* work on ſome religious ſubject than, as he imagined, a code of *Tartarian* laws. That very learned man appears to have made a worſe miſtake in giving us for *Mongal* characters, a page of writing which has the appearance of *Japaneſe*, or mutilated *Chineſe* letters.

If the *Tartars* in general, as we have every reaſon to believe, had no written memorials, it cannot be thought wonderful that their *languages*, like thoſe of *America*, ſhould have been in perpetual fluctuation, and that more than fifty dialects, as HYDE had been credibly informed, ſhould be ſpoken between *Moſcow* and *China* by the many kindred tribes, or their ſeveral branches, which are enumerated by ABU'LGHA'ZI'. What thoſe dialects are, and whether they really ſprang from a common ſtock, we ſhall probably learn from Mr. PALLAS, and other indefatigable men employed by the *Ruſſian* court; and it is from the *Ruſſians* that we muſt expect the moſt accurate information concerning their *Aſiatic* ſubjects. I perſuade myſelf that, if their inquiries be judiciouſly made and faithfully reported, the reſult of them will prove that all the languages properly *Tartarian* aroſe from one common ſource, excepting always the jargons of ſuch wanderers or mountaineers as, having long been divided from the main body of the nation, muſt in a courſe of ages have framed ſeparate idioms for themſelves. The only *Tartarian* language of which I have any knowledge, is the *Turkiſh* of *Conſtantinople*, which is however ſo copious, that whoever ſhall know it perfectly, will eaſily underſtand, as we are aſſured by intelligent authors, the dialects of *Tátáriſtán*; and we may collect from ABU'LGHA'ZI', that he would find little difficulty in the *Calmac* and the *Mogul*. I will not offend your ears by a dry catalogue of ſimilar words in thoſe different languages; but a careful inveſtigation has convinced me, that, as the *Indian* and *Arabian* tongues are ſeverally deſcended from a common parent, ſo thoſe of *Tartary* might be traced to one ancient ſtem eſſentially differing from the two others. It appears, indeed, from a ſtory told by ABU'LGHA'ZI', that the *Virâts* and the *Mengals* could not underſtand each other; but no more can the *Danes* and the *Engliſh*, yet their dialects beyond a doubt are branches of the

he ſame *Gothic* tree. The dialect of the *Moguls*, in which ſome hiſtories of TAIMU'R and his deſcendants were originally compoſed, is called in *India*, where a learned native ſet me right when I uſed another word, *Turcì*; not that it is preciſely the ſame with the *Turkiſh* of the *Othmánlus*, but the two idioms differ, perhaps, leſs than *Swediſh* and *German*, or *Spaniſh* and *Portugueſe*, and certainly leſs than *Welch* and *Iriſh*. In hope of aſcertaining this point, I have long ſearched in vain for the original works aſcribed to TAIMU'R and BA'BER; but all the *Moguls* with whom I have converſed in this country, reſemble the crow in one of their popular fables, who, having long affected to walk like a pheaſant, was unable after all to acquire the gracefulneſs of that elegant bird, and in the mean time unlearned his own natural gait: they have not learned the dialect of *Perſia*, but have wholly forgotten that of their anceſtors. A very conſiderable part of the old *Tartarian* language, which in *Aſia* would probably have been loſt, is happily preſerved in *Europe*; and if the ground-work of the weſtern *Turkiſh*, when ſeparated from the *Perſian* and *Arabic*, with which it is embelliſhed, be a branch of the loſt *Oghúzian* tongue, I can aſſert with confidence, that it has not the leaſt reſemblance either to *Arabic* or *Sanſcrit*, and muſt have been invented by a race of men wholly diſtinct from the *Arabs* or *Hindus*. This fact alone overſets the ſyſtem of M. BAILLY, who conſiders the *Sanſcrit*, of which he gives in ſeveral places a moſt erroneous account, as '*a fine monument of his* '*primeval* Scythians, *the preceptors of mankind, and planters of a ſublime* '*philoſophy, even in* India;' for he holds it an inconteſtable truth, that *a language which is dead, ſuppoſes a nation which is deſtroyed*; and he ſeems to think ſuch reaſoning perfectly deciſive of the queſtion, without having recourſe to aſtronomical arguments, or the ſpirit of ancient inſtitutions. For my part, I deſire no better proof than that which the language of

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the *Brâhmans* affords, of an immemorial and total difference between the *Savages of the Mountains*, as the old *Chineſe* juſtly called the *Tartars*, and the ſtudious, placid, contemplative inhabitants of theſe *Indian* plains.

II. THE *geographical* reaſoning of M. BAILLY, may, perhaps, be thought equally ſhallow, if not inconſiſtent in ſome degree with itſelf. 'An adoration of the ſun and of fire,' ſays he, 'muſt neceſſarily have ariſen in a cold region; therefore, it muſt have been foreign to *India*, *Perſia*, *Arabia*; therefore, it muſt have been derived from *Tartary*.' No man, I believe, who has travelled in winter through *Bahâr*, or has even paſſed a cold ſeaſon at *Calcutta* within the tropic, can doubt that the ſolar warmth is often deſirable by all, and might have been conſidered as adorable by the ignorant in theſe climates, or that the return of ſpring deſerves all the ſalutations which it receives from the *Perſian* and *Indian* poets; not to rely on certain hiſtorical evidence, that ANTARAH, a celebrated warrior and bard, actually periſhed with cold on a mountain of *Arabia*. To meet, however, an objection, which might naturally be made to the voluntary ſettlement and amazing population of his primitive race in the icy regions of the north, he takes refuge in the hypotheſis of M. BUFFON, who imagines that our whole globe was at firſt of a white heat, and has been gradually cooling from the poles to the equator; ſo that the *Hyperborean* countries had once a delightful temperature, and *Siberia* itſelf was even *hotter than the climate of our temperate zones*, that is, was in too hot a climate, by his firſt propoſition, for the primary worſhip of the ſun. That the temperature of countries has not ſuſtained a change in the lapſe of ages, I will by no means inſiſt; but we can hardly reaſon concluſively, from a variation of temperature, to the cultivation and diffuſion of ſcience. If as many female elephants and tigreſſes as we now find in *Bengal*,

Bengal, had formerly littered in the *Siberian* foreſts, and the young, as the earth cooled, had ſought a genial warmth in the climate of the ſouth, it would not follow that other ſavages, who migrated in the ſame direction and on the ſame account, brought religion and philoſophy, language and writing, art and ſcience, into the ſouthern latitudes.

We are told by Abu'lgha'zi', that the primitive religion of human creatures, or the pure adoration of One Creator, prevailed in *Tartary* during the firſt generations from Ya'fet, but was extinct before the birth of Oghu'z, who reſtored it in his dominions; that, ſome ages after him, the *Mongals* and the *Turcs* relapſed into groſs idolatry; but that Chengiz was a Theiſt, and, in a converſation with the *Mohammedan* Doctors, admitted their arguments for the being and attributes of the Deity to be unanſwerable, while he conteſted the evidence of their Prophet's legation. From old *Grecian* authorities we learn, that the *Maſſagetæ* worſhipped the ſun; and the narrative of an embaſſy from Justin to the *Khákán*, or Emperor, who then reſided in a fine vale near the ſource of the *Irtiſh*, mentions the *Tartarian* ceremony of purifying the *Roman* Ambaſſadors by conducting them between two fires. The *Tartars* of that age are repreſented as adorers of the *four elements*, and believers in an inviſible ſpirit, to whom they ſacrificed bulls and rams. Modern travellers relate that, in the feſtivals of ſome *Tartarian* tribes, they pour a few drops of a conſecrated liquor on the ſtatues of their Gods; after which an attendant ſprinkles a little of what remains three times toward the ſouth in honour of fire, toward the weſt and eaſt in honour of water and air, and as often toward the north in honour of the earth, which contained the reliques of their deceaſed anceſtors. Now all this may be very true, without proving a national

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affinity between the *Tartars* and *Hindus*; for the *Arabs* adored the planets and the works of nature; the *Arabs* had carved images, and made libations on a black ſtone; the *Arabs* turned in prayer to different quarters of the heavens; yet we know with certainty, that the *Arabs* are a diſtinct race from the *Tartars*; and we might as well infer that they were the ſame people, becauſe they had each their *Nomades, or wanderers for paſture*, and becauſe the *Turcmans*, deſcribed by IBNUARABSH'AH, and by him called *Tátárs*, are, like *moſt Arabian* tribes, paſtoral and warlike, hoſpitable and generous, wintering and ſummering on different plains, and rich in herds and flocks, horſes and camels; but this agreement in manners proceeds from the ſimilar nature of their ſeveral deſerts, and their ſimilar choice of a free rambling life, without evincing a community of origin, which they could ſcarce have had without preſerving ſome remnant at leaſt of a common language.

MANY *Lamas*, we are aſſured, or Prieſts of BUDDHA, have been found ſettled in *Siberia*; but it can hardly be doubted that the *Lamas* had travelled thither from *Thibet*, whence it is more than probable that the religion of the *Buddhas* was imported into *Southern*, or *Chineſe Tartary*, ſince we know that rolls of *Thibetian* writing have been brought even from the borders of the *Caſpian*. The complexion of BUDDHA himſelf, which, according to the *Hindus*, was *between white and ruddy*, would perhaps have convinced M. BAILLY, had he known the *Indian* tradition, that the laſt great legiſlator and God of the Eaſt was a *Tartar*; but the *Chineſe* conſider him as a native of *India*; the *Bráhmans* inſiſt, that he was born in a foreſt near *Gayá*; and many reaſons may lead us to ſuſpect that his religion was carried from the weſt and the ſouth to thoſe eaſtern and northern countries in which it prevails. On the whole, we meet with

with few or no traces in *Scythia* of *Indian* rites and ſuperſtitions, or of that poetical mythology with which the *Sanſcrit* poems are decorated; and we may allow the *Tartars* to have adored the Sun with more reaſon than any ſouthern people, without admitting them to have been the ſole original inventors of that univerſal folly. We may even doubt the originality of their veneration for the *four elements*, which forms a principal part of the ritual introduced by ZER'ATUSHT, a native of *Rai* in *Perſia*, born in the reign of GUSHTASP; whoſe ſon, PASH'UTEN, is believed by the *Pârſis* to have reſided long in *Tartary*, at a place called *Cangidiz*; where a magnificent palace is ſaid to have been built by the father of CYRUS, and where the *Perſian* prince, who was a zealot in the new faith, would naturally have diſſeminated its tenets among the neighbouring *Tartars*.

OF any philoſophy, except natural ethics, which the rudeſt ſociety requires and experience teaches, we find no more veſtiges in *Aſiatic Scythia* than in ancient *Arabia*: nor would the name of a philoſopher and a *Scythian* have been ever connected, if ANACHARSIS had not viſited *Athens* and *Lydia* for that inſtruction which his birth-place could not have afforded him: but ANACHARSIS was the ſon of a *Grecian* woman, who had taught him her language; and he ſoon learned to deſpiſe his own. He was unqueſtionably a man of a ſound underſtanding and fine parts; and, among the lively ſayings which gained him the reputation of a wit, even in *Greece*, it is related by DIOGENES LAERTIUS, that, when an *Athenian* reproached him with being a *Scythian*, he anſwered, 'My 'country is, indeed, a diſgrace to me, but thou art a diſgrace to thy 'country.' What his country was, in regard to manners and civil duties, we may learn from his fate in it; for when, on his return from *Athens*,

he attempted to reform it, by introducing the wiſe laws of his friend SOLON, he was killed on a hunting party, with an arrow ſhot by his own brother, a *Scythian* chieftain. Such was the philoſophy of M. BAILLY's *Atlantes*, the firſt and moſt enlightened of nations! We are aſſured, however, by the learned author of the *Dabiſtan*, that the *Tartars* under CHENGIZ, and his deſcendants, were lovers of truth; and would not even preſerve their lives by a violation of it. DE GUIGNES aſcribes the ſame veracity, the parent of all virtues, to the *Huns*; and STRABO, who might only mean to laſh the *Greeks* by praiſing Barbarians, as HORACE extolled the wandering *Scythians* merely to ſatirize his luxurious countrymen, informs us, that the nations of *Scythia* deſerved the praiſe due to wiſdom, heroic friendſhip, and juſtice; and this praiſe we may readily allow them on his authority, without ſuppoſing them to have been the preceptors of mankind.

As to the laws of ZAMOLXIS, concerning whom we know as little as of the *Scythian* DEUCALION, or of ABARIS the *Hyperborean*, and to whoſe ſtory even HERODOTUS gave no credit, I lament, for many reaſons, that, if ever they exiſted, they have not been preſerved. It is certain, that a ſyſtem of laws, called *Yaſſa*, has been celebrated in *Tartary* ſince the time of CHENGIZ, who is ſaid to have republiſhed them in his empire, as his inſtitutions were afterwards adopted and enforced by TAIMU'R; but they ſeem to have been a common, or traditionary law, and were probably not reduced into writing till CHENGIZ had conquered a nation who were able to write.

III. HAD the religious opinions and allegorical fables of the *Hindus* been actually borrowed from *Scythia*, travellers muſt have diſcovered in that

that country ſome ancient monuments of them; ſuch as pieces of groteſque ſculpture, images of the Gods and *Avatárs*, and inſcriptions on pillars, or in caverns, analogous to thoſe which remain in every part of the weſtern peninſula, or to thoſe which many of us have ſeen in *Bahár* and at *Banáras*; but (except a few detached idols) the only great monuments of *Tartarian* antiquity are a line of ramparts on the weſt and eaſt of the *Caſpian*, aſcribed, indeed, by ignorant *Muſelmans* to *Yájúj* and *Májúj*, or *Gog* and *Magog*, that is to the *Scythians*; but manifeſtly raiſed by a very different nation, in order to ſtop their predatory inroads through the paſſes of *Caucaſus*. The *Chineſe* wall was built or finiſhed on a ſimilar conſtruction, and for a ſimilar purpoſe, by an Emperor who died only two hundred and ten years before the beginning of our era; and the other mounds were very probably conſtructed by the old *Perſians*, though, like many works of unknown origin, they are given to SECANDER; not the *Macedonian*, but a more ancient hero, ſuppoſed by ſome to have been JEMSHI'D. It is related that pyramids and tombs have been found in *Tátáriſtán*, or *Weſtern Scythia*, and ſome remnants of edifices in the lake *Saiſan*; that veſtiges of a deſerted city have been recently diſcovered by the *Ruſſians* near the *Caſpian Sea*, and the *Mountain of Eagles*; and that golden ornaments and utenſils, figures of elks and other quadrupeds in metal, weapons of various kinds, and even implements for mining, but made of copper, inſtead of iron, have been dug up in the country of the *Tſhúdès*; whence M. BAILLY infers, with great reaſon, the high antiquity of that people. But the high antiquity of the *Tartars*, and their eſtabliſhment in that country near four thouſand years ago, no man diſputes; we are enquiring into their ancient religion and philoſophy, which neither ornaments of gold nor tools of copper will prove to have had an affinity with the religious rites and the ſciences of *India*. The

golden utenſils might poſſibly have been fabricated by the *Tartars* themſelves; but it is poſſible too that they were carried from *Rome*, or from *China*, whence occaſional embaſſies were ſent to the Kings of *Eighùr*. Towards the end of the tenth century the *Chineſe* Emperor diſpatched an ambaſſador to a Prince named ERSLA'N, which in the *Turkiſh* of *Conſtantinople* ſignifies a *lion*, who reſided near the *Golden Mountain* in the ſame ſtation, perhaps, where the *Romans* had been received in the middle of the ſixth century. The *Chineſe* on his return home reported the *Eighùrìs* to be a grave people, with fair complexions, diligent workmen, and ingenious artificers not only in gold, ſilver, and iron, but in jaſper and fine ſtones; and the *Romans* had before deſcribed their magnificent reception in a rich palace, adorned with *Chineſe* manufactures. But theſe times were comparatively modern; and, even if we ſhould admit that the *Eighùrìs*, who are ſaid to have been governed for a period of two thouſand years by an *Idecùt*, or ſovereign of their own race, were in ſome very early age a literary and poliſhed nation, it would prove nothing in favour of the *Huns*, *Turcs*, *Mongals*, and other ſavages to the north of *Pekin*, who ſeem in all ages before MUHAMMED, to have been equally ferocious and illiterate.

WITHOUT actual inſpection of the manuſcripts that have been found near the *Caſpian*, it would be impoſſible to give a correct opinion concerning them; but one of them, deſcribed as written on blue ſilky paper, in letters of gold and ſilver, not unlike *Hebrew*, was probably a *Thibetian* compoſition, of the ſame kind with that which lay near the ſource of the *Irtiſh*, and of which CASSIANO, I believe, made the firſt accurate verſion. Another, if we may judge from the deſcription of it, was probably modern *Turkiſh*; and none of them could have been of great antiquity.

IV. FROM

IV. From ancient monuments, therefore, we have no proof that the *Tartars* were themſelves well-inſtructed, much leſs that they inſtructed the world; nor have we any ſtronger reaſon to conclude from their general manners and character, that they had made an early proficiency in *arts* and *ſciences*. Even of poetry, the moſt univerſal and moſt natural of the fine arts, we find no genuine ſpecimens aſcribed to them, except ſome horrible war-ſongs, expreſſed in *Perſian* by Ali' of *Yezd*, and poſſibly invented by him. After the conqueſt of *Perſia* by the *Mongals*, their princes, indeed, encouraged learning, and even made aſtronomical obſervations at *Samarkand*. As the *Turcs* became poliſhed by mixing with the *Perſians* and *Arabs*, though *their very nature*, as one of their own writers confeſſes, *had before been like an incurable diſtemper, and their minds clouded with ignorance*; thus alſo the *Manchew* monarchs of *China* have been patrons of the learned and ingenious; and the Emperor Tien-Long is, if he be now living, a fine *Chineſe* poet. In all theſe inſtances the *Tartars* have reſembled the *Romans*, who, before they had ſubdued *Greece*, were little better than tigers in war, and *Fauns* or *Sylvans* in ſcience and art.

Before I left *Europe* I had inſiſted in converſation, that the *Tuzuk*, tranſlated by Major Davy, was never written by Taimu'r himſelf, at leaſt not as Cæsar wrote his Commentaries, for one very plain reaſon, that no *Tartarian* king of his age could write at all; and, in ſupport of my opinion, I had cited Ibnu Arabsha'h, who, though juſtly hoſtile to the ſavage by whom his native city, *Damaſcus*, had been ruined, yet praiſes his talents, and the real greatneſs of his mind, but adds, — "He was wholly illiterate; he neither read nor "wrote any thing; and he knew nothing of *Arabic*; though of *Perſian*, "*Turkiſh*,

" *Turkiſh*, and the *Mogul* dialect, he knew as much as was ſufficient for " his purpoſe, and no more. He uſed with pleaſure to hear hiſtories read " to him; and ſo frequently heard the ſame book, that he was able by " memory to correct an inaccurate reader." This paſſage had no effect on the tranſlator, whom *great and learned men in* India *had aſſured*, it ſeems, *that the work was authentic*; by which he meaned, *compoſed by the conqueror himſelf:* but the *great* in this country might have been *unlearned*, or the *learned* might not have been *great* enough to anſwer any leading queſtion in a manner that oppoſed the declared inclination of a *Britiſh* inquirer; and, in either caſe, ſince no witneſſes are named, ſo general a reference to them will hardly be thought concluſive evidence. On my part, I will name a *Muſelman*, whom we all know, and who has enough both of *greatneſs* and of *learning* to decide the queſtion both impartially and ſatisfactorily: the *Nawwàb* MOZAFFER JANG informed me of his own accord, that no man of ſenſe in *Hindiſtàn* believed the work to have been compoſed by TAIMU'R; but that his favourite, ſurnamed HINDU SHA'H, was known to have written that book, and others aſcribed to his patron, after many confidential diſcourſes with the *Emir*, and, perhaps, nearly in the Prince's words as well as in his perſon: a ſtory which ALI' of *Yezd*, who attended the court of TAIMU'R, and has given us a flowery panegyric inſtead of a hiſtory, renders highly probable, by confirming the latter part of the *Arabian* account, and by total ſilence as to the literary productions of his maſter. It is true, that a very ingenious but indigent native, whom DAVY ſupported, has given me a written memorial on the ſubject, in which he mentions TAIMU'R as the author of two works in *Turkiſh*; but the credit of his information is overſet by a ſtrange apocryphal ſtory of a king of *Yemen*, who invaded, he ſays, the *Emir*'s dominions, and in whoſe library the manuſcript was afterwards

wards found, and tranſlated by order of ALI'SHI'R, firſt miniſter of TAIMU'R's grandſon; and Major DAVY himſelf, before he departed from *Bengal*, told me, that he was greatly perplexed by finding in a very accurate and old copy of the *Tuzuc*, which he deſigned to republiſh with conſiderable additions, a particular account, written *unqueſtionably* by TAIMU'R, of *his own death*. No evidence, therefore, has been adduced to ſhake my opinion, that the *Moguls* and *Tartars*, before their conqueſt of *India* and *Perſia*, were wholly unlettered; although it may be poſſible that even without art or ſcience, they had, like the *Huns*, both warriors and lawgivers in their own country ſome centuries before the birth of CHRIST.

IF learning was ever anciently cultivated in the regions to the north of *India*, the ſeats of it, I have reaſon to ſuſpect, muſt have been *Eighùr*, *Caſhghar*, *Khatà*, *Chin*, *Tancùt*, and other countries of *Chineſe Tartary*, which lie between the thirty-fifth and forty-fifth degrees of northern latitude; but I ſhall, in another diſcourſe, produce my reaſons for ſuppoſing that thoſe very countries were peopled by a race allied to the *Hindus*, or enlightened at leaſt by their vicinity to *India* and *China*; yet in *Tancùt*, which by ſome is annexed to *Thibet*, and even among its old inhabitants, the *Seres*, we have no certain accounts of uncommon talents or great improvements: they were famed, indeed, for the faithful diſcharge of moral duties, for a pacific diſpoſition, and for that longevity which is often the reward of patient virtues and a calm temper; but they are ſaid to have been wholly indifferent in former ages to the elegant arts, and even to commerce; though FADLU'LLAH had been informed that, near the cloſe of the *thirteenth* century, many branches of natural philoſophy were cultivated in *Cam-chau*, then the metropolis of *Serica*.

WE

We may readily believe thoſe who aſſure us, that ſome tribes of wandering *Tartars* had real ſkill in applying herbs and minerals to the purpoſes of medicine, and pretended to ſkill in magic; but the general character of their nation ſeems to have been this: They were profeſſed hunters or fiſhers, dwelling on that account in foreſts or near great rivers, under huts or rude tents, or in waggons drawn by their cattle from ſtation to ſtation; they were dexterous archers, excellent horſemen, bold combatants, appearing often to flee in diſorder for the ſake of renewing their attack with advantage; drinking the milk of mares, and eating the fleſh of colts; and thus in many reſpects reſembling the old *Arabs*; but in nothing more than in their love of intoxicating liquors, and in nothing leſs than in a taſte for poetry and the improvement of their language.

This has been proved, and, in my humble opinion, beyond controverſy, that the far greater part of *Aſia* has been peopled and immemorially poſſeſſed by three conſiderable nations, whom, for want of better names, we may call *Hindus*, *Arabs*, and *Tartars*; each of them divided and ſubdivided into an infinite number of branches, and all of them ſo different in form and features, language, manners, and religion, that if they ſprang originally from a common root, they muſt have been ſeparated for ages. Whether more than three primitive ſtocks can be found, or, in other words, whether the *Chineſe*, *Japaneſe*, and *Perſians*, are entirely diſtinct from them, or formed by their intermixture, I ſhall hereafter, if your indulgence to me continue, diligently inquire. To what concluſions theſe inquiries will lead, I cannot yet clearly diſcern; but if they lead to truth, we ſhall not regret our journey through this dark region of ancient hiſtory, in which, while

we

we proceed ſtep by ſtep, and follow every glimmering of certain light that preſents itſelf, we muſt beware of thoſe falſe rays and luminous vapours which miſlead *Aſiatic* travellers, by an appearance of water, but are found, on a near approach, to be deſerts of ſand.

I.

THE SIXTH

DISCOURSE,

ON

THE PERSIANS.

DELIVERED 19 FEBRUARY, 1789.

GENTLEMEN,

I Turn with delight from the vaſt mountains and barren deſerts of *Túrán*, over which we travelled laſt year, with *no* perfect knowledge of our courſe, and requeſt you now to accompany me on a literary journey through one of the moſt celebrated and moſt beautiful countries in the world; a country, the hiſtory and languages of which, both ancient and modern, I have long attentively ſtudied, and on which I may, without arrogance, promiſe you more poſitive information than I could poſſibly procure on a nation ſo diſunited and ſo unlettered as the *Tartars:* I mean that which *Europeans* improperly call *Perſia*; the name of a ſingle province being applied to the whole empire of *Irán*, as it is correctly denominated by the preſent natives of it, and by all the learned *Muſelmans* who reſide in theſe *Britiſh* territories. To give you an idea of its largeſt boundaries, agreeably to my former mode of deſcribing *India*,

Arabia, and *Tartary*, between which it lies, let us begin with the ſource of the great *Aſſyrian* ſtream, *Euphrates* (as the *Greeks*, according to their cuſtom, were pleaſed to miſcall the *Forât*) and thence deſcend to its mouth in the *Green Sea*, or *Perſian Gulf*, including in our line ſome conſiderable diſtricts and towns on both ſides of the river; then, coaſting *Perſia*, properly ſo named, and other *Iranian* provinces, we come to the delta of the *Sindhu* or *Indus*; whence, aſcending to the mountains of *Caſhghar*, we diſcover its fountains and thoſe of the *Jaihùn*, down which we are conducted to the *Caſpian*, which formerly, perhaps, it entered, though it loſes itſelf now in the ſands and lakes of *Khwárezm*. We next are led from the ſea of *Khozar*, by the banks of the *Cur*, or *Cyrus*, and along the *Caucaſian* ridges to the ſhore of the *Euxine*, and thence, by the ſeveral *Grecian* ſeas, to the point whence we took our departure, at no conſiderable diſtance from the *Mediterranean*. We cannot but include the *Lower Aſia* within this outline, becauſe it was unqueſtionably a part of the *Perſian*, if not of the old *Aſſyrian*, empire; for we know that it was under the dominion of CAIKHOSRAU; and DIODORUS, we find, aſſerts that the kingdom of *Troas* was dependent on *Aſſyria*; ſince PRIAM implored and obtained ſuccours from his Emperor TEUTAMES, whoſe name approaches nearer to TAHMU'RAS than to that of any other *Aſſyrian* monarch. Thus may we look on *Irân* as the nobleſt *iſland* (for ſo the *Greeks* and the *Arabs* would have called it) or at leaſt as the nobleſt *peninſula* on this habitable globe; and if M. BAILLY had fixed on it as the *Atlantis* of PLATO, he might have ſupported his opinion with far ſtronger arguments than any that he has adduced in favour of *New Zembla*. If the account, indeed, of the *Atlantes* be not purely an *Egyptian*, or an *Utopian* fable, I ſhould be more inclined to place them in *Irân* than in any region with which I am acquainted.

It may ſeem ſtrange, that the ancient hiſtory of ſo diſtinguiſhed an empire ſhould be yet ſo imperfectly known; but very ſatisfactory reaſons may be aſſigned for our ignorance of it: the principal of them are the ſuperficial knowledge of the *Greeks* and *Jews*, and the loſs of *Perſian* archives, or hiſtorical compoſitions. That the *Grecian* writers, before XENOPHON, had *no* acquaintance with *Perſia*, and that *all* their accounts of it are *wholly* fabulous, is a paradox too extravagant to be ſeriouſly maintained; but their connexion with it in war or peace had, indeed, been generally confined to bordering kingdoms under feudatory princes; and the firſt *Perſian* Emperor, whoſe life and character they ſeem to have known with tolerable accuracy, was the great CYRUS, whom I call, without fear of contradiction, CAIKHOSRAU; for I ſhall then only doubt that the KHOSRAU of FIRDAUSI was the CYRUS of the firſt *Greek* hiſtorian, and the Hero of the oldeſt political and moral romance, when I doubt that LOUIS *Quatorze* and LEWIS *the Fourteenth* were one and the ſame *French* King. It is utterly incredible that two different princes of *Perſia* ſhould each have been born in a foreign and hoſtile territory; ſhould each have been doomed to death in his infancy by his maternal grandfather in conſequence of portentous dreams, real or invented; ſhould each have been ſaved by the remorſe of his deſtined murderer, and ſhould each, after a ſimilar education among herdſmen as the ſon of a herdſman, have found means to reviſit his paternal kingdom; and having delivered it, after a long and triumphant war, from the tyrant who had invaded it, ſhould have reſtored it to the ſummit of power and magnificence. Whether ſo romantic a ſtory, which is the ſubject of an Epic Poem, as majeſtic and entire as the *Iliad*, be hiſtorically true, we may feel perhaps an inclination to doubt; but it cannot with reaſon be denied, that the outline of it related to a ſingle Hero, whom the *Aſiatics*, converſing

with

with the father of *European* hiſtory, deſcribed according to their popular traditions by his true name, which the *Greek* alphabet could not expreſs; nor will a difference of names affect the queſtion, ſince the *Greeks* had little regard for truth, which they *ſacrificed* willingly *to the Graces* of their language, and the nicety of their ears; and, if they could render foreign words melodious, they were never ſolicitous to make them exact: hence they probably formed CAMBYSES from CA'MBAKHSH, or *granting deſires*, a title rather than a name; and XERXES from SHI'RU'YI, a prince and warrior in the *Shâhnâmah*, or from SHI'RSHA'H, which might alſo have been a title; for the *Aſiatic* princes have conſtantly aſſumed new titles or epithets at different periods of their lives, or on different occaſions: a cuſtom which we have ſeen prevalent in our own time both in *Irân* and *Hinduſtân*, and which has been a ſource of great confuſion even in the ſcriptural accounts of *Babylonian* occurrences: both *Greeks* and *Jews* have in fact accommodated *Perſian* names to their own articulation; and both ſeem to have diſregarded the native literature of *Irân*, without which they could at moſt attain a general and imperfect knowledge of the country. As to the *Perſians* themſelves, who were contemporary with the *Jews* and *Greeks*, they muſt have been acquainted with the hiſtory of their own times, and with the traditional accounts of paſt ages; but for a reaſon, which will preſently appear, they choſe to conſider CAYU'MERS as the founder of their empire; and, in the numerous diſtractions which followed the overthrow of DA'RA', eſpecially in the great revolution on the defeat of YEZDEGIRD, their civil hiſtories were loſt, as thoſe of *India* have unhappily been, from the ſolicitude of the prieſts, the only depoſitaries of their learning, to preſerve their books of law and religion at the expence of all others. Hence it has happened that nothing remains of genuine *Perſian* hiſtory

before

before the dynaſty of SA'SA'N, except a few ruſtic traditions and fables, which furniſhed materials for the *Shàhnámah*, and which are ſtill ſuppoſed to exiſt in the *Pahlavi* language. The annals of the *Piſhdádi*, or *Aſſyrian* race, muſt be conſidered as dark and fabulous; and thoſe of the *Cayáni* family, or the *Medes* and *Perſians*, as heroic and poetical; though the lunar eclipſes, ſaid to be mentioned by PTOLEMY, fix the time of GUSHTASP, the prince by whom ZERA'TUSHT was protected. Of the *Parthian* kings, deſcended from ARSHAC, or ARSACES, we know little more than the names; but the *Sáſánís* had ſo long an intercourſe with the Emperors of *Rome* and *Byzantium*, that the period of their dominion may be called an hiſtorical age. In attempting to aſcertain the beginning of the *Aſſyrian* empire, we are deluded, as in a thouſand inſtances, by names arbitrarily impoſed. It had been *ſettled* by chronologers, that the firſt monarchy eſtabliſhed in *Perſia* was the *Aſſyrian*; and NEWTON, finding ſome of opinion that it roſe in the firſt century after the Flood, but unable, by his own calculations, to extend it farther back than *ſeven hundred and ninety* years before CHRIST, rejected part of the old ſyſtem, and adopted the reſt of it; concluding, that the *Aſſyrian* monarchs began to reign about two hundred years after SOLOMON; and that, in all preceding ages, the government of *Irán* had been divided into ſeveral petty ſtates and principalities. Of this opinion I confeſs myſelf to have been; when, diſregarding the wild chronology of the *Muſelmáns* and *Gabrs*, I had allowed the utmoſt natural duration to the reigns of eleven *Piſhdádi* kings, without being able to add more than a hundred years to NEWTON's computation. It ſeemed, indeed, unaccountably ſtrange that, although ABRAHAM had found a regular monarchy in *Egypt*; although the kingdom of *Yemen* had juſt pretenſions to very high antiquity; although the *Chineſe*, in the twelfth century before our era, had made approaches at

leaſt

leaſt to the preſent form of their extenſive dominion; and although we can hardly ſuppoſe the firſt *Indian* monarchs to have reigned leſs than three thouſand years ago, yet *Perſia*, the moſt delightful, the moſt compact, the moſt deſirable country of them all, ſhould have remained for ſo many ages unſettled and diſunited. A fortunate diſcovery, for which I was firſt indebted to *Mir* MUHAMMED HUSAIN, one of the moſt intelligent *Muſelmàns* in *India*, has at once diſſipated the cloud, and caſt a gleam of light on the primeval hiſtory of *Irán*, and of the human race, of which I had long deſpaired, and which could hardly have dawned from any other quarter.

THE rare and intereſting tract *on twelve different religions*, entitled the *Dabiſtán*, and compoſed by a *Mohammedan* traveller, a native of *Caſhmír*, named MOHSAN, but diſtinguiſhed by the aſſumed ſurname of FA'NI', or *Periſhable*, begins with a wonderfully curious chapter on the religion of HU'SHANG, which was long anterior to that of ZERAIUSHT, but had continued to be ſecretly profeſſed by many learned *Perſians* even to the author's time; and ſeveral of the moſt eminent of them, diſſenting in many points from the *Gabrs*, and perſecuted by the ruling powers of their country, had retired to *India*; where they compiled a number of books, now extremely ſcarce, which MOHSAN had peruſed, and with the writers of which, or with many of them, he had contracted an intimate friendſhip. From them he learned, that a powerful monarchy had been eſtabliſhed for ages in *Irán* before the acceſſion of CAYUMERS, that it was called the *Mahábádian* Dynaſty, for a reaſon which will ſoon be mentioned, and that many princes, of whom ſeven or eight only are named in the *Dabiſtán*, and among them MAHBUL, or MAHA' BALI, had raiſed their empire to the zenith of human glory. If

we can rely on this evidence, which to me appears unexceptionable, the *Iranian* monarchy muſt have been the oldeſt in the world; but it will remain dubious to which of the three ſtocks, *Hindu*, *Arabian*, or *Tartar*, the firſt Kings of *Irán* belonged, or whether they ſprang from a *fourth* race diſtinct from any of the others; and theſe are queſtions which we ſhall be able, I imagine, to anſwer preciſely, when we have carefully inquired into the *languages* and *letters*, *religion* and *philoſophy*, and incidentally into the *arts* and *ſciences* of the ancient *Perſians*.

I. In the new and important remarks which I am going to offer on the ancient *languages* and *characters* of *Irán*, I am ſenſible that you muſt give me credit for many aſſertions, which on this occaſion it is impoſſible to prove; for I ſhould ill deſerve your indulgent attention, if I were to abuſe it by repeating a dry liſt of detached words, and preſenting you with a vocabulary inſtead of a diſſertation; but, ſince I have no ſyſtem to maintain, and have not ſuffered imagination to delude my judgment; ſince I have habituated myſelf to form opinions of men and things from *evidence*, which is the only ſolid baſis of *civil*, as *experiment* is of *natural* knowledge; and ſince I have maturely conſidered the queſtions which I mean to diſcuſs, you will not, I am perſuaded, ſuſpect my teſtimony, or think that I go too far, when I aſſure you that I will aſſert nothing poſitively which I am not able ſatisfactorily to demonſtrate. When MUHAMMED was born, and ANU'SHI'RAVA'N, whom he calls *the Juſt King*, ſat on the throne of *Perſia*, two languages appear to have been generally prevalent in the great empire of *Irán*; that of the *court*, thence named *Derí*, which was only a refined and elegant dialect of the *Párſí*, ſo called from the province, of which *Shirás* is now the capital; and that of the learned, in which moſt books were compoſed, and which

had the name of *Pahlavì*, either from the *heroes*, who ſpoke it in former times, or from *Pahlu*, a track of land, which included, we are told, ſome conſiderable cities of *Irák*: the ruder dialects of both were, and, I believe, ſtill are ſpoken by the ruſtics in ſeveral provinces; and in many of them, as *Herát*, *Zábul*, *Siſtàn*, and others, diſtinct idioms were vernacular, as it happens in every kingdom of great extent. Beſides the *Pársì* and *Pahlavì*, a very ancient and abſtruſe tongue was known to the prieſts and philoſophers, called *the language of the Zend*, becauſe a book on religious and moral duties, which they held ſacred, and which bore that name, had been written in it; while the *Pázend*, or comment on that work, was compoſed in *Pahlavì*, as a more popular idiom; but a learned follower of ZERA'TUSHT, named BAHMAN, who lately died at *Calcutta*, where he had lived with me as a *Perſian* reader about three years, aſſured me that the *letters* of his prophet's book were properly called *Zend*, and the *language Aveſtà*, as the words of the *Védas* are *Sanſcrit*, and the characters *Nágarì*: or as the old *Sagas* and poems of *Iſeland* were expreſſed in *Runick* letters. Let us however, in compliance with cuſtom, give the name of *Zend* to the ſacred language of *Perſia*, until we can find, as we ſhall very ſoon, a fitter appellation for it. The *Zend* and the old *Pahlavì* are almoſt extinct in *Iràn*; for among ſix or ſeven thouſand *Gabrs*, who reſide chiefly at *Yezd* and in *Cirmàn*, there are very few who can read *Pahlavi*, and ſcarce any who even boaſt of knowing the *Zend*; while the *Pársì*, which remains almoſt pure in the *Shâhnámah*, has now become by the intermixture of numberleſs *Arabic* words, and many imperceptible changes, a new language exquiſitely poliſhed by a ſeries of fine writers in proſe and verſe, and analogous to the different idioms gradually formed in *Europe* after the ſubverſion of the *Roman* empire: but with modern

Perſian

Perſian we have no concern in our preſent inquiry, which I confine to the ages that preceded the *Mohammedan* conqueſt. Having twice read the works of FIRDAUSI' with great attention, ſince I applied myſelf to the ſtudy of old *Indian* literature, I can aſſure you with confidence, that hundreds of *Pârsì* nouns are pure *Sanſcrit*, with no other change than ſuch as may be obſerved in the numerous *bhâſhâs*, or vernacular dialects of *India*; that very many *Perſian* imperatives are the roots of *Sanſcrit* verbs; and that even the moods and tenſes of the *Perſian* verb-ſubſtantive, which is the model of all the reſt, are deducible from the *Sanſcrit* by an eaſy and clear analogy: we may hence conclude, that the *Pârsi* was derived, like the various *Indian* dialects, from the language of the *Brâhmans*; and I muſt add, that in the pure *Perſian* I find no trace of any *Arabian* tongue, except what proceeded from the known intercourſe between the *Perſians* and *Arabs*, eſpecially in the time of BAHRA'M, who was educated in *Arabia*, and whoſe *Arabic* verſes are ſtill extant, together with his heroic line in *Deri*, which many ſuppoſe to be the firſt attempt at *Perſian* verſification in *Arabian* metre: but, without having recourſe to other arguments, *the compoſition of words*, in which the genius of the *Perſian* delights and which that of the *Arabic* abhors, is a deciſive proof that the *Pârsì* ſprang from an *Indian* and not from an *Arabian* ſtock. Conſidering languages as mere inſtruments of knowledge, and having ſtrong reaſons to doubt the exiſtence of genuine books in *Zend* or *Pahlavì* (eſpecially ſince the well-informed author of the *Dabiſtân* affirms the work of ZERA'TUSHT to have been loſt, and its place ſupplied by a recent compilation) I had no inducement, though I had an opportunity, to learn what remains of thoſe ancient languages; but I often converſed on them with my friend BAHMAN; and both of us were convinced after full conſideration, that the *Zend* bore a ſtrong reſemblance to *Sanſcrit*, and the

Pahlavì to *Arabic*. He had at my requeſt tranſlated into *Pahlavì* the fine inſcription exhibited in the *Gulſtàn*, on the diadem of CYRUS; and I had the patience to read the liſt of words from the *Pázend*, in the appendix to the *Farhangi Jehángìrì*. This examination gave me perfect conviction that the *Pahlavì* was a dialect of the *Chaldaic*; and of this curious fact I will exhibit a ſhort proof. By the nature of the *Chaldean* tongue, moſt words ended in the firſt long vowel like *ſhemià*, heaven; and that very word, unaltered in a ſingle letter, we find in the *Pázend*, together with *lailià*, night; *meyà*, water; *àirà*, fire; *matrà*, rain; and a multitude of others, all *Arabic* or *Hebrew*, with a *Chaldean* termination: ſo *zamar*, by a beautiful metaphor from *pruning-trees*, means in *Hebrew* to *compoſe verſes*, and thence, by an eaſy tranſition, to *ſing* them; and in *Pahlavì* we ſee the verb *zamrúniten*, to *ſing*, with its forms *zamrúnemi*, I *ſing*; and *zamrúnid*, he *ſang*; the verbal terminations of the *Perſian* being added to the *Chaldaic* root. Now all thoſe words are integral parts of the language, not adventitious to it, like the *Arabic* nouns and verbals engrafted on modern *Perſian*; and this diſtinction convinces me that the dialect of the *Gabrs*, which they pretend to be that of ZERA'TUSHT, and of which BAHMAN gave me a variety of written ſpecimens, is a late invention of their prieſts, or ſubſequent at leaſt to the *Muſelman* invaſion; for, although it may be poſſible that a few of their ſacred books were preſerved, as he uſed to aſſert, in ſheets of lead or copper at the bottom of wells near *Yezd*, yet as the conquerors had not only a ſpiritual, but a political intereſt in perſecuting a warlike, robuſt, and indignant race of irreconcileable conquered ſubjects, a long time muſt have elapſed before the hidden ſcriptures could have been ſafely brought to light, and few who could perfectly underſtand them muſt then have remained; but, as they continued to profeſs among themſelves the religion

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of their forefathers, it became expedient for the *Mûbeds* to ſupply the loſt or mutilated works of their legiſlator by new compoſitions, partly from their imperfect recollection, and partly from ſuch moral and religious knowledge as they gleaned, moſt probably, among the *Chriſtians*, with whom they had an intercourſe. One rule we may fairly eſtabliſh in deciding the queſtion, whether the books of the modern *Gabrs* were anterior to the invaſion of the *Arabs*: when an *Arabic* noun occurs in them, changed only by the ſpirit of the *Chaldean* idiom, as *wertà* for *werd*, a roſe; *dabù* for *dhahab*, gold; or *demàn* for *zemàn*, time, we may allow it to have been ancient *Pahlavì*; but when we meet with verbal nouns or infinitives, evidently formed by the rules of *Arabian* grammar, we may be ſure that the phraſes in which they occur are comparatively modern; and not a ſingle paſſage which BAHMAN produced from the books of his religion would abide this teſt.

WE come now to the language of the *Zend*: and here I muſt impart a diſcovery which I lately made, and from which we may draw the moſt intereſting conſequences. M. ANQUETIL, who had the merit of undertaking a voyage to *India* in his earlieſt youth, with no other view than to recover the writings of ZERA'TUSHT, and who would have acquired a brilliant reputation in *France*, if he had not ſullied it by his immoderate vanity and virulence of temper, which alienated the good-will even of his own countrymen, has exhibited in his work entitled *Zendàveſtà*, two vocabularies in *Zend* and *Pahlavì*, which he had found in an approved collection of *Rawáyát*, or *Traditional Pieces*, in modern *Perſian*. Of his *Pahlavì* no more needs be ſaid, than that it ſtrongly confirms my opinion concerning the *Chaldaic* origin of that language; but, when I peruſed the *Zend* gloſſary, I was inexpreſſibly ſurprized to find

find, that ſix or ſeven words in ten were pure *Sanſcrit*, and even ſome of their inflections formed by the rules of the *Vyácaran*; as *yuſhmácan*, the genitive plural of *yuſhmad*. Now M. ANQUETIL moſt certainly, and the *Perſian* compiler moſt probably, had no knowledge of *Sanſcrit*; and could not, therefore, have invented a liſt of *Sanſcrit* words. It is therefore, an authentic liſt of *Zend* words which had been preſerved in books or by tradition; and it follows, that the language of the *Zend* was at leaſt a dialect of the *Sanſcrit*, approaching perhaps as nearly to it as the *Prácrit*, or other popular idioms, which we know to have been ſpoken in *India* two thouſand years ago. From all theſe facts it is a neceſſary conſequence, that the oldeſt diſcoverable languages of *Perſia* were *Chaldaic* and *Sanſcrit*; and that, when they had ceaſed to be vernacular, the *Pahlavi* and *Zend* were deduced from them reſpectively; and the *Parſi* either from the *Zend* or immediately from the dialect of the *Bráhmans*; but all had perhaps a mixture of *Tartarian*; for the beſt lexicographers aſſert, that numberleſs words in ancient *Perſian* are taken from the language of the *Cimmerians*, or the *Tartars* of *Kipchák*; ſo that the *three* families, whoſe lineage we have examined in former diſcourſes, had left viſible traces of themſelves in *Irán*, long before the *Tartars* and *Arabs* had ruſhed from their deſerts, and returned to that very country from which in all probability they originally proceeded, and which the *Hindus* had abandoned in an earlier age, with poſitive commands from their legiſlators to reviſit it no more. I cloſe this head with obſerving, that no ſuppoſition of a mere political or commercial intercourſe between the different nations will account for the *Sanſcrit* and *Chaldaic* words, which we find in the old *Perſian* tongues; becauſe they are, in the firſt place, too numerous to have been introduced by ſuch means; and ſecondly, are not the names of exotic animals, commodities,

modities, or arts, but thoſe of material elements, parts of the body, natural objects and relations, affections of the mind, and other ideas common to the whole race of man.

If a nation of *Hindus*, it may be urged, ever poſſeſſed and governed the country of *Irân*, we ſhould find on the very ancient ruins of the temple or palace, now called *the throne of* Jemshi'd, ſome inſcriptions in *Dévanágarí*, or at leaſt in the characters on the ſtones at *Elephanta*, where the ſculpture is unqueſtionably *Indian*, or in thoſe on the *Staff of* Fi'ruz Sha'h, which exiſt in the heart of *India*; and ſuch inſcriptions we probably ſhould have found, if that edifice had not been erected after the migration of the *Bráhmans* from *Irân*, and the violent ſchiſm in the *Perſian* religion, of which we ſhall preſently ſpeak; for although the popular name of the building at *Iſtakhr*, or *Perſepolis*, be no certain proof that it was raiſed in the time of Jemshi'd, yet ſuch a fact might eaſily have been preſerved by tradition; and we ſhall ſoon have abundant evidence that the temple was poſterior to the reign of the *Hindu* monarchs. The *cypreſſes* indeed, which are repreſented with the figures in proceſſion, might induce a reader of the *Shâhnámah* to believe, that the ſculptures related to the new faith introduced by Zera'tusht; but, as a cypreſs is a beautiful ornament, and as many of the figures appear inconſiſtent with the reformed adoration of fire, we muſt have recourſe to ſtronger proofs, that the *Takhti* Jemshi'd was erected after Cayu'mers. The building has lately been viſited, and the characters on it examined, by Mr. Francklin; from whom we learn, that Niebuhr has delineated them with great accuracy: but without ſuch teſtimony I ſhould have ſuſpected the correctneſs of the delineation; becauſe the *Daniſh* traveller has exhibited two inſcriptions in modern *Perſian*, and one of them from

the ſame place, which cannot have been exactly tranſcribed; they are very elegant verſes of NIZA'MI' and SADI' *on the inſtability of human greatneſs*; but ſo ill engraved or ſo ill copied, that, if I had not had them nearly by heart, I ſhould not have been able to read them: and M. ROUSSEAU of *Iſpahán*, who tranſlated them with ſhameful inaccuracy, muſt have been deceived by the badneſs of the copy, or he never would have created a new king WAKAM, by forming one word of JEM and the particle prefixed to it. Aſſuming, however, that we may reaſon as concluſively on the characters publiſhed by NIEBUHR as we might on the monuments themſelves, were they now before us, we may begin with obſerving, as CHARDIN had obſerved on the very ſpot, that they bear no reſemblance whatever to the letters uſed by the *Gabrs* in their copies of the *Vendidad*: this I once urged, in an amicable debate with BAHMAN, as a proof that the *Zend* letters were a modern invention; but he ſeemed to hear me without ſurprize, and inſiſted that the letters to which I alluded, and which he had often ſeen, were monumental characters, never uſed in books, and intended either to conceal ſome religious myſteries from the vulgar, or to diſplay the art of the ſculptor, like the embelliſhed *Cufick* and *Nigarì* on ſeveral *Arabian* and *Indian* monuments. He wondered that any man could ſeriouſly doubt the antiquity of the *Pahlavì* letters; and in truth the inſcription behind the horſe of *Ruſtam*, which NIEBUHR has alſo given us, is apparently *Pahlavì*, and might with ſome pains be decyphered: that character was extremely rude, and ſeems to have been written, like the *Roman* and the *Arabic*, in a variety of hands; for I remember to have examined a rare collection of old *Perſian* coins in the muſeum of the great Anatomiſt WILLIAM HUNTER, and, though I believed the legends to be *Pahlavì*, and had no doubt that they were coins of *Parthian* kings, yet I could not read the inſcriptions

inſcriptions without waſting more time than I had then at command in comparing the letters, and aſcertaining the proportions in which they ſeverally occurred. The groſs *Pahlavì* was improved by ZERA'TUSHT or his diſciples into an elegant and perſpicuous character, in which the *Zendávéſtà* was copied; and both were written from the right hand to the left, like other *Chaldaic* alphabets; for they are manifeſtly both of *Chaldean* origin; but the *Zend* has the ſingular advantage of expreſſing all the long and ſhort vowels, by diſtinct marks, in the body of each word, and all the words are diſtinguiſhed by full points between them; ſo that if modern *Perſian* were unmixed with *Arabic*, it might be written in *Zend* with the greateſt convenience, as any one may perceive by copying in that character a few pages of the *Shâhnámah*. As to the unknown inſcriptions in the palace of JEMSHI'D, it may reaſonably be doubted whether they contain a ſyſtem of letters which any nation ever adopted: in *five* of them the letters, which are ſeparated by points, may be reduced to forty, at leaſt I can diſtinguiſh no more eſſentially different; and they all ſeem to be regular variations and compoſitions of a ſtraight line and an angular figure like the head of a javelin, or a leaf (to uſe the language of botaniſts) *hearted and lanced*. Many of the *Runick* letters appear to have been formed of ſimilar elements; and it has been obſerved, that the writing at *Perſepolis* bears a ſtrong reſemblance to that which the *Iriſh* call *Ogham*: the word *Agam* in *Sanſcrit* means *myſterious knowledge*; but I dare not affirm that the two words had a common origin, and only mean to ſuggeſt that, if the characters in queſtion be really alphabetical, they were probably ſecret and ſacerdotal, or a mere cypher, perhaps, of which the prieſts only had the key. They might, I imagine, be decyphered, if the language were certainly known; but, in all the other inſcriptions of the ſame

ſort, the characters are too complex, and the variations of them too numerous, to admit an opinion that they could be ſymbols of articulate ſounds; for even the *Nágarì* ſyſtem, which has more diſtinct letters than any known alphabet, conſiſts only of forty-nine ſimple characters, two of which are mere ſubſtitutions, and four of little uſe in *Sanſcrit* or in any other language; while the more complicated figures, exhibited by NIEBUHR, muſt be as numerous at leaſt as the *Chineſe* keys, which are the ſigns of *ideas* only, and ſome of which reſemble the old *Perſian* letters at *Iſtakhr*. The *Damiſh* traveller was convinced from his own obſervation, that they were written from the left hand, like all the characters uſed by *Hindu* nations; but I muſt leave this dark ſubject, which I cannot illuminate, with a remark formerly made by myſelf, that the ſquare *Chaldaic* letters, a few of which are found on the *Perſian* ruins, appear to have been originally the ſame with the *Devanágarì*, before the latter were encloſed, as we now ſee them, in angular frames.

II. THE primeval religion of *Irán*, if we rely on the authorities adduced by MOHSANI FA'NI', was that which NEWTON calls the oldeſt (and it may juſtly be called the nobleſt) of all religions: "a firm belief "that One Supreme GOD made the world by his power, and continu- "ally governed it by his providence; a pious fear, love, and adoration "of Him; a due reverence for parents and aged perſons; a fraternal "affection for the whole human ſpecies, and a compaſſionate tenderneſs "even for the brute creation." A ſyſtem of devotion ſo pure and ſublime could hardly among mortals be of long duration; and we learn from the *Dabiſtán*, that the popular worſhip of the *Irámians* under HU'SHANG was purely *Sabian*: a word, of which I cannot offer any certain etymology, but which has been deduced by grammarians from *Sabà*, *an hoſt*,

hoſt and, particularly the *hoſt of heaven*, or the *celeſtial bodies*, in the adoration of which the *Sabian* ritual is believed to have conſiſted. There is a deſcription in the learned work juſt mentioned, of the ſeveral *Perſian* temples dedicated to the Sun and Planets, of the images adored in them, and of the magnificent proceſſions to them on preſcribed feſtivals, one of which is probably repreſented by ſculpture in the ruined city of JEMSHI'D; but the planetary worſhip in *Perſia* ſeems only a part of a far more complicated religion, which we now find in theſe *Indian* provinces; for MOHSAN aſſures us, that, in the opinion of the beſt informed *Perſians*, who profeſſed the faith of HU'SHANG, diſtinguiſhed from that of ZERA'TUSHT the firſt monarch of *Irân* and of the whole earth was MAHA'BA'D, a word apparently *Sanſcrit*, who divided the people into four orders, the *religious*, the *military*, the *commercial*, and the *ſervile*, to which he aſſigned names unqueſtionably the ſame in their origin with thoſe now applied to the four primary claſſes of the *Hindus*. They added, that he received from the Creator, and promulgated among men, *a ſacred book in a heavenly language*, to which the *Muſelman* author gives the *Arabic* title of *Deſátir*, or Regulations, but the original name of which he has not mentioned; and that *fourteen* MAHA'BA'DS had appeared or would appear in human ſhapes, for the government of this world. Now when we know that the *Hindus* believe in *fourteen* MENUS, or celeſtial perſonages with ſimilar functions, the *firſt* of whom left a book of *regulations*, or *divine ordinances*, which they hold equal to the *Veda*, and the language of which they believe to be that of the Gods, we can hardly doubt that the firſt corruption of the pureſt and oldeſt religion was the ſyſtem of *Indian* Theology invented by the *Bráhmans*, and prevalent in theſe territories where the book of MAHA'BA'D or MENU is at this hour the ſtandard of all religious and moral duties. The acceſſion of CAYU'MERS to the

throne of *Perſia*, in the eighth or ninth century before CHRIST, ſeems to have been accompanied by a conſiderable revolution both in government and religion: he was moſt probably of a different race from the *Mahábádians*, who preceded him, and began perhaps the new ſyſtem of national faith which HUSHANG, whoſe name it bears, completed; but the reformation was partial; for, while they rejected the complex polytheiſm of their predeceſſors, they retained the laws of MAHA'BA'D, with a ſuperſtitious veneration for the ſun, the planets, and fire; thus reſembling the *Hindu* ſects, called *Sauras* and *Ságnicas*, the ſecond of which is very numerous at *Banares*, where many *agnihótras* are continually blazing, and where the *Ságnicos*, when they enter on their ſacerdotal office, kindle, with two pieces of the hard wood *Semi*, a fire which they keep lighted through their lives for their nuptial ceremony, the performance of ſolemn ſacrifices, the obſequies of departed anceſtors, and their own funeral pile. This remarkable rite was continued by ZERA'TUSHT; who reformed the old religion by the addition of genii, or angels, preſiding over months and days, of new ceremonies in the veneration ſhown to fire, of a new work, which he pretended to have received from heaven, and, above all, by eſtabliſhing the actual adoration of One Supreme Being. He was born, according to MOHSAN, in the diſtrict of *Rai*; and it was he, not (as AMMIANUS aſſerts) his protector GUSHTASB, who travelled into *India*, that he might receive information from the *Bráhmans* in theology and ethics. It is barely poſſible that PYTHAGORAS knew him in the capital of *Irak*; but the *Grecian* ſage muſt then have been far advanced in years, and we have no certain evidence of an intercourſe between the two philoſophers. The reformed religion of *Perſia* continued in force till that country was ſubdued by the *Muſelmans*; and, without ſtudying the *Zend*, we have ample information concerning it

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in the modern *Perſian* writings of ſeveral who profeſſed it. BAHMAN always named ZERA'IUSHT with reverence; but he was in truth a pure Theiſt, and ſtrongly diſclaimed any adoration of the *fire* or other elements: he denied that the doctrine of two coeval principles, ſupremely good and ſupremely bad, formed any part of his faith; and he often repeated with emphaſis the verſes of FIRDAUSI on the proſtration of CYRUS and his paternal grandfather before the blazing altar: "Think not that they "were adorers of fire; for that element was only an exalted object, on "the luſtre of which they fixed their eyes; they humbled themſelves "a whole week before GOD; and, if thy underſtanding be ever ſo "little exerted, thou muſt acknowledge thy dependence on the Being "ſupremely pure." In a ſtory of SADI, near the cloſe of his beautiful *Búſtán*, concerning the idol of SO'MANA'TH, or MAHA'DE'VA, he confounds the religion of the *Hindus* with that of the *Gabrs*, calling the *Brâhmans* not only *Moghs* (which might be juſtified by a paſſage in the *Meſnavì*) but even readers of the *Zend* and *Pazend*. Now, whether this confuſion proceeded from real or pretended ignorance, I cannot decide, but am as firmly convinced that the doctrines of the *Zend* were diſtinct from thoſe of the *Veda*, as I am that the religion of the *Brâhmans*, with whom we converſe every day, prevailed in *Perſia* before the acceſſion of CAYU'MERS, whom the *Pársìs*, from reſpect to his memory, conſider as the firſt of men, although they believe in *an univerſal deluge* before his reign.

WITH the religion of the old *Perſians*, their *philoſophy* (or as much as we know of it) was intimately connected; for they were aſſiduous obſervers of the luminaries, which they adored, and eſtabliſhed (according to MOHSAN, who confirms in ſome degree the fragments of BEROSUS) a number

a number of artificial cycles with diſtinct names, which ſeem to indicate a knowledge of the period in which the equinoxes appear to revolve. They are ſaid alſo to have known the moſt wonderful powers of nature, and thence to have acquired the fame of magicians and enchanters: but I will only detain you with a few remarks on that metaphyſical theology, which has been profeſſed immemorially by a numerous ſect of *Perſians* and *Hindus*, was carried in part into *Greece*, and prevails even now among the learned *Muſelmans*, who ſometimes avow it without reſerve. The modern philoſophers of this perſuaſion are called *Sifis*, either from the *Greek* word for *a ſage*, or from the *woollen* mantle which they uſed to wear in ſome provinces of *Perſia*. Their fundamental tenets are, that nothing exiſts abſolutely but GOD: that the human ſoul is an emanation from his eſſence, and though divided for a time from its heavenly ſource, will be finally reunited with it; that the higheſt poſſible happineſs will ariſe from its reunion, and that the chief good of mankind in this tranſitory world, conſiſts in as perfect an *union* with the Eternal Spirit as the incumbrances of a mortal frame will allow; that, for this purpoſe, they ſhould break all *connexion* (or *taálluk*, as they call it) with extrinſic objects, and paſs through life without *attachments*, as a ſwimmer in the ocean ſtrikes freely without the impediment of clothes; that they ſhould be ſtraight and free as the cypreſs, whoſe fruit is hardly perceptible, and not ſink under a load, like fruit-trees *attached* to a trellis; that, if mere earthly charms have power to influence the ſoul, the *idea* of celeſtial beauty muſt overwhelm it in extatic delight; that for want of apt words to expreſs the divine perfections and the ardour of devotion, we muſt borrow ſuch expreſſions as approach the neareſt to our ideas, and ſpeak of *Beauty* and *Love* in a tranſcendent and myſtical ſenſe; that, like a *reed* torn from its native bank, like *wax* ſeparated

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from its delicious honey, the ſoul of man bewails its diſunion with *melancholy muſic*, and ſheds burning tears, like the lighted taper, waiting paſſionately for the moment of its extinction, as a diſengagement from earthly trammels, and the means of returning to its Only Beloved. Such in part (for I omit the minuter and more ſubtil metaphyſics of the *Sófis*, which are mentioned in the *Dabiſtàn)* is the wild and enthuſiaſtic religion of the modern *Perſian* poets, eſpecially of the ſweet HA'FIZ and the great *Maulavì*: ſuch is the ſyſtem of the *Védánti* philoſophers and beſt lyric poets of *India*; and, as it was a ſyſtem of the higheſt antiquity in both nations, it may be added to the many other proofs of an immemorial affinity between them.

III. ON the ancient *monuments* of *Perſian* ſculpture and architecture, we have already made ſuch obſervations as were ſufficient for our purpoſe; nor will you be ſurprized at the diverſity between the figures at *Elephanta*, which are manifeſtly *Hindu*, and thoſe at *Perſepolis*, which are merely *Sabian*, if you concur with me in believing that the *Takhti Jemſhid* was erected after the time of CAYU'MERS, when the *Bráhmans* had migrated from *Iràn*, and when their intricate mythology had been ſuperſeded by the ſimpler adoration of the planets and of fire.

IV. As to the *ſciences* or *arts* of the old *Perſians*, I have little to ſay; and no complete evidence of them ſeems to exiſt. MOHSAN ſpeaks more than once of ancient verſes in the *Pahlavì* language; and BAHMAN aſſured me, that ſome ſcanty remains of them had been preſerved: their muſic and painting, which NIZA'MI celebrated, have irrecoverably periſhed; and in regard to MA'NI', the painter and impoſtor, whoſe book

of

of drawings, called *Artang*, which he pretended to be divine, is ſuppoſed to have been deſtroyed by the *Chineſe*, in whoſe dominions he had ſought refuge, the whole tale is too modern to throw any light on the queſtions before us concerning the origin of nations and the inhabitants of the primitive world.

THUS has it been proved by clear evidence and plain reaſoning, that a powerful monarchy was eſtabliſhed in *Irân* long before the *Aſſyrian*, or *Piſhdâdî*, government; that it was in truth a *Hindu* monarchy, though, if any chuſe to call it *Cuſian*, *Caſdean*, or *Scythian*, we ſhall not enter into a debate on mere names; that it ſubſiſted many centuries, and that its hiſtory has been engrafted on that of the *Hindus*, who founded the monarchies of *Ayódhyà* and *Indraprêſtha*; that the language of the firſt *Perſian* empire was the mother of the *Sanſcrit*, and conſequently of the *Zend* and *Parſi*, as well as of *Greek*, *Latin*, and *Gothic*; that the language of the *Aſſyrians* was the parent of *Chaldaic* and *Pahlavi*, and that the primary *Tartarian* language alſo had been current in the ſame empire; although, as the *Tartars* had no books or even letters, we cannot with certainty trace their unpoliſhed and variable idioms. We diſcover, therefore in *Perſia*, at the earlieſt dawn of hiſtory, the *three* diſtinct races of men, whom we deſcribed on former occaſions, as poſſeſſors of *India*, *Arabia*, *Tartary*; and whether they were collected in *Irân* from diſtant regions, or diverged from it as from a common centre, we ſhall eaſily determine by the following conſiderations. Let us obſerve, in the firſt place, the central poſition of *Irân*, which is bounded by *Arabia*, by *Tartary*, and by *India*; whilſt *Arabia* lies contiguous to *Irân* only, but is remote from *Tartary*, and divided even from the ſkirts of *India* by a conſiderable gulf; no country, therefore, but *Perſia* can

ſeem‡ likely to have ſent forth its colonies to all the kingdoms of *Aſia*: the *Bráhmans* could never have migrated from *India* to *Irán*, becauſe they are expreſsly forbidden by their oldeſt exiſting laws to leave the region which they inhabit at this day. The *Arabs* have not even a tradition of an emigration into *Perſia* before MOHAMMED; nor had they indeed any inducement to quit their beautiful and extenſive domains: and, as to the *Tartars*, we have no trace in hiſtory of their departure from their plains and foreſts till the invaſion of the *Medes*, who, according to etymologiſts, were the ſons of MADAI; and even they were conducted by princes of an *Aſſyrian* family. The *three* races, therefore, whom we have already mentioned (and more than three we have not yet found) emigrated from *Irán*, as from their common country; and thus the *Saxon* chronicle, I preſume from good authority, brings the firſt inhabitants of *Britain* from *Armenia*; while a late very learned writer concludes, after all his laborious reſearches, that the *Goths*, or *Scythians*, came from *Perſia*; and another contends with great force, that both the *Iriſh* and old *Britons* proceeded ſeverally from the borders of the *Caſpian:* a coincidence of concluſions, from different media, by perſons wholly unconnected, which could ſcarce have happened if they were not grounded on ſolid principles. We may, therefore, hold this propoſition firmly eſtabliſhed, that *Irán*, or *Perſia*, in its largeſt ſenſe, was the true centre of population, of knowledge, of languages, and of arts; which, inſtead of travelling weſtward only, as it has been fancifully ſuppoſed, or eaſtward, as might with equal reaſon have been aſſerted, were expanded in all directions to all the regions of the world in which the *Hindu* race had ſettled under various denominations: but whether *Aſia* has not produced other races of men, diſtinct from the *Hindus*, the *Arabs*, or the *Tartars*, or whether any apparent diverſity may not have ſprung from an intermixture of thoſe

three in different proportions, muſt be the ſubject of a future enquiry. There is another queſtion of more immediate importance, which you, Gentlemen, only can decide; namely, "by what means we can preſerve our "Society from dying gradually away, as it has advanced gradually to its "preſent (ſhall I ſay flouriſhing or languiſhing?) ſtate." It has ſubſiſted five years without any expence to the members of it, until the firſt volume of our Tranſactions was publiſhed; and the price of that large volume, if we compare the different values of money in *Bengal* and in *England*, is not more than equal to the *annual* contribution towards the charges of the Royal Society by each of its fellows, who may not have choſen to compound for it on his admiſſion. This I mention, not from an idea that any of us could object to the purchaſe of one copy at leaſt, but from a wiſh to inculcate the neceſſity of our common exertions in promoting the ſale of the work both here and in *London*. In vain ſhall we meet, as a literary body, if our meetings ſhall ceaſe to be ſupplied with original diſſertations and memorials; and in vain ſhall we collect the moſt intereſting papers, if we cannot publiſh them occaſionally without expoſing the Superintendants of the Company's preſs, who undertake to print them at their own hazard, to the danger of a conſiderable loſs. By united efforts the *French* have compiled their ſtupendous repoſitories of univerſal knowledge; and by united efforts only can we hope to rival them, or to diffuſe over our own country and the reſt of *Europe*, the lights attainable by our *Aſiatic Reſearches*.

IV.

A LETTER

FROM THE LATE HENRY VANSITTART, ESQ.

TO THE PRESIDENT.

SIR,

HAVING ſome time ago met with a *Perſian* abridgement, compoſed by *Maulavì* KHAIRU'DDIN, of the *áſrarú'l afaghinah*, or the ſecrets of the *Afghàns*, a book written in the *Puſhto* language by HUSAIN, the ſon of SA'BIR, the ſon of KHIZR, the diſciple of *Hazrat* SHA'H KA'SIM *Sulaimánì*, whoſe tomb is in *Chunárgur*, I was induced to tranſlate it. Although it opens with a very wild deſcription of the origin of that tribe, and contains a narrative which can by no means be offered upon the whole as a ſerious and probable hiſtory, yet I conceive that the knowledge of what a nation ſuppoſe themſelves to be, may be intereſting to a Society like this, as well as of what they really are. Indeed, the commencement of almoſt every hiſtory is fabulous; and the moſt enlightened nations, after they have arrived at that degree of civilization and importance which has enabled and induced them to commemorate their actions, have always found a vacancy at their outſet, which invention, or at beſt preſumption, muſt ſupply. Such fictions appear at firſt in the form of traditions; and, having in this ſhape amuſed ſucceſſive generations by a gratification of their national vanity, they are committed to writing, and acquire the authority of hiſtory.

As a kingdom is an aſſemblage of component parts, condenſed by degrees from ſmaller aſſociations of individuals to their general union, ſo hiſtory is a combination of the tranſactions not only of the different tribes, but even of the individuals of the nation of which it treats. Each particular narrative, in ſuch a general collection, muſt be ſummary and incomplete. Biography, therefore, as well as deſcriptions of the manners, actions, and even opinions of ſuch tribes as are connected with a great kingdom, are not only entertaining in themſelves, but uſeful, as they explain and throw a light upon the hiſtory of the nation.

Under theſe impreſſions I venture to lay before the Society the tranſlation of an abridged hiſtory of the *Afghàns*; a tribe at different times ſubject to, and always connected with, the kingdoms of *Perſia* and *Hinduſtàn*. I alſo ſubmit a ſpecimen of their language, which is called by them *Pukhto*; but this word is ſoftened in *Perſian* into *Puſhto*.

I am, Sir,

With the greateſt reſpect,

Your moſt obedient humble ſervant,

Henry Vansittart.

Calcutta, March 3, 1784.

ON THE DESCENT OF THE AFGHANS FROM THE JEWS.

THE *Afghàns*, according to their own traditions, are the poſterity of MELIC TA'LU'T (king SAUL) who, in the opinion of ſome, was a deſcendant of JUDAH, the ſon of JACOB; and according to others, of BENJAMIN, the brother of JOSEPH.

IN a war which raged between the children of *Iſrael* and the *Amalekites*, the latter being victorious, plundered the *Jews*, and obtained poſſeſſion of the ark of the covenant. Conſidering this the God of the *Jews*, they threw it into fire, which did not affect it. They afterwards attempted to cleave it with axes, but without ſucceſs: every individual who treated it with indignity, was puniſhed for his temerity. They then placed it in their temple, but all their idols bowed to it. At length they faſtened it upon a cow, which they turned looſe in the wilderneſs.

WHEN the Prophet Samuel aroſe, the children of *Iſrael* ſaid to him, "We have been totally ſubdued by the *Amalekites*, and have no king: raiſe "to us a king, that we may be enabled to contend for the glory of God." SAMUEL ſaid, "In caſe you are led out to battle, are you determined to "fight?" They anſwered, "What has befallen us that we ſhould not "fight againſt infidels? That nation has baniſhed us from our country "and children." At this time the angel GABRIEL deſcended, and, delivering a wand, ſaid, "It is the command of GOD, that the perſon whoſe "ſtature ſhall correſpond with this wand, ſhall be king of *Iſrael*."

MELIC

MELIC TA'LU'T was at that time a man of inferior condition, and performed the humble employment of feeding the goats and cows of others. One day a cow under his charge was accidentally loſt. Being diſappointed in his ſearches he was greatly diſtreſſed, and applied to SAMUEL, ſaying, "I have loſt a cow, and do not poſſeſs the means of ſatisfying the owner. Pray for me, that I may be extricated from this difficulty." SAMUEL, perceiving that he was a man of lofty ſtature, aſked his name. He anſwered, TA'LU'T. SAMUEL then ſaid, "Meaſure TA'LU'T with the wand which "the angel GABRIEL brought." His ſtature was equal to it. SAMUEL then ſaid, GOD has raiſed TA'LU'T to be your king." The children of *Iſrael* anſwered, "We are greater than our king. We are men of dignity, "and he is of inferior condition: how ſhall he be our king?" SAMUEL informed them they ſhould know that God had conſtituted TA'LU'T their king, by his reſtoring the ark of the covenant. He accordingly reſtored it, and they acknowledged him their ſovereign.

AFTER TA'LU'T obtained the kingdom, he ſeized part of the territories of JALU'T, or GOLIAH, who aſſembled a large army, but was killed by DAVID. TA'LU'T afterwards died a martyr in a war againſt the infidels; and God conſtituted DAVID king of the *Jews*.

MELIC TA'LU'T had two ſons, one called BERKIA and the other IRMIA, who ſerved DAVID, and were beloved by him. He ſent them to fight againſt the infidels; and, by GOD's aſſiſtance, they were victorious.

THE ſon of BERKIA was called AFGH'AN, and the ſon of IRMIA was named USBEC. Thoſe youths diſtinguiſhed themſelves in the reign of DAVID, and were employed by SOLOMON. AFGH'AN was diſtinguiſhed

diſtinguiſhed by his corporal ſtrength, which ſtruck terror into Demons and Genii. USBEC was eminent for his learning.

AFGH'AN uſed frequently to make excurſions to the mountains; where his progeny, after his death, eſtabliſhed themſelves, lived in a ſtate of independence, built forts, and exterminated the infidels.

WHEN the ſelect of creatures, MUHAMMED, appeared upon earth, his fame reached the AFGH'ANS, who ſought him in multitudes under their leaders KHALID and ABDUL RASHI'D, ſons of WAL'ID. The prophet honoured them with the moſt gracious reception, ſaying, "Come, O *Me*"*lic*, or Kings:" whence they aſſumed the title of *Melic*, which they enjoy to this day. The prophet gave them his enſign, and ſaid that the faith would be ſtrengthened by them.

MANY ſons were born of KHA'LID, the ſon of WALI'D, who ſignalized themſelves in the preſence of the prophet, by fighting againſt the infidels. MUHAMMED honoured and prayed for them.

IN the reign of Sultan MAHMU'D of *Ghaznah*, eight men arrived, of the poſterity of KHA'LID the ſon of WALI'D, whoſe names were KALUN, ALUN, DAUD, YALUA, AHMED, AWIN, and GHA'ZI'. The Sultan was much pleaſed with them, and appointed each a commander in his army. He alſo conferred on them the offices of *Vuzir*, and *Vakili Mutlak*, or Regent of the Empire.

WHEREVER they were ſtationed they obtained poſſeſſion of the country, built moſques, and overthrew the temples of idols. They increaſed

ſo

ſo much, that the army of MAHMU'D was chiefly compoſed of *Afghàns*. When HERHIND, a powerful prince of *Hinduſtàn*, meditated an invaſion of *Ghaznah*, Sultan MAHMU'D diſpatched againſt him the deſcendants of KHA'LID with twenty thouſand horſe: a battle enſued; the *Afghàns* made the attack; and, after a ſevere engagement, which laſted from day-break till noon, defeated HERHIND, killed many of the infidels, and converted ſome to the *Muhammedan* faith.

THE *Afghàns* now began to eſtabliſh themſelves in the mountains; and ſome ſettled in cities with the permiſſion of Sultan MAHMU'D. They framed regulations, dividing themſelves into four claſſes, agreeably to the following deſcription. The firſt is the *pure* claſs, conſiſting of thoſe whoſe fathers and mothers were *Afghàns*. The ſecond claſs conſiſts of thoſe whoſe fathers were *Afghàns*, and mothers of another nation. The third claſs contains thoſe whoſe mothers were *Afghàns*, and fathers of another nation. The fourth claſs is compoſed of the children of women whoſe mothers were *Afghàns*, and fathers and huſbands of a different nation. Perſons who do not belong to one of the claſſes, are not called *Afghàns*.

AFTER the death of Sultan MAHMU'D they made another ſettlement in the mountains. SHIHA'BUDDI'N *Ghori*, a ſubſequent Sultan of *Ghaznah*, was twice repulſed from *Hinduſtàn*. His *Vazir* aſſembled the people, and aſked if any of the poſterity of KHA'LID were living. They anſwered, "Many now live in a ſtate of independence in the mountains, where they "have a conſiderable army." The *Vazir* requeſted them to go to the mountains, and by entreaties prevail on the *Afghàns* to come; for they were the deſcendants of companions of the prophet.

The inhabitants of *Ghaznah* undertook this embaſſy, and, by entreaties and preſents, conciliated the minds of the *Afghàns*, who promiſed to engage in the ſervice of the Sultan, provided he would himſelf come, and enter into an agreement with them. The Sultan viſited them in their mountains; honoured them; and gave them dreſſes and other preſents. They ſupplied him with twelve thouſand horſe, and a conſiderable army of infantry. Being diſpatched by the Sultan before his own army, they took *Dehlì*, killed Roy Pahtoura the King, his Miniſters, and Nobles, laid waſte the city, and made the infidels priſoners. They afterwards exhibited nearly the ſame ſcene in *Canauj*.

The Sultan, pleaſed by the reduction of thoſe cities, conferred honours upon the *Afghàns*. It is ſaid, that he then gave them the titles of *Patàn* and *Khàn*: the word *Patàn* is derived from the *Hindi* verb *Paitnà*, to ruſh, in alluſion their alacrity in attacking the enemy The *Patàns* have greatly diſtinguiſhed themſelves in the hiſtory of *Hinduſtàn*, and are divided into a variety of ſects.

The race of *Afghàns* poſſeſſed themſelves of the mountain of Solomon, which is near *Kandahàr*, and the circumjacent country, where they have built forts: this tribe has furniſhed many kings. The following monarchs of this race have ſat upon the throne of *Dehlì*: Sultan *Behlole*, *Afghàn* Lodi, Sultan Secander, Sultan Ibra'him, Shi'r Shah, Isla'm Shah, Adil Shah Sur. They alſo number the following kings of *Gaur*: Solaiman *Shàh Gurzanì*, Bayazid *Shàh*, and Kubt *Shàh*; beſides whom their nation has produced many conquerors of Provinces. The *Afghàns* are called *Solaimànì*, either becauſe they

were formerly the subjects of SOLOMON, king of the *Jews*, or because they inhabited the mountain, of SOLOMON.

THE translation being finished, I shall only add, that the country of the *Afghàns*, which is a province of *Càbul*, was originally called *Roh*, and from hence is derived the name of the *Rohillahs*. The city, which was established in it by the *Afghàns*, was called by them *Paishawer*, or *Paishòr*, and is now the name of the whole district. The sects of the *Afghàns* or *Patàns* are very numerous. The principal are these: *Lodì*, *Lohaurì*, *Sùr*, *Serwànì*, *Yusufzìhì*, *Bangash*, *Dilazaùc*, *Khattì*, *Yasin*, *Khail*, and *Balòje*. The meaning of *Zìhì*, is offspring, and of *Khail*, sect. A very particular account of the *Afghàns*, has been written by the late HA'FIZ RAHMAT *Khàn*, a chief of the *Rohillahs*, from which the curious reader may derive much information. They are *Musselmans*, partly of the *Sunni*, and partly of the *Shiah*, persuasion. They are great boasters of the antiquity of their origin, and reputation of their tribe, but other *Musselmans* entirely reject their claim, and consider them of modern, and even base, extraction. However, their character may be collected from history. They have distinguished themselves by their courage, both singly and unitedly, as principals and auxiliaries. They have conquered for their own princes and for foreigners, and have always been considered the main strength of the army, in which they have served. As they have been applauded for virtues, they have also been reproached for vices, having sometimes been guilty of treachery, and even acted the base part of assassins.

A SPE-

A SPECIMEN OF THE PUSHTO LANGUAGE.

لَستَمْ ظَا لِمَانْ حَا كِمَانْ

اَوْرِ كُوْرَ پيْشَوْرْ دِرِيْ وَاْرَه يَوْ دِيْ

By the oppreffion of tyrannical rulers,
Fire, the grave, and *Paifhór*, all three have been rendered equal.

دُسُنَّتْ وِپُرْ خِصَة دَ يْ مَرَا غَالِي رَوَايَت

With refpect to prayers enjoined by the *Sunnah*, they are remitted.
It is thus expreffed in the reports.

نَايْ اُو تَا دِيرَه شَهِوِيْ كَا نَيْ نَدِهِيس پرِيْ نَوِيْ

If a *man* perform them, it is very laudable. If he do not perform them it is no crime in him.

مبرزا خان

اي مِيرْزَا كَه دَ خُوْيِ بِهْتَرِيْ نَوِيْ

دَ سَيّد تَعَا وَتْ سِه دَيْ لَه بَامَنَهْ

If the difpofition be not good, *O Mírzá*,
What difference is there between a *Sayyed* and a *Bráhman*?

NOTE

NOTE BY THE PRESIDENT.

THIS account of the *Afghâns* may lead to a very intereſting diſcovery. We learn from Esdras, that the Ten Tribes, after a wandering journey, came to a country called *Arſareth*; where, we may ſuppoſe, they ſettled: now the *Afghâns* are ſaid by the beſt *Perſian* hiſtorians to be deſcended from the *Jews*; they have traditions among themſelves of ſuch a deſcent; and it is even aſſerted, that their families are diſtinguiſhed by the names of *Jewiſh* tribes, although, ſince their converſion to the *Iſlâm*, they ſtudiouſly conceal their origin; the *Puſhto* language, of which I have ſeen a dictionary, has a manifeſt reſemblance to the *Chaldaick*; and a conſiderable diſtrict under their dominion is called *Hazâreh*, or *Hazâret*, which might eaſily have been changed into the word uſed by Esdras. I ſtrongly recommend an inquiry into the literature and hiſtory of the *Afghâns*.

RE-

V.

REMARKS ON THE ISLAND OF HINZUAN OR JOHANNA. BY THE PRESIDENT.

HINZU'AN (a name, which has been gradually corrupted into *Anzuame*, *Anzuan*, *Juanny*, and *Johanna*) has been governed about two centuries by a colony of *Arabs*, and exhibits a curious inſtance of the ſlow approaches toward civilization, which are made by a ſmall community, with many natural advantages, but with few means of improving them. An account of this *African* iſland, in which we hear the language and ſee the manners of *Arabia*, may neither be unintereſting, in itſelf, nor foreign to the objects of inquiry propoſed at the inſtitution of our Society.

On *Monday* the 28th of *July* 1787, after a voyage, in the *Crocodile*, of ten weeks and two days from the rugged iſlands of *Cape Verd*, our eyes were delighted with a proſpect ſo beautiful, that neither a painter nor a poet could perfectly repreſent it, and ſo cheering to us, that it can juſtly be conceived by ſuch only, as have been in our preceding ſituation. It was the ſun riſing in full ſplendour on the iſle of *Mayótta* (as the ſeaman called it) which we had joyfully diſtinguiſhed the preceding afternoon by the height of its peak, and which now appeared at no great diſtance from the windows of our cabin; while *Hinzúán*, for which we had ſo long panted, was plainly diſcernible a-head, where its high lands preſented themſelves with remarkable boldneſs. The weather was fair; the water, ſmooth; and a gentle breeze drove us eaſily before dinner time round a rock, on which the *Boſſam* ſtruck juſt a year

before, into a commodious road *, where we dropped our anchor early in the evening: we had ſeen *Mohilla*, another ſiſter iſland, in the courſe of the day.

THE frigate was preſently ſurrounded with canoes, and the deck ſoon crowded with natives of all ranks, from the high-born chief, who waſhed linen, to the half-naked ſlave, who only paddled. Moſt of them had letters of recommendation from *Engliſhmen*, which none of them were able to read, though they ſpoke *Engliſh* intelligibly; and ſome appeared vain of titles, which our countrymen had given them in play, according to their ſuppoſed ſtations: we had *Lords*, *Dukes*, and *Princes* on board ſoliciting our cuſtom and importuning us for preſents. In fact they were too ſenſible to be proud of empty ſounds, but juſtly imagined, that thoſe ridiculous titles would ſerve as marks of diſtinction, and, by attracting notice, procure for them ſomething ſubſtantial. The only men of real conſequence in the iſland, whom we ſaw before we landed, were the Governor ABULLAH, ſecond couſin to the king, and his brother ALWI', with their ſeveral ſons; all of whom will again be particularly mentioned: they underſtood *Arabick*, ſeemed zealots in the *Mohammedan* faith, and admired my copies of the *Alkoran*; ſome verſes of which they read, whilſt ALWI' peruſed the opening of another *Arabian* manuſcript, and explained it in *Engliſh* more accurately than could have been expected.

The next morning ſhowed us the iſland in all its beauty; and the ſcene

* Lat. 12. 16. 47 S. Long. 44. 25. 5. E. by the Maſter.

was

was ſo diverſified, that a diſtinct view of it could hardly have been exhibited by the beſt pencil: you muſt, therefore, be ſatisfied with a mere deſcription, written on the very ſpot and compared attentively with the natural landſcape. We were at anchor in a fine bay, and before us was a vaſt amphitheatre, of which you may form a general notion by picturing in your minds a multitude of hills infinitely varied in ſize and figure, and then ſuppoſing them to be thrown together, with a kind of artleſs ſymmetry, in all imaginable poſitions. The back ground was a ſeries of mountains, one of which is pointed, near half a mile perpendicularly high from the level of the ſea, and little more than three miles from the ſhore: all of them were richly clothed with wood, chiefly fruit-trees, of an exquiſite verdure. I had ſeen many a mountain of ſtupendous height in *Wales* and *Switzerland*, but never ſaw one before, round the boſom of which the clouds were almoſt continually rolling, while its green ſummit roſe flouriſhing above them, and received from them an additional brightneſs. Next to this diſtant range of hills was another tier, part of which appeared charmingly verdant, and part rather barren; but the contraſt of colours changed even this nakedneſs into a beauty: nearer ſtill were innumerable mountains, or rather cliffs, which brought down their verdure and fertility quite to the beech; ſo that every ſhade of green, the ſweeteſt of colours, was diſplayed at one view by land and by water. But nothing conduced more to the variety of this enchanting proſpect, than the many rows of palm trees, eſpecially the tall and gracefully *Areca's*, on the ſhores, in the valleys, and on the ridges of hills where one might almoſt ſuppoſe them to have been planted regularly by deſign. A more beautiful appearance can ſcarce be conceived, than ſuch a number of elegant palms in ſuch a ſituation, with luxuriant tops like verdant plumes, placed at juſt intervals, and ſhowing between them

part

part of the remoter landſcape, while they left the reſt to be ſupplied by the beholder's imagination. The town of *Matſamúdo* lay on our left, remarkable at a diſtance for the tower of the principal moſque, which was built by HALI'MAH, a queen of the iſland, from whom the preſent king is deſcended; a little on our right was a ſmall town, called *Bantáni*. Neither the territory of *Nice*, with its olives, date-trees, and cypreſſes, not the iſles of *Hieres*, with their delightful orange-groves, appeared ſo charming to me, as the view from the road of *Himiáin*; which, nevertheleſs, is far ſurpaſſed, as the Captain of the *Crocodile* aſſured us, by many of the iſlands in the ſouthern ocean. If life were not too ſhort for the complete diſcharge of all reſpective duties, publick and private, and for the acquiſition even of neceſſary knowledge in any degree of perfection, with how much pleaſure and improvement might a great part of it be ſpent in admiring the beauties of this wonderful orb, and contemplating the nature of man in all its varieties!

WE haſtened to tread on firm land, to which we had been ſo long diſuſed, and went on ſhore after breakfaſt, to ſee the town, and return the Governor's viſit. As we walked, attended by a crowd of natives, I ſurprized them by reading aloud an *Arabic* inſcription over the gate of a moſque, and ſtill more, when I entered it, by explaining four ſentences, which were written very diſtinctly on the wall, ſignifying, "that the "world was given us for our own edification, not for the purpoſe of raiſing "ſumptuous buildings; life, for the diſcharge of moral and religious du-"ties, not for pleaſurable indulgences; wealth, to be liberally beſtowed, "not avariciouſly hoarded; and learning, to produce good actions, not "empty diſputes." We could not but reſpect the temple even of a falſe prophet, in which we found ſuch excellent morality: we ſaw nothing

better among the *Romiſh* trumpery in the church at *Madeira*. When we came to ABDULLAH's houſe, we were conducted through a ſmall court-yard into an open room, on each ſide of which was a large and convenient ſofa, and above it a high bed-place in a dark receſs, over which a chintz counterpoint hung down from the ceiling. This is the general form of the beſt rooms in the iſland; and moſt of the tolerable houſes have a ſimilar apartment on the oppoſite ſide of the court, that there may be at all hours a place in the ſhade for dinner or for repoſe. We were entertained with ripe dates from *Yemen*, and the milk of cocoa-nuts; but the heat of the room, which ſeemed acceſſible to all who choſe to enter it, and the ſcent of muſk or civet, with which it was perfumed, ſoon made us deſirous of breathing a purer air; nor could I be detained long by the *Arabic* manuſcripts which the Governor produced, but which appeared of little uſe, and conſequently of no value except to ſuch as love mere curioſities. One of them, indeed, relating to the penal law of the *Mohammedans*, I would gladly have purchaſed at a juſt price; but he knew not what to aſk, and I knew that better books on that ſubject might be procured in *Bengal*. He then offered me a black boy for one of my *Alkorans*, and preſſed me to barter an *Indian* dreſs, which he had ſeen on board the ſhip, for a cow and calf: the golden ſlippers attracted him moſt, ſince his wife, he ſaid, would like to wear them; and, for that reaſon, I made him a preſent of them; but had deſtined the book and the robe for his ſuperior. No high opinion could be formed of *Sayad* ABDULLA, who ſeemed very eager for gain, and very ſervile where he expected it.

OUR next viſit was to *Shaikh* SALIM, the king's eldeſt ſon; and, if we had ſeen him firſt, the ſtate of civilization in *Hinzuán* would have ap-

peared at its loweſt ebb. The worſt *Engliſh* hackney in the worſt ſtable, is better lodged, and looks more princely than this heir apparent; but, though his mien and apparel were extremely ſavage, yet allowance ſhould have been made for his illneſs; which, as we afterwards learned, was an abſceſs in the ſpleen, a diſorder not uncommon in that country, and frequently cured, agreeably to the *Arabian* practice, by the actual cautery. He was inceſſantly chewing pieces of the *Areca-nut* with ſhell-lime: a cuſtom borrowed, I ſuppoſe, from the *Indians*, who greatly improve the compoſition with ſpices and betel-leaves, to which they formerly added camphor: all the natives of rank chewed it, but not, I think, to ſo great an exceſs. Prince SA'LIM from time to time gazed at himſelf with complacency in a piece of broken looking-glaſs, which was glued on a ſmall board; a ſpecimen of wretchedneſs which we obſerved in no other houſe; but many circumſtances convinced us, that the apparently low condition of his royal highneſs, who was not on bad terms with his father, and ſeemed not to want authority, proceeded wholly from his avarice. His brother HAMDULLAH, who generally reſides in the town of *Domoni*, has a very different character, being eſteemed a man of worth, good ſenſe, and learning: he had come, the day before, to *Matſamudo*, on hearing that an *Engliſh* frigate was in the road; and I, having gone out for a few minutes to read an *Arabic* inſcription, found him, on my return, devouring a manuſcript which I had left with ſome of the company. He is a *Kadi*, or *Mohammedan* judge; and, as he ſeemed to have more knowledge than his countrymen, I was extremely concerned that I had ſo little converſation with him. The king, *Shaikh* AHMED, has a younger ſon, named ABDULLAH, whoſe uſual reſidence is in the town of *Wani*, which he ſeldom leaves, as the ſtate of his health is very infirm. Since the ſucceſſion to the title and authority of *Sultan* is not unalterably fixed in one line,

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but requires confirmation by the chiefs of the iſland, it is not improbable that they may hereafter be conferred on prince HAMDULLAH.

A LITTLE beyond the hole in which SA'LIM received us, was his *haram*, or the apartment of his women, which he permitted us all to ſee; not through politeneſs to ſtrangers, as we believed at firſt, but, as I learned afterwards from his own lips, in expectation of a preſent. We ſaw only two or three miſerable creatures with their heads covered, while the favourite, as we ſuppoſed, ſtood behind a coarſe curtain, and ſhowed her ankles under it, loaded with ſilver rings; which, if ſhe was capable of reflection, ſhe muſt have conſidered as glittering fetters rather than ornaments; for a rational being would have preferred the condition of a wild beaſt, expoſed to perils and hunger in a foreſt, to the ſplendid miſery of being wife or miſtreſs to SA'LIM.

BEFORE we returned, ALWI' was deſirous of ſhowing me his books; but the day was too far advanced, and I promiſed to viſit him ſome other morning. The governor, however, prevailed on us to ſee his place in the country, where he invited us to dine the next day: the walk was extremely pleaſant from the town to the ſide of a rivulet, which formed in one part a ſmall pool, very convenient for bathing, and thence through groves and alleys, to the foot of a hill; but the dining-room was little better than an open barn, and was recommended only by the coolneſs of its ſhade. ABDULLAH would accompany us on our return to the ſhip, together with two *Muftis*, who ſpoke *Arabic* indifferently, and ſeemed eager to ſee all my manuſcripts; but they were very moderately learned, and gazed with ſtupid wonder on a fine copy of the *Hamáſah*, and on other collections of ancient poetry.

EARLY the next morning a black meſſenger, with a tawny lad as his interpreter, came from Prince SA'LIM; who, having broken his perſpective-glaſs, wiſhed to procure another by purchaſe or barter: a polite anſwer was returned, and ſteps taken to gratify his wiſhes. As we on our part expreſſed a deſire to viſit the king at *Domóni*, the prince's meſſenger told us that his maſter would, no doubt, lend us palanquins (for there was not a horſe in the iſland) and order a ſufficient number of his vaſſals to carry us, whom we might pay for their trouble, as we thought juſt: we commiſſioned him, therefore, to aſk that favour, and begged that all might be ready for our excurſion before ſun-riſe, that we might eſcape the heat of the noon, which, though it was the middle of winter, we had found exceſſive. The boy, whoſe name was COMBO MADI, ſtaid with us longer than his companion: there was ſomething in his look ſo ingenuous, and in his broken *Engliſh* ſo ſimple, that we encouraged him to continue his innocent prattle. He wrote and read *Arabic* tolerably well, and ſet down at my deſire the names of ſeveral towns in the iſland, which, he firſt told me, was properly called *Hinzuán*. The fault of begging for whatever he liked he had in common with the governor and other nobles; but hardly in a greater degree. His firſt petition for ſome lavender-water was readily granted; and a ſmall bottle of it was ſo acceptable to him, that, if we had ſuffered him, he would have kiſſed our feet; but it was not for himſelf that he rejoiced ſo extravagantly: he told us, with tears ſtarting from his eyes, that his mother would be pleaſed with it, and the idea of her pleaſure ſeemed to fill him with rapture: never did I ſee filial affection more warmly felt, or more tenderly and, in my opinion, unaffectedly expreſſed; yet this boy was not a favourite of the officers, who thought him artful. His mother's name, he ſaid, was FA'TIMA; and he importuned us to viſit her;

her; conceiving, I ſuppoſe, that all mankind muſt love and admire her. We promiſed to gratify him; and, having made him ſeveral preſents, permitted him to return. As he reminded me of ALADDIN in the *Arabian* tale, I deſigned to give him that name in a recommendatory letter, which he preſſed me to write, inſtead of St. DOMINGO, as ſome *European* viſiter had ridiculouſly called him; but, ſince the alluſion would not have been generally known, and ſince the title of *Alau'ldin*, or *Eminence in Faith*, might have offended his ſuperiors, I thought it adviſable for him to keep his *African* name. A very indifferent dinner was prepared for us at the houſe of the Governor, whom we did not ſee, the whole day, as it was the beginning of *Ramadàn*, the *Mohammedan* lent, and he was engaged in his devotions, or made them his excuſe; but his eldeſt ſon ſat by us while we dined, together with MU'SA, who was employed, jointly with his brother HUSAIN, as purveyor to the Captain of the frigate.

HAVING obſerved a very elegant ſhrub, that grew about ſix feet high in the court-yard, but was not then in flower, I learned with pleaſure that it was *Hinnà*, of which I had read ſo much in *Arabian* poems, and which *European* botaniſts have ridiculouſly named *Lawſonia*. MU'SA bruiſed ſome of the leaves, and having moiſtened them with water, applied them to our nails and the tips of our fingers, which, in a ſhort time, became of a dark orange-ſcarlet. I had before conceived a different idea of this dye, and imagined that it was uſed by the *Arabs* to imitate the natural redneſs of thoſe parts in young and healthy perſons, which in all countries muſt be conſidered as a beauty: perhaps a leſs quantity of *Hinnà*, or the ſame differently prepared, might have produced that effect. The old men in *Arabia* uſed the ſame dye to conceal their grey hairs, while their daughters

were

were dying their lips and gums black, to ſet off the whiteneſs of their teeth; ſo univerſal in all nations and ages are perſonal vanity, and a love of diſguiſing truth; though in all caſes, the farther our ſpecies recede from nature, the farther they depart from true beauty; and men at leaſt ſhould diſdain to uſe artifice or deceit for any purpoſe, or on any occaſion. If the women of rank at *Paris*, or thoſe in *London*, who wiſh to imitate them, be inclined to call the *Arabs* barbarians, let them view their own head-dreſſes and cheeks in a glaſs, and, if they have leſt no room for bluſhes, be inwardly at leaſt aſhamed of their cenſure.

In the afternoon I walked a long way up the mountains in a winding path, amid plants and trees, no leſs new than beautiful, and regretted exceedingly that very few of them were in bloſſom; as I ſhould then have had leiſure to examine them. Curioſity led me from hill to hill; and I came at laſt to the ſources of a rivulet, which we had paſſed near the ſhore, and from which the ſhip was to be ſupplied with excellent water. I ſaw no birds on the mountains but *Guinea-fowls*, which might have been eaſily caught: no inſects were troubleſome to me but moſquitos; and I had no fear of venomous reptiles, having been aſſured that the air was too pure for any to exiſt in it; but I was often unwillingly a cauſe of fear to the gentle and harmleſs lizard, who ran among the ſhrubs. On my return I miſſed the path by which I had aſcended; but having met ſome blacks laden with yams and plantains, I was by them directed to another which led me round, through a charming grove of cocoa-trees, to the Governor's country-ſeat, where our entertainment was cloſed by a ſyllabub, which the *Engliſh* had taught the *Muſſelmans* to make for them.

We received no anſwer from Sa'lim, nor, indeed, expected one; ſince we took for granted that he could not but approve our intention of viſiting his father; and we went on ſhore before ſunriſe, in full expectation of a pleaſant excurſion to *Domóni:* but we were happily diſappointed. The ſervants at the prince's door, told us coolly that their maſter was indiſpoſed, and, as they believed, aſleep; that he had given them no orders concerning his palanquins, and that they durſt not diſturb him. Alwi' ſoon came to pay us his compliments, and was followed by his eldeſt ſon, Ahmed, with whom we walked to the gardens of the two princes, Sa'lim and Hamdullah; the ſituation was naturally good, but wild and deſolate; and, in Sa'lim's garden, which we entered through a miſerable hovel, we ſaw a convenient bathing-place, well-built with ſtone, but then in great diſorder, and a ſhed, by way of ſummer-houſe, like that under which we dined at the governor's, but ſmaller, and leſs neat. On the ground lay a kind of cradle about ſix feet long, and little more than one foot in breadth, made of cords twiſted in a ſort of clumſy net-work, with a long thick bamboo fixed to each ſide of it. This, we heard with ſurprize, was a royal palanquin, and one of the vehicles in which we were to have been rocked on mens ſhoulders over the mountains. I had much converſation with Ahmed, whom I found intelligent and communicative. He told me that ſeveral of his countrymen compoſed ſongs and tunes; that he was himſelf a paſſionate lover of poetry and muſic; and that, if we would dine at his houſe, he would play and ſing to us. We declined his invitation to dinner, as we had made a conditional promiſe, if ever we paſſed a day at *Matſamádo*, to eat curry with *Bínà* Gibu, an honeſt man, of whom we purchaſed eggs and vegetables, and to whom ſome *Engliſhman* had given the title of *Lord*, which made him extremely vain: we could, therefore, make

Savva!

Sayyad ARMED only a morning viſit. He ſung a hymn or two in *Arabic*, and accompanied his drawling, though pathetic pſalmody, with a kind of mandoline, which he touched with an awkward quill: the inſtrument was very imperfect, but ſeemed to give him delight. The names of the ſtrings were written on it in *Arabian* or *Indian* figures, ſimple and compounded; but I could not think them worth copying. He gave Captain WILLIAMSON, who wiſhed to preſent ſome literary curioſities to the library at *Dublin*, a ſmall roll, containing a hymn in *Arabic* letters, but in the language of *Mombuza*, which was mixed with *Arabic*; but it hardly deſerved examination, ſince the ſtudy of languages has little intrinſic value, and is only uſeful as the inſtrument of real knowledge, which we can ſcarce expect from the poets of the *Mozambique*. ARMED would, I believe, have heard our *European* airs (I always except *French* melody) with rapture; for his favourite tune was a common *Iriſh* jig, with which he ſeemed wonderfully affected.

ON our return to the beach I thought of viſiting old ALWI', according to my promiſe, and prince SALI'M, whoſe character I had not then diſcovered: I reſolved for that purpoſe to ſtay on ſhore alone, our dinner with GIBU having been fixed at an early hour. ALWI' ſhowed me his manuſcripts, which chiefly related to the ceremonies and ordinances of his own religion; and one of them, which I had formerly ſeen in *Europe*, was a collection of ſublime and elegant hymns in praiſe of MOHAMMED, with explanatory notes in the margin. I requeſted him to read one of them after the manner of the *Arabs*, and he chanted it in a ſtrain by no means unpleaſing; but I am perſuaded that he underſtood it very imperfectly. The room, which was open to the ſtreet, was preſently crowded with viſiters, moſt of whom were *Muftis*, or *Expounders of the Law*; and ALWI', deſirous

deſirous perhaps to diſplay his zeal before them at the expence of good breeding, directed my attention to a paſſage in a commentary on the *Koràn*, which I found levelled at the *Chriſtians*. The commentator, having related with ſome additions (but, on the whole, not inaccurately) the circumſtances of the temptation, puts this ſpeech into the mouth of the tempter: "though I am unable to delude thee, yet I will miſlead, "by thy means, more human creatures than thou wilt ſet right." 'Nor 'was this menace vain,' ſays the *Mohammedan* writer, 'for the inhabitants 'of a region many thouſand leagues in extent, are ſtill ſo deluded by 'the Devil, that they impiouſly call I'SA the ſon of GOD. Heaven pre-'ſerve us,' he adds,' from blaſpheming *Chriſtians* as well as blaſpheming *Jews*.' Although a religious diſpute with thoſe obſtinate zealots would have been unſeaſonable and fruitleſs, yet they deſerved, I thought, a ſlight reprehenſion, as the attack ſeemed to be concerted among them. 'The 'commentator,' ſaid I, 'was much to blame for paſſing ſo indiſcriminate 'and haſty a cenſure: the title which gave your legiſlator, and gives 'you ſuch offence, was often applied in *Judea* by a bold figure, agree-'able to the *Hebrew* idiom, though unuſual in *Arabic*, to *angels*, to *holy* '*men*, and even to *all mankind*, who are commanded to call GOD *their* '*Father*; and in this large ſenſe the Apoſtle to the *Romans* calls the 'elect the *children of* GOD, and the MESSIAH the *firſt-born among many* '*brethren*; but the words *only begotten* are applied tranſcendently and in-'comparably to him alone *; and as for me, who believe the ſcriptures, 'which you alſo profeſs to believe, though you aſſert without proof that we 'have altered them, I cannot refuſe him an appellation, though far ſurpaſſ-'ing our reaſon, by which he is diſtinguiſhed in the Goſpel; and the be-

* Rom. viii. 29. See 1 John iii. 1. H. Barrow, 231, 232, 151.

'lievers in MUHAMMED, who expreſsly name him *the Meſſiah*, and pro-
'nounce him to have been born of a virgin, which alone might fully juſtify
'the phraſe condemned by this author, are themſelves condemnable for
'cavilling at words, when they cannot object to the ſubſtance of our faith
'conſiſtently with their own.' The *Muſelmans* had nothing to ſay in reply; and the converſation was changed.

I WAS aſtoniſhed at the queſtions which ALWI' put to me concerning the late peace and the independence of *America*; the ſeveral powers and reſources of *Britain* and *France*, *Spain* and *Holland*; the character and ſuppoſed views of the Emperor; the comparative ſtrength of the *Ruſſian*, Imperial, and *Othman* armies, and their reſpective modes of bringing their forces to action. I anſwered him without reſerve, except on the ſtate of our poſſeſſions in *India*; nor were my anſwers loſt, for I obſerved, that all the company were variouſly affected by them; generally with amazement, often with concern; eſpecially when I deſcribed to them the great force and admirable diſciple of the *Auſtrian* army, and the ſtupid prejudices of the *Turks*, whom nothing can induce to abandon their old *Tartarian* habits; and expoſed the weakneſs of their empire in *Africa*, and even in the more diſtant provinces of *Aſia*. In return, he gave me clear, but general, information concerning the government and commerce of his iſland. "His country," he ſaid, "was poor, and produced few articles of "trade; but, if they could get money, *which they now preferred to play-* "*things* (thoſe were his words) they might eaſily," he added, "procure "foreign commodities, and exchange them advantageouſly with their "neighbours in the iſlands and on the continent. Thus with a little mo-"ney," ſaid he, "we purchaſe muſkets, powder, balls, cutlaſſes, knives, "cloths, raw cotton, and other articles brought from *Bombay*; and with

"thoſe

" thoſe we trade to *Madagaſcar* for the natural produce of the country, or " for *dollars*, with which the *French* buy cattle, honey, butter, and ſo forth, " in that iſland. With *gold*, which we receive from your ſhips, we can " procure elephants teeth from the natives of *Mozambique*, who barter " them alſo for ammunition and bars of iron; and the *Portugueze* in that " country give us cloths of various kinds in exchange for our commodities: " thoſe cloths we diſpoſe of lucratively in the three neighbouring iſlands; " whence we bring rice, cattle, a kind of bread-fruit which grows in " *Comara*, and *ſlaves*, which we buy alſo at other places to which we trade; " and we carry on this traffic in our own veſſels."

HERE I could not help expreſſing my abhorrence of their *ſlave-trade*, and aſked him by what law they claimed a property in rational beings, ſince our Creator had given our ſpecies a dominion, to be moderately exerciſed, over the beaſts of the field and the fowls of the air, but none *to man over man?* " By no law," anſwered he, " unleſs neceſſity be a law. " There are nations in *Madagaſcar* and in *Africa*, who know neither " GOD, nor his Prophet, nor MOSES, nor DAVID, nor the MESSIAH: " thoſe nations are in perpetual war, and take many captives, whom, if " they could not ſell, they would certainly kill. Individuals among " them are in extreme poverty, and have numbers of children, who, " if they cannot be diſpoſed of, muſt periſh through hunger, together " with their miſerable parents. By purchaſing theſe wretches, we pre- " ſerve their lives, and, perhaps, thoſe of many others whom our " money relieves. The ſum of the argument is this: If we buy them, " they will live; if they become valuable ſervants, they will live com- " fortably; but if they are not ſold, they muſt die miſerably." ' There ' may be,' ſaid I, ' ſuch caſes; but you fallaciouſly draw a general con-

'cluſion from a few particular inſtances; and this is the very fallacy 'which, on a thouſand other occaſions, deludes mankind. It is not to be 'doubted that a conſtant and gainful traffic in human creatures foments 'war, in which captives are always made, and keeps up that perpetual en-'mity, which you pretend to be the *cauſe* of a practice in itſelf reprehen-'ſible, while in truth it is its *effect*; the ſame traffic encourages lazineſs in 'ſome parents, who might in general ſupport their families by proper in-'duſtry, and ſeduces others to ſtifle their natural feelings. At moſt, your 'redemption of thoſe unhappy children can amount only to a perſonal 'contract, implied between you, for gratitude and reaſonable ſervice on 'their part, for kindneſs and humanity on yours; but can you think 'your part performed by diſpoſing of them againſt their wills with as 'much indifference as if you were ſelling cattle; eſpecially as they 'might become readers of the *Korán*, and pillars of your faith? The 'law,' ſaid he, 'forbids our ſelling them when they are believers in the 'Prophet; and little children only are ſold; nor they often, or by all 'maſters.' "You, who believe in MUHAMMED," ſaid I, "are bound by "the ſpirit and letter of his laws to take pains, that they alſo may believe "in him; and, if you neglect ſo important a duty for ſordid gain, I do "not ſee how you can hope for proſperity in this world, or for happineſs "in the next." My old friend and the *Muftis* aſſented, and muttered a few prayers; but probably forgot my preaching before many minutes had paſſed.

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So much time had ſlipped away in this converſation, that I could make but a ſhort viſit to Prince SA'LIM; and my view in viſiting him was to fix the time of our journey to *Domóni* as early as poſſible on the next morning. His appearance was more ſavage than ever; and I found

found him in a diſpoſition to complain bitterly of the *Engliſh*. "No ac-
"knowledgement," he ſaid, "had been made for the kind attentions of
"himſelf and the chief men in his country to the officers and people
"of the *Brilliant*, though a whole year had elapſed ſince the wreck."
I really wondered at the forgetfulneſs, to which alone ſuch a neglect
could be imputed, and aſſured him, that I would expreſs my opinion both
in *Bengal* and in letters to *England*. "We have little," ſaid he, "to hope
"from letters; for, when we have been paid with them inſtead of money,
"and have ſhown them on board your ſhips, we have commonly been
"treated with diſdain, and often with imprecations." I aſſured him that
either thoſe letters muſt have been written coldly and by very obſcure
perſons, or ſhown to very ill-bred men, of whom there were too many in
all nations; but that a few inſtances of rudeneſs ought not to give him
a general prejudice againſt our national character. "But you," ſaid he,
"are a wealthy nation; and we are indigent: yet, though all our groves
"of cocoa-trees, our fruits, and our cattle, are ever at your ſervice,
"you always try to make hard bargains with us for what you chuſe to
"diſpoſe of, and frequently will neither ſell nor give thoſe things which
"we principally want." 'To form,' ſaid I, 'a juſt opinion of *Engliſhmen*,
'you muſt viſit us in our own iſland, or at leaſt in *India*; here we are
'ſtrangers and travellers: many of us have no deſign to trade in any
'country, and none of us think of trading in *Hinzuàn*, where we ſtop
'only for refreſhment. The clothes, arms, or inſtruments, which you
'may want, are commonly neceſſary or convenient to us; but, if
'*Seyyad* ALWI' or his ſons were to be ſtrangers in our country, you
'would have no reaſon to boaſt of ſuperior hoſpitality.' He then
ſhowed me, a ſecond time, a part of an old ſilk veſt with the ſtar of the
order of the Thiſtle, and begged me to explain the motto; expreſſing a

wiſh

wiſh that the order might be conferred on him by the King of *England*, in return for his good offices to the *Engliſh*. I repreſented to him the impoſſibility of his being gratified, and took occaſion to ſay, that there was more true dignity in their own native titles than in thoſe of *Prince*, *Duke*, and *Lord*, which had been idly given them, but had no conformity to their manners, or the conſtitution of their government.

THIS converſation not being agreeable to either of us, I changed it, by deſiring that the palanquins and bearers might be ready next morning as early as poſſible. He anſwered, that his palanquins were at our ſervice for nothing, but that we muſt pay him ten dollars for each ſet of bearers; that it was the ſtated price; and that Mr. HASTINGS had paid it when he went to viſit the king. This, as I learned afterwards, was falſe; but, in all events, I knew that he would keep the dollars himſelf, and give nothing to the bearers, who deſerved them better, and whom he would compel to leave their cottages and toil for his profit. "Can you imagine," I replied, "that we would employ four-and-twenty men to bear us ſo far on their "ſhoulders without rewarding them amply? But ſince they are free men "(ſo he had aſſured me) and not your ſlaves, we will pay them in proportion "to their diligence and good behaviour; and it becomes neither your dig-"nity nor ours to make a previous bargain." I ſhowed him an elegant copy of the *Koràn*, which I deſtined for his father, and deſcribed the reſt of my preſent; but he coldly aſked, "if that was all." Had he been king, a purſe of dry dollars would have given him more pleaſure than the fineſt or holieſt manuſcript. Finding him, in converſing on a variety of ſubjects, utterly void of intelligence or principle, I took my leave, and ſaw him no more; but promiſed to let him know for certain whether we ſhould make our intended excurſion.

WE

We dined in tolerable comfort, and had occaſion, in the courſe of the day, to obſerve the manners of the natives in the middle rank, who are called *Bánas*, and all of whom have ſlaves conſtantly at work for them. We viſited the mother of COMBOMA'DI, who ſeemed in a ſtation but little raiſed above indigence; and her huſband, who was a mariner, bartered an *Arabic* treatiſe on aſtronomy and navigation, which he had read, for a ſea-compaſs, of which he well knew the uſe.

In the morning I had converſed with two very old *Arabs* of *Yemen*, who had brought ſome articles of trade to *Hinzuán*; and in the afternoon I met another, who had come from *Maſkat* (where at that time there was a civil war) to purchaſe, if he could, an hundred ſtand of arms. I told them all that I loved their nation; and they returned my compliments with great warmth, eſpecially the two old men, who were near fourſcore; and reminded me of ZOHAIR and HA'RETH.

So bad an account had been given me of the road over the mountains, that I diſſuaded my companions from thinking of the journey, to which the Captain became rather diſinclined; but, as I wiſhed to be fully acquainted with a country which I might never ſee again, I wrote the next day to SA'LIM, requeſting him to lend me one palanquin, and to order a ſufficient number of men. He ſent me no written anſwer; which I aſcribe rather to his incapacity than to rudeneſs: but the Governor, with ALWI' and two of his ſons, came on board in the evening, and ſaid, that they had ſeen my letter; that all ſhould be ready; but that I could not pay leſs for the men than ten dollars. I ſaid I would pay more; but it ſhould be to the men themſelves, according to their behaviour. They returned ſomewhat diſſatisfied, after I had played at cheſs with ALWI's younger

younger ſon, in whoſe manner and addreſs there was ſomething remarkably pleaſing.

BEFORE ſunriſe on the 2d of *Auguſt*, I went alone on ſhore, with a ſmall baſket of ſuch proviſions as I might want in the courſe of the day, and with ſome cuſhions to make the prince's palanquin at leaſt a tolerable vehicle; but the prince was reſolved to receive the dollars to which his men were entitled; and he knew that, as I was eager for the journey, he could preſcribe his own terms. Old ALWI' met me on the beach, and brought excuſes from SA'LIM, who, he ſaid, was indiſpoſed. He conducted me to his houſe, and ſeemed rather deſirous of perſuading me to abandon my deſign of viſiting the king; but I aſſured him, that if the prince would not ſupply me with proper attendants, I would walk to *Domóm* with my own ſervants and a guide. *Shaikh* SA'LIM, he ſaid, was miſerably avaricious; that he was aſhamed of a kinſman with ſuch a diſpoſition; but that he was no leſs obſtinate than covetous; and that without ten dollars paid in hand, it would be impoſſible to procure bearers. I then gave him three guineas, which he carried, or pretended to carry to SA'LIM, but returned without the change, alleging that he had no ſilver, and promiſing to give me, on my return, the few dollars that remained. In about an hour the ridiculous vehicle was brought by nine ſturdy blacks, who could not ſpeak a word of *Arabick*; ſo that I expected no information concerning the country through which I was to travel; but ALWI' aſſiſted me in a point of the utmoſt conſequence. 'You cannot go,' ſaid he, 'without an interpreter; for the king 'ſpeaks only the language of this iſland; but I have a ſervant, whoſe 'name is TUMU'NI, a ſenſible and worthy man, who underſtands *English*, 'and is much eſteemed by the king: he is known and valued all over 'the

'*Hinzuàn*. This man ſhall attend you, and you will ſoon be ſenſible of 'his worth.'

TUMU'NI deſired to carry my baſket; and we ſet out with a proſpect of fine weather, but ſome hours later than I had intended. I walked by the gardens of the two princes to the ſkirts of the town, and came to a little village, conſiſting of ſeveral very neat huts, made chiefly with the leaves of the cocoa-tree; but the road a little farther was ſo ſtony, that I ſat in the palanquin, and was borne with perfect ſafety over ſome rocks. I then deſired my guide to aſſure the men that I would pay them liberally; but the poor peaſants, who had been brought from their farms on the hill, were not perfectly acquainted with the uſe of money, and treated my promiſe with indifference.

ABOUT five miles from *Matſamúdo* lies the town of *Wáni*, where *Shaikh* ABDULLAH, who has already been mentioned, uſually reſides. I ſaw it at a diſtance, and it ſeemed to be agreeably ſituated. When I had paſſed the rocky part of the road I came to a ſtony beach, where the ſea appeared to have loſt ſome ground, ſince there was a fine ſand to the left, and beyond it a beautiful bay, which reſembled that of *Weymouth*, and ſeemed equally convenient for bathing; but it did not appear to me that the ſtones over which I was carried had been recently covered with water. Here I ſaw the frigate; and, taking leave of it for two days, turned from the coaſt into a fine country very neatly cultivated, conſiſting partly of hillocks exquiſitely green, and partly of plains, which were then in a gaudy dreſs of rich yellow bloſſoms. My guide informed me that they were plantations of a kind of vetch, which was eaten by the natives. Cottages and farms were interſperſed all over this gay cham-

paign, and the whole ſcene was delightful; but it was ſoon changed for beauties of a different ſort. We deſcended into a cool valley, through which ran a rivulet of perfectly clear water; and there, finding my vehicle uneaſy, though from the laughter and merriment of my bearers I concluded them to be quite at their eaſe, I bade them ſet me down, and walked before them all the reſt of the way. Mountains, clothed with fine trees and flowering ſhrubs, preſented themſelves on our aſcent from the vale; and we proceeded for half an hour through pleaſant wood-walks, where I regretted the impoſſibility of loitering a while to examine the variety of new bloſſoms which ſucceeded one another at every ſtep, and the virtues, as well as names of which, ſeemed familiar to TUMU'NI. At length we deſcended into a valley of greater extent than the former: a river, or large wintery torrent, ran through it, and fell down a ſteep declivity at the end of it, where it ſeemed to be loſt among rocks. Cattle were grazing on the banks of the river, and the huts of their owners appeared on the hills. A more agreeable ſpot I had not before ſeen, even in *Switzerland* or *Merionethſhire*; but it was followed by an aſſemblage of natural beauties which I hardly expected to find in a little iſland twelve degrees to the ſouth of the *Line*. I was not ſufficiently pleaſed with my ſolitary journey to diſcover charms which had no actual exiſtence, and the firſt effect of the contraſt between St. *Jago* and *Hinzuan* had ceaſed; but, without any diſpoſition to give the landſcape a high colouring, I may truly ſay, what I thought at the time, that the whole country which next preſented itſelf, as far ſurpaſſed *Emeronville* or *Blenheim*, or any other imitations of nature which I had ſeen in *France* or *England*, as the fineſt bay ſurpaſſes an artificial piece of water. Two very high mountains, covered to the ſummit with the richeſt verdure, were at ſome diſtance on my right hand, and ſeparated from me by mea-

dows diverſified with cottages and herds, or by vallies reſounding with torrents and water-falls: on my left was the ſea, to which there were beautiful openings from the hills and woods; and the road was a ſmooth path naturally winding through a foreſt of ſpicy ſhrubs, fruit trees, and palms. Some high trees were ſpangled with white bloſſoms, equal in fragrance to orange-flowers. My guide called them *Mouongos*, but the day was declining ſo faſt, that it was impoſſible to examine them. The variety of fruits, flowers, and birds, of which I had a tranſient view in this magnificent garden, would have ſupplied a naturaliſt with amuſement for a month; but I ſaw no remarkable inſect, and no reptile of any kind. The woodland was diverſified by a few pleaſant glades, and new proſpects were continually opened: at length a noble view of the ſea burſt upon me unexpectedly; and, having paſſed a hill or two, we came to the beach, beyond which were ſeveral hills and cottages. We turned from the ſhore, and on the next eminence I ſaw the town of *Domóni*, at a little diſtance below us. I was met by a number of natives, a few of whom ſpoke *Arabic*; and thinking it a convenient place for repoſe, I ſent my guide to apprize the king of my intended viſit. He returned in half an hour with a polite meſſage, and I walked into the town, which ſeemed large and populous. A great crowd accompanied me; and I was conducted to a houſe built on the ſame plan with the beſt houſes at *Matſamúdo*. In the middle of the court yard ſtood a large *Mouongo*-tree, which perfumed the air; the apartment on the left was empty; and in that on the right ſat the king, on a ſofa or bench covered with an ordinary carpet. He roſe when I entered, and, graſping my hands, placed me near him on the right; but, as he could ſpeak only the language of *Hinzuán*, I had recourſe to my friend TUMU'NI, than whom a readier or more accurate interpreter could not have been found. I

preſented the king with a very handſome *Indian* dreſs of blue ſilk with golden flowers, which had been worn only once at a maſquerade, and with a beautiful copy of the *Koràn*, from which I read a few verſes to him. He took them with great complacency, and ſaid he wiſhed I had come by ſea, that he might have loaded one of my boats with fruit, and with ſome of his fineſt cattle. He had ſeen me, he ſaid, on board the frigate, where he had been, according to his cuſtom, in diſguiſe, and had heard of me from his ſon *Shaikh* HAMDULLAH. I gave him an account of my journey, and extolled the beauties of his country: he put many queſtions concerning mine, and profeſſed great regard for our nation. "But I hear," ſaid he, "that you are a magiſtrate, "and conſequently profeſs peace: why are you armed with a broad-"ſword?" 'I was a man,' I ſaid, 'before I was a magiſtrate; and, if it 'ſhould ever happen that law could not protect me, I muſt protect 'myſelf.' He ſeemed about ſixty years old, had a very cheerful countenance, and great appearance of good-nature, mixed with a certain dignity which diſtinguiſhed him from the crowd of miniſters and officers who attended him. Our converſation was interrupted by notice, that it was the time for evening-prayers; and, when he roſe, he ſaid, "This houſe is yours, and I will viſit you in it after you "have taken ſome refreſhment." Soon after, his ſervants brought a roaſt fowl, a rice-pudding, and ſome other diſhes, with papayas and very good pomegranates: my own baſket ſupplied the reſt of my ſupper. The room was hung with old red cloth, and decorated with pieces of porcelain, and feſtoons of *Engliſh* bottles; the lamps were places on the ground in large ſea-ſhells; and the bed-place was a receſs, concealed by a chintz hanging oppoſite to the ſofa on which we had been ſitting. Though it was not a place that invited repoſe, and the gnats were inexpreſſibly troubleſome,

troubleſome, yet the fatigue of the day procured me very comfortable ſlumber. I was waked by the return of the king and his train; ſome of whom were *Arabs*, for I heard one ſay *huwa rákid*, or, *he is ſleeping*. There was immediate ſilence; and I paſſed the night with little diſturbance, except from the unwelcome ſongs of the moſquitos. In the morning all was equally ſilent and ſolitary; the houſe appeared to be deſerted, and I began to wonder what had become of TUMU'NI: he came at length, with concern on his countenance, and told me that the bearers had run away in the night; but that the king, who wiſhed to ſee me in another of his houſes, would ſupply me with bearers, if he could not prevail on me to ſtay till a boat could be ſent for. I went immediately to the king, whom I found ſitting on a raiſed ſofa in a large room, the walls of which were adorned with ſentences from the *Koràn*, in very legible characters. About fifty of his ſubjects were ſeated on the ground in a ſemicircle before him; and my interpreter took his place in the midſt of them. The good old king laughed heartily when he heard the adventure of the night, and ſaid, "you will now be my "gueſt for a week I hope; but, ſeriouſly, if you muſt return ſoon, "I will ſend into the country for ſome peaſants to carry you." He then apologized for the behaviour of *Shaikh* SA'LIM, which he had heard from TUMU'NI, who told me afterwards that he was much diſpleaſed with it, and would not fail to expreſs his diſpleaſure. He concluded with a long harangue on the advantage which the *Engliſh* might derive from ſending a ſhip every year from *Bombay* to trade with his ſubjects, and on the wonderful cheapneſs of their commodities, eſpecially of their cowries. Ridiculous as this idea might ſeem, it ſhowed an enlargement of mind, a deſire of promoting the intereſt of his people, and a ſenſe of the benefits ariſing from trade, which could hardly have been

been expected from a petty *African* chief; and which, if he had been ſovereign of *Yemen*, might have been expanded into rational projects proportioned to the extent of his dominions. I anſwered, that I was imperfectly acquainted with the commerce of *India*; but that I would report the ſubſtance of his converſation, and would ever bear teſtimony to his noble zeal for the good of his country, and to the mildneſs with which he governed it. As I had no inclination to paſs a ſecond night in the iſland, I requeſted leave to return without waiting for bearers. He ſeemed very ſincere in preſſing me to lengthen my viſit; but had too much *Arabian* politeneſs to be importunate. We, therefore, parted; and at the requeſt of TUMU'NI, who aſſured me that little time would be loſt in ſhowing attention to one of the worthieſt men in *Hinzuán*, I made a viſit to the Governor of the town, whoſe name was MUTEKKA. His manners were very pleaſing; and he ſhowed me ſome letters from the officers of the *Brilliant*, which appeared to flow warm from the heart, and contained the ſtrongeſt *eloge* of his courteſy and liberality. He inſiſted on filling my baſket with ſome of the fineſt pomegranates I had ever ſeen; and I left the town impreſſed with a very favourable opinion of the king and his governor. When I reaſcended the hill, attended by many of the natives, one of them told me in *Arabic*, that I was going to receive the higheſt mark of diſtinction that was in the king's power to ſhow me; and he had ſcarce ended, when I heard the report of a ſingle gun: *Shaikh* AHMED had ſaluted me with the whole of his ordnance. I waved my hat, and ſaid *Allah Acbar:* the people ſhouted, and I continued my journey, not without fear of inconvenience from exceſſive heat and the fatigue of climbing rocks. The walk, however, was not on the whole unpleaſant: I ſometimes reſted in the valleys and forded all the rivulets, which refreſhed me with their coolneſs,

and

and ſupplied me with exquiſite water to mix with the juice of my pomegranates, and occaſionally with brandy. We were overtaken by ſome peaſants who came from the hills by a nearer way, and brought the king's preſent of a cow with her calf, and a ſhe-goat with two kids: they had apparently been ſelected for their beauty, and were brought ſafe to *Bengal*. The proſpects which had ſo greatly delighted me the preceding day had not yet loſt their charms, though they wanted the recommendation of novelty; but I muſt confeſs, that the moſt delightful object in that day's walk, of near ten miles, was the black frigate, which I diſcerned at ſun-ſet, from a rock near the Prince's gardens. Cloſe to the town I was met by a native, who, perceiving me to be weary, opened a fine cocoa-nut, which afforded me a delicious draught. He informed me that one of his countrymen had been puniſhed that afternoon for a theft on board the *Crocodile*; and added, that, in his opinion, the puniſhment was no leſs juſt than the offence was diſgraceful to his country. The offender, as I afterwards learned, was a youth of a good family, who had married a daughter of old ALWI', but, being left alone for a moment in the cabin, and ſeeing a pair of blue Morocco ſlippers, could not reſiſt the temptation, and concealed them ſo ill under his gown, that he was detected with the mainer. This proves that no principle of honour is inſtilled by education into the gentry of this iſland: even ALWI', when he had obſerved that, "In the month of *Ramadân* it was not lawful to paint with *Hinna*, "or to *tell lies*;" and when I aſked whether both were lawful all the reſt of the year, anſwered, that "lies were innocent, if no man was injured by "them." TUMU'NI took his leave, as well ſatisfied as myſelf with our excurſion. I told him, before his maſter, that I transferred alſo to him the dollars which were due to me out of the three guineas; and that,

if

if ever they ſhould part, I ſhould be very glad to receive him into my ſervice in *India*. Mr. ROBERTS, the maſter of the ſhip, had paſſed the day with *Sayyad* AHMED, and had learned from him a few curious circumſtances concerning the government of *Hinzuán*, which he found to be a monarchy limited by an ariſtocracy. The king, he was told, had no power of making war by his own authority; but, if the aſſembly of nobles, who were from time to time convened by him, reſolved on a war with any of the neighbouring iſlands, they defrayed the charges of it by voluntary contributions; in return for which they claimed as their own all the booty and captives that might be taken. The hope of gain or the want of ſlaves is uſually the real motive for ſuch enterprizes, and oſtenſible pretexts are eaſily found: at that very time, he underſtood, they meditated a war, becauſe they wanted hands for the following harveſt. Their fleet conſiſted of ſixteen or ſeventeen ſmall veſſels, which they manned with about two thouſand five hundred iſlanders, armed with muſkets and cutlaſſes, or with bows and arrows. Near two years before, they had poſſeſſed themſelves of two towns in *Mayáta*, which they ſtill kept and garriſoned. The ordinary expences of the government were defrayed by a tax from two hundred villages; but the three principal towns were exempt from all taxes, except that they paid annually to the Chief *Mufti* a fortieth part of the value of all their moveable property; and from that payment neither the king nor the nobles claimed an exception. The kingly authority, by the principles of their conſtitution, was conſidered as elective, though the line of ſucceſſion had not in fact been altered ſince the firſt election of a Sultan. He was informed, that a wandering *Arab*, who had ſettled in the iſland, had, by his intrepidity in ſeveral wars, acquired the rank of a chieftain, and afterwards of a king with limited powers; and that he was the *grandfather* of *Shaikh* AHMED. I had been aſſured that Queen

HALI'MAH was his *grandmother*; and, that he was the *firſt* king; but it muſt be remarked, that the words *jedd* and *jeddah* in *Arabic* are uſed for a male and female *anceſtor* indefinitely; and, without a correct pedigree of AHMED's family, which I expected to procure, but was diſappointed, it would ſcarce be poſſible to aſcertain the time when his forefather obtained the higheſt rank in the government. In the year 1600 *Captain* JOHN DAVIS, who wrote an account of his voyage, found *Mayáta* governed by a king, and *Anſuame*, or *Hinzuán*, by a queen, who ſhowed him great marks of friendſhip. He anchored before the town of *Demos* (does he mean *Domóni?*) which was as large, he ſays, as *Plymouth*; and he concludes from the ruins around it, that it had once been a place of ſtrength and grandeur. I can only ſay, that I obſerved no ſuch ruins. Fifteen years after, *Captain* PEYTON and *Sir* THOMAS ROE touched at the *Comara Iſlands*; and from their ſeveral accounts, it appears that an old Sultaneſs then reſided in *Hinzuán*, but had a dominion paramount over all the iſles, three of her ſons governing *Mohila* in her name. If this be true, SOHAILI' and the ſucceſſors of HALI'MAH muſt have loſt their influence over the other iſlands; and, by renewing their dormant claim, as it ſuits their convenience, they may always be furniſhed with a pretence for hoſtilities. Five generations of eldeſt ſons would account for an hundred and ſeventy of the years which have elapſed ſince DAVIS and PEYTON found *Hinzuán* ruled by a Sultaneſs; and AHMED was of ſuch an age, that his reign may be reckoned equal to a generation. It is probable, on the whole, that HALI'MAH was the widow of the firſt *Arabian* king, and that her moſque has been continued in repair by his deſcendants; ſo that we may reaſonably ſuppoſe two centuries to have paſſed ſince a ſingle *Arab* had the courage and addreſs to eſtabliſh in that beautiful iſland a form of government, which, though bad enough in itſelf, appears to have been adminiſtered with advantage to the original inhabitants. We have

lately heard of civil commotions in *Hinzuàn*, which, we may venture to pronounce, were not excited by any cruelty or violence of AHMED, but were probably occaſioned by the inſolence of an oligarchy naturally hoſtile to king and people. That the mountains in the *Comaru Iſlands* contain diamonds and the precious metals, which are ſtudiouſly concealed by the policy of the ſeveral governments, may be true, though I have no reaſon to believe it, and have only heard it aſſerted without evidence; but I hope that neither an expectation of ſuch treaſures, nor of any other advantage, will ever induce an *European* power to violate the firſt principles of juſtice, by aſſuming the ſovereignty of *Hinzuàn*, which cannot anſwer a better purpoſe than that of ſupplying our fleets with ſeaſonable refreſhment; and, although the natives have an intereſt in receiving us with apparent cordiality; yet, if we wiſh their attachment to be unfeigned, and their dealings juſt, we muſt ſet them an example of ſtrict honeſty in the performance of our engagements. In truth, our nation is not cordially loved by the inhabitants of *Hinzuàn*, who, as it commonly happens, form a general opinion from a few inſtances of violence or breach of faith. Not many years ago an *European*, who had been hoſpitably received, and liberally ſupported at *Maſſamùda*, behaved rudely to a young married woman, who, being of low degree, was walking veiled through a ſtreet in the evening. Her huſband ran to protect her, and reſented the rudeneſs, probably with menaces, poſſibly with actual force; and the *European* is ſaid to have given him a mortal wound with a knife or bayonet, which he brought, after the ſcuffle, from his lodging. This foul murder, which the law of nature would have juſtified the magiſtrate in puniſhing with death, was reported to the king, who told the governor (I uſe the very words of ALWI') that "it would be wiſer to huſh it up." ALWI' mentioned a civil caſe of his own, which ought not to be concealed. When he was on the coaſt of *Africa*, in the dominions of a very ſavage

prince

prince, a ſmall *European* veſſel was wrecked; and the prince not only ſeized all that could be ſaved from the wreck, but claimed the captain and the crew as his ſlaves, and treated them with ferocious inſolence. ALWI' aſſured me, that when he heard of the accident, he haſtened to the prince, fell proſtrate before him, and by tears and importunity prevailed on him to give the *Europeans* their liberty; that he ſupported them at his own expence, enabled them to build another veſſel, in which they ſailed to *Hinzuàn*, and departed thence for *Europe* or *India*. He ſhowed me the Captain's promiſſory notes for ſums, which to an *African* trader muſt be a conſiderable object, but which were no price for liberty, ſafety, and perhaps life, which his good, though diſintereſted, offices had procured. I lamented that, in my ſituation, it was wholly out of my power to aſſiſt ALWI' in obtaining juſtice; but he urged me to deliver an *Arabic* letter from him, encloſing the notes to the Governor-General, who, as he ſaid, knew him well; and I complied with his requeſt. Since it is poſſible that a ſubſtantial defence may be made by the perſon thus accuſed of injuſtice, I will not name either him or the veſſel which he commanded; but, if he be living, and if this paper ſhould fall into his hands, he may be induced to reflect how highly it imports our national honour, that a people, whom we call ſavage, but who adminiſter to our convenience, may have no juſt cauſe to reproach us with a violation of our contracts.

VI.

ON THE BAYA, OR INDIAN GROSS-BEAK.

BY AT'HAR ALI KHAN OF DEHLI.

THE little bird, called *Bayà* in *Hindì*, *Berbera* in *Sanſcrit*, *Bábúi* in the dialect of *Bengal*, *Cibù* in *Perſian*, and *Tennawwit* in *Arabic*, from his remarkably *pendent* neſt, is rather larger than a ſparrow, with yellow-brown plumage, a yellowiſh head and feet, a light-coloured beak, and a conic beak very thick in proportion to his body. This bird is exceedingly common in *Hinduſtàn*; he is aſtoniſhingly ſenſible, faithful, and docile, never voluntarily deſerting the place where his young were hatched, but not averſe, like moſt other birds, to the ſociety of mankind, and eaſily taught to perch on the hand of his maſter. In a ſtate of nature he generally builds his neſt on the higheſt tree that he can find, eſpecially on the Palmyra, or on the *Indian* fig-tree, and he prefers that which happens to overhang a well or a rivulet; he makes it of graſs, which he weaves like cloth and ſhapes like a large bottle, ſuſpending it firmly on the branches, but ſo as to rock with the wind, and placing it with its entrance downwards to ſecure it from birds of prey. His neſt uſually conſiſts of two or three chambers; and it is the popular belief, that he lights them with fire-flies, which he catches alive at night and confines with moiſt clay, or with cow-dung: that ſuch flies are often found in his neſt, where pieces of cow-dung are alſo ſtuck, is indubitable; but as their light could be of little uſe to him, it ſeems probable that he only feeds on them. He may be taught with eaſe to fetch a piece of

paper,

paper, or any ſmall thing, that his maſter points out to him. It is an atteſted fact, that, if a ring be dropped into a deep well, and a ſignal given to him, he will fly down with amazing celerity, catch the ring before it touches the water, and bring it up to his maſter with apparent exultation; and it is confidently aſſerted, that, if a houſe or any other place be ſhown to him once or twice, he will carry a note thither immediately, on a proper ſignal being made. One inſtance of his docility I can myſelf mention with confidence, having often been an eye-witneſs of it. The young *Hindu* women at *Banáres*, and in other places, wear very thin plates of gold, called *tícas*, ſlightly fixed by way of ornament between their eye-brows; and, when they paſs through the ſtreets, it is not uncommon for the youthful libertines, who amuſe themſelves with training *Bayàs*, to give them a ſign which they underſtand, and ſend them to pluck the pieces of gold from the foreheads of their miſtreſſes, which they bring in triumph to the lovers. The *Bayà* feeds naturally on graſshoppers, and other inſects, but will ſubſiſt, when tame, on pulſe macerated in water. His fleſh is warm and drying, of eaſy digeſtion, and recommended, in medical books, as a ſolvent of ſtone in the bladder, or kidneys; but of that virtue there is no ſufficient proof. The female lays many beautiful eggs, reſembling large pearls; the white of them, when they are boiled, is tranſparent, and the flavour of them is exquiſitely delicate. When many *Bayàs* are aſſembled on a high tree, they make a lively din, but it is rather chirping than ſinging; their want of muſical talents is, however, amply ſupplied by their wonderful ſagacity, in which they are not excelled by any of the feathered inhabitants of the foreſt.

VII.

ON THE CHRONOLOGY OF THE HINDUS.

WRITTEN IN JANUARY, 1788.

BY THE PRESIDENT.

THE great antiquity of the *Hindus* is believed ſo firmly by themſelves, and has been the ſubject of ſo much converſation among *Europeans*, that a ſhort view of their Chronological Syſtem, which has not yet been exhibited from certain authorities, may be acceptable to thoſe who ſeek truth without partiality to received opinions, and without regarding any conſequences that may reſult from their inquiries. The conſequences, indeed, of truth cannot but be deſireable, and no reaſonable man will apprehend any danger to ſociety from a general diffuſion of its light; but we muſt not ſuffer ourſelves to be dazzled by a falſe glare, nor miſtake enigmas and allegories for hiſtorical verity. Attached to no ſyſtem, and as much diſpoſed to reject the *Moſaic* hiſtory, if it be proved erroneous, as to believe it, if it be confirmed by ſound reaſoning from indubitable evidence, I propoſe to lay before you a concife account of *Indian* Chronology extracted from *Sanſcrit* books, or collected from converſations with *Pandits*, and to ſubjoin a few remarks on their ſyſtem, without attempting to decide a queſtion, which I ſhall venture to ſtart, "whether it is not in fact the ſame with "our own, but embelliſhed and obſcured by the fancy of their poets and "the riddles of their aſtronomers?"

ONE

ONE of the moſt curious books in *Sanſcrit*, and one of the oldeſt after the *Vedas*, is a tract on *religious and civil duties*, taken, as it is believed, from the oral inſtructions of MENU, ſon of BRAHMA', to the firſt inhabitants of the earth. A well-collated copy of this intereſting law-tract is now before me; and I begin my diſſertation with a few couplets from the firſt chapter of it: "The ſun cauſes the diviſion of day and night, "which are of two ſorts, thoſe of men, and thoſe of the Gods; the "day for the labour of *all* creatures in their ſeveral employments; the "night for their ſlumber. A month is a day and night of the Patriarchs; "and it is divided into two parts; the bright half is *their* day for labo-"rious exertions; the dark half, *their* night for ſleep. A year is a day "and night of the Gods; and that is alſo divided into two halves; the "day is, when the ſun moves toward the north; the night, when it "moves toward the ſouth. Learn now the duration of a night and day "of BRAHMA' with that of the ages reſpectively and in order. Four "thouſand years *of the Gods* they call the *Crita* (or *Satya*) age; and its "limits at the beginning and at the end *are*, in like manner, as many "hundreds. In the three ſucceſſive ages, together with their limits at "the beginning and end of them, are thouſands and hundreds diminiſhed "by one. This aggregate of four ages, amounting to twelve thouſand "divine years, is called an age of the Gods; and a thouſand ſuch "divine ages added together, muſt be conſidered as a day of BRAHMA': "his night has alſo the ſame duration. The before-mentioned age "of the Gods, or twelve thouſand of their years, multiplied by ſeventy-"one, form what is named here below a *Manwantara*. There are "*alternate* creations and deſtructions *of worlds* through innumerable "*Manwantaras*: the Being ſupremely deſirable performs all this again "and again."

Such is the arrangement of infinite time, which the *Hindus* believe to have been revealed from Heaven, and which they generally underſtand in a literal ſenſe. It ſeems to have intrinſic marks of being purely aſtronomical; but I will not appropriate the obſervations of others, nor anticipate thoſe in particular which have been made by two or three of our members, and which they will, I hope, communicate to the Society. A conjecture, however, of Mr. Patterson, has ſo much ingenuity in it, that I cannot forbear mentioning it here, eſpecially as it ſeems to be confirmed by one of the couplets juſt cited. He ſuppoſes, that as a *month* of mortals is a day and night of the Patriarchs, from the analogy of its bright and dark halves, ſo, by the ſame analogy, a day and night of mortals might have been conſidered by the ancient *Hindus* as a month of the lower world; and then a year of ſuch months will conſiſt only of twelve days and nights; and thirty ſuch years will compoſe a lunar year of mortals; whence he ſurmiſes that the *four million three hundred and twenty thouſand* years, of which the four *Indian* ages are ſuppoſed to conſiſt, mean only years of twelve days; and, in fact, that ſum divided by *thirty*, is reduced to *an hundred and forty-four thouſand*: now *a thouſand four hundred and forty* years are one *pada*, a period in the *Hindu* aſtronomy; and that ſum, multiplied by *eighteen*, amounts preciſely to *twenty-five thouſand nine hundred and twenty*, the number of years in which the fixed ſtars appear to perform their long revolution eaſtward. The laſt mentioned ſum is the product alſo of *an hundred and forty-four*; which, according to M. Bailly, was an old *Indian* cycle, into *an hundred and eighty*, or the *Tartarian* period called *Yan*, and of *two thouſand eight hundred and eighty* into *nine*, which is not only one of the lunar cycles, but conſidered by the *Hindus* as a myſterious number, and an emblem of Divinity, becauſe, if it be multiplied by any other whole number, the ſum of the figures in the

different products remains always nine, as the Deity, who appears in many forms, continues One immutable eſſence. The important period of *twenty five thouſand nine hundred and twenty* years is well known to ariſe from the multiplication of *three hundred and ſixty* into *ſeventy-two*, the number of years in which a fixed ſtar ſeems to move through a degree of a great circle; and, although M. LE GENTIL aſſures us that the modern *Hindus* believe a complete revolution of the ſtars to be made in *twenty-four thouſand* years, or *fifty-four* ſeconds of a degree to be paſſed in one year, yet we may have reaſon to think that the old *Indian* aſtronomers had made a more accurate calculation, but concealed their knowledge from the people under the veil of *fourteen* MANWANTARAS, *ſeventy-one* divine ages, compound cycles, and years of different ſorts, from thoſe of BRAHMA to thoſe of *Pátála*, or the *infernal regions*. If we follow the analogy ſuggeſted by MENU, and ſuppoſe only a day and night to be called a *year*, we may divide the number of years in a divine age by *three hundred and ſixty*, and the quotient will be *twelve thouſand*, or the number of his *divine years* in one age: but, conjecture apart, we need only compare the two periods 4320000 and 25920, and we ſhall find, that among their common diviſors are 6, 9, 12, &c. 18, 36, 72, 144, &c. which numbers, with their ſeveral multiples, eſpecially in a decuple progreſſion, conſtitute ſome of the moſt celebrated periods of the *Chaldeans*, *Greeks*, *Tartars*, and even of the *Indians*. We cannot fail to obſerve, that the number 432, which appears to be the baſis of the *Indian* ſyſtem, is a 60th part of 25920, and, by continuing the compariſon, we might probably ſolve the whole enigma. In the preface to a *Váhines* almanack I find the following wild ſtanza: "A *thouſand* Great "Ages are a day of BRAHMA'; a *thouſand* ſuch days are an *Indian* "hour of VISHNU; *ſix hundred thouſand* ſuch hours make a period

" of RUDRA; and a million of *Rudras* (or *two quadrillions five hundred* " *and ninety-two thouſand trillions of lunar years*) are but a *ſecond* to the " Supreme Being." The *Hindu* theologians deny the concluſion of the ſtanza to be orthodox: — " *Time*," they ſay, " *exiſts not at all with* GOD;" and they adviſe the aſtronomers to mind their own buſineſs, without meddling with theology. The aſtronomical verſe, however, will anſwer our preſent purpoſe; for it ſhows, in the firſt place, that cyphers are added at pleaſure to ſwell the periods; and, if we take ten cyphers from a *Rudra*, or divide by ten thouſand millions, we ſhall have a period of 2592000000 years, which, divided by 60 (the uſual diviſor of *time* among the *Hindus*) will give 4320000, or a Great Age, which we find ſubdivided in the proportion of 4, 3, 2, 1, from the notion of *virtue* decreaſing arithmetically in the *golden*, *ſilver*, *copper*, and *earthen* ages. But, ſhould it be thought improbable that the *Indian* aſtronomers, in very early times, had made more accurate obſervations than thoſe of *Alexandria*, *Bagdad*, or *Marághah*, and ſtill more improbable that they ſhould have relapſed without apparent cauſe into error, we may ſuppoſe that they formed their divine age by an arbitrary multiplication of 24000 by 180, according to M. Le GENTIL; or of 21600 by 200, according to the comment on the *Súrya Siddhánta*. Now, as it is *hardly* poſſible that ſuch coincidences ſhould be accidental, we may hold it *nearly* demonſtrated, that the period of a *divine age* was at firſt merely aſtronomical, and may conſequently reject it from our preſent inquiry into the hiſtorical or civil chronology of *India*. Let us, however, proceed to the avowed opinions of the *Hindus*, and ſee, when we have aſcertained their ſyſtem, whether we can reconcile it to the courſe of nature, and the common ſenſe of mankind.

THE aggregate of their four ages they call a Divine Age, and believe that in every thouſand ſuch ages, or in every *day* of BRAHMA', *fourteen* MENUS are ſucceſſively inveſted by him with the ſovereignty of the earth: each MENU, they ſuppoſe, tranſmits his empire to his ſons and grandſons during a period of ſeventy-one divine ages; and ſuch a period they name a *Manwantara*; but, ſince *fourteen* multiplied by *ſeventy-one* are not quite a *thouſand*, we muſt conclude that *ſix divine ages* are allowed for intervals between the *Manwantaras*, or for the twilight of BRAHMA"s day. Thirty ſuch days, or *Calpas*, conſtitute, in their opinion, *a month* of BRAHMA'; twelve ſuch months, one of his years; and an hundred ſuch years, his *age*; of which age they aſſert, that fifty years have elapſed. We are now then, according to the *Hindus*, in the firſt day or *Calpa* of the firſt month of the fifty-firſt year of BRAHMA"s age, and in the twenty-eighth divine age of the ſeventh *Manwantara*; of which divine age the *three firſt* human ages have paſſed, and *four thouſand eight hundred and eighty-eight* of the *fourth*.

IN the preſent day of BRAHMA', the firſt MENU was ſurnamed SWA'YAMBHUVA, or *Son of the Self-exiſtent*; and it is he by whom the *Inſtitutes of Religious and Civil Duties* are ſuppoſed to have been delivered. In his time the Deity deſcended at a *ſacrifice*; and, by his wife SATARU'PA', he had two diſtinguiſhed ſons, and three daughters. This pair was created for the multiplication of the human ſpecies, after that new creation of the world which the *Bráhmans* call *Pádmacalpa*, or the *Lotos*-creation.

IF it were worth while to calculate the age of MENU's Inſtitutes, according to the *Bráhmans*, we muſt multiply four million three hundred

and

and twenty thouſand by ſix times ſeventy-one, and add to the product the number of years already paſt in the ſeventh *Manwantara*. Of the five MENUS, who ſucceeded him, I have ſeen little more than the names; but the *Hindu* writings are very diffuſe on the life and poſterity of the *ſeventh* MENU, ſurnamed VAIVASWATA, or *Child of the Sun*. He is ſuppoſed to have had ten ſons, of whom the eldeſt was ICSHWA'CU; and to have been accompanied by ſeven *Riſhis*, or holy perſons, whoſe names were CASYAPA, ATRI, VASISHTHA, VISWA'MITRA, GAUTAMA, JAMADAGNI, and BHARADWA'JA; an account which explains the opening of the fourth chapter of the *Gità*: "This immutable ſyſtem of "devotion," ſays CRISHNA, "I revealed to VIVASWAT, *or the Sun*; "VIVASWAT declared it to *his ſon* MENU; MENU explained it to "ICSHWA'CU: thus the Chief *Riſhis* know this ſublime *doctrine* delivered "from one to another."

IN the reign of this *Sun-born* Monarch the *Hindus* believe the whole earth to have been drowned, and the whole human race deſtroyed by a flood, except the pious prince himſelf, the ſeven *Riſhis*, and their ſeveral wives; for they ſuppoſe his children to have been born after the deluge. This general *pralaya*, or deſtruction, is the ſubject of the firſt *Puràna*, or *Sacred Poem*, which conſiſts of fourteen thouſand ſtanzas; and the ſtory is conciſely, but clearly and elegantly, told in the eighth book of the *Bhágawata*, from which I have extracted the whole, and tranſlated it with great care, but will only preſent you here with an abridgement of it. "The demon HAYAGRI'VA having purloined the *Védas* "from the cuſtody of BRAHMA', while he was repoſing at the cloſe of "the ſixth *Manwantara*, the whole race of men became corrupt, except "the ſeven *Riſhis* and SATYAVRATA, who then reigned in *Dravira*, a "maritime

" maritime region to the ſouth of *Carnáta*. This prince was performing " his ablutions in the river *Critamálá*, when VISHNU appeared to him " in the ſhape of a ſmall fiſh, and, after ſeveral augmentations of bulk " in different waters, was placed by SATYAVRATA in the ocean, where " he thus addreſſed his amazed votary: " In *ſeven* days all creatures who " have offended me ſhall be deſtroyed by a deluge; but thou ſhalt be " ſecured in a capacious veſſel miraculouſly formed; take therefore all " kinds of medicinal herbs and eſculent grain for food, and, together " with the ſeven holy men, your reſpective wives, and pairs of all " animals enter the ark without fear; then ſhalt thou know God face " to face, and all thy queſtions ſhall be anſwered." Saying this, he diſappeared; and after ſeven days, the ocean 'began to overflow the 'coaſts, and the earth to be flooded by conſtant ſhowers, when SATY-'AVRATA, meditating on the Deity, ſaw a large veſſel moving on the 'waters: he entered it, having in all reſpects conformed to the inſtruc-'tions of VISHNU; who, in the form of a vaſt fiſh, ſuffered the veſſel 'to be tied with a great ſea-ſerpent, as with a cable, to his meaſureleſs 'horn. When the deluge had ceaſed, VISHNU ſlew the demon, and 'recovered the *Védas*, inſtructed SATYAVRATA in divine knowledge, 'and appointed him the ſeventh MENU, by the name of VAIVAS-'WATA.' Let us compare the two *Indian* accounts of the *Creation* and the *Deluge* with thoſe delivered by MOSES. It is not made a queſtion in this tract, whether the firſt chapters of *Geneſis* are to be underſtood in a literal, or merely an allegorical ſenſe. The only points before us are, whether the creation deſcribed by the *firſt* MENU, which the *Bráhmans* call that of the *Lotos*, be not the ſame with that recorded in our Scripture? and whether the ſtory of the *ſeventh* MENU be not one and the ſame with that of NOAH? I propoſe the queſtions, but

but affirm nothing; leaving others to ſettle their opinions, whether ADAM be derived from *ádim*, which in *Sanſcrit* means the *firſt*, or MENU from NUH, the true name of the Patriarch; whether the *ſacrifice*, at which GOD is believed to have deſcended, alludes to the offering of ABEL; and, on the whole, whether the two MENUS can mean any other perſons than the great progenitor and the reſtorer of our ſpecies.

ON a ſuppoſition that VAIVASWATA, or *Sun-born*, was the NOAH of Scripture, let us proceed to the *Indian* account of his poſterity, which I extract from the *Purúnárt'hapracáſa*, or *The Puránas Explained*, a lately compoſed in *Sanſcrit* by RA'DHA'CA'NTA SARMAN, a *Pandit* of extenſive learning and great fame among the *Hindus* of this province. Before we examine the genealogies of kings, which he has collected from the *Puránas*, it will be neceſſary to give a general idea of the *Avatáras*, or *Deſcents*, of the Deity. The *Hindus* believe innumerable ſuch deſcents or ſpecial interpoſitions of Providence in the affairs of mankind, but they reckon *ten* principal *Avataras* in the current period of four ages; and all of them are deſcribed, in order as they are ſuppoſed to occur, in the following Ode of JAYADE'VA, the great Lyric Poet of *India*.

1. "THOU recovereſt the *Véda* in the water of the ocean of deſtruc-
"tion, *placing it* joyfully in the boſom of an ark fabricated *by thee*, O
"CE'SAVA, aſſuming the body of a fiſh. Be victorious, O HERI, Lord of
"the Univerſe!

2. "The earth ſtands firm on thy immenſely broad back, which
"grows larger from the callus, occaſioned by bearing that vaſt burden,

"O CE'SAVA

" O CE'SAVA, aſſuming the body of a *tortoiſe*. Be victorious, O HERI,
" Lord of the Univerſe!

3. " THE earth, placed on the point of thy tuſk, remains fixed like
" the figure of a black antelope on the moon, O CE'SAVA, aſſuming the
" form of a *boar*. Be victorious, O HERI, Lord of the Univerſe!

4. " THE claw with a ſtupendous point, on the exquiſite lotos of thy
" lion's paw, is the black bee that ſtung the body of the embowelled HIRA-
" NYACASIPU, O CE'SAVA, aſſuming the form of a *man-lion*. Be victori-
" ous, O HERI, Lord of the Univerſe!

5. " By thy power thou beguileſt BALI, O thou miraculous dwarf,
" thou purifier of men with the water (of *Ganga*) ſpringing from thy feet,
" O CE'SAVA, aſſuming the form of a *dwarf*. Be victorious, O HERI,
" Lord of the Univerſe!

6. " Thou batheſt in pure water, conſiſting of the blood of *Cſhatriyas*,
" the world, whoſe offences are removed, and who are relieved from the
" pain of other births, O CE'SAVA, aſſuming the form of PARAS'U-RA'MA.
" Be victorious, O HERI, Lord of the Univerſe!

7. " WITH eaſe to thyſelf, with delight to the Genii of the eight re-
" gions, thou ſcattereſt on all ſides in the plain of combat the demon with
" ten heads, O CE'SAVA, aſſuming the form of RA'MA-CHANDRA. Be
" victorious, O HERI, Lord of the Univerſe!

8. " THOU

8. "Thou weareſt on thy bright body a mantle ſhining like a blue "cloud, or like the water of *Yamunà*, tripping toward thee through fear of "thy furrowing *ploughſhare*, O CE'SAVA, aſſuming the form of BALA-RA'MA. Be victorious, O HERI, Lord of the Univerſe!

9. "THOU blameſt (Oh wonderful!) the whole *Véda*, when thou ſeeſt, "O kind-hearted, the ſlaughter of cattle preſcribed for ſacrifice, O CE'SAVA, "aſſuming the body of BUDDHA. Be victorious, O HERI, Lord of the "Univerſe!

10. "FOR the deſtruction of all the impure thou draweſt thy cymeter "like a blazing comet (how tremendous!) O CE'SAVA, aſſuming the body "of CALCI. Be victorious, O HERI, Lord of the Univerſe!"

THESE ten *Avatáras* are by ſome arranged according to the thouſands of divine years in each of the four ages, or in an arithmetical proportion from four to one; and, if ſuch an arrangement were univerſally received, we ſhould be able to aſcertain a very material point in the *Hindu* Chronology: I mean the birth of BUDDHA, concerning which the different *Pandits* whom I have conſulted, and the ſame *Pandits* at different times, have expreſſed a ſtrange diverſity of opinion. They all agree that CALCI is yet to come, and that BUDDHA was the laſt conſiderable incarnation of the Deity; but the aſtronomers at *Varánes* place him in the *third* age; and RA'DHA'CA'NT inſiſts that he appeared after the *thouſandth* year of the *fourth*. The learned and accurate author of the *Dabiſtán*, whoſe information concerning the *Hindus* is wonderfully correct, mentions an opinion of the *Pandits* with whom he had converſed, that BUDDHA began his career *ten* years before the cloſe of the third age; and GO'VERDHANA of *Caſhmír*, who had once informed

me that CRISHNA deſcended *two centuries* before BUDDHA, aſſured me lately that the *Caſhmirians* admitted an interval of *twenty-four* years (others allow only *twelve*) between thoſe two divine perſons. The beſt authority, after all, is the *Bhágavat* uſelf, in the firſt chapter of which it is expreſsly declared that "BUDDHA, the ſon of JINA, would appear at *Cicata*, for the "purpoſe of confounding the demons, *juſt at the beginning* of the *Caliyug*." I have long been convinced that, on theſe ſubjects, we can only reaſon ſatisfactorily from *written* evidence, and that our forenſick rule muſt be invariably applied, *to take the declarations of the* Bráhmans *moſt ſtrongly againſt themſelves*, that is, *againſt their pretenſions to antiquity*; ſo that, on the whole, we may ſafely place BUDDHA *juſt at the beginning* of the *preſent* age. But what is the *beginning* of it? When this queſtion was propoſed to RA'DHA'CA'NT, he anſwered, "of a period compriſing "more than four hundred thouſand years, the firſt two or three thouſand "may reaſonably be called *the beginning*." On my demanding *written* evidence, he produced a book of ſome authority, compoſed by a learned *Góſwámi*, and entitled *Bhágawatámrita*, or the *Nectar* of the *Bhágawat*, on which it is a metrical comment; and the couplet which he read from it deſerves to be cited. After the juſt mentioned account of BUDDHA in the text, the commentator ſays,

Aſau vyactah calérabdaſahaſradwitayè gatè,
Márth pát'alaverná'ſya dwibhujà chicurójj'hità.

'He *became* viſible, the-thouſandth-and-ſecond-year-of-the-Cali-*age being* 'paſt; his body of-a-colour-between-white-and-ruddy, with-two-arms, 'without-hair *on his head*.'

Cicata,

Cicata, named in the text as the birth-place of BUDDHA, the *Góswámi* ſuppoſes to have been *Dhermaranya*, a wood near *Gayá*, where a coloſſal image of that ancient deity ſtill remains. It ſeemed to me of black ſtone; but, as I ſaw it by torch-light, I cannot be poſitive as to its colour, which may, indeed, have been changed by time.

THE *Brahmans* univerſally ſpeak of the *Bauddhas* with all the malignity of an intolerant ſpirit; yet the moſt orthodox among them conſider BUDDHA himſelf as an incarnation of VISHNU. This is a contradiction hard to be reconciled, unleſs we cut the knot, inſtead of untying it, by ſuppoſing with GIORGI, that there were *two* BUDDHAS, the younger of whom eſtabliſhed the new religion, which gave ſo great offence in *India*, and was introduced into *China* in the firſt century of our era. The *Caſhmirian* before mentioned aſſerted this fact, without being led to it by any queſtion that implied it; and we may have reaſon to ſuppoſe that *Buddha* is in truth only a general word for a *Philoſopher*. The author of a celebrated *Sanſcrit* Dictionary, entitled from his name *Amaracóſha*, who was himſelf a *Bauddha*, and flouriſhed in the firſt century before CHRIST, begins his vocabulary with nine words that ſignify *heaven*, and proceeds to thoſe which mean *a deity in general*; after which come different *claſſes* of *Gods*, *Demigods*, and *Demons*, all by *generic* names; and they are followed by two very remarkable heads; firſt (not the *general names* of BUDDHA, but) the names of a *Buddha-in-general*, of which he gives us eighteen, ſuch as *Muni*, *Sáſtri*, *Munindra*, *Vináyaca*, *Samantabhadra*, *Dhermarája*, *Sugata*, and the like; moſt of them ſignificative of *excellence*, *wiſdom*, *virtue*, and *ſanctity*; ſecondly, the names of a-*particular*-*Buddha*-*Muni*-who-deſcended-in-the-family-of-SA'CYA (thoſe are the very words of the original) and his titles are, *Sácyamuni*,

Sácyaſinha, *Servárt'haſiddha*, *Saudhódani*, *Gautama*, *Arcabandhu*, or *Kinſman of the Sun*, and *Máyádévíſuta*, or *Child of* MA'YA': — thence the author paſſes to the different epithets of particular *Hindu* deities. When I pointed out this curious paſſage to RA'DHA'CA'NT, he contended, that the firſt eighteen names were *general* epithets, and the following ſeven *proper names*, or *patronymicks*, of one and the ſame perſon; but RA'MA-LO'CHAN, my own teacher, who, though not a *Bráhman*, is an excellent ſcholar, and a very ſenſible unprejudiced man, aſſured me that *Buddha* was a *generic* word, like *Déva*; and that the learned author, having exhibited the names of a *Dévatá* in general, proceeded to thoſe of a *Buddha* in general, before he came to particulars: he added, that *Buddha* might mean a *Sage*, or a *Philoſopher*, though *Budha* was the word commonly uſed for a mere *wiſe man* without ſupernatural powers. It ſeems highly probable, on the whole, that the BUDDHA whom JAYADE'VA celebrates in his Hymn, was the *Sácyaſinha*, or *Lion of* SA'CYA, who, though he forbade the ſacriſices of cattle, which the *Védas* enjoin, was believed to be VISHNU himſelf in a human form, and that another *Buddha*, one perhaps of his followers in a latter age, aſſuming his name and character, attempted to overſet the whole ſyſtem of the *Bráhmans*, and was the cauſe of that perſecution from which the *Bauddhas* are known to have fled into very diſtant regions. May we not reconcile the ſingular difference of opinion among the *Hindus* as to the time of BUDDHA's appearance, by ſuppoſing that they have confounded the *Two Buddhas*, the firſt of whom was born a few years before the cloſe of the laſt age, and the ſecond, when above a thouſand years of the preſent age had elapſed? We know, from better authorities, and with as much certainty as can juſtly be expected on ſo doubtful a ſubject, the real time, compared with our own era, when the ancient BUDDHA began to diſtinguiſh

diſtinguiſh himſelf; and it is for this reaſon principally that I have dwelt with minute anxiety on the ſubject of the laſt *Avatàr*.

THE *Brâhmans* who aſſiſted ABU'LFAZI in his curious, but ſuperficial account of his maſter's empire, informed him, if the figures in the *Áyini Acbari* be correctly written, that a period of 2962 years had elapſed from the birth of BUDDHA to the 40th year of ACBAR's reign, which computation will place his birth in the 1366th year before that of our Saviour; but, when the *Chineſe* government admitted a new religion from *India* in the firſt century of our era, they made particular enquiries concerning the age of the old *Indian* BUDDHA, whoſe birth, according to COUPLET, they place in the 41ſt year of their 28th cycle, or 1036 years before CHRIST, and they call him, ſays he, FOE the ſon of MOYE, or MA'YA'; but M. DE GUIGNES, on the authority of four *Chineſe* hiſtorians, aſſerts, that Fo was born about the year before CHRIST 1027, in the kingdom of *Caſhmír*. GIORGI, or rather CASSIANO, from whoſe papers his work was compiled, aſſures us, that by the calculation of the *Thibetians* he appeared only 959 years before the *Chriſtian* epoch; and M. BAILLY, with ſome heſitation, places him 1031 years before it, but inclines to think him far more ancient; confounding him, as I have done in a former tract, with the *firſt* BUDDHA, or MERCURY, whom the *Goths* called WODEN, and of whom I ſhall preſently take particular notice. Now, whether we aſſume the medium of the four laſt-mentioned dates, or implicitly rely on the authorities quoted by DE GUIGNES, we may conclude that BUDDHA was firſt diſtinguiſhed in this country *about a thouſand* years before the beginning of our era; and whoever, in ſo early an age, expects a certain epoch, unqualified with *about* or *nearly*, will be greatly diſappointed. Hence it is clear, that, whether the fourth age

of

of the *Hindus* began about *one* thouſand years before CHRIST, according to GOVERDHAN's account of BUDDHA's birth, or *two* thouſand according to that of RA'DHA'CA'NT, the common opinion, that 4888 years of it are now elapſed, is erroneous; and here for the preſent we leave BUDDHA, with an intention of returning to him in due time; obſerving only, that if the learned *Indians* differ ſo widely in their accounts of the age when their ninth *Avatàr* appeared in their country, we may be aſſured that they have no certain chronology before him, and may ſuſpect the certainty of all the relations concerning even *his* appearance.

THE received chronology of the *Hindus* begins with an abſurdity ſo monſtrous, as to overthrow the whole ſyſtem; for, having eſtabliſhed their period of *ſeventy-one divine ages* as the reign of each *Menu*, yet thinking it incongruous to place a holy perſonage in times of *impurity*, they inſiſt that the *Menu* reigns only in every *golden* age, and diſappears in the *three human ages* that follow it; continuing to dive and emerge like a water-fowl till the cloſe of his *Manwantara*. The learned author of the *Purànárt'hapracáſa*, which I will now follow ſtep by ſtep, mentioned this ridiculous opinion with a ſerious face; but as he has not inſerted it in his work, we may take his account of the ſeventh *Menu* according to its obvious and rational meaning, and ſuppoſe that VAIVASWATA, the ſon of SU'RYA, the ſon of CASYAPA, or *Uranus*, the ſon of MARI'CHI, or *Light*, the ſon of BRAHMA', which is clearly an allegorical pedigree, reigned in the laſt golden age, or, according to the *Hindus*, three million eight hundred and ninety-two thouſand eight hundred and eighty-eight years ago. But they contend, that he actually reigned on earth *one million ſeven hundred and twenty-eight thouſand* years of mortals, or *four thouſand eight hundred* years of the Gods; and this opinion is

another

another monſter ſo repugnant to the courſe of nature and to human reaſon, that it muſt be rejected as wholly fabulous, and taken as a proof that the *Indians* know nothing of their *Sun-born* MENU but his name and the principal event of his life; I mean the *univerſal deluge*, of which the *three* firſt *Avatàrs* are merely allegorical repreſentations, with a mixture, eſpecially in the *ſecond*, of aſtronomical mythology.

FROM this MENU the whole race of men is believed to have deſcended; for the ſeven *Riſhis* who were preſerved with him in the ark, are not mentioned as fathers of human families; but ſince his daughter ILA' was married, as the *Indians* tell us, to the firſt BUDHA, or *Mercury*, the ſon of CHANDRA, or the *Moon*, a male deity, whoſe father was ATRI, ſon of BRAHMA' (where again we meet with an allegory purely aſtronomical or poetical) his poſterity are divided into two great branches, called the *Children of the Sun*, from his own ſuppoſed father; and the *Children of the Moon*, from the parent of his daughter's huſband. The lineal male deſcendants in both theſe families are ſuppoſed to have reigned in the cities of *Ayódhyà*, or *Audh*, and *Pratiſht'hána*, or *Vitóra*, reſpectively, till the *thouſandth year of the preſent age*; and the names of all the princes in both lines having been diligently collected by RA'DHA'CA'NT from ſeveral *Purânas*, I exhibit them in two columns, arranged by myſelf with great attention.

SECOND

SECOND AGE.

	CHILDREN OF THE SUN.	CHILDREN OF THE MOON.	
	Ikshwa'cu,	Budha,	
	Vicucshi,	*Pururavas*,	
	Cucutst'ha,	Ayush,	
	Anénas,	Nahusha,	
5.	*Prith'u*,	*Yayáti*,	
	Vis'wagandhi,	*Puru*,	
	Chandra,	Janaméjaya,	
	Yuvanás'wa,	Prachinwat,	
	Sr.ava,	Pravira,	
10.	Vrihadas'wa,	Menasyu,	10.
	Dhundhumára,	Chárupada,	
	Drid'has'wa,	Sudyu,	
	Heryas'wa,	Bahugava,	
	Nicumbha,	Sanyáti,	
15.	Crisas'wa,	Ahanyáti,	15.
	Sénajit,	Raudras'wa,	
	Yuvanás'wa,	Ritéyush,	
	Mándhátri,	Rantináva,	
	Purucutsa,	Sumati,	
20.	Trasadasyu,	Aiti,	20.
	Anaranya,	*Dushmanta*,	
	Heryas'wa,	*Bharata*, *	
	Praruna,	(Vitat'ha,	

CHILDREN

CHILDREN OF THE

	SUN.	MOON.	
	Trivindhana,	Manyu,	
25.	Satyavrata,	Vrihatcſhétra,	25.
	Triſ'ancu,	Haſtin,	
	Haris'chandra,	Ajamid'ha,	
	Róhita,	Ricſha,	
	Harita,	Samwarana,	
30.	Champa,	*Curu*,	
	Sudéva,	*Jahnu*,	
	Vijaya,	Surat'ha,	
	Bharuca,	Vidúrat'ha,	
	Vrica,	Sárvabhauma,	
35.	Báhuca,	Jayatſéna,	35.
	Sagara,	Rádhica,	
	Aſamanjas,	Ayutáyuſh,	
	Ans'umat,	Acródhana,	
	Bhagírat'ha,	Dévátit'hi,	
40.	Sruta,	Ricſha,	40.
	Nábha,	*Dilipa*,	
	Sindhudwípa,	Pratípa,	
	Ayutáyuſh,	Sántanu,	
	Ritaperna,	*Vichitravírya*,	
45.	Saudáſa,	Pándu,	45.
	Asmaca,	*Yudhiſht'hir*).	
	Múlaca,		
	Das'arat'ha,		

CHILDREN OF THE

	SUN	MOON.
	Aídabidí,	
50.	Viswasáha,	
	C'hátwánga,	
	Dirghabáhu,	
	Raghu,	
	Aja,	
55.	*Dáśarat'ha*,	
	Ra'ma.	

It is agreed among all the *Pandits*, that Ra'ma, their *ſeventh* incarnate divinity, appeared as King of *Ayódhyà* in the *interval* between the *ſilver* and the *brazen* ages; and, if we ſuppoſe him to have begun his reign at the very beginning of that interval, ſtill *three thouſand three hundred* years of the Gods, or *a million one hundred and eighty-eight thouſand* lunar years of mortals, will remain in the *ſilver* age, during which the *fifty-five* princes between Vaivaswata and Ra'ma muſt have governed the world; but, reckoning *thirty* years for a generation, which is rather too much for a long ſucceſſion of *eldeſt* ſons, as they are ſaid to have been, we cannot, by the courſe of nature, extend the *ſecond* age of the *Hindus* beyond *ſixteen hundred and fifty* ſolar years. If we ſuppoſe them not to have been eldeſt ſons, and even to have lived longer than modern princes in a diſſolute age, we ſhall find only a period of *two thouſand* years; and, if we remove the difficulty by admitting miracles, we muſt ceaſe to reaſon, and may as well believe at once whatever the *Bráhmans* chuſe to tell us.

In the *Lunar* pedigree we meet with another abſurdity equally fatal to the credit of the *Hindu* ſyſtem. As far as the twenty-ſecond degree of deſcent from VAIVASWATA, the ſynchroniſm of the two families appears tolerably regular, except that the Children of the Moon were not all *eldeſt* ſons; for king YAYA'TI appointed the youngeſt of his five ſons to ſucceed him in *India*, and allotted inferior kingdoms to the other four who had offended him; part of the *Dacſhin*, or the *South*, to YADU, the anceſtor of CRISHNA; the north to ANU; the eaſt to DRUHYA; and the weſt to TURVASU; from whom the *Pandits* believe, or pretend to believe, in compliment to our nation, that we are deſcended. But of the ſubſequent degrees in the lunar line they know ſo little, that, unable to ſupply a conſiderable interval between BHARAT and VITAT'HA, whom they call his ſon and ſucceſſor, they are under a neceſſity of aſſerting, that the great anceſtor of YUDHISHT'HIR actually reigned *ſeven-and-twenty thouſand years*; a fable of the ſame claſs with that of his wonderful birth, which is the ſubject of a beautiful *Indian* drama. Now, if we ſuppoſe his life to have laſted no longer than that of other mortals, and admit VITAT'HA and the reſt to have been his regular ſucceſſors, we ſhall fall into another abſurdity; for then, if the generations in both lines were nearly equal, as they would naturally have been, we ſhall find YUDHISHT'HIR, who reigned confeſſedly at the cloſe of the *brazen* age, nine generations older than RAMA, before whoſe birth the *ſilver* age is allowed to have ended. After the name of BHARAT, therefore, I have ſet an aſteriſk, to denote a conſiderable chaſm in the *Indian* Hiſtory, and have inſerted between brackets, as out of their places, his *twenty-four* ſucceſſors, who reigned, if at all, in the following age immediately before the war of the *Mahabharat*. The fourth *Avatar*, which is placed in the interval between the *firſt* and

ſecond ages, and the *fifth*, which ſoon followed it, appear to be moral fables grounded on hiſtorical facts: the *fourth* was the puniſhment of an impious monarch, by the Deity himſelf *burſting from a marble column*, in the ſhape of a *lion*; and the *fifth* was the humiliation of an arrogant prince by ſo contemptible an agent as a mendicant *dwarf*. After theſe, and immediately before BUDDHA, come three great warriors, all named RA'MA; but it may juſtly be made a queſtion, whether they are not three repreſentations of one perſon, or three different ways of relating the ſame hiſtory. The firſt and ſecond RA'MAS are ſaid to have been contemporary; but whether all or any of them mean RAMA, the ſon of CU'SH, I leave others to determine. The mother of the ſecond RAMA was named CAU'SHALYA', which is a derivative of CUSHALA; and, though his father be diſtinguiſhed by the title or epithet of DA'SARAT'HA, ſignifying that *his war-chariot bore him to all quarters of the world*, yet the name of CUSH, as the *Cáſhmírians* pronounce it, is preſerved entire in that of his ſon and ſucceſſor, and ſhadowed in that of his anceſtor VICUCSHI; nor can a juſt objection be made to this opinion from the naſal *Arabian* vowel in the word *Rámah* mentioned by MOSES, ſince the very word *Arab* begins with the ſame letter, which the *Greeks* and *Indians* could not pronounce; and they were obliged, therefore, to expreſs it by the vowel which moſt reſembled it. On this queſtion, however, I aſſert nothing; nor on another, which might be propoſed, "whether the "*fourth* and *fifth Avatárs* be not allegorical ſtories of the two pre- "ſumptuous monarchs, NIMROD and BELUS?" The hypotheſis, that *government* was firſt eſtabliſhed, *laws* enacted, and *agriculture* encouraged in *India* by RAMA about *three thouſand eight hundred* years ago, agrees with the received account of NOAH's death, and the previous ſettlement of his immediate deſcendants.

THIRD

THIRD AGE.

CHILDREN OF THE

	SUN.	MOON.	
	Cus'ha,		
	Atit'hi,		
	Niſhadha,		
	Nabhas,		
5.	Pundarica		
	Cſhémadhanwas,	Vitat'ha,	
	Dévánica,	Manyu,	
	Ahínagu,	Vrihatcſhétra,	
	Páripátra,	Haſtin,	
10.	Ranach'hala,	Ajamid'ha,	
	Vajranábha,	Ricſha,	
	Arca,	Samwarana,	
	Sugana,	*Curu*,	
	Vidhriti,	*Jahnu*,	
15.	Hiranyanábha,	Surat'ha,	10,
	Puſhya,	Vidúrat'ha,	
	Dhruvaſandhi,	Sárvabhauma,	
	Suders'ana,	Jayatſéna,	
	Agniverna,	Rádhica,	
20.	Sighra,	Ayutáyuſh,	15.
	Manu, ſuppoſed to be ſtill alive.	Acródhana,	
	Praſus'ruta,	Dévatit'hi,	
	Sandhi,	Ricſha,	

CHILDREN

	CHILDREN OF THE SUN.	CHILDREN OF THE MOON.	
	Amers'ana,	Dilipa,	
25.	Mahaſwat,	Pratipa,	20.
	Vis'wabhábu,	Sántanu,	
	Praſenajit,	Vichitravírya,	
	Tacſhaca,	Pándu,	
	Vrihadbala,	*Yudhiſht'hira*,	
30.	Vrihadran'a, Y. B. C. 1300.	*Paricſhit*,	25.

HERE we have only *nine*-and-*twenty* princes of the ſolar line between RA'MA and VRIHADRANA excluſively; and their reigns, during the whole *brazen* age, are ſuppoſed to have laſted near *eight hundred* and *ſixty-four thouſand* years, a ſuppoſition evidently againſt nature; the uniform courſe of which allows only a period of *eight hundred* and *ſeventy* (or, at the very utmoſt, of *a thouſand*) years for *twenty-nine* generations. PARI'CSHIT, the great nephew and ſucceſſor of YUDHISHT'HIR, who had recovered the throne from DURYO'DHAN, is allowed without controverſy to have reigned in the interval between the *brazen* and *earthen* ages, and to have died at the ſetting-in of the *Caliyug*; ſo that, if the *Pandits* of *Caſhmìr* and *Varánes* have made a right calculation of BUDDHA's appearance, the preſent, or *fourth*, age muſt have begun about *a thouſand* years before the birth of CHRIST; and conſequently the reign of ICSHWA'CU could not have been earlier than *four thouſand* years before that great epoch; and even that date will perhaps appear, when it ſhall be ſtrictly examined, to be near *two thouſand* years earlier than the truth. I cannot leave the third *Indian* age, in which the virtues and vices of mankind are ſaid to have been equal, without obſerving, that even the

cloſe

close of it is manifestly fabulous and poetical, with hardly more *appearance* of historical truth than the tale of *Troy* or of the *Argonauts*; for YUDHISHT'HIR, it seems, was the son of DHERMA, the *Genius of Justice*; BHI'MA of PAVAN, or the *God of Wind*; ARJUN of INDRA, or the *Firmament*; NACUL and SAHADE'VA, of the two CUMA'RS, the CASTOR and POLLUX of *India*; and BHI'SHMA, their reputed great uncle, was the child of GANGA', or the GANGES, by SA'NTANU, whose brother DE'VA'PI is supposed to be still alive in the city of *Calápa*; all which fictions may be charming embellishments of an heroic poem, but are just as absurd in civil history as the descent of two royal families from the Sun and the Moon.

FOURTH AGE.

CHILDREN OF THE

SUN.	MOON.	
Urucriya,	*Janamējaya*,	
Vatsavriddha,	*Satánica*,	
Prativyóma,	Sahasran ca,	
Bhánu,	Aśwamédhaja,	
5. Déváca,	Aśímacrishna,	5.
Sahadéva,	Némichacra,	
Víra,	Upta,	
Vrihadaswa,	Chitrarat'ha,	
Bhánumat,	Suchirat'ha,	
10. Pratícáśwa,	Dhritimat,	10.
Supratica,	Sushéna,	

CHILDREN

	CHILDREN OF THE SUN.	CHILDREN OF THE MOON.	
	Marudéva,	Sunít'ha,	
	Sunacſhatra,	Nrichacſhuh,	
	Puſhcara,	Suc'hinala,	
15.	Antaríchha,	Pariplava,	15.
	Sutapas,	Sunaya,	
	Amitrajit,	Médhávin,	
	Vrihadrája,	Nripanjaya,	
	Barhi,	Derva,	
20.	Critanjaya,	Timi	20.
	Ran'anjaya,	Vrihadrat'ha,	
	Sanjaya,	Sudáſa,	
	Slócya,	Satánica,	
	Suddhóda,	Durmadana,	
25.	Lángalada,	Rahínara,	25.
	Praſénajit,	Dand'apán'i,	
	Cſhudraca,	Nimi,	
	Sumitra, Y.B.C.2100	Cſhémaca.	

IN both families we ſee *thirty* generations are reckoned from YUDHISHT'HIR and from VRIHADBALA his contemporary (who was killed in the war of *Bhárat*, by ABHIMANYU, ſon of ARJUN, and father of PARI'CSHIT) to the time when the *Solar* and *Lunar* dynaſties are believed to have become extinct in the preſent divine age; and for theſe generations the *Hindus* allot a period of *one thouſand* years only, or a *hundred* years for *three* generations; which calculation, though proba-

bly

bly too large, is yet moderate enough, compared with their abſurd accounts of the preceding ages: but they reckon exactly the ſame number of years for *twenty* generations only in the family of JARA'SANDHA, whoſe ſon was contemporary with YUDHISHT'HIR, and founded a new dynaſty of princes in *Magadha*, or *Bahàr*; and this exact coincidence of the time in which the three races are ſuppoſed to have been extinct, has the appearance of an artificial chronology, formed rather from imagination than from hiſtorical evidence; eſpecially as twenty kings, in an age comparatively modern, could not have reigned a thouſand years. I, nevertheleſs, exhibit the liſt of them as a curioſity; but am far from being convinced that all of them ever exiſted: that, if they did exiſt, they could not have reigned more than *ſeven hundred* years, I am fully perſuaded by the courſe of nature and the concurrent opinion of mankind.

KINGS OF MAGADHA.

	Sahadéva,	Suchi,	
	Márjári,	Cſhéma,	
	Srutaſravas,	Suvrata,	
	Ayutáyuſh,	Dhermaſutra,	
5.	Niramitra,	Srama,	15.
	Sunacſhatra,	Dri'd'haſena,	
	Vrihetſéna,	Sumati,	
	Carmajit,	Subala,	
	Srutanjaya,	Sunita,	
10.	Vipra,	Satyajit.	20.

PURANJAYA, ſon of the twentieth king, was put to death by his miniſter SUNACA, who placed his own ſon PRADYO'TA on the throne

of his maſter; and this revolution conſtitutes an epoch of the higheſt importance in our preſent inquiry; firſt, becauſe it happened, according to the *Bhágawatámrita*, two years exactly before BUDDHA's appearance in the ſame kingdom; next, becauſe it is believed by the *Hindus* to have taken place *three thouſand eight hundred* and *eighty-eight* years ago, or *two thouſand one hundred* years before CHRIST; and laſtly, becauſe a regular chronology, according to the number of years in each dynaſty, has been eſtabliſhed from the acceſſion of PRADYO'TA to the ſubverſion of the genuine *Hindu* government; and that chronology I will now lay before you, after obſerving only that RA'DHA'CA'NT himſelf ſays nothing of BUDDHA in this part of his work, though he particularly mentions the two preceding *Avataras* in their proper places.

KINGS OF MAGADHA.

		Y. B. C.
Pradyóta		2100
Palaca,		
Viſác'hayúpa,		
Rájaca,		
Nandiverdhana,	5 reigns = 138 years.	
Sis'unága,		1962
Cácaverna,		
Cſhémadherman,		
Cſhátrajnya,		
Vidhiſára,	5.	
Ajátaſatru,		
Darbhaca,		

KINGS

KINGS OF MAGADHA.

	Y. B. C.
Ajaya	
Nandiverdhana,	
Mahánandi, $10r = 360y$.	
NANDA,	1602

THIS prince, of whom frequent mention is made in the *Sanſcrit* books, is ſaid to have been murdered, after a reign of *a hundred* [illegible] by a very learned and ingenious, but paſſionate and vindictive, *Bráhman*, whoſe name was CHA'NACYA, and who raiſed to the throne a man of the *Maurya* race, named CHANDRAGUPTA. By the death of NANDA and his ſons the *Cſhatriya* family of PRADYO'TA became extinct.

MAURYA KINGS.

	Y. B. C.
Chandragupta,	1502
Váriſára,	
Aſócaverdhana,	
Suyas'as,	
Des'arat'ha	
Sangata,	
Sális'úca,	
Sómas'arman,	
Satadhanwas,	
Vrihadrat'ha, $10r = 137y$.	

On the death of the tenth *Maurya* king, his place was aſſumed by his Commander in Chief, Pushpamitra, of the *Sunga* nation or family.

SUNGA KINGS.

		Y. B. C.
Puſhpamitra,		1365
Agnimitra,		
Sujyéſht'ha,		
Vaſumitra,		
Abhadraca,	5.	
Pulinda,		
Ghóſha,		
Vajramitra,		
Bhágavata,		
Dévabhúti,	10 *r* = 112 *y*.	

The laſt prince was killed by his miniſter Vasudéva, of the *Canna* race, who uſurped the throne of *Magadha*.

CANNA KINGS.

		Y. B. C.
Vaſudéva,		1253
Bhúmitra,		
Náráyana,		
Suſarman,	4 *r* = 345 *y*.	

A *Súdra*

A *Súdra*, of the *Andhra* family, having murdered his maſter SUSARMAN, and ſeized the government, founded a new dynaſty of

ANDHRA KINGS.

		Y. B. C.
Balin,		908
Criſhna,		
Srísántacarna,		
Paurnamáſa,		
Lambódara,	5.	
Vivilaca		
Méghaſwáti,		
Vátamána,		
Talaca,		
Sivaſwáti,	10.	
Puríſhabhéru,		
Sunandana,		
Chacóraca,		
Ba'taca,		
Gómatin,	15.	
Purímat,		
Médas'iras,		
Siraſcand'ha,		
Yajnyas'rí,		
Vijaya,	20.	
Chandrabíja,	21 *r* = 456 *y*.	

AFTER

After the death of CHANDRABIJA, which happened, according to the *Hindus*, 396 years before VICRAMA'DITYA, or 452 B. C. we hear no more of *Magadha* as an independent kingdom, but RA'DHA'CA'NT has exhibited the names of *ſeven* dynaſties, in which *ſeventy-ſix* princes are ſaid to have reigned *one thouſand three hundred and ninety-nine* years in *Avabhriti*, a town of the *Dacſhin*, or *South*, which we commonly call *Decan*. The names of the ſeven dynaſties, or of the families who eſtabliſhed them, are *Abh'ira*, *Gardabhin*, *Canca*, *Yavana*, *Turuſhcara*, *Bhuvunda*, *Maula*; of which the *Yavanas* are by ſome, not generally, ſuppoſed to have been *Ionians*, or *Greeks*; but the *Turuſhcaras* and *Maulas* are univerſally believed to have been *Turcs* and *Moguls*; yet RA'DHA'CA'NT adds, "When the *Maula* race was extinct, five princes, named *Bhúnanda*, "*Bangira*, *Sa'unandi*, *Yas'ónandi*, and *Pravíraca*, reigned *an hundred* "*and ſix* years (or till the year 1053) in the city of *Cilacilà*," which, he tells me, he underſtands to be in the country of the *Mahárá ſhtras*, or *Mahrattas*; and here ends his *Indian* Chronology; for "after PRAVI'RA-"CA," ſays he, "this empire was divided among *Mléch'has*, or Infidels." This account of the *ſeven modern dynaſties* appears very doubtful in itſelf, and has no relation to our preſent enquiry; for their dominion ſeems confined to the *Decan*, without extending to *Magadha*; nor have we any reaſon to believe that a race of *Grecian* princes ever eſtabliſhed a kingdom in either of thoſe countries. As to the *Moguls*, their dynaſty ſtill ſubſiſts, at leaſt nominally, unleſs that of *Chengiz* be meant, and his ſucceſſors could not have reigned in any part of *India* for the period of *three hundred* years, which is aſſigned to the *Maulas*; nor is it probable that the word *Turc*, which an *Indian* could have eaſily pronounced and clearly expreſſed in the *Nágarí* letters, ſhould have been corrupted into *Turuſhcara*. On the whole, we may ſafely cloſe the moſt authentic

ſyſtem

ſyſtem of *Hindu* Chronology that I have yet been able to procure, with the death of CHANDRAGU'PTA. Should any farther information be attainable, we ſhall, perhaps, in due time, attain it either from books or inſcriptions in the *Sanſcrit* language; but, from the materials with which we are at preſent ſupplied, we may eſtabliſh as indubitable the two following propoſitions: that the *three firſt* ages of the *Hindus* are chiefly *mythological*, whether their mythology was founded on the dark enigmas of their aſtronomers, or on the heroic fictions of their poets; and that the *fourth*, or *hiſtorical*, age cannot be carried farther back than about two thouſand years before CHRIST. Even in the hiſtory of the preſent age, the generations of men and the reigns of kings are extended beyond the courſe of nature, and beyond the average reſulting from the accounts of the *Bráhmans* themſelves; for they aſſign to *an hundred and forty-two* modern reigns a period of *three thouſand one hundred and fifty-three* years, or about *twenty-two* years to a reign one with another; yet they repreſent only four *Canna* princes on the throne of *Magadha* for a period of *three hundred* and *forty-five* years; now it is even more improbable that four ſucceſſive kings ſhould have reigned *eighty-ſix years and three months* each, than that NANDA ſhould have been king a *hundred* years, and murdered at laſt. Neither account can be credited; but that we may allow the higheſt probable antiquity to the *Hindu* government, let us grant, that *three generations* of men were equal on an average to *an hundred* years, and that *Indian* princes have reigned, one with another, *two-and-twenty*: then reckoning thirty generations from ARJUN, the brother of YUDHISHT'HIRA, to the extinction of his race, and taking the *Chineſe* account of BUDDHA's birth from M. DE GUIGNES, as the moſt authentic medium between ABU'L FAZL and the *Thibetians*, we may arrange the corrected *Hindu* Chronology, according to the following table,

ſupplying

ſupplying the word *about* or *nearly* (ſince perfect accuracy cannot be attained and ought not to be required) before every date.

	Y. B. C.
Abhimanyu, *ſon of* ARJUN,	2029
Pradyóta,	1029
BUDDHA,	1027
Nanda,	699
Balin,	149
VICRAMA'DITYA,	56
DE'VAPA'LA, *king of* Gaur,	23

IF we take the date of BUDDHA's appearance from ABU'LFAZL, we muſt place ABHIMANYU 2368 years before CHRIST, unleſs we calculate from the twenty kings of *Magadha*, and allow *ſeven hundred* years, inſtead of *a thouſand*, between ARJUN and PRADYO'TA, which will bring us again very nearly to the date exhibited in the table; and, perhaps, we can hardly approach nearer to the truth. As to *Rájà* NANDA, if he really ſat on the throne a whole century, we muſt bring down the *Andhra* dynaſty to the age of VICRAMA'DITYA, who with his feudatories had probably obtained ſo much power during the reign of thoſe princes, that they had little more than a nominal ſovereignty, which ended with CHANDRABI'JA in the *third* or *fourth* century of the *Chriſtian* era; having, no doubt, been long reduced to inſignificance by the kings of *Gaur*, deſcended from GO'PA'LA. But, if the author of the *Dabiſtán* be warranted in fixing the birth of BUDDHA *ten* years before the *Caliyug*, we muſt thus correct the Chronological Table:

BUDDHA

	Y. B. C.
BUDDHA,	1027
Paricſhit,	1017
Pradyóta (reckoning 20 *or* 30 generations)	317 or 17
	Y. A. C.
Nanda,	13 or 313

THIS correction would oblige us to place VICRAMA'DITYA before NANDA, to whom, as all the *Pandits* agree, he was long poſterior; and if this be an hiſtorical fact, it ſeems to confirm the *Bhágawatámrita*, which fixes the beginning of the *Caliyug* about *a thouſand* years before BUDDHA; beſides that BALIN would then be brought down at leaſt to the ſixth, and CHANDRABI'JA to the tenth century after CHRIST, without leaving room for the ſubſequent dynaſties, if they reigned ſucceſſively.

THUS have we given a ſketch of *Indian* hiſtory through the longeſt period fairly aſſignable to it, and have traced the foundation of the *Indian* empire above *three thouſand eight hundred years* from the preſent time; but, on a ſubject in itſelf ſo obſcure, and ſo much clouded by the fictions of the *Bráhmans*, who, to aggrandize themſelves, have deſignedly raiſed their antiquity beyond the truth, we muſt be ſatisfied with probable conjecture and juſt reaſoning from the beſt attainable data; nor can we hope for a ſyſtem of *Indian* Chronology, to which no objection can be made, unleſs the aſtronomical books in *Sanſcrit* ſhall clearly aſcertain the places of the colures in ſome preciſe years of the hiſtorical age, not by looſe traditions, like that of a coarſe obſervation by CHIRON,

who poſſibly never exiſted (for "he lived," ſays NEWTON, "in the *golden* "age," which muſt long have preceded the *Argonautic* expedition) but by ſuch evidence as our own aſtronomers and ſcholars ſhall allow to be unexceptionable.

A CHRONOLOGICAL TABLE,

ACCORDING TO ONE OF THE HYPOTHESES INTIMATED IN THE PRECEDING TRACT.

CHRISTIAN and MUSELMAN.	HINDU.	*Years from* 1788 *of our era.*
ADAM,	MENU I. Age I.	5794
NOAH,	MENU II.	4737
Deluge,		4188
Nimrod,	*Hiranyacaſipu*. Age II.	4206
Bel,	*Bali*,	3892
RAMA,	RAMA. Age III.	3817
Noah's death,		3787
	Pradyóta,	2817
	BUDDHA. Age IV.	2815
	Nanda,	2487
	Balin,	1937
	Vicramáditya,	1844
	Dévapálu,	1811
CHRIST,		1787
	Nárávanpála,	1721
	Saca,	1709
Walìd,		1080
Mahmùd,		786
Chengiz,		548
Taimùr,		391
Babur,		276
Nádirſhàh,		49

VIII.

ON THE CURE OF THE ELEPHANTIASIS.

BY AT'HAR ALI KHAN OF DEHLI.

INTRODUCTORY NOTE.

AMONG the afflicting maladies, which puniſh the vices and try the virtues of mankind, there are few diſorders, of which the conſequences are more dreadful, or the remedy in general more deſirable, than the *judhám* of the *Arabs*, or *khórah* of the *Indians*. It is alſo called in *Arabia dáu'l'ásad*: a name correſponding with the *Leontiaſis* of the *Greeks*, and ſuppoſed to have been given in alluſion to the grim, diſtracted, and *lion-like* countenances of the miſerable perſons who are affected with it. The more common name of the diſtemper is *Elephantiaſis*, or, as LUCRETIUS calls it, *Elephas*, becauſe it renders the ſkin like that of an *Elephant*, uneven and wrinkled, with many tubercles and furrows; but this complaint muſt not be confounded with the *dául'ſil*, or *ſwelled legs*, deſcribed by the *Arabian* phyſicians, and very common in this country. It has no fixed name in *Engliſh*, though HILLARY, in his *Obſervations on the Diſeaſes of Barbadoes*, calls it the *leproſy of the joints*, becauſe it principally affects the extremities; which in the laſt ſtage of the malady are diſtorted, and at length drop off; but, ſince it is in truth a diſtemper corrupting the whole maſs of blood, and therefore conſidered by PAUL of *Ægina* as an *univerſal ulcer*, it requires a more general appellation, and may properly be named the *Black Leproſy*; which term is in fact adopted by M. BOISSIEU de SAUVAGES and GORRÆUS, in

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contradiſtinction to the *White* Leproſy, or the *Beres* of the *Arabs*, and *Leuce* of the *Greeks*.

THIS diſeaſe, by whatever name we diſtinguiſh it, is peculiar to hot climates, and has rarely appeared in *Europe*. The philoſophical poet of *Rome* ſuppoſes it confined to *the Banks of the Nile*; and it has certainly been imported from *Africa* into the *Weſt India*-Iſlands by the black ſlaves, who carried with them their reſentment and their revenge; but it has been long known in *Hindoſtan*: and the writer of the following Diſſertation, whoſe father was phyſician to NA'DIRSHA'H, and accompanied him from *Perſia* to *Dehli*, aſſures me that it rages with virulence among the native inhabitants of *Calcutta*. His obſervation, that it is frequently a conſequence of the *venereal infection*, would lead us to believe that it might be radically cured by *Mercury*; which has, nevertheleſs, been found ineffectual, and even hurtful, as HILLARY reports, in the *Weſt Indies*. The juice of *hemlock*, ſuggeſted by the learned MICHAELIS, and approved by his medical friend ROEDERER, might be very efficacious at the beginning of the diſorder, or in the milder ſorts of it; but, in the caſe of a malignant and inveterate *judhám*, we muſt either adminiſter a remedy of the higheſt power, or, agreeably to the deſponding opinion of CELSUS, *leave the patient to his fate, inſtead of teaſing him with fruitleſs medicines*, and ſuffer him, in the forcible words of ARETÆUS, *to ſink from inextricable ſlumber into death*. The life of a man is, however, ſo dear to him by nature, and in general ſo valuable to ſociety, that we ſhould never deſpond while a ſpark of it remains; and, whatever apprehenſions may be formed of future danger from the diſtant effects of *arſenic*, even though it ſhould eradicate a preſent malady, yet, as no ſuch inconvenience has ariſen from the uſe of it

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in *India*, and, as Experience muſt ever prevail over Theory, I cannot help wiſhing that this ancient *Hindu* medicine may be fully tried under the inſpection of our *European* Surgeons, whoſe minute accuracy and ſteady attention muſt always give them a claim to ſuperiority over the moſt learned natives; but many of our countrymen have aſſured me, that they by no means entertain a contemptuous opinion of the native medicines, eſpecially in diſeaſes of the ſkin. Should it be thought that the mixture of ſulphur muſt render the poiſon leſs active, it may be adviſable at firſt to adminiſter orpiment, inſtead of the *cryſtalline arſenic*.

ON

ON THE CURE OF THE ELEPHANTIASIS AND OTHER DISORDERS OF THE BLOOD.

GOD IS THE ALL-POWERFUL HEALER.

IN the year of the MESSIAH 1783, when the worthy and reſpectable *Maúlavi* MI'R MUHAMMED HUSAI'N, who excels in every branch of uſeful knowledge, accompanied Mr. RICHARD JOHNSON from *Lac'hnau* to *Calcutta*, he viſited the humble writer of this tract, who had long been attached to him with ſincere affection; and, in the courſe of their converſation, 'One of the fruits of my late excurſion,' ſaid he, 'is a pre-'ſent for you, which ſuits your profeſſion, and will be generally uſeful 'to our ſpecies. Conceiving you to be worthy of it by reaſon of your 'aſſiduity in medical enquiries, I have brought you a preſcription, the 'ingredients of which are eaſily found, but not eaſily equalled as a power-'ful remedy againſt all corruptions of the blood, the *judham*, and the '*Perſian* fire, the remains of which are a ſource of infinite maladies. It 'is an old ſecret of the *Hindu* phyſicians; who applied it alſo to the 'cure of cold and moiſt diſtempers; as the palſy, diſtortions of the 'face, relaxation of the nerves, and ſimilar diſeaſes: its efficacy too has 'been proved by long experience; and this is the method of prepar-'ing it.

'TAKE of white *arſenic*, fine and freſh, one *tóla*; of picked black pepper 'ſix times as much: let both be well beaten at intervals, for four days ſuc-'ceſſively, in an iron mortar, and then reduced to an impalpable powder in

'one of ſtone with a ſtone-peſtle, and thus completely levigated, a little 'water being mixed with them. Make pills of them as large as tares or 'ſmall pulſe, and keep them dry in a ſhady place *.

'One of thoſe pills muſt be ſwallowed morning and evening with 'ſome *betel*-leaf, or, in countries where *betel* is not at hand, with cold 'water. If the body be cleanſed from foulneſs and obſtructions by gentle hartics and bleeding, before the medicine is adminiſtered, the remedy .l be ſpeedier.'

The principal ingredient of this medicine is the *arſenic*, which the *Arabs* call *ſhucc*, the *Perſians mergi múſh*, or *mouſe-bane*, and the *Indians ſanc'hya*; a mineral ſubſtance, ponderous and *cryſtalline*: the *orpiment*, or *yellow* arſenic, is the weaker ſort. It is a deadly poiſon, and ſo ſubtil, that, when mice are killed by it, the very ſmell of the dead will deſtroy the living of that ſpecies. After it has been kept about ſeven

* The loweſt weight in general uſe among the *Hindus* is the *reti*, called in *Sanſcrit* either *racticà* or *ractica*, indicating *redneſs*, and *criſhnalà* from *criſhna*, *black*. It is the *red* and *black* ſeed of the *gunjà*-plant, which is a creeper of the ſame claſs and order at leaſt with the *glycyrrhiza*; but I take this from report, having never examined its bloſſoms. One *ractica* is ſaid to be of equal weight with three barley-corns, or four grains of rice in the huſk; and eight *reti*-weights, uſed by jewellers, are equal to ſeven carats. I have weighed a number of the ſeeds in diamond-ſcales, and find the average apothecary's weight of one ſeed to be a grain *and five-ſixteenths*. Now in the *Hindu* medical books *ten* of the *racticà*-ſeeds are one *máſhaca*, and *eight maſhacas* make a *tólaca* or *tólà*, but in the law-books of *Bengal* a *máſhaca* conſiſts of *ſixteen racticàs*, and a *tólaca* of *five máſhàs*; and, according to ſome authorities, *five retis* only go to one *máſhà*, *ſixteen* of which make a *tólaca*. We may obſerve, that the ſilver *reti*-weights, uſed by the goldſmiths at *Banáres*, are *twice* as heavy as the *ſeeds*; and thence it is that *eight retis* are commonly ſaid to conſtitute one *máſhà*, that is, *eight* ſilver weights, or *ſixteen* ſeeds; *eighty* of which ſeeds, or 105 grains, conſtitute the quantity of arſenic in the *Hindu* preſcription.

years,

years, it loſes much of its force; its colour becomes turbid; and its weight is diminiſhed. This mineral is hot and dry in the fourth degree: it cauſes ſuppuration, diſſolves or unites, according to the quantity given; and is very uſeful in cloſing the lips of wounds when the pain is too intenſe to be borne. An unguent made of it with oils of any ſort, is an effectual remedy for ſome cutaneous diſorders, and, mixed with roſe-water, it is good for cold tumours, and for the dropſy; but it muſt never be adminiſtered without the greateſt caution; for ſuch is its power, that the ſmalleſt quantity of it in powder, drawn, like *alcohol*, between the eye-laſhes, would in a ſingle day entirely corrode the coats and humours of the eye; and fourteen *retis* of it would in the ſame time deſtroy life. The beſt antidote againſt its effects are the ſcrapings of leather reduced to aſhes. If the quantity of arſenic taken be accurately known, four times as much of thoſe aſhes, mixed with water, and drank by the patient, will ſheath and counteract the poiſon.

THE writer, conformably to the directions of his learned friend, prepared the medicine; and, in the ſame year, gave it to numbers, who were reduced by the diſeaſes above mentioned to the point of death. GOD is his witneſs that they grew better from day to day, were at laſt completely cured, and are now living (except one or two, who died of other diſorders) to atteſt the truth of this aſſertion. One of his firſt patients was a *Pârsì*, named MENU'CHEHR, who had come from Surat to this city, and had fixed his abode near the writer's houſe. He was ſo cruelly afflicted with a confirmed lues, here called *the Perſian Fire*, that his hands and feet were entirely ulcerated, and almoſt corroded, ſo that he became an object of diſguſt and abhorrence. This man conſulted the writer on his caſe, the ſtate of which he diſcloſed without reſerve. Some

blood was taken from him on the ſame day, and a cathartic adminiſtered on the next. On the third day he began to take the *arſenic-pills*, and, by the bleſſing of GOD, the virulence of his diſorder abated by degrees, until ſigns of returning health appeared: in a fortnight his recovery was complete, and he was bathed, according to the practice of our phyſicians. He ſeemed to have no virus left in his blood, and none has been ſince perceived by him.

BUT the power of this medicine has chiefly been tried in the cure of the *juzám*, as the word is pronounced in *India*: a diſorder infecting the whole maſs of blood, and thence called by ſome *fíſádi khún*. The former name is derived from an *Arabic* root, ſignifying, in general, *amputation, maiming, exciſion*, and, particularly, the *truncation* or *eroſion of the fingers*, which happens in the laſt ſtage of the diſeaſe. It is extremely contagious; and, for that reaſon, the Prophet ſaid, *ferrú mina'lmajdhúmi camá teferrú mina'l aſad*, or, 'Flee from a perſon afflicted with the 'judhám, as you would flee from a lion.' The author of the *Bahhru'lja-wáhir*, or *Sea of Pearls*, ranks it as an infectious malady with the *meaſles*, the *ſmall-pox*, and the *plague*. It is alſo *hereditary*, and, in that reſpect, claſſed by medical writers with the *gout*, the *conſumption*, and the *white leproſy*.

A COMMON cauſe of this diſtemper is the unwholeſome diet of the natives, many of whom are accuſtomed, after eating a quantity of *fiſh*, to ſwallow copious draughts of *milk*, which fail not to cauſe an accumulation of yellow and black bile, which mingles itſelf with the blood, and corrupts it. But it has other cauſes; for a *Brahmen*, who had never taſted *fiſh* in his life, applied lately to the compoſer of this eſſay, and

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appeared in the higheſt degree affected by a corruption of blood; which he might have inherited, or acquired by other means. Thoſe whoſe religion permits them to eat *beef*, are often expoſed to the danger of heating their blood intenſely, through the knavery of the butchers in the *Bázár*, who fatten their calves with *Bálátwer*; and thoſe who are ſo ill-adviſed as to take *provocatives*, a folly extremely common in *India*, at firſt are inſenſible of the miſchief, but, as ſoon as the increaſed moiſture is diſperſed, find their whole maſs of blood inflamed and, as it were, aduſt; whence ariſes the diſorder of which we are now treating. The *Perſian* (or venereal) fire generally ends in this malady, as one De'vi' Prasa'd, lately in the ſervice of Mr. Vansittart, and ſome others, have convinced me by an unreſerved account of their ſeveral caſes.

It may here be worth while to report a remarkable caſe, which was related to me by a man who had been afflicted with the *juzám* near four years, before which time he had been diſordered with the *Perſian* fire; and, having cloſed an ulcer by means of a ſtrong healing plaſter, was attacked by a violent pain in his joints. On this he applied to a *Cabirája*, or *Hindu* phyſician, who gave him ſome pills, with a poſitive aſſurance that the uſe of them would remove his pain in a few days; and in a few days it was, in fact, wholly removed; but a very ſhort time after, the ſymptoms of the *juzám* appeared, which continually increaſed to ſuch a degree, that his fingers and toes were on the point of dropping off. It was afterwards diſcovered, that the pills which he had taken were made of cinnabar, a common preparation of the *Hindus*; the heat of which had firſt ſtirred the humours, which, on ſtopping the external diſcharge, had fallen on the joints, and then had occaſioned a quantity of aduſt bile to mix itſelf with the blood and infect the whole maſs.

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Of this dreadful complaint, however cauſed, the firſt ſymptoms are a numbneſs and redneſs of the whole body, and principally of the face, an impeded hoarſe voice, thin hair and even baldneſs, offenſive perſpiration and breath, and whitlows on the nails. The cure is beſt begun with copious bleeding and cooling drink, ſuch as a decoction of the *nilúfer*, or *Nymphea*, and of violets, with ſome doſes of manna; after which ſtronger cathartics muſt be adminiſtered. But no remedy has proved ſo efficacious as the pills compoſed of arſenic and pepper. One inſtance of their effect may here be mentioned; and many more may be added, if required.

In the month of *February*, in the year juſt mentioned, one *Shaikh* RAMAZA'NI', who was then an upper-ſervant to the Board of Revenue, had ſo corrupt a maſs of blood, that a black leproſy of his joints was approaching; and moſt of his limbs began to be ulcerated: in this condition he applied to the writer, and requeſted immediate aſſiſtance. Though the diſordered ſtate of his blood was evident on inſpection, and required no particular declaration of it, yet many queſtions were put to him; and it was clear from his anſwers that he had a confirmed *juzám*: he then loſt a great deal of blood, and, after due preparation, took the arſenic-pills. After the firſt week his malady ſeemed alleviated; in the ſecond it was conſiderably diminiſhed; and in the third ſo entirely removed, that the patient went into the bath of health, as a token that he no longer needed a phyſician.

IX. ON

IX.

ON THE INDIAN GAME OF CHESS.

BY THE PRESIDENT.

IF evidence be required to prove that chefs was invented by the *Hindus*, we may be ſatisfied with the teſtimony of the *Perſians*; who, though as much inclined as other nations to appropriate the ingenious inventions of a foreign people, unanimouſly agree that the game was imported from the weſt of *India*, together with the charming fables of VISHNUSARMAN, in the fifth century of our era. It ſeems to have been immemorially known in *Hindoſtan* by the name of *Chaturanga*, that is, the four *angas*, or *members*, of an army, which are ſaid in the *Amara cósha* to be *haſtyaswarat'hapádátam*, or *elephants, horſes, chariots*, and *foot-ſoldiers*; and, in this ſenſe, the word is frequently uſed by epic poets in their deſcriptions of real armies. By a natural corruption of the pure *Sanſcrit* word, it was changed by the old *Perſians* into *Chatrang*; but the *Arabs*, who ſoon after took poſſeſſion of their country, had neither the initial nor final letter of that word in their alphabet, and conſequently altered it further into *Shatranj*, which found its way preſently into the modern *Perſian*, and at length into the dialects of *India*, where the true derivation of the name is known only to the learned. Thus has a very ſignificant word in the ſacred language of the *Brahmans* been transformed by ſucceſſive changes into *axedrez, ſtaechi, échecs, chefs*; and, by a whimſical concurrence of circumſtances, given birth to the *Engliſh* word *check*, and even a name to the *Exchequer* of *Great Britain*. The beautiful ſimplicity and extreme perfection of the game, as it is commonly played

played in *Europe* and *Aſia*, convince me that it was invented by one effort of ſome great genius; not completed by gradual improvements, but formed, to uſe the phraſe of *Italian* critics, *by the firſt intention*; yet of this ſimple game, ſo exquiſitely contrived, and ſo certainly invented in *India*, I cannot find any account in the claſſical writings of the *Brahmans*. It is, indeed, confidently aſſerted, that *Sanſcrit* books on Cheſs exiſt in this country; and, if they can be procured at *Banáres*, they will aſſuredly be ſent to us: at preſent I can only exhibit a deſcription of a very ancient *Indian* game of the ſame kind; but more complex, and, in my opinion, more modern than the ſimple Cheſs of the *Perſians*. This game is alſo called *Chaturanga*, but more frequently *Chatúrdſi*, or the *four Kings*, ſince it is played by four perſons repreſenting as many princes, two allied armies combating on each ſide. The deſcription is taken from the *Bhaviſhya Puran*, in which YUDHISHT'HIR is repreſented converſing with VYA'SA, who explains, at the king's requeſt, the form of the fictitious warfare, and the principal rules of it. "Having marked *eight* ſquares on all ſides," ſays the ſage, "place the *red* "army to the eaſt, the *green* to the ſouth, the *yellow* to the weſt, and "the *black* to the north: let the *elephant* ſtand on the left of the *king*; "next to him the *horſe*; then the *boat*; and, before them all, four "*foot-ſoldiers*; but the *boat* muſt be placed in the *angle* of the board." From this paſſage it clearly appears, that an army, with its four *angas*, muſt be placed on each ſide of the board, ſince an *elephant* could not ſtand in any other poſition on the *left* hand of each *king*; and RA'DHACA'NT informed me, that the board conſiſted, like ours, of *ſixty-four* ſquares, half of them occupied by the forces, and half vacant. He added, that this game is mentioned in the oldeſt law-books, and that it was invented by the wife of RA'VAN, king of *Lancà*, in order to amuſe him with

with an image of war, while his metropolis was closely besieged by RA'MA in the second age of the world. He had not heard the story told by FIRDAUSI near the close of the *Sháhnámah*, and it was probably carried into *Persia* from *Cányacubja* by BORZU, the *favourite physician*, thence called *Vaidyapríya*, of the great ANU'SHIRAV'AN; but he said that the *Bráhmans* of *Gaur*, or *Bengal*, were once celebrated for superior skill in the game, and that his father, together with his spiritual preceptor JAGANNA'T'H, now living at *Tribéni*, had instructed two young *Bráhmans* in all the rules of it, and had sent them to *Jayanagar* at the request of the late *Rájá*, who had liberally rewarded them. A *ship* or *boat* is substituted, we see, in this complex game for the *rat'h*, or armed *chariot*, which the *Bengalese* pronounce *rot'h*, and which the *Persians* changed into *rokh*, whence came the *rook* of some *European* nations; as the *virrge* and *fol* of the *French* are supposed to be corruptions of *fers* and *fil*, the *prime minister* and *elephant* of the *Persians* and *Arabs*. It were vain to seek an etymology of the word *rook* in the modern *Persian* language; for, in all the passages extracted from FIRDAUSI and JA'MI, where *rokh* is conceived to mean a *hero*, or a *fabulous bird*, it signifies, I believe, no more than a *cheek* or a *face*; as in the following description of a procession in *Egypt*: "When a thousand youths, like cypresses, box-trees, and firs, "with locks as fragrant, cheeks as fair, and bosoms as delicate as lilies "of the valley, were marching gracefully along, thou wouldst have said "that the new spring was *turning his face* (not as HYDE translates the "words, *carried on rokhs*) from station to station;" and, as to the battle of the *duwázdeh rokh*, which D'HERBELOT supposes to mean *douze preux chevaliers*, I am strongly inclined to think that the phrase only signifies a combat of *twelve persons face to face*, or six on a side. I cannot agree with my friend RA'DHA'CA'NT, that a *ship* is properly introduced

in this imaginary warfare inſtead of a *chariot*, in which the old *Indian* warriors conſtantly fought; for, though the *king* might be ſuppoſed to ſit in a *car*, ſo that the four *angas* would be complete, and though it may often be neceſſary in a real campaign to paſs rivers or lakes, yet no river is marked on the *Indian* as it is on the *Chineſe* cheſs-board; and the intermixture of ſhips with horſes, elephants, and infantry embattled on a plain, is an abſurdity not to be defended. The uſe of *dice* may, perhaps, be juſtified in a repreſentation of war, in which *fortune* has unqueſtionably a great ſhare; but it ſeems to exclude cheſs from the rank which has been aſſigned to it among the ſciences, and to give the game before us the appearance of *whiſt*, except that pieces are uſed openly, inſtead of cards which are held concealed. Nevertheleſs, we find that the moves in the game deſcribed by VYA'SA were to a certain degree regulated by *chance*; for he proceeds to tell his royal pupil, that, "if "*cinque* be thrown, the *king* or a *pawn* muſt be moved; if *quatre*, the "*elephant*; if *trois*, the *horſe*; and if *deux*, the *boat*."

HE then proceeds to the moves: "the *king* paſſes freely on all ſides but "over *one* ſquare only; and with the ſame limitation the *pawn* moves, "but he advances ſtraight forward and kills his enemy through an "angle; the *elephant* marches in all directions as far as his driver "pleaſes; the *horſe* runs obliquely, traverſing three ſquares; and the "*ſhip* goes over two ſquares diagonally." The elephant, we find, has the powers of our *queen*, as we are pleaſed to call the *miniſter*, or *general* of the *Perſians*; and the *ſhip* has the motion of the piece to which we give the unaccountable appellation of *biſhop*, but with a reſtriction which muſt greatly leſſen his value.

THE

THE bard next exhibits a few general rules and ſuperficial directions for the conduct of the game. "The *pawns* and the *ſhip* both kill and may "be voluntarily killed; while the *king*, the *elephant*, and the *horſe*, may "ſlay the foe, but cannot expoſe themſelves to be ſlain. Let each player "preſerve his own forces with extreme care, ſecuring his *king* above "all, and not ſacrificing a ſuperior to keep an inferior piece." Here the commentator on the *Purán* obſerves, that the *horſe*, who has the choice of *eight* moves from any central poſition, muſt be preferred to the *ſhip*, who has only the choice of *four*; but this argument would not have equal weight in the common game, where the *biſhop* and *tower* command a whole line, and where a knight is always of leſs value than a tower in action, or the biſhop of that ſide on which the attack is begun. "It is by the overbearing power of the *elephant* that the king "fights boldly; let the whole army, therefore, be abandoned, in order "to ſecure the *elephant*: the king muſt never place one elephant before "another, according to the rule of GO'TAMA, unleſs he be compelled "by want of room, for he would thus commit a dangerous fault; and, if "he can ſlay one of two hoſtile elephants, he muſt deſtroy that on his "left hand." The laſt rule is extremely obſcure; but, as GO'TAMA was an illuſtrious lawyer and philoſopher, he would not have condeſcended to leave directions for the game of *Chaturanga*, if it had not been held in great eſtimation by the ancient ſages of *India*.

ALL that remains of the paſſage which was copied for me by RA'DHA'CA'NT and explained by him, relates to the ſeveral modes in which a partial ſucceſs or complete victory may be obtained by any one of the four players; for we ſhall ſee that, as if a diſpute had ariſen between two allies, one of the kings may aſſume the command of all the forces,

and aim at ſeparate conqueſt. Firſt, "When any one king has placed "himſelf on the ſquare of another king, which advantage is called *Sinhá-* "*ſana*, or *the throne*, he wins a ſtake, which is doubled, if he kills the "adverſe monarch when he ſeizes his place; and, if he can ſeat himſelf "on the throne of his ally, he takes the command of the whole army." Secondly, "If he can occupy ſucceſſively the thrones of all three prin- "ces, he obtains the victory, which is named *Chaturáji*, and the ſtake "is doubled if he kills the laſt of the three juſt before he takes poſſeſſion "of his throne; but, if he kills him on his throne, the ſtake is quadru- "pled." Thus, as the commentator remarks, in a real warfare, a king may be conſidered as victorious when he ſeizes the metropolis of his adverſary; but, if he can deſtroy his foe, he diſplays greater heroiſm, and relieves his people from any further ſolicitude. "Both in gaining the "*Sinhásana* and the *Chaturáji*, ſays VYA'SA the king muſt be ſupported "by the *elephants*, or by all the forces united." Thirdly, "When one "player has his own king on the board, but the king of his partner has "been taken, he may replace his captive ally if he can ſeize both the "adverſe kings; or, if he cannot effect their capture, he may exchange "his king for one of them againſt the general rule, and thus redeem "the allied prince, who will ſupply his place." This advantage has the name of *Nripácriſhṭ'a*, or *recovered by the king*, and the *Naucácriſhṭ'a* ſeems to be analogous to it, but confined to the caſe of *ſhips*. Fourthly, "If a pawn can march to any ſquare on the oppoſite extremity of the "board except that of the king, or that of the ſhip, he aſſumes what- "ever power belonged to that ſquare; and this promotion is called *Shaṭ-* "*pada*, or the *ſix ſtrides*." Here we find the rule, with a ſingular exception concerning the advancement of *pawns*, which often occaſions a moſt intereſting ſtruggle at our common cheſs, and which has furniſhed the

poets

poets and moraliſts of *Arabia* and *Perſia* with many lively reflections on human life. It appears that "this privilege of *Shatpada* was not allowable, "in the opinion of GO'TAMA, when a player had three pawns on the "board; but when only one pawn and one ſhip remained, the pawn might "advance even to the ſquare of a king or a ſhip, and aſſume the power "of either." Fifthly, "According to the *Rácſhaſas*, or *giants* (that "is, the people of *Lancà*, where the game was invented) there could be "neither victory nor defeat if a king were left on the plain without force: "a ſituation which they named *Cácacáſht'ha*." Sixthly, "If three ſhips "happen to meet, and the fourth ſhip can be brought up to them in the "remaining angle, this has the name of *Vrihanmaucà*; and the player of "the fourth ſeizes all the others." Two or three of the remaining couplets are ſo dark, either from an error in the manuſcript or from the antiquity of the language, that I could not underſtand the *Pandit*'s explanation of them, and ſuſpect that they gave even him very indiſtinct ideas; but it would be eaſy, if it were worth while to play at the game by the preceding rules, and a little practice would perhaps make the whole intelligible. One circumſtance in this extract from the *Puràn* ſeems very ſurprizing: all games of hazard are poſitively forbidden by MENU, yet the game of *Chaturanga*, in which dice are uſed, is taught by the great VYAS'A himſelf, whoſe law-tract appears with that of GO'TAMA among the eighteen books which form the *Dhermaſáſtra*; but as RA'DHA'CA'NT and his preceptor JAGANNA'T'H are both employed by government in compiling a Digeſt of *Indian* Laws, and as both of them, eſpecially the venerable Sage of *Tribéni*, underſtand the game, they are able, I preſume, to aſſign reaſons why it ſhould have been excepted from the general prohibition, and even openly taught by ancient and modern *Bráhmans*.

X.

TWO INSCRIPTIONS FROM THE VINDHYA MOUNTAINS.

TRANSLATED FROM THE SANSCRIT
BY CHARLES WILKINS, ESQ.

FIRST INSCRIPTION, IN A CAVERN, CALLED THE GROT OF THE RISHIS, NEAR GAYA.

1. ANANTA VARMA, maſter of the hearts of the people, who was the good ſon of *Sree* SARDOOLA, by his own birth and great virtues claſſed amongſt the principal rulers of the earth, gladly cauſed this ſtatue of KREESHNA, of unſullied renown, confirmed in the world like his own reputation and the image of KANTEEMATEE *, to be depoſited in this great mountain-cave.

2. SREE SARDOOLA, of eſtabliſhed fame, jewel of the diadems of kings, emblem of time to the martial poſſeſſors of the earth, to the ſubmiſſive the tree of the fruit of deſire, a light to the Military Order, whoſe glory was not founded upon the feats of a ſingle battle, the raviſher of female hearts and the image of SMARA †, became the ruler of the land.

* RADHA, the favourite miſtreſs of KREESHNA.

† KAMA DEVA the *Cupid* of the *Hindoos*.

3. WHEREVER

3. WHEREVER *Sree* SARDOOLA is wont to caſt his own diſcordant ſight towards a foe, and the fortunate ſtar, his broad eye is enflamed with anger between its expanded lids; *there* falleth a ſhower of arrows from the ear-drawn ſtring of the bow of his ſon, the renowned ANANTA VARMA, the beſtower of infinite happineſs.

SECOND INSCRIPTION, IN A CAVE BEHIND NAGARJENI.

1. THE auſpicious *Sree* YAJNA VARMA, whoſe movement was as the ſportive elephant's in the ſeaſon of luſt, was, like MANOO *, the appointer of the military ſtation of all the chiefs of the earth.—By whoſe divine offerings, the God with a thouſand eyes † being conſtantly invited, the emaciated *Powlomee* ‡, for a long time ſullied the beauty of her cheeks with falling tears.

2. ANANTA VARMA by name, the friend of ſtrangers; renowned in the world in the character of valour; by nature immaculate as the lunar beams, and who is the offſpring of *Sree* SARDOOLA:—By him this wonderful ſtatue of BHOOTAPATEE and of DEVEE ||, the maker of all things viſible and inviſible and the granter of boons, which hath taken ſanctuary in this cave, was cauſed to be made. May it protect the univerſe!

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* The firſt legiſlator of the *Hindus*.

† *Eendra* a deification of the Heavens.

‡ The wife of *Eendra*.

|| *Seva*, or *Mahadeva* and his conſort in one image, as a type of the deities, *Geaur* and *Gaurie*.

3. THE

3. THE ſtring of his expanded bow, charged with arrows, and drawn to the extremity of the ſhoulder, burſteth the circle's centre. Of ſpacious brow, propitious diſtinction, and ſurpaſſing beauty, he is the image of the moon with an undiminiſhed countenance. ANANTA VARMA to the end! Of form like SMARA * in exiſtence, he is ſeen with the conſtant and affectionate, ſtanding with their tender and faſcinated eyes conſtantly fixed upon him.

4. FROM the machine his bow, reproacher of the crying *Koorara* †, bent to the extreme, he is endued with force; from his expanded virtue he is a provoker; by his good conduct his renown reacheth to afar; he is a hero by whoſe courſing ſteeds the elephant is diſturbed, and a youth who is the ſeat of ſorrow to the women of his foes. He is the director, and his name is ANANTA ‡.

* The Hindoo *Cupid*.

† A bird that is conſtantly making a noiſe before rain.

‡ This word ſignifies eternal or infinite.

XI.

A DESCRIPTION OF ASAM, BY MOHAMMED CAZIM,

TRANSLATED FROM THE PERSIAN

BY HENRY VANSITTART, ESQ.*

ASAM, which lies to the north-eaſt of *Bengal*, is divided into two parts by the river *Brahmaputra*, that flows from *Khatà*. The northern portion is called *Uttarcul*, and the ſouthern *Dacſhincul*. *Uttarcul* begins at *Gowahutty*, which is the boundary of his Majeſty's territorial poſſeſſions, and terminates in mountains inhabited by a tribe called *Meeri Mechmi*. *Dacſhincul* extends from the village *Sidea* to the hills of *Srinagar*. The moſt famous mountains to the northward of *Uttarcul* are thoſe of *Duleh* and *Laudah*; and to the ſouthward of *Dacſhincul* are thoſe of *Namrup (Càmrùp?)* ſituated four days journey above *Ghergong*, to which the *Rájá* retreated. There is another chain of hills, which is inhabited by a tribe called *Namac*, who pay no revenue to the *Rájá*, but profeſs allegiance to him, and obey a few of his orders. But the † *Zemleh* tribe are entirely independent of him, and, whenever they find an opportunity, plunder the country contiguous to their mountains. *Aſàm* is of an oblong figure: its length is about 200 ſtandard coſs, and its breadth, from the northern to the ſouthern mountains, about eight days journey. From *Gowahutty* to *Ghergong* are ſeventy-five

* Th[illegible] of *Aſam* was tranſlated for the Society, but afterwards printed by the learned tranſlat[illegible] [illegible]ndix to his *Aalemgirnamah*. It is reprinted here, becauſe our government has [illegible] as well acquainted as poſſible with all the nations *bordering* on the *Britiſh* t[illegible]

† [illegible] this tribe are called *Duſleh*.

ſtandard

ſtandard coſs; and from thence it is fifteen days journey to *Khoten*, which was the reſidence of *Peeran Wiſeh* *, but is now called *Ava* †, and is the capital of the *Rájá* of *Pegu*, who conſiders himſelf of the poſterity of that famous General. The firſt five days journey from the mountains of *Cámrùp* is performed through foreſts and over hills, which are arduous and difficult to paſs. You then travel eaſtward to *Ava* through a level and ſmooth country. To the northward is the plain of *Khatà*, that has been before mentioned as the place from whence the *Brahmaputra* iſſues, which is afterwards fed by ſeveral rivers that flow from the ſouthern mountains of *Aſàm*. The principal of theſe is the *Dhonee*, which has before occurred in this hiſtory. It joins that broad river at the village *Luckeegereh*.

BETWEEN theſe rivers is an iſland well inhabited, and in an excellent ſtate of tillage. It contains a ſpacious, clear, and pleaſant country, extending to the diſtance of about fifty coſs. The cultivated track is bounded by a thick foreſt, which harbours elephants, and where thoſe animals may be caught, as well as in four or five other foreſts of *Aſàm*. If there be occaſion for them, five or ſix hundred elephants may be procured in a year. Acroſs the *Dhonee*, which is the ſide of *Ghergong*, is a wide, agreeable, and level country, which delights the heart of the beholder. The whole face of it is marked with population and tillage; and it preſents on every ſide charming proſpects of ploughed fields, har-

* According to *Khondemir*, *Peeran Wiſeh* was one of the nobles of *Afraſiab*, King of *Turàn*, contemporary with *Kaicoos*, ſecond prince of the *Kianian* dynaſty. In the *Ferhung Jehangeery* and *Burhaun Kateá* (two Perſian Dictionaries) *Peeran* is deſcribed as one of the *Pehlewan* or heroes of *Turàn*, and General under *Afraſiab*, the name of whoſe father was *Wiſeh*.

† This is a palpable miſtake. *Khoten* lies to the north of *Himálaya*; and *Peeran Wiſeh* could never have ſeen *Ava*.

veſts,

veſſs, gardens, and groves. All the iſland before deſcribed lies in *Dac-ſhincul*. From the village *Selagereh* to the city of *Ghergong*, is a ſpace of about fifty coſs, filled with ſuch an uninterrupted range of gardens, plentifully ſtocked with fruit-trees, that it appears as one garden. Within them are the houſes of the peaſants, and a beautiful aſſemblage of coloured and fragrant herbs, and of garden and wild flowers blowing together. As the country is overflowed in the rainy ſeaſon, a high and broad cauſeway has been raiſed for the convenience of travellers from *Salagereh* to *Ghergong*, which is the only uncultivated ground that is to be ſeen. Each ſide of this road is planted with ſhady bamboos, the tops of which meet, and are intertwined. Amongſt the fruits which this country produces, are mangoes, plantains, jacks, oranges, citrons, limes, pine-apples, and *punialeh*, a ſpecies of *amleh*, which has ſuch an excellent flavour, that every perſon who taſtes it prefers it to the plum. There are alſo cocoa-nut trees, pepper-vines, *Areca*-trees, and the *Sidij* *, in great plenty. The ſugar-cane excels in ſoftneſs and ſweetneſs, and is of three colours, red, black, and white. There is ginger free from fibres, and betel-vines. The ſtrength of vegetation and fertility of the ſoil are ſuch, that whatever ſeed is ſown, or ſlips planted, they always thrive. The environs of *Ghergong* furniſh ſmall apricots, yams, and pomegranates; but as theſe articles are wild, and not aſſiſted by cultivation and engraftment, they are very indifferent. The principal crop of this country conſiſts in rice and *maſh* †. *Ades* is very ſcarce, and wheat and barley are never ſown. The ſilks are excellent, and reſemble

* The *Sidij* is a long aromatic leaf, which has a pungent taſte, and is called in *Sanſcrit Tija-patra*. In our botanical books it bears the name of *Malabathrum*, or the *Indian* leaf.

† *Maſh* is a ſpecies of grain, and *Ades* a kind of pea.

thoſe

thoſe of *China*; but they manufacture very few more than are required for uſe. They are ſucceſsful in embroidering with flowers, and in weaving velvet and *tautbund*, which is a ſpecies of ſilk of which they make tents and *kenauts* *. Salt is a very precious and ſcarce commodity: it is found at the bottom of ſome of the hills; but of a bitter and pungent quality. A better ſort is in common uſe, which is extracted from the plantain-tree. The mountains, inhabited by the tribe called *Nanac*, produce plenty of excellent *Lignum Aloes*, which a ſociety of the natives imports every year into *Aſâm*, and barters for ſalt and grain. This evil-diſpoſed race of mountaineers are many degrees removed from the line of humanity, and are deſtitute of the characteriſtical properties of a man. They go naked from head to foot, and eat dogs, cats, ſnakes, mice, rats, ants, locuſts, and every thing of this ſort which they can find. The hills of *Cámrùp*, *Sidea*, and *Luckigereh*, ſupply a fine ſpecies of *Lignum Aloes*, which ſinks in water. Several of the mountains contain muſk-deer.

The country of *Uttarcul*, which is on the northern ſide of the *Brahmaputra*, is in the higheſt ſtate of cultivation, and produces plenty of pepper and *Areca*-nuts. It even ſurpaſſes *Dacſhincul* in population and tillage; but, as the latter contains a greater track of wild foreſts, and places difficult of acceſs, the rulers of *Aſâm* have choſen to reſide in it for the convenience of control, and have erected in it the capital of the kingdom. The breadth of *Uttarcul*, from the bank of the river to the foot of the mountains, which is a cold climate, and contains ſnow, is various, but is nowhere leſs than fifteen coſs, nor more than forty-five coſs. The

* *Kenauts* are walls made to ſurround tents.

inhabitants

inhabitants of thoſe mountains are ſtrong, have a robuſt and reſpectable appearance, and are of a middling ſize. Their complexions, like thoſe of the natives of all cold climates, are red and white; and they have alſo trees and fruits peculiar to frigid regions. Near the fort of *Jum Dereh*, which is on the ſide of *Gowahutty*, is a chain of mountains, called the country of *Dereng*, all the inhabitants of which reſemble each other in appearance, manners, and ſpeech, but are diſtinguiſhed by the names of their tribes and places of reſidence. Several of theſe hills produce muſk, *katans**, *bhoat*†, *peree*, and two ſpecies of horſes, called *goont* and *tanyans*. Gold and ſilver are procured here, as in the whole country of *Aſâm*, by waſhing the ſand of the rivers. This, indeed, is one of the ſources of revenue. It is ſuppoſed that 12,000 inhabitants, and ſome ſay 20,000, are employed in this occupation; and it is a regulation, that each of theſe perſons ſhall pay a fixed revenue of a *tólà* ‡ of gold to the *Rájá*. The people of *Aſâm* are a baſe and unprincipled nation, and have no fixed religion. They follow no rule but that of their own inclinations, and make the approbation of their own vicious minds the teſt of the propriety of their actions. They do not adopt any mode of worſhip practiſed either by *Heathens* or *Mohammedans*; nor do they concur with any of the known ſects which prevail amongſt mankind. Unlike the *Pagans* of *Hinduſtân*, they do not reject victuals which have been dreſſed by *Muſelmans*; and they abſtain from no fleſh except hu-

* Katans is thus deſcribed in the *Burhan Katea*: "This word, in the language of *Rûm*, is a "cow-cow; the tail of which is hung upon the necks of horſes, and on the ſummit of ſtand-"ards. Some ſay that it is a cow which lives in the mountains of *Khatà*." It here means the mountain-cow, which ſupplies the tail that is made into *chowries*; and in *Sanſcrit* is called *châmara*.

† *Bhoat* and *peree* are two kinds of blanket.

‡ Eighty *rati*-weights. See page 151, *note*.

man.

man. They even eat animals that have died a natural death; but, in conſequence of not being uſed to the taſte of ghee, they have ſuch an antipathy to this article, that if they diſcover the leaſt ſmell of it in their victuals, they have no reliſh for them. It is not their cuſtom to veil their women; for even the wives of the *Rájá* do not conceal their faces from any perſon. The females perform work in the open air, with their countenances expoſed and heads uncovered. The men have often four or five wives each, and publicly buy, ſell, and change them. They ſhave their heads, beards, and whiſkers, and reproach and admoniſh every perſon who neglects this ceremony. Their language has not the leaſt affinity with that of *Bengal**. Their ſtrength and courage are apparent in their looks; but their ferocious manners and brutal tempers are alſo betrayed by their phyſiognomy. They are ſuperior to moſt nations in corporal force and hardy exertions. They are enterprizing, ſavage, fond of war, vindictive, treacherous, and deceitful. The virtues of compaſſion, kindneſs, friendſhip, ſincerity, truth, honour, good faith, ſhame, and purity of morals, have been left out of their compoſition. The ſeeds of tenderneſs and humanity have not been ſown in the field of their frames. As they are deſtitute of the mental garb of manly qualities, they are alſo deficient in the dreſs of their bodies. They tie a cloth round their heads, and another round their loins, and throw a ſheet upon their ſhoulder; but it is not cuſtomary in that country to wear turbans, robes, drawers, or ſhoes. There are no buildings of brick or ſtone, or with walls of earth, except the gates of the city of *Ghergong*, and ſome of their idolatrous temples The rich and poor conſtruct their habita-

* This is an error; young *Brahmens* often come from *Aſam* to *Nadiyá* for inſtruction; and their vulgar dialect is underſtood by the *Bengal* teachers.

tion

tions of wood, bamboos, and ſtraw. The *Rájá* and his courtiers travel in ſtately litters; but the opulent and reſpectable perſons amongſt his ſubjects are carried in lower vehicles, called doolies. *Aſám* produces neither horſes *, camels, nor aſſes; but thoſe cattle are ſometimes brought thither from other countries. The brutal inhabitants, from a congenial impulſe, are fond of ſeeing and keeping aſſes, and buy and ſell them at a high price; but they diſcover the greateſt ſurprize at ſeeing a camel; and are ſo afraid of a horſe, that if one trooper ſhould attack a hundred armed *Aſamians*, they would all throw down their arms and flee, or, ſhould they not be able to eſcape, they would ſurrender themſelves priſoners. Yet, ſhould one of that deteſtable race encounter two men of another nation on foot, he would defeat them.

The ancient inhabitants of this country are divided into two tribes, the *Aſamians* and the *Cultanians*. The latter excel the former in all occupations except war and the conduct of hardy enterpriſes, in which the former are ſuperior. A body-guard of ſix or ſeven thouſand *Aſamians*, fierce as demons, of unſhaken courage, and well provided with warlike arms and accoutrements, always keep watch near the *Rájá*'s ſitting and ſleeping apartments; theſe are his loyal and confidential troops and patrol. The martial weapons of this country are the muſquet, ſword, ſpear, and arrow and bow of bamboo. In their forts and boats they have alſo plenty of cannon, *zerbuzen* † and *ramchangee*, in the management of which they are very expert.

* As the Author has aſſerted that two ſpecies of horſes, called *gunt* and *tanyans*, are produced in *Durang*, we muſt ſuppoſe that this is a different country from *Aſám*.

† Swivels.

WHENEVER any of the *Rájàs*, magiſtrates, or principal men die, they dig a large cave for the deceaſed, in which they inter his women, attendants, and ſervants, and ſome of the magnificent equipage and uſeful furniture which he poſſeſſed in his life-time, ſuch as elephants, gold and ſilver, *bádraſh* (large fans) carpets, clothes, victuals, lamps, with a great deal of oil, and a torch-bearer; for they conſider thoſe articles as ſtores for a future ſtate. They afterwards conſtruct a ſtrong roof over the cave upon thick timbers. The people of the army entered ſome of the old caves, and took out of them the value of 90,000 rupees, in gold and ſilver. But an extraordinary circumſtance is ſaid to have happened, to which the mind of man can ſcarcely give credit, and the probability of which is contradicted by daily experience. It is this: All the Nobles came to the Imperial General, and declared, with univerſal agreement, that a golden betel-ſtand was found in one of the caves that was dug eighty years before, which contained betel-leaf quite green and freſh; but the authenticity of this ſtory reſts upon report.

GHERGONG has four gates, conſtructed of ſtone and earth; from each of which the *Rájá*'s palace is diſtant three coſs. The city is encompaſſed with a fence of bamboos, and within it high and broad cauſeways have been raiſed for the convenience of paſſengers during the rainy ſeaſon. In the front of every man's houſe is a garden, or ſome cultivated ground. This is a fortified city, which encloſes villages and tilled fields. The *Rájá*'s palace ſtands upon the bank of the *Degoo*, which flows through the city. This river is lined on each ſide with houſes, and there is a ſmall market which contains no ſhopkeepers except ſellers of betel. The reaſon is, that it is not cuſtomary for the inhabitants to buy proviſions for daily uſe, becauſe they lay up a ſtock for themſelves,

ſelves, which laſts them a year. The *Rajà*'s palace is ſurrounded by a cauſeway, planted on each ſide with a cloſe hedge of bamboos, which ſerves inſtead of a wall. On the outſide there is a ditch, which is always full of water. The circumference of the encloſure is one coſs and fourteen jereebs. Within it have been built lofty halls and ſpacious apartments for the *Rájà*, moſt of them of wood, and a few of ſtraw, which are called *chuppers*. Amongſt theſe is a *diwàn khánah*, or public ſaloon, one hundred and fifty cubits long, and forty broad, which is ſupported by ſixty-ſix wooden pillars, placed at an interval of about four cubits from each other. The *Rajà*'s ſeat is adorned with lattice-work and carving. Within and without have been placed plates of braſs, ſo well poliſhed, that when the rays of the ſun ſtrike upon them they ſhine like mirrors. It is an aſcertained fact, that 3,000 carpenters and 12,000 labourers were conſtantly employed in this work during two years before it was finiſhed. When the *Rajà* ſits in this chamber, or travels, inſtead of drums and trumpets, they beat the * *dhól* and *dand*. The latter is a round and thick inſtrument made of copper, and is certainly the ſame as the drum †, which it was cuſtomary in the time of the ancient kings to beat in battles and marches.

THE *Rájàs* of this country have always raiſed the creſt of pride and vainglory, and diſplayed an oſtentatious appearance of grandeur, and a numerous train of attendants and ſervants. They have not bowed the head of ſubmiſſion and obedience, nor have they paid tribute or reverence to the moſt powerful monarch; but they have curbed the ambition and

* The *dhól* is a kind of drum, which is beaten at each end.

† This is a kind of kettle-drum, and is made of a compoſition of ſeveral metals.

checked the conquests of the most victorious princes of *Hindustán*. The solution of the difficulties attending a war against them, has baffled the penetration of heroes, who have been stiled Conquerors of the World. Whenever an invading army has entered their territories, the *Asamaans* have covered themselves in strong posts, and have distressed the enemy by stratagems, surprises, and alarms, and by cutting off their provisions. If these means have failed, they have declined a battle in the field, but have carried the peasants into the mountains, burnt the grain, and left the country empty. But when the rainy season has set in upon the advancing enemy, they have watched their opportunity to make excursions and vent their rage; the famished invaders have either become their prisoners or been put to death. In this manner powerful and numerous armies have been sunk in that whirlpool of destruction, and not a soul has escaped.

FORMERLY, HUSAIN SH'AH, a king of *Bengal*, undertook an expedition against *Asám*, and carried with him a formidable force in cavalry, infantry, and boats. The beginning of this invasion was crowned with victory. He entered the country, and erected the standard of superiority and conquest. The *Rájà* being unable to encounter him in the field, evacuated the plains, and retreated to the mountains. HUSAIN left his son with a large army to keep possession of the country, and returned to *Bengal*. The rainy season commenced, and the roads were shut up by the inundation. The *Rájà* descended from the mountains, surrounded the *Bengal* army, skirmished with them, and cut off their provisions, till they were reduced to such straits, that they were all in a short time either killed or made prisoners.

IN

In the ſame manner Mohammed *Shàh*, the ſon of Togluc *Shàh*, who was king of ſeveral of the provinces of *Hinduſtàn*, ſent a well-appointed army of a hundred thouſand cavalry to conquer *Aſàm*; but they were all devoted to oblivion in that country of enchantment; and no intelligence or veſtige of them remained. Another army was diſpatched to revenge this diſaſter; but when they arrived in *Bengal*, they were panic-ſtruck, and ſhrunk from their enterprize; becauſe if any perſon paſſes the frontier into that diſtrict, he has not leave to return. In the ſame manner, none of the inhabitants of that country are able to come out of it; which is the reaſon that no accurate information has hitherto been obtained relative to that nation. The natives of *Hinduſtàn* conſider them as wizards and magicians, and pronounce the name of that country in all their incantations and counter-charms. They ſay, that every perſon who ſets his foot there is under the influence of witchcraft, and cannot find the road to return.

Jeidej Sing [*], the *Rájà* of *Aſàm*, bears the title of *Swergì*, or *Celeſtial*. *Swerg*, in the *Hinduſtànì* language, means heaven. That frantic and vainglorious prince is ſo exceſſively fooliſh and miſtaken, as to believe that his vicious anceſtors were ſovereigns of the heavenly hoſt, and that one of them being inclined to viſit the earth, deſcended by a golden ladder. After he had been employed ſome time in regulating and governing his new kingdom, he became ſo attached to it, that he fixed his abode in it, and never returned.

In ſhort, when we conſider the peculiar circumſtances of *Aſàm*; that

* Properly *Jayadhwaja Sinha*, or *the Lion with Banners of Conqueſt*.

the

the country is ſpacious, populous, and hard to be penetrated; that it abounds in perils and dangers; that the paths and roads are beſet with difficulties; that the obſtacles to the conqueſt of it are more than can be deſcribed; that the inhabitants are a ſavage race, ferocious in their manners, and brutal in their behaviour; that they are of a gigantic appearance, enterprizing, intrepid, treacherous, well armed, and more numerous than can be conceived; that they reſiſt and attack the enemy from ſecure poſts, and are always prepared for battle; that they poſſeſs forts as high as heaven, garriſoned by brave ſoldiers, and plentifully ſupplied with warlike ſtores, the reduction of each of which would require a long ſpace of time; that the way was obſtructed by thick and dangerous buſhes, and broad and boiſterous rivers: when we conſider theſe circumſtances, we ſhall wonder that this country, by the aid of GOD and the auſpices of his Majeſty, was conquered by the imperial army, and became a place for erecting the ſtandard of the faith. The haughty and inſolent heads of ſeveral of the deteſtable *Aſſamians*, who ſtretch the neck of pride, and who are devoid of religion and remote from GOD, were bruiſed by the hoofs of the horſes of the victorious warriors. The *Muſſelman* heroes experienced the comfort of fighting for their religion; and the bleſſings of it reverted to the ſovereignty of his juſt and pious Majeſty.

The *Rájá*, whoſe ſoul had been enſlaved by pride, and who had been bred up in the habit of preſuming on the ſtability of his own government, never dreamt of this reverſe of fortune; but being now overtaken by the puniſhment due to his crimes, fled, as has been before mentioned, with ſome of his nobles, attendants, and family, and a few of his effects, to the mountains of *Cámrúp*. That ſpot, by its bad air and water,

water, and confined ſpace, is rendered the worſt place in the world, or rather, it is one of the pits of hell. The *Rájà*'s officers and ſoldiers, by his orders croſſed the *Dhonee*, and ſettled in the ſpacious iſland between that and the *Brahmaputra*, which contains numerous foreſts and thickets. A few took refuge in other mountains, and watched an opportunity of committing hoſtilities.

CA'MRUP is a country on the ſide of *Dacſhincul*, ſituated between three high mountains, at the diſtance of four days journey from *Ghergong*. It is remarkable for bad water, noxious air, and confined proſpects. Whenever the *Rájà* uſed to be angry with any of his ſubjects, he ſent them thither. The roads are difficult to paſs, inſomuch that a foot-traveller proceeds with the greateſt inconvenience. There is one road wide enough for a horſe, but the beginning of it contains thick foreſts for about half a coſs. Afterwards there is a defile, which is ſtony and full of water. On each ſide is a mountain towering to the ſky.

THE Imperial General remained ſome days in *Ghergong*, where he was employed in regulating the affairs of the country, encouraging the peaſants, and collecting the effects of the *Rájà*. He repeatedly read the *Khotbeh*, or prayer, containing the name and titles of the Prince of the Age, King of Kings, ALEMGEER, Conqueror of the World, and adorned the faces of the coins with the imperial impreſſion. At this time there were heavy ſhowers, accompanied with violent wind, for two or three days; and all the ſigns appeared of the rainy ſeaſon, which in that country ſets in before it does in *Hinduſtán*. The General exerted himſelf in eſtabliſhing poſts and fixing guards for keeping open the roads, and ſupplying the army with proviſions. He thought now of ſecuring himſelf during the rains; and determined, after the ſky ſhould be cleared from the

the clouds, the lightning ceaſe to illuminate the air, and the ſwelling of the water ſhould ſubſide, that the army ſhould again be ſet in motion againſt the *Rájá* and his attendants, and be employed in delivering the country from the evils of their exiſtence.

THE Author then mentions ſeveral ſkirmiſhes which happened between the *Rájá*'s forces and the imperial troops, in which the latter were always victorious. He concludes thus:—

"AT length all the villages of *Dacſhincul* fell into the poſſeſſion of the imperial army. Several of the inhabitants and peaſants, from the diffuſion of the fame of his Majeſty's kindneſs, tenderneſs, and juſtice, ſubmitted to his government, and were protected in their habitations and property. The inhabitants of *Uttarcul* alſo became obedient to his commands. His Majeſty rejoiced when he heard the news of this conqueſt, and rewarded the General with a coſtly dreſs, and other diſtinguiſhing marks of his favour."

THE narrative to which this is a ſupplement, gives a conciſe hiſtory of the military expedition into *Aſſam*. In this deſcription the Author has ſtopt at a period when the imperial troops had poſſeſſed themſelves of the capital, and were maſters of any part of the plain country which they choſe to occupy or over-run. The ſequel diminiſhes the credit of the conqueſt, by ſhowing that it was temporary, and that the *Rájá* did not forget his uſual policy of haraſſing the invading army during the rainy ſeaſon: but this conduct produced only the effect of diſtreſſing and diſguſting it with the ſervice, inſtead of abſolutely deſtroying it, as his predeceſſors had deſtroyed former adventurers. Yet the concluſion of this

war

war is far from weakening the panegyric which the Author has paſſed upon the Imperial General, to whom a difference of ſituation afforded an opportunity of diſplaying additional virtues, and of cloſing that life with heroic fortitude, which he had always hazarded in the field with martial ſpirit. His name and titles were *Mir* JUMLEH, MOAZZIM *Khán*, *Khání*, *Khánán*, *Sipáhì* SA'LA'R.

REMARK.

THE preceding account of the *Aſámians*, who are probably ſuperior in all reſpects to the *Moguls*, exhibits a ſpecimen of the black malignity and frantic intolerance with which it was uſual, in the reign of AURANGZIB, to treat all thoſe whom the crafty, cruel, and avaricious Emperor was pleaſed to condemn as infidels and barbarians.

XII.

ON THE
MANNERS, RELIGION, AND LAWS OF THE CU
OR MOUNTAINEERS OF TIPRA.

COMMUNICATED IN PERSIAN
BY JOHN RAWLINS, ESQ.

THE inhabitants of the mountainous diſtricts to the eaſt of *Bengal*, give the name of PA'TIYA'N to the Being who created the univerſe; but they believe that a Deity exiſts in every tree, that the Sun and Moon are Gods, and that, whenever they worſhip thoſe ſubordinate divinities, PA'TIYA'N is pleaſed.

IF any one among them put another to death, the chief of the tribe, or other perſons, who bear no relation to the deceaſed, have no concern in puniſhing the murderer; but, if the murdered perſon has a brother, or other heir, he may take blood for blood, nor has any man whatever a right to prevent or oppoſe ſuch retaliation.

WHEN a man is detected in the commiſſion of theft or other atrocious offence, the chieftain cauſes a recompenſe to be given to the complainant, and reconciles both parties; but the chief himſelf receives a cuſtomary fine; and each party gives a feaſt of pork, or other meat, to the people of his reſpective tribe.

IN ancient times it was not a cuſtom among them to cut off the heads of the women whom they found in the habitations of their enemies;

but it happened once that a woman aſked another, why ſhe came ſo late to her buſineſs of ſowing grain: ſhe anſwered, that her huſband was gone to battle, and that the neceſſity of preparing food and other things for him had occaſioned her delay. This anſwer was overheard by a man at enmity with her huſband; and he was filled with reſentment againſt her, conſidering, that, as ſhe had prepared food for her huſband for the purpoſe of ſending him to battle againſt his tribe, ſo in general, if women were not to remain at home, their huſbands could not be ſupplied with proviſion, and conſequently could not make war with advantage. From that time it became a conſtant practice to cut off the heads of the enemy's women, eſpecially if they happen to be pregnant, and therefore confined to their houſes; and this barbarity is carried ſo far, that if a *Gúr* aſſail the houſe of an enemy and kill a woman with child, ſo that he may bring two heads, he acquires honour and celebrity in his tribe, as the deſtroyer of two foes at once.

As to the marriages of this wild nation, when a rich man has made a contract of marriage, he gives four or five head of *gayáls* (the cattle of the mountains) to the father and mother of the bride, whom he carries to his own houſe: her parents then kill the *gayáls*, and, having prepared fermented liquors and boiled rice, with other eatables, invite the father, mother, brethren, and kindred of the bridegroom to a nuptial entertainment. When a man of ſmall property is inclined to marry, and a mutual agreement is made, a ſimilar method is followed in a lower degree; and a man may marry any woman, except his own mother. If a married couple live cordially together, and have a ſon, the wife is fixed and irremoveable; but if they have no ſon, and eſpecially if they live together on bad terms, the huſband may divorce his wife, and marry another woman.

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THEY have no idea of heaven or hell, the reward of good, or the puniſhment of bad actions; but they profeſs a belief that, when a perſon dies, a certain ſpirit comes and ſeizes his ſoul, which he carries away; and that whatever the ſpirit promiſes to give at the inſtant when the body dies, will be found and enjoyed by the dead; but that, if any one ſhould take up the corſe and carry it off, he would not find the treaſure.

THE food of this people conſiſts of elephants, hogs, deer, and other animals; of which, if they find the carcaſes or limbs in the forests, they dry them, and eat them occaſionally.

WHEN they have reſolved on war, they ſend ſpies before hoſtilities are begun, to learn the ſtations and ſtrength of the enemy, and the condition of the roads; after which they march in the night; and two or three hours before day-light, make a ſudden aſſault with ſwords, lances, and arrows. If their enemies are compelled to abandon their ſtation, the aſſailants inſtantly put to death all the males and females who are left behind, and ſtrip the houſes of all their furniture; but, ſhould their adverſaries, having gained intelligence of the intended aſſault, be reſolute enough to meet them in battle, and ſhould they find themſelves overmatched, they ſpeedily retreat, and quietly return to their own habitations. If at any time they ſee a ſtar very near the moon, they ſay, 'to-night we 'ſhall undoubtedly be attacked by ſome enemy;' and they paſs that night under arms with extreme vigilance. They often lie in ambuſh in a foreſt, near the path where their foes are uſed to paſs and repaſs, waiting for the enemy with different ſorts of weapons, and killing every man or woman who happens to paſs by. In this ſituation, if a leech, or a worm, or a ſnake, ſhould bite one of them, he bears the pain in perfect ſilence;

ſilence; and whoever can bring home the head of an enemy which he has cut off, is ſure to be diſtinguiſhed and exalted in his nation. When two hoſtile tribes appear to have equal force in battle, and neither has hopes of putting the other to flight, they make a ſignal of pacific intentions, and, ſending agents reciprocally, ſoon conclude a treaty; after which they kill ſeveral head of *gayáls*, and feaſt on their fleſh, calling on the Sun and Moon to bear witneſs of the pacification: but if one ſide, unable to reſiſt the enemy, be thrown into diſorder, the vanquiſhed tribe is conſidered as tributary to the victors; who every year receive from them a certain number of *gayáls*, wooden diſhes, weapons, and other acknowledgements of vaſſalage. Before they go to battle they put a quantity of roaſted *álus* (eſculent roots like *potatoes*) and paſte of rice-flour into the hollow of bamboos, and add to them a proviſion of dry rice, with ſome leathern bags full of liquor. Then they aſſemble, and march with ſuch celerity, that in one day they perform a journey ordinarily made by letter-carriers in three or four days, ſince they have not the trouble and delay of dreſſing victuals. When they reach the place to be attacked, they ſurround it in the night, and at early dawn enter it, putting to death both young and old, women and children, except ſuch as they chuſe to bring away captive. They put the heads which they cut off into leathern bags; and if the blood of their enemies be on their hands, they take care not to waſh it off. When, after this ſlaughter, they take their own food, they thruſt a part of what they eat into the mouths of the heads which they have brought away, ſaying to each of them, 'Eat, quench thy 'thirſt, and ſatisfy thy appetite: as thou haſt been ſlain by my hand, 'ſo may thy kinſmen be ſlain by my kinſmen!' During their journey they have uſually two ſuch meals; and every watch, or two watches, they

they ſend intelligence of their proceedings to their families. When any one of them ſends word that he has cut off the head of an enemy, the people of his family, whatever be their age or ſex, expreſs great delight, making caps and ornaments of red and black ropes; then filling ſome large veſſels with fermented liquors, and decking themſelves with all the trinkets they poſſeſs, they go forth to meet the conqueror, blowing large ſhells, and ſtriking plates of metal, with other rude inſtruments of muſic. When both parties are met they ſhow extravagant joy, men and women dancing and ſinging together; and if a married man has brought an enemy's head, his wife wears a head-dreſs with gay ornaments, the huſband and wife alternately pour fermented liquor into each other's mouths, and ſhe waſhes his bloody hands with the ſame liquor which they are drinking. Thus they go revelling, with exceſſive merriment, to their place of abode; and, having piled up the heads of their enemies in the court-yard of their chieftain's houſe, they ſing and dance round the pile; after which they kill ſome *gayals* and hogs with their ſpears, and, having boiled the fleſh, make a feaſt on it, and drink the fermented liquor. The richer men of this race faſten the heads of their foes on a bamboo, and fix it on the graves of their parents; by which acts they acquire great reputation. He who brings back the head of a ſlaughtered enemy, receives preſents from the wealthy, of cattle and ſpirituous liquor; and, if any captives are brought alive, it is the prerogative of thoſe chieftains who were not in the campaign, to ſtrike off the heads of the captives. Their weapons are made by particular tribes; for ſome of them are unable to fabricate inſtruments of war.

In regard to their civil inſtitutions, the whole management of their houſehold affairs belongs to the women; while the men are employed in clearing

clearing foreſts, building huts, cultivating land, making war, or hunting game and wild beaſts. Five days (they never reckon by months or years) after the birth of a male child, and three days after that of a female, they entertain their family and kinſmen with boiled rice and fermented liquor; and the parents of the child partake of the feaſt. They begin the ceremony with fixing a pole in the court-yard; and then killing a *gayál*, or hog, with a lance, they conſecrate it to their deity; after which all the party eat the fleſh and drink liquor; cloſing the day with a dance and with ſongs. If any one among them be ſo deformed, by nature or by accident, as to be unfit for the propagation of his ſpecies, he gives up all thought of keeping houſe, and begs for his ſubſiſtence, like a religious mendicant, from door to door, continually dancing and ſinging. When ſuch a perſon goes to the houſe of a rich and liberal man, the owner of the houſe uſually ſtrings together a number of red and white ſtones, and fixes one end of the ſtring on a long cane, ſo that the other end may hang down to the ground; then paying a kind of ſuperſtitious homage to the pebbles, he gives alms to the beggar; after which he kills a *gayál* and a hog, and ſome other quadrupeds, and invites his tribe to a feaſt. The giver of ſuch an entertainment acquires extraordinary fame in the nation; and all unite in applauding him with every token of honour and reverence.

When a *Cuſi* dies, all his kinſmen join in killing a hog and a *gayál*; and, having boiled the meat, pour ſome liquor into the mouth of the deceaſed, round whoſe body they twiſt a piece of cloth by way of ſhroud: all of them taſte the ſame liquor as an offering to his ſoul; and this ceremony they repeat at intervals for ſeveral days. Then they lay the body on a ſtage, and, kindling a fire under it, pierce it with a ſpit and

dry

dry it: when it is perfectly dried they cover it with two or three folds of cloth, and inclosing it in a little cafe within a chefl, bury it under ground. All the fruits and flowers that they gather within a year after the burial, they fcatter on the grave of the deceafed; but fome bury their dead in a different manner; covering them firft with a fhroud, then with a mat of woven reeds, and hanging them on a high tree. Some, when the flefh is decayed, waih the bones, and keep them dry in a bowl, which they open on every fudden emergency; and, fancying themfelves at a conftultation with the bones, purfue whatever meafures they think proper, alleging, that they act by the command of their departed parents and kindred. A widow is obliged to remain a whole year near the grave of her hufband, where her family bring her food: if fhe die within the year, they mourn for her; if fhe live, they carry her back to her houfe, where all her relations are entertained with the ufual feaft of the *Cúcis*.

If the deceafed leaves three fons, the eldeft and the youngeft fhare all his property, but the middle fon takes nothing: if he hath no fons, his eftate goes to his brothers; and, if he has no brothers, it efcheats to the chief of the tribe.

NOTE.

A PARTY of *Cúcis* vifited the late CHARLES CROFTS, Efq. at *Jaraháil*, in the fpring of 1776, and entertained him with a dance: they promifed to return after their harveft, and feemed much pleafed with their reception.

XIII.

ON THE SECOND CLASSICAL BOOK OF THE CHINESE.

BY THE PRESIDENT.

THE vicinity of *China to our Indian* territories, from the capital of which there are not more than *ſix hundred miles* to the province of YU'NA'N, muſt neceſſarily draw our attention to that moſt ancient and wonderful empire, even if we had no commercial intercourſe with its more diſtant and maritime provinces; and the benefits that might be derived from a more intimate connexion with a nation long famed for their uſeful arts, and for the valuable productions of their country, are too apparent to require any proof or illuſtration. My own inclinations and the courſe of my ſtudies lead me rather to conſider at preſent their *laws*, *politics*, and *morals* (with which their general literature is cloſely blended) than their manufactures and trade; nor will I ſpare either pains or expence to procure tranſlations of their moſt approved *law-tracts*, that I may return to *Europe* with diſtinct ideas, drawn from the fountain-head of the wiſeſt *Aſiatic* legiſlation. It will probably be a long time before accurate returns can be made to my inquiries concerning the *Chineſe laws*; and, in the interval, the Society will not perhaps be diſpleaſed to know, that a tranſlation of a moſt venerable and excellent work may be expected from *Canton*, through the kind aſſiſtance of an ineſtimable correſpondent.

ACCORDING to a *Chineſe* writer, named LI YANG PING, 'the ancient characters uſed in his country were the outlines of viſible ob-

'jects, earthly and celeſtial; but as things merely intellectual could not 'be expreſſed by thoſe figures, the grammarians of *China* contrived to 'repreſent the various operations of the mind by metaphors drawn from 'the productions of nature: thus the idea of roughneſs and of rotundity, 'of motion and reſt, were conveyed to the eye by ſigns repreſenting a 'mountain, the ſky, a river, and the earth; the figures of the ſun, the moon, 'and the ſtars, differently combined, ſtood for ſmoothneſs and ſplendor, 'for any thing artfully wrought, or woven with delicate workmanſhip; 'extenſion, growth, increaſe, and many other qualities, were painted 'in characters taken from the clouds, from the firmament, and from the 'vegetable part of the creation; the different ways of moving, agility 'and ſlowneſs, idleneſs and diligence, were expreſſed by various inſects, 'birds, fiſh, and quadrupeds. In this manner paſſions and ſentiments 'were traced by the pencil, and ideas not ſubject to any ſenſe were 'exhibited to the ſight, until by degrees new combinations were 'invented, new expreſſions added; the characters deviated imperceptibly 'from their primitive ſhape, and the *Chineſe* language became not only 'clear and forcible, but rich and elegant in the higheſt degree.'

In this language, ſo ancient and ſo wonderfully compoſed, are a multitude of books, abounding in uſeful as well as agreeable knowledge; but the higheſt claſs conſiſts of *Five* works; one of which at leaſt every *Chineſe* who aſpires to literary honours muſt read again and again, until he poſſeſſes it perfectly.

The *firſt* is purely *Hiſtorical*, containing annals of the empire from the *two-thouſand-three hundred-thirty-ſeventh* year before Christ: it is entitled Shu' King, and a verſion of it has been publiſhed in *France*; to which country

country we are indebted for the moſt authentic and moſt valuable ſpecimens of *Chineſe* hiſtory and literature, from the compoſitions which preceded thoſe of HOMER to the poetical works of the preſent Emperor, who ſeems to be a man of the brighteſt genius and the moſt amiable affections. We may ſmile, if we pleaſe, at the levity of the *French*, as they laugh without ſcruple at our ſerioufneſs; but let us not ſo far undervalue our rivals in arts and in arms as to deny them their juſt commendation, or to relax our efforts in that noble ſtruggle, by which alone we can preſerve our own eminence.

THE Second Claſſical work of the *Chineſe* contains *three hundred* Odes, or ſhort Poems, in praiſe of ancient ſovereigns and legiſlators, or deſcriptive of ancient manners, and recommending an imitation of them in the diſcharge of all public and domeſtic duties: they abound in wiſe maxims and excellent precepts; 'their whole doctrine,' according to *Cun-fu-tſu*, in the LU'NYU', or *Moral Diſcourſes*, 'being reducible to 'this grand rule, that we ſhould not even entertain a thought of any 'thing baſe or culpable;' but the copies of the SHI' KING, for that is the title of the book, are ſuppoſed to have been much diſfigured ſince the time of that great philoſopher, by ſpurious paſſages and exceptionable interpolations; and the ſtyle of the Poems is in ſome parts too metaphorical, while the brevity of other parts renders them obſcure; though many think even this obſcurity ſublime and venerable, like that of ancient cloyſters and temples, '*ſhedding*,' as MILTON expreſſes it, '*a* '*dim religious light*.' There is another paſſage in the LU'NYU' which deſerves to be ſet down at length: 'Why, my ſons, do you not ſtudy 'the book of Odes? If we creep on the ground, if we lie uſeleſs and 'inglorious, thoſe poems will raiſe us to true glory: in them we ſee,

'as

'as in a mirror, what may beſt become us, and what will be unbecoming; by their influence we ſhall be made ſocial, affable, benevolent; for, 'as muſic combines ſounds in juſt melody, ſo the ancient poetry tempers and compoſes our paſſions: the Odes teach us our duty to our 'parents at home, and abroad to our prince; they inſtruct us alſo delightfully in the various productions of nature.' 'Haſt thou ſtudied,' ſaid the philoſopher to his ſon PE'E'U, 'the firſt of the three hundred Odes on 'the nuptials of Prince VE'NVA'M and the virtuous TAI JIN? He who 'ſtudies them not, reſembles a man with his face againſt a wall, unable to 'advance a ſtep in virtue and wiſdom.' Moſt of thoſe Odes are near *three thouſand* years old, and ſome, if we give credit to the *Chineſe* annals, conſiderably older; but others are ſomewhat more recent, having been compoſed under the later Emperors of the *third* family, called SHEU. The work is printed in *four* volumes; and, towards the end of the *firſt*, we find the Ode which COUPLET has accurately tranſlated at the beginning of the TA' HIO, or *Great Science*, where it is finely amplified by the philoſopher. I produce the original from the SHI' KING itſelf, and from the book in which it is cited, together with a double verſion, one verbal and another metrical: the only method of doing juſtice to the poetical compoſitions of the *Aſiatics*. It is a panegyric on VUCU'N, Prince of *Guey*, in the province of *Honang*, who died, near a century old, in the *thirteenth* year of the Emperor PINGVANG, *ſeven hundred and fifty-ſix years* before the birth of CHRIST, or *one hundred and forty-eight*, according to Sir ISAAC NEWTON, after the taking of *Troy*, ſo that the *Chineſe* poet might have been contemporary with HESIOD and HOMER, or at leaſt muſt have written the Ode before the *Iliad* and *Odyſſey* were carried into *Greece* by LYCURGUS.

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THE verbal tranſlation of the thirty-two original characters is this:

' Behold yon reach of *the river* KI;
' Its green reeds how luxuriant! how luxuriant!
' Thus is our Prince adorned with virtues;
' As a carver, as a filer, of ivory,
' As a cutter, as a poliſher, of gems.
' O how elate and ſagacious! O how dauntleſs and compoſed
' How worthy of fame! How worthy of reverence!
' We have a Prince adorned with virtues,
' Whom to the end *of time* we can not forget.

THE PARAPHRASE.

Behold, where yon blue riv'let glides
Along the laughing dale;
Light reeds bedeck its verdant ſides,
And frolic in the gale.

So ſhines our Prince! In bright array
The Virtues round him wait;
And ſweetly ſmil'd th'auſpicious day
That rais'd him o'er our ſtate.

As pliant hands in ſhapes refin'd
Rich iv'ry carve and ſmoothe,
His *laws* thus mould each ductile mind,
And ev'ry paſſion ſoothe.

As

As gems are taught by patient art
In ſparkling ranks to beam,
With *manners* thus he forms the heart,
And ſpreads a gen'ral gleam.

What ſoft, yet awful, dignity!
What meek, yet manly, grace!
What ſweetneſs dances in his eye,
And bloſſoms in his face!

So ſhines our Prince! A ſky-born crowd
Of virtues round him blaze:
Ne'er ſhall Oblivion's murky cloud
Obſcure his deathleſs praiſe.

THE prediction of the Poet has hitherto been accompliſhed; but he little imagined that his compoſition would be admired, and his prince celebrated in a language not then formed, and by the natives of regions ſo remote from his own.

IN the *tenth* leaf of the TA' HIO, a beautiful compariſon is quoted from another Ode in the SHI' KING, which deſerves to be exhibited in the ſame form with the preceding.

'The[1] peach[2] tree, how fair[3]! how graceful!
'Its[4] leaves[5], how blooming[6]! how pleaſant[7]!
'Such is[8] a[9] bride[10] when ſhe[11] enters her bridegroom's houſe,
'And pays[12] due attention[13] to[14] her[15] whole family.'

The ſimile may thus be rendered:

Gay child of Spring, the garden's queen.
Yon peach-tree charms the roving ſight:
Its fragrant leaves how richly green!
Its bloſſoms how divinely bright!

So ſoftly ſmiles the blooming bride
By love and conſcious Virtue led
O'er her new manſion to preſide,
And placid joys around her ſpread.

The next leaf exhibits a compariſon of a different nature, rather ſublime than agreeable, and conveying rather cenſure than praiſe:

1 8 3 4
O how horridly impends yon ſouthern mountain!
5 6 7 1
Its rocks in how vaſt, how rude a heap!
9 10 11 12
Thus loftily thou ſitteſt, O miniſter of YN;
13 14 15 16
All the people look up to thee with dread.

Which may be thus paraphraſed:

See, where yon crag's imperious height
The ſunny highland crowns,
And, hideous as the brow of night,
Above the torrent frowns!

So ſcowls the Chief, whoſe will is law,
Regardleſs of our ſtate;
While millions gaze with painful awe,
With fear allied to hate.

It was a very ancient practice in *China* to paint or engrave moral ſentences and approved verſes on veſſels in conſtant uſe; as the words RENEW THYSELF DAILY were inſcribed on the baſon of the emperor TANG, and the poem of KIEN LONG, who is now on the throne, in praiſe of Tea, has been publiſhed on a ſet of porcelain cups; and, if the deſcription juſt cited of a ſelfiſh and inſolent ſtateſman were, in the ſame manner, conſtantly preſented to the eyes and attention of rulers, it might produce ſome benefit to their ſubjects and to themſelves; eſpecially if the comment of TSEM TSU, who may be called the XENOPHON, as CUN FU' TSU' was the SOCRATES, and MEM TSU the PLATO, of *China*, were added to illuſtrate and enforce it.

If the reſt of the *three hundred* Odes be ſimilar to the ſpecimens adduced by thoſe great moraliſts in their works, which the *French* have made public, I ſhould be very ſolicitous to procure our nation the honour of bringing to light the *ſecond* Claſſical book of the *Chineſe*. The *third*, called YEKING, or the book of Changes, believed to have been written by Fo, the HERMES of the Eaſt, and conſiſting of right lines variouſly diſpoſed, is hardly intelligible to the moſt learned *Mandarins*; and CUN FU' TSU' himſelf, who was prevented by death from accompliſhing his deſign of elucidating it was diſſatisfied with all the interpretations of the earlieſt commentators. As to the *fifth*, or LIKI, which that excellent man compiled from old monuments, it conſiſts chiefly of the *Chineſe* ritual, and of tracts on Moral Duties; but the *fourth* entitled CHUNG CIEU, or *Spring* and *Autumn*, by which the ſame incomparable writer meaned the *flouriſhing* ſtate of an Empire, under a virtuous monarch, and the *fall* of kingdoms, under bad governors; muſt be an intereſting work in every nation. The powers, however, of

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an individual are ſo limited, and the field of knowledge is ſo vaſt, that I dare not promiſe more, than to procure, if any exertions of mine will avail, a complete tranſlation of the Sui' King, together with an authentick abridgement of the *Chineſe* Laws, civil and criminal. A native of *Canton*, whom I knew ſome years ago in *England*, and who paſſed his firſt examinations with credit in his way to literary diſtinctions, but was afterwards allured from the purſuit of learning by a proſpect of ſucceſs in trade, has favoured me with the *Three Hundred Odes* in the original, together with Lu'n Yu', a faithful verſion of which was publiſhed at *Paris* near a century ago; but he ſeems to think, that it would require three or four years to complete a tranſlation of them; and Mr. Cox informs me, that none of the *Chineſe*, to whom he has acceſs, *poſſeſs leiſure and perſeverance enough for ſuch a taſk*; yet he hopes, with the aſſiſtance of Whang Arong, to ſend me next ſeaſon ſome of the poems tranſlated into *Engliſh*. A little encouragement would induce this young *Chineſe* to viſit *India*, and ſome of his countrymen would perhaps, accompany him; but, though conſiderable advantage to the public, as well as to letters, might be reaped from the knowledge and ingenuity of ſuch emigrants, yet we muſt wait for a time of greater national wealth and proſperity, before ſuch a meaſure can be formally recommended by us to our patrons at the helm of government.

A LETTER TO THE PRESIDENT FROM A YOUNG CHINESE.

SIR,

I RECEIVED the favour of your letter dated 28th March 1784, by Mr. Cox. I remember the pleaſure of dining with you in company with Capt. BLAKE and Sir JOSHUA REYNOLDS; and I ſhall always remember the kindneſs of my friends in *England*.

The *Chineſe* book, SHI' KING, that contains three hundred Poems, with remarks thereon, and the work of *Con-fu-tſu*, and his grandſon, the *Tai Ho*, beg you will accept; but to tranſlate the work into *Engliſh* will require a great deal of time; perhaps three or four years; and I am ſo much engaged in buſineſs, that I hope you will excuſe my not undertaking it.

If you wiſh for any books or other things from *Canton*, be ſo good as to let me know, and I will take particular care to obey your orders.

Wiſhing you health,

I am, SIR,

Your moſt obedient humble Servant,

WHANG ATONG.

To Sir WILLIAM JONES.

Dec. 10, 1784.

ADVER-

ADVERTISEMENT.

EXAMPLES of derivatives from Arabic Quadriliterals rarely occur in the Perſian language; and from the 9th, 11th, 12th, and 13th Conjugations of the Triliterals there are none to be met with. I have therefore confined my obſervations to the nine Conjugations included in the Table. And although particular ſenſes and uſes are aſſigned to each of theſe by Grammarians, (which may be ſeen in Mr. Richardſon's Gram. p. 65) it is at the ſame time to be obſerved, that they are nevertheleſs frequently uſed in other ſenſes; many of them retaining the ſimple ſignification of the primitives: and that every root does not extend through every Conjugation; but that ſome are uſed in one form; many in ſeveral; none in all.

Theſe obſervations are applicable to the preſent ſubject; and the derivatives of ſuch Conjugations as are more frequently uſed in the Arabic ſeem alſo to be more frequently than any other introduced into the Perſian.

Where no Example of any particular form is to be found in Golius and Meninſki I have left a blank in the Table, which may be filled up whenever any can be met with.

With regard to the Examples which I have brought to illuſtrate the following Rules they are ſuch as came firſt to hand; and *one* Example of an Infinitive or Participle is intended as a repreſentation of the Infinitives and Participles of every ſpecies and conjugation. To have attempted a complete ſyſtem

of

of examples would have carried me far beyond the limits of my preſent undertaking.

OF ARABIC INFINITIVES.

I. Their Maſculine Singulars are uſed in the Perſian as ſubſtantives; and in every reſpect ſerve the ſame purpoſes, and are ſubject to the ſame rules of conſtruction, as Subſtantives orginally Perſian.

Ex. 1. governing a ſub. ſol. اظهارِ یکانای demonſtrations of unanimity.

2. agreeing with an ad. ſol. استعجالِ تمام great haſte.

3. agreeing with a part. paſ. ſol. تحریرِ مسطور the ſaid writing.

4. nominatives to verbs, نظرِ بر این بود my view was this.

5. governed by verbs, احتظاظِ وافر یافت he received great delight.

6. governed by a prepoſition, بعدازِ تقدیمِ مراسم after performing the duties.

7. united by a conjunction, اقبال واجلال proſperity and ſplendor.

8. rendered definite by affixing ي اتّحادي که میان بود the union that was between.

II. Their Maſculine Plurals are uſed in the Perſian as ſubſtantives; and in every reſpect ſerve the ſame purpoſes, and are ſubject to the ſame rules of conſtruction as Subſtantives originally Perſian.

Ex. 1. governing a ſub. ſol. اخلاقِ مردم the diſpoſitions of

2. agreeing with an ad. fol. افعالِ نيک good actions.
3. agreeing with a part. paſ. fol. اطوارِ مسطور the qualifications deſcribed.

III. Their Feminine Singulars are uſed in the Perſian as Subſtantives; and in every reſpect ſerve the ſame purpoſes, and are ſubject to the ſame rules of conſtruction as Subſtantives originally Perſian.

Ex. 1. nominatives to verbs, اجازت است there is permiſſion.
2. governing a ſubſtantive following, معاملتِ ملک the buſineſs of the empire.
3. agreeing with an ad. fol. مقاتلهٔ عظیمه a bloody battle.
4. agreeing with a part. paſ. fol. مکاتبهٔ مرقومه بدوستي a letter written in friendſhip.

IV. Their Feminine Plurals are uſed in the Perſian as ſubſtantives; and in every reſpect ſerve the ſame purpoſes, and are ſubject to the ſame rules of conſtruction, as Subſtantives originally Perſian.

Ex. 1. governing a ſub. ſol. توجهاتِ دوستان the civilities of friends.
2. agreeing with an ad. fol. معاملات کلّي public affairs.
3. agreeing with a part. paſ. fol. تکليفاتِ مزبور the ſaid burthens.

V. The Infinitives of the firſt Conjugation of Tranſitive Verbs are regularly of the form exhibited in the Table. But thoſe of Intranſitives are reducible to no proper

proper rule without innumerable exceptions. Grammarians make of them in all thirty-two different forms, which may be ſeen in Mr. Richardſon's Grammar, p. 92: but for theſe irregularities he juſtly obſerves that a dictionary is the only proper guide. Theſe Infinitives, both Singulars and Plurals, are introduced freely into the Perſian as Subſtantives.

Ex. governing another ſub. fol. وصولِ مکتوب the arrival of the letter, &c. &c.

OF ARABIC PARTICIPLES ACTIVE.

1. Their Maſculine Singulars are uſed in the Perſian as Participles, as Subſtantives, and as Adjectives.

Ex. 1. as participles with a verb fol. منتظر ماند he remained expecting.
طالع و لامع باد be ſhining and blazing.

2. as ſub. governing another ſub. fol. حاکمِ شهر governor of the city.
موجبِ خوشنودي cauſing gladneſs—the cauſe of gladneſs.
مصنّفِ این کتاب compoſing this book---the author of this book.
مطابقِ شرعِ شریف following the noble law---follower of the noble law.

3. as an ad. qualifying a ſub. مردمِ قابل an able man.

4. following another ſub. ſignifying the ſame thing, حضرتِ خالق God the creator.

5. agreeing

5. agreeing with an ad. fol. عامل نیک a good agent.

6. agreeing with a part. paſ. fol. حاکم مستقلّ abſolute judge.

7. governed by a verb, قاتلرا کشت he put the murderer to death.

8. nominatives to verbs, اگر عاشق صادق است if the lover be ſincere.

9. with a prepoſn. fol.

an uncommon conſtruction, مشتمل بر مصادقت containing friendſhip.

II. Their Maſculine perfect Plurals are uſed in the Perſian as Subſtantives, in the form of the oblique caſe which terminates in ین. But they do not ſeem to be uſed in the form of the nominative which terminates in ون.

Ex. 1. governed by a ſub. going before, علم اولین و آخرین the knowledge of the moderns and ancients.

قوم مسلمین the ſect of the faithful.

III. Their Maſculine imperfect Plurals are uſed in the Perſian as Subſtantives.

Ex. 1. governing a ſub. fol. حدّام حال و استقبال officer of the preſent and future.

2. agreeing with an ad. fol. عمال جدید و قدیم the new and old agents.

IV. Their Feminine Singulars are uſed in the Perſian as Participles, as Subſtantives, and as Adjectives.

Ex. 1. as a part. act. with a verb fol. حامله است ſhe is pregnant.

2. as a ſub. governing another fol. مالکهٔ ملک queen of the empire.

3. as an ad. qualifying a ſub. going before, زنِ حامله a pregnant woman.

4. as a ſub. qualified by an ad. following, مشفقهٔ مهربان kind friend.

5. as a ſub. qualified by a part. paſ. following, صاحبهٔ موصوفه accompliſhed lady.

V. Their Feminine perfect Plurals are uſed in the Perſian as Subſtantives expreſſing things without life.

Ex. 1. governing a ſub. fol. واقعات زمان the incidents of time.

2. agreeing with an ad. fol. واردات ناگهانی unforeſeen events.

Of ARABIC PARTICIPLES PASSIVE.

I. Their Maſculine Singulars are uſed in the Perſian as Participles Paſſive, as Subſtantives, and as Adjectives.

Ex. 1. as a part. paſ. جبلّیِ همت صروف بران است the ſum of my deſire is beſtowed on that.

ظلِّ شفقت مبدو دیاد be the ſhade of clemency extended.

2. as a ſub. governing another ſol. it. مشهودِ ضمیرِ منیر میگردانید I make it the perception (i. e. the thing perceived) of your enlightened ſoul; i. e. I repreſent it. &c.

مرغوب

مرغوبِ طبایع the deſire, (i. e. the thing deſired) of the fouls.

3. as an ad. qualifying a ſub. going before, بندهٔ مظلوم the injured ſlave.

4. joined with another ſub. by a conjunction, مقصود و مرام intention and deſign.

5. governed by verbs, خلایق را مسرور خاطر گردانند make the people glad.

6. nominatives to verbs, مقصودِ او شان بر این بود their intention was this.

II. Their Maſculine perfect Plural does not ſeem to be uſed in the Perſian, either in the form of the nominative or the oblique caſe.

III. Their Feminine Singulars are uſed in the Perſian as Subſtantives, and as Adjectives.

Ex. 1. as a ſub. governing another ſub. it, معشوقهٔ من my beloved, i.e. the beloved of me.

2. as a ſub. agreeing with a part. paſ. following, معشوقهٔ مذکوره the ſaid beloved woman.

3. as an ad. agreeing with a ſub. going before, والدهٔ مخدومه reſpected mother.

IV. Their Feminine perfect Plurals are uſed in the Perſian as Subſtantives, to expreſs things without life.

Ex. 1. governing a ſub. fol. مطلوباتِ آن مهربان the demands of that friend.

2. agreeing with an ad. fol. مقدمات شرعی law affairs.

V. The Active and Paſſive Participles of Tranſitive verbs form, with a following ſubſtantive having the Article ال prefixed to it, compounds corresponding to that of خوب‌روي, which are uſed in the Perſian as Subſtantives, and as Adjectives.

Ex. 1. as a ſub. a nominative to the verb. متعذّرُ الفصل است he evades a deciſion.

2. as an ad. qualifying a ſub. شخصِ واجبُ التعظيم a perſon deſerving reſpect.

قلمِ مقطوعُ اللسان a pen, cut ſhort in the point.

Of ARABIC ADJECTIVES *reſembling* PARTICIPLES.

I. The forms حَسَن صَعْب سَرِير repreſent three ſpecies of Arabic words which are derived from Intranſitive verbs; and called by Arabic Grammarians, Adjectives reſembling Participles. The Singulars of theſe forms are uſed in the Perſian both as Adjectives and Subſtantives.

Ex. 1. as a ſub. qualified by the pronoun dem. آن عزيز that reſpectable perſon.

2. with a verb. شرير است he is wicked.

3. as an ad. qualifying a ſub. دوستِ قديم an old friend.

II. Their Plurals are uſed in the Perſian as Subſtantives.

Ex. 1. governing a ſub. fol. حكمائي يونان the learned men of Greece.

2. agreeing with an ad. fol. شرفائي پاک نهاد noblemen of integrity.

III. Theſe

V. Theſe three forms of Adjectives reſembling Participles, form, with a following Subſtantive having the Article ال prefixed to it, compounds corresponding to that of خوبروي, which are uſed in the Perſian both as Subſtantives and Adjectives.

Ex. 1. as a ſub. qualified by the pro. demonſt. آن حسن الوجه that beauty.
آن نديم الخدمت that old ſervant.

2. as a ſub. qualified by an ad. fol. نديم الخدمت مذكور the ſaid old ſervant.

3. as an ad. qualifying a ſub. going before, مرد نديم الخدمت a man of long ſervice.

Of PARTICIPLES *expreſſing the ſenſe of their* PRIMITIVES *in a ſtronger degree.*

I. The forms نصّار نصور نصر منصار are Participles which expreſs the ſenſe of their primitives in a ſtronger degree; and are ſometimes uſed in the Perſian as Adjectives.

Ex. 1. agreeing with a ſub. going before, ادويهٔ قتّاله a poiſonous medicine.

2 agreeing with a verb fol. صبور است he is full of patience.

صربب Is the form of a Participle expreſſing the ſenſe of the primitive in a leſs degree; but it does not ſeem to be uſed in the Perſian.

Of ARABIC SUBSTANTIVES.

I. The Arabic Noun of time and place are frequently employed in the Perſian; and the following liſt exhibits the forms of ſuch as are derived from the firſt Conjugations of the different ſpecies of Triliterals.

CONJU-

CONJUGATION 1ſt.

NOUNS of TIME and PLACE from TRILITERALS.

	FROM	Roots.
I.	مَكْتَبٌ the time and place of writing,	كتب
II.	مَقَرٌّ a place of reſt, reſidence,	قرّ
III.	مَا مَنٌ a place of ſafety,	امن
V.	مَبْدَأٌ the place and time of beginning,	بداء
VI.	مَوْضِعٌ place, opportunity,	وضع
VII.	مَقَامٌ the place and time of ſtanding,	قوم
VIII.	مَدْعًا the place or object of deſire,	دعو
X.	مَبِيعٌ the place and time of ſelling,	بيع
XI.	مَرْمًا the place and time of throwing,	رمي
XII.	مَآبٌ the place of return, the center,	اوب
XV.	مَجِيءٌ the time of coming—arrival,	جي
XVII.	مَأْتًا the place, the way of approaching,	اتي
XVIII.	مَرْءًا the place of looking, beholding,	راي
XIX.	مَوْلًا ومَوْلِيٌ the place of power—and thus Lord, Maſter, &c.	ولي
XXI.	مَهْوًا a place of diviſion—the interval,	هوي
XXII.	مَحْيًا the time and place of living,	حي
XXIII.	مَاوًا ومَاوِيٌ a place of habitation—refuge,	اوي

———To expreſs the *place* more particularly, ة is ſometimes added to the common form as مَقْبَرَةٌ a burning place.

II. The

II. The Noun of time and place from the derivative Conjugations is exactly the ſame with the Participle Paſſive; and is alſo uſed in the Perſian.

Ex. 1. a part. Paſſive from the 10th conjugation, مستودع depoſited—alſo a place of depoſit.

III. The Perſian language has terms proper to itſelf for expreſſing the Inſtrument of Action; it does not however reject the uſe of the Arabic Inſtrumental Noun which is repreſented by the forms. مِنْصَر مِنْصَار or مِنْصَرت

Ex. 1. governing another ſub. ſol. بميزان عقل سنجيد he weighed in ſcale of reaſon.

مفتاح مقصود the key of his intention.

IV. All Arabic proper names, and the names of things, are introduced into the Perſian at pleaſure.

Ex. مريم Mary, مكّه Mecca, عين the eye, لحم fleſh, جدّ an anceſtor, &c. &c.

Of ARABIC ADJECTIVES.

I. Beſides the Arabic Participles which we have already obſerved are uſed as Adjectives, there is alſo a plentiful ſource of real Adjectives formed by affixing ي to Subſtantives of almoſt every denomination, which are freely introduced into the Perſian.

Ex.

Ex. انسانی humane, ارضی earthly, مصری Egyptian, &c. &c.

II. The Maſculine Singulars of Arabic Superlatives are uſed in the Perſian both as Subſtantives and Adjectives.

Ex. 1. as a ſub. governing another ſol. it, اسعدِ زمان the moſt fortunate of times.

2. as an ad. qualifying a ſub. going before, در وقتِ احسن at a moſt lucky time.

III. The Maſculine Plurals of Arabic Superlatives are uſed in the Perſian both as Subſtantives and Adjectives.

Ex. 1. as a ſub. governing another ſol. it, اکابرِ وقت the great men of the age.

2. as an ad. qualifying a ſub. going before, اشخاصِ اکابر moſt illuſtrious perſonages.

IV. The Feminine Singulars of Arabic Superlatives are uſed in the Perſian as Adjectives.

Ex. 1. qualifying a ſub. going before, دولتِ عظمی proſperity moſt great.

V. Arabic Ordinal Numbers are uſed in the Perſian as Adjectives.

Ex. 1. qualifying a ſub. going before, بابِ اول the firſt chapter.

Of

Of the Form of Arabic Words when used in the Persian.

I. All Arabic Infinitives, Participles, Subſtantives, and Adjectives, are introduced into the Perſian in the form of the nominative, which throws away from the laſt letter every ſpecies of Nunnation (ـٌ), or ſhort vowel (ـُ), which they may poſſeſs as Arabic words, and remain without motion; but, when their conſtruction in the Perſian requires them to aſſume the termination of another caſe, they receive it in the ſame manner as if they were originally Perſian words; with the following exceptions:

1ſt. When an Arabic word terminating in ي, that muſt be pronounced as ī*, becomes the firſt Subſtantive in conſtruction with another Subſtantive following it, ي is actually changed into ا, to which ſhort ى (ِ) is afterwards affixed, to ſhew the conſtruction.

Ex. تمنى in conſtruction becomes تمناي as تمناي شفاعت the petition of interceſſion, and ſo alſo مولي دعوي مهني &c.

2d. Feminine Arabic Subſtantives terminating in ة, when introduced into the Perſian, change ة, ſometimes into ه, and ſometimes into ت

Ex. محبة friendſhip, being found written by the ſame author محبه and محبت

3d. Feminine Arabic Adjectives and Participles terminating in ة, when introduced into the Perſian, always change ة into ه.

* See Richardſon's Arabic Gram. p. 109, Canon III.

Ex. خالصة pure, is always written خالصه as محبت خالصه pure friendſhip.

4th. Arabic Participles Plural, terminating in ين, although introduced into the Perſian as Nominatives, are originally the oblique caſe.

Ex. دانایان متقدمین چنین فرمودند the learned ancients thus ſaid.

5th. When an Arabic Infinitive is uſed in the Perſian language as an adverb, it is introduced in the form of the Arabic accuſative without any change.

Ex. اتفاقا accidentally, &c. &c.

OF ARABIC ADVERBS, PREPOSITIONS, AND CONJUNCTIONS.

I. Arabic Adverbs, Prepoſitions, and Conjunctions ſeem to be introduced into the Perſian language at pleaſure. Of theſe Mr. Richardſon has made a very uſeful collection in his chapter of ſeparate Particles, to which I beg leave to refer; obſerving at the ſame time, that a knowledge of ſuch, as are moſt frequently employed, will eaſily be acquired from experience without any particular inſtructions.

Of ARABIC COMPOUNDS.

I. The manner in which different Arabic parts of ſpeech are employed to form a variety of compounded words made uſe of in the Perſian is well expreſſed by Sir William Jones, in his Perſian Grammar; and, with reſpect to phraſes purely Arabi

Arabic, and whole ſentences, which are often met with in Perſian authors, they require a perfect knowledge of the Arabic language, and do not belong to this place.

OF THE CONSTRUCTION OF ARABIC INFINITIVES, PARTICIPLES, SUBSTANTIVES, AND ADJECTIVES.

I. In the Perſian language, when Arabic Adjectives or Participles are made uſe of to qualify Arabic or Perſian Subſtantives Singular, they agree with them in Gender and Number.

Ex. 1. an Arabic ſub. maſc. qualified
by an Arabic part. paſſ. maſc. عاشق مذكور the ſaid lover.
2. an Arabic ſub. fem. qualified by
an Arabic part. paſſ. fem. والدهٔ مكرمه reſpected mother
3. a Perſian ſub. maſc. qualified by
an Arabic adj. maſc. دوست قديم an old friend.
4. a Perſian ſub. fem. qualified by
an Arabic adj. fem. هيشيرهٔ عزيزه dear ſiſter.

II. When Arabic Adjectives and Participles are made uſe of to qualify Arabic Subſtantives Maſculine and Plural; they remain in the Maſculine Singular.

Ex. 1. an Arab. ſub. maſc. plur. with
an Arab. part. maſc. ſing. حكام مذكور the ſaid officers.
2. a Perſ. ſub. maſc. plur. with an
Arab. part. maſc. ſing. برادران مذكور the ſaid brethren.

III. When Arabic Adjectives and Participles are made uſe of to qualify Arabic or Perſian Subſtantives Feminine and Plural, they are put in the Feminine Singular; and often, though not ſo properly, in the Maſculine Singular.

Ex. 1. An Arabic ſub. fem.
plur. with Arabic part.
ſing. both fem. maſc. تكليفات مذكوره مذكور the ſaid burthens.
2. A Perſian ſubſt. femin.
plur. with Arabic partic.
ſing. both fem. and maſc. زبان موصوفه موصوف accompliſhed women.

IV. An Arabic Subſtantive, in the Perſian, is often rendered definite by a following Arabic Adjective or Participle having the article ال prefixed.

Ex. a ſub. with a part. paſſ. نبي المختار the prophet elect.

For an account of the Genders of Arabic Words, and of their perfect and imperfect Plurals, I muſt again refer to Mr. Richardſon's Arabic Grammar; and to that of ERPENIUS, where the latter ſubject is treated at ſtill greater length.

OF THE INTRODUCTION OF THE ARABIC INTO THE LANGUAGE OF HINDOSTAN.

I. All the different ſpecies of Infinitives, Participles, Subſtantives and Adjectives which we have enumerated; and all compounds formed by *Arabic* and *Perſian*

ſian words, are introduced into the language of *Hindoſtan*, in the ſame form, for the ſame purpoſes, and with the ſame freedom as in the *Perſian*: ſubmitting themſelves to the different rules of regimen and concord, that are peculiar to *that* language; in the ſame manner as if they were words originally belonging to it. *Arabic* Adverbs, Prepoſitions, and Conjunctions are alſo uſed in the language of *Hindoſtan*; but I think leſs frequently than in the *Perſian*.

ON THE ASTRONOMICAL COMPUTATIONS OF THE HINDUS.

By Samuel Davis, Esq.

Bhâgalpur, 15*th Feb.* 1789.

IT is, I believe, generally admitted, that inquiries into the Aſtronomy of the *Hindus* may lead to much curious information, beſides what relates merely to the ſcience itſelf; and that attempts to aſcertain the Chronology of this ancient nation will, as they have hitherto done, prove unſatisfactory, unleſs aſſiſtance be derived from ſuch reſearches.

The following communication is not expected to contribute towards ſo deſirable a purpoſe; but, with all its imperfections, it may have the uſeful effect of awakening the attention of others in this country, who are better qualified for ſuch inveſtigations, and of inciting them to purſue the ſame object more ſucceſsfully, by ſhowing that numerous treatiſes in *Sanſcrit* on Aſtronomy are procurable, and the *Brâhmens* are extremely willing to explain them. As an encouragement to thoſe, who may be inclined to amuſe themſelves in this way, I can farther venture to declare, from the experience I have had, that *Sanſcrit* books in this ſcience are more eaſily tranſlated than almoſt any others, when once the technical terms are underſtood, the ſubject of them admitting neither of metaphyſical reaſoning, nor of metaphor, but being delivered in plain terms, and generally illuſtrated with examples in practice, the meaning may be well enough made out, by the help of a *Pandit*, through the medium of the *Perſian* or the *Hindî* language.

Moreover

Moreover it does not appear, that ſkill in the abſtruſe parts of modern mathematicks is indiſpenſably neceſſary, but that, with as much knowledge of geometry and the circles of the ſphere as it may be ſuppoſed, moſt of the members of this ſociety poſſeſs, a conſiderable progreſs, might be made in revealing many intereſting particulars, which at preſent lie hid to *Europeans* in the *Jyótiſh*, or Aſtronomical, *Sáſtra*.

The prediction of eclipſes and other phenomena, publiſhed in the *Hindu Patra* or Almanack, excited my curioſity long ago, to know by what means it was effected; but it was not until lately that I had any means of gratification: I had before this been inclined to think with many others, that the *Bráhmens* poſſeſs no more knowledge in aſtronomy than they have derived from their anceſtors in tables ready calculated to their hands, and that few traces of the principles of the ſcience could be found among them; but conſulting ſome *Sanſcrit* books, I was induced to alter my opinion. To ſatisfy myſelf on this ſubject, I began with calculating, by a modern *Hindu* formula, an eclipſe which will happen in next *November*; the particulars of which proceſs, although in ſome meaſure intereſting, were not ſufficient for my purpoſe, as it yet remained to be learnt, on what grounds ſome tables uſed in it were conſtructed; and for this information I was referred to the *Súrya Siddhánta*, an original treatiſe, and reputed a divine revelation. For a copy of the *Súrya Siddhánta* I am indebted to Sir Robert Chambers, who procured it among other books at *Benares*; but the obſcurity of many technical terms made it ſometimes difficult to be underſtood even by the *Pandit* I employed, who was by no means deeply verſed in the ſcience he profeſſed. By his diligence and through the obliging aſſiſtance of Mr Duncan at *Benares*, who procured for me the *Tiká* or commentary, thi

difficulty was at length ſurmounted; and a computation of the above-mentioned eclipſe, not merely on the principles, but ſtrictly by the rules of the *Súrya Siddhánta*, is what I propoſe now to preſent you with, after ſuch preliminary obſervations as may be neceſſary to make it intelligible.

I SUPPOSE it ſufficiently well known, that the *Hindu* diviſion of the ecliptic into ſigns, degrees, &c. is the ſame as ours; that their aſtronomical year is ſydereal, or containing that ſpace of time in which the ſun, departing from a ſtar, returns to the ſame; that it commences on the inſtant of his entering the ſign *Aries*, or rather the *Hindu* conſtellation *Méſha* *; that each aſtronomical month contains as many even days and fractional parts as he ſtays in each ſign; and that the civil differs from the aſtronomical account of time only in rejecting thoſe fractions, and beginning the year and month at ſun-riſe, inſtead of the intermediate inſtant of the artificial day or night. Hence ariſes the unequal portion of time aſſigned to each month, dependent on the ſituation of the ſun's apſis, and the diſtance of the vernal equinoctial colure from the beginning of *Méſha* in the *Hindu* ſphere; and by theſe means they avoid thoſe errors which *Europeans*, from a different method of adjuſting their calendar by intercalary days, have been ſubject to. An explanation of theſe matters would lead me beyond my preſent intention, which is to give a general account only of the method by which the *Hindus* compute eclipſes, and thereby to ſhow that a late *French* author was too haſty in aſſerting generally that they determine them "by ſet forms, couched in enig-

* Or, to be more particular, on his entering the *Naçhatra*, or lunar manſion *(Aſwini)*. There were formerly only twenty-ſeven *Naçhatras*: a 28th *(Abhijit)* has been ſince added, taken out of the 21ſt and 22d, named *Uttaráſhádá* and *Sravaná*. Theſe three in their order comprehend 10°, 5°, and 11° 40′ of the zodiac: the reſt comprehend 13° 20′ each.

matical verſes *," &c. So far are they from deſerving the reproach of ignorance, which Monſ. SONNERAT has implied, that on inquiry, I believe, the *Hindu* ſcience of aſtronomy will be found as well known now as it ever was among them, although, perhaps, not ſo generally, by reaſon of the little encouragement men of ſcience at preſent meet with, compared with what they formerly did under their native princes.

IT has been common with aſtronomers to fix on ſome epoch, from which, as from a radix, to compute the planetary motions; and the ancient *Hindus* choſe that point of time counted back, when, according to their motions as they had determined them, they muſt have been in conjunction in the beginning of *Méſha*, or *Aries*, and coeval with which circumſtance they ſuppoſed the creation. This, as it concerned the planets only, would have produced a moderate term of years, compared with the enormous antiquity that will be hereafter ſtated; but, having diſcovered a ſlow motion of the nodes and apſides alſo, and taken it into the computation, they found it would require a length of time correſponding with 1955884890 years now expired, when they were ſo ſituated, and 2364115110 years more before they would return to the ſame ſituation again, forming together the grand anomaliſtic period denominated a *Calpa*, and fancifully aſſigned as the day of BRAHMA'. The *Calpa* they divided into *Manwanteras*, and greater and leſſer *Yugas*. The uſe of the *Manwantera* is not ſtated in the *Súrya Siddhánta*; but that of the *Mahà*, or greater *Yug*, is ſufficiently evident, as being an anomaliſtic period of the ſun and moon, at the end of which the latter, with her apogee and aſcending node, is found together with the ſun in the firſt of *Aries*; the planets alſo deviating from

* See the tranſlation of Monſ. SONNERAT's Voyage.

that

that point only as much as is their latitude and the difference between their mean and true anomaly.

THESE cycles being ſo conſtructed as to contain a certain number of mean ſolar days, and the *Hindu* ſyſtem aſſuming that at the creation, when the planets began their motions, a right line, drawn from the equinoctial point *Lancà* through the centre of the earth, would, if continued, have paſſed through the centres of the ſun and planets to the firſt ſtar in *Aries*; their mean longitude for any propoſed time afterwards may be computed by proportion. As the revolutions a planet makes in any cycle are to the number of days compoſing it, ſo are the days given to its motion in that time; and, the even revolutions being rejected, the fraction, if any, ſhows its mean longitude at midnight under their firſt meridian of *Lancà*: for places eaſt or weſt of that meridian a proportional allowance is made for the difference of longitude on the earth's ſurface, called in *Sanſcrit* the *Déſántara*. The poſitions of the apſides and nodes are computed in the ſame manner, and the equation of the mean to the true place, determined on principles which will be hereafter mentioned.

The diviſion of the *Mahà Yug* into the *Satya*, *Tréta*, *Dwápar*, and *Cali* ages, does not appear from the *Sárya Siddhánta* to anſwer any practical aſtronomical purpoſe, but to have been formed on ideas ſimilar to the *golden*, *ſilver*, *brazen*, and *iron* ages of the *Greeks*. Their origin has however been aſcribed to the preceſſion of the equinoxes by thoſe who will of courſe refer the *Manwantera* and *Calpa* to the ſame foundation: either way the latter will be found anomaliſtic, as has been deſcribed, if I rightly underſtand the following paſſage in the firſt ſection of the *Sárya Siddhánta*, the tranſlation of which is, I believe, here correctly given.

——— "TIME, of the denomination *Murta* *, is eſtimated by reſpi-
" rations; ſix reſpirations make a *Vicalà*, ſixty *Vicalas* a *Danda*, ſixty
" *Dandas* a *Nacſhatra* day, and thirty *Nacſhatra* days a *Nacſhatra*
" month. The *Savan* month is that contained between thirty ſucceſſive
" riſings of *Sóya*, and varies in its length according to the *Lagna Bhuja*.
" Thirty *Tit'his* compoſe the *Chándra* month. The *Saura* month is
" that in which the ſun deſcribes one ſign of the zodiac, and his paſ-
" ſage through the twelve ſigns is one year, and one of thoſe years is a
" *Déva* day, or day of the Gods. When it is day at *Aſura* †, it is night
" with the GODS; and when it is day with the GODS, it is night at *Aſura*.
" Sixty of the *Déva* days, multiplied by ſix, give the *Déva* year; and
" twelve hundred of the *Déva* years form the aggregate of the four
" *Yugas*. To determine the *Saura* years contained in this aggregate,
" write down the following numbers, 4, 3, 2, which multiply by 10,000;
" the product 4320000 is the aggregate, or *Mahà Yuga*, including the *Sandhi*
" and *Sandhyanſa* ‡. This is divided into four *Yugas*, by reaſon of the
" different proportions of *Virtue* prevailing on earth, in the following man-
" ner. Divide the aggregate 4320000 by 10, and multiply the quotient by
" four for the *Satya Yug*, by three for the *Trétà*, by two for the *Dwápar*, and

---

* This is mean ſydereal time. A *Nacſhatra*, or ſydereal day, is the time in which the earth makes a turn upon its axis, or, according to the *Hindus*, in which the ſtars make one complete revolution. This is ſhorter than the *Sávan* or ſolar day, which varies in its length according to the *Lagna Bhuja* or right aſcenſion, and alſo from the ſun's unequal motion in the ecliptic; for both which circumſtances the *Hindus* have their *equation of time*, as will appear in the calculation of the eclipſe.

† *Aſura*, the ſouth pole, the habitation of the *Aſura Loca*, or Demons, with whom the *Devas*, who reſide at *Sumeru*, the north pole, wage eternal war.

‡ *Sandhi* and *Sandhyanſa*, the morning and evening twilight. "The proper words, I believe, are *Sandhyà* and *Sandhyánſa*.

" by

" by one for the *Cali Yug*. Divide either of the *Yugs* by ſix for its " *Sandhi* and *Sandhyanſa*. Seventy-one *Yugs* make a *Manwantera*; and " at the cloſe of each *Manwantera* there is a *Sandhi* equal to the *Satya* " *Yug*, during which there is an univerſal deluge. Fourteen *Manwanteras*, " including the *Sandhi*, compoſe a *Calpa*, and at the commencement of " each *Calpa* there is a *Sandhi* equal to the *Satya Yug*, or 1,728,000 *Saura* " years. A *Calpa* is therefore equal to 1,000 *Mahá Yugs*. One *Calpa* is " a day with BRAHMA', and his night is of the ſame length; and the pe- " riod of his life is 100 of his years. One half of the term of BRAHMA"s " life, or fifty years, is expired, and of the remainder the firſt *Calpa* is " begun; and ſix *Manwanteras*, including the *Sandhi*, are expired. The " ſeventh *Manwantera*, into which we are now advanced, is named *Vaivaſwa-* " *ta*: of this *Manwantera* twenty-ſeven *Mahá Yugs* are elapſed, and we " are now in the *Satya Yug* of the twenty-eighth, which *Satya Yug* conſiſts " of 1,728,000 *Saura* years. The whole amount of years expired from " the beginning of the *Calpa** to the preſent time, may hence be com-

Conſtruction of the *Calpa*.

Cali,	432000	
Dwapar,	432000	1 864000
Treta	432000 × 3 =	1296000
Satya	432000 × 4 =	1728000
Aggregate, or *Maha Yug*,		4320000
		71
Manwantera,		306720000
With a *Sandhi*, equal to the *Satya Yug*,		1728000
		308448000
		14
Calpa,		4318272000
With a *Sandhi* equal to the *Satya Yug*		1728000
Whole duration of a *Calpa*		4320000000

Computation of the period elapſed of the *Calpa* at the end of the laſt *Satya* age, when the *Surya Siddhánta* is ſuppoſed to have been

			Years
Sandhi at the beginning of the *Calpa*,			1728000
6 *Manwanteras*, or	308448000 × 6 =		1850688000
27 *Maha Yugs* of the 7th *Manwantera*, or	4320000 × 27 =		116640000
Satya Age of the 28th *Maha Yug*,	=		1728000
			1970784000

puted;

" puted; but from the number of years ſo found muſt be made a deduc-
" tion of one hundred times four hundred and ſeventy-four divine years,
" or of that product multiplied by three hundred and ſixty for human years,
" that being the term of BRAHMA"s employment in the creation;
" after which the planetary motions commenced.

" SIXTY *Piculas* make one *Calá*, ſixty *Calás* one *Bhága*, thirty *Bhágas*
" one *Ráſi*, and there are twelve *Ráſis* in the *Bhagana* *.

" † IN one *Yug*, *Súrya*, *Budha*, and *Sucra* perform 432,0000 *Madhyama*
" revolutions through the zodiac. *Mangala*, *Vrihaſpati*, and *Sani* make
" the ſame number of *Sighra* revolutions through it; *Chandra* makes
" 57,753,336 ‡ *Madhyama* revolutions; *Mangala* 2,296,832 *Madhyama* re-
" volutions; *Budha's Sighras* are 17,937,060; *Vrihaſpati's Madhyamas*
" 364,220; *Sucra's Sighras* 7,022,376; *Sani's Madhyamas* are 146,568.
" The *Chandróchcha* revolutions are 488,203; the retrograde revolutions
" of the *Chandrapáta* are 232,238.

" The time contained between ſun-riſe and ſun-riſe is the *Bhúmi Sávan*
" day: the number of thoſe days contained in a *Yug* is 1,577,917,828 §. The

* The diviſion of the *Bhagana*, or zodiac, into ſigns, degrees, &c.

† *Surya* the Sun; *Budha*, Mercury; *Sucra*, Venus; *Mangala*, Mars; *Vrihaſpati*, Jupiter; *Sani*, Saturn; *Chandra*, the Moon; the *Chandra Uchcha*, or *Chandróchcha*, the Moon's apogee; *Chandra Páta*, the Moon's aſcending node. The *Madhyama* revolutions of Mars, Jupiter, and Saturn, and the *Sighra* revolutions of Venus and Mercury, anſwer to their revolutions about the ſun.

‡ 57753336—4320000=53433336 lunar months, or lunations, in a *Yug*; and $\frac{1577917828}{53433336}$ = *D.* 29 *H.* 31 *M.* 50 *S.* 5 *P.* 6 &c. in each mean lunation, or in Engliſh time 29 . 12 . 44. 2 . 47 . 36 . 53433336—51840000 = 1593336 *Adds* or intercalary lunar months in 4320000 ſolar ſydereal years.

§ $\frac{1577917828}{4320000}$ = 365. 15. 31. 31. 24. diurnal revolutions of the Sun, the length of the *Hindu* year.

" number

" number of *Nacshatra* days 1582237828 †; of *Chándra* days 1603000080; " of *Adhi* months 1593336; of *Cshaya Tit'his* 25082252; of *Saura* " months 51840000. From either of the planets *Nacshatra* days deduct " the number of its revolutions, the remainder will be the number of its " *Savan* days contained in a *Yug*. The difference between the number " of the revolutions of *Súrya* and *Chandra* gives the number of *Chándra* " months; and the difference between the *Saura* months and *Chándra* months

† $\frac{1582237828}{4320000}$ = 366. 15. 31. 31. 24. diurnal revolutions of the stars in one year.

$\frac{1577917829}{57753336}$ 27. 19. 18. 1. 57. &c. The Moon's periodical month. The 1603000080 *Chándra*, or lunar days, called also *Tit'his*, are each one-thirtieth part of the moon's synodical month or relative period, and vary in length according to the inequality of her motion from the sun. The *Cshaya Tit'his* and *Adhi*, or intercalary lunar months, are sufficiently evident.

The sun and planets preside alternately over the days of the week, which are named accordingly. The first day after the creation was *Ravivár*, or *Sunday*: it began at midnight, under the meridian of *Lancà*; and the *Ravivár* of the *Hindus* corresponds with our Sunday. The sun and planets in the same manner govern the years: hence they may be said to have weeks of years. DANIEL's prophesy is supposed to mean *weeks* of years.

The *Hindu* cycle of 60, supposed by some to be the Chaldean *Sosos*, is referred to the planet Jupiter: " one of these years is equal to the time in which by his mean motion, he (*Vrihaspati*) " advances one degree in his orbit" (Commentary on the *Súrya Siddhánta*.) This cycle is, I believe, wholly applied to astrology. Neither this cycle of 60 nor the *Pitri's* day are mentioned in this part of the *Súrya Siddhánta*, where they might be expected to occur: perhaps on inquiry there may be found some reason for supposing them both of a later invention. " The " *Pitrís* inhabit behind *Chandra*, and their mid-day happens when *Chandra* is in conjunction with " *Súrya*, and their midnight when *Chandra* is in opposition to *Súrya*; their morning, or sunrise, " is at the end of half the *Crishna Pacsha*, and their sunset at the end of half the *Súcla Pacsha*: " this is declared in the *Sácalya Sanhità*. Their names are *Agni*, *Swátti*, &c. their day and night " are therefore together equal to one *Chándrá* month." (Commentary). Hence it appears, the *Hindus* have observed that the moon revolves once on her axis in a lunar month, and consequently has the same side always opposed to the earth. They have also noticed the difference of her apparent magnitude in the horizon and on the meridian, and endeavour to explain the cause of a phenomenon which *Europeans*, as well as themselves, are at a loss to account for.

" gives

" gives the number of *Adhi* months. Deduct the *Sávan* days from the " *Chándra* days, the remainder will be the number of *Tit'hi Cshayas*. The " number of *Adhi* months, *Tit'hi Cshayas*, *Nacshatra*, *Chándra*, and *Sávan* " days, multiplied ſeverally by 1000, gives the number of each contained " in a *Calpa*.

" THE number of *Mandóchcha* revolutions, which revolutions are direct, " or according to the order of the ſigns contained in a *Calpa*, is of " *Súrya* 387; of *Mangala* 204; of *Budha* 368; of *Vrihaſpati* 900; of " *Sucra* 535; of *Sani* 39.

" THE number of revolutions of the *Pátas*, which revolutions are re- " trograde, or contrary to the order of the ſigns contained in a *Calpa*, " is of *Mangala* 214; of *Budha* 488; of *Vrihaſpati* 174; of *Sucra* 903; " of *Sani* 662. The *Páta* and *Uchcha* of *Chandra* are already men- " tioned."

IT muſt be obſerved, that, although the planetary motions as above determined might have ſerved for computations in the time of MAYA, the author of the *Súrya Siddhánta*, yet for many years paſt they have not been found to agree with the obſerved places in the heavens in every inſtance, and that corrections have accordingly been introduced by increaſing or reducing thoſe numbers. Thus the motions of the moon's apogee and node are now increaſed in computations of their places by the addition of four revolutions each in a *Yug*, to their reſpective numbers above given. The nature of theſe corrections, denominated in *Sanſcrit Bíja*, is explained in a paſſage of the *Tícà*, or Commentary on the *Súrya Siddhánta*, wherein is maintained the priority of that *Sáſtra* in point of time

to

to all others. The tranſlation of that paſſage, together with the text it illuſtrates, is as follows:

(*Súrya Siddhánta.*) "ARCA (the Sun) addreſſing MEYA, who attended "with reverence, ſaid, Let your attention, abſtracted from human con- "cerns, be wholly applied to what I ſhall relate. SU'RYA in every "former *Yug* revealed to the *Munis* the invariable ſcience of aſtronomy. "The planetary motions may alter; but the principles of that ſcience are "always the ſame."

(*The Commentary.*) "Hence it appears that the *Súrya Siddhánta* was "prior to the *Brahma Siddhánta* and every other *Sáſtra*, becauſe this "*Sáſtra* muſt be the ſame that was revealed *in every former Yug*, al- "though the motions of the planets might have been different. This "variation in the planetary motions is mentioned in the *Viſhnu Dhermót- "ter*, which directs that the planets be obſerved with an inſtrument, where- "by their agreement or diſagreement may be determined in regard to their "computed places; and in caſe of the latter, an allowance of *Bija* accord- "ingly made. VASISHT'HA in his *Siddhánta* alſo recommends this "occaſional correction of *Bija*, ſaying to the *Muni* MA'NDAVYA, "I have "ſhown you how to determine ſome matters in aſtronomy; but the "mean motion of *Súrya* and the other planets will be found to differ "in each *Yug*." Accordingly A'RYABHATTA, BRAHMAGUPTA, and "others, having obſerved the heavens, formed rules on the principles of "former *Sáſtras*, but which differed from each other in proportion to "the diſagreement, which they ſeverally obſerved, of the planets with "reſpect to their computed places.

"WHY the *Munis*, who certainly knew, did not give the particulars "of those deviations, may seem unaccountable, when the men A'RYAB-"HATTA, BRAHMAGUPTA, and others, have determined them: the "reason was, that those deviations are not in themselves uniform; and "to state their variations would have been endless. It was therefore "thought better, that examinations at different times should be made, "and due corrections of the *Bija* introduced. A *Ganita Sástra*, whose rules "are demonstrable, is true; and when conjunctions, oppositions, and other "planetary phenomena, calculated by such *Sástras*, are found not to agree "with observation, a proportionable *Bija* may be introduced without any "derogation from their credit. It was therefore necessary that this "*Sástra* (the *Surya Siddhánta*) should be revealed in each *Yug*, and that "other *Sastras* should be composed by the *Munis*.

"THE original *Sástra* then appears to be the *Súrya Siddhánta*; the "second, the *Brahma Siddhánta*; the third, the *Paulastya Siddhánta*; the "fourth, the *Sóma Siddhánta*."

IN the following table are given the periodical revolutions of the planets, their nodes, and apsides, according to the *Súrya Siddhánta*. The corrections of *Bija* at present used, are contained in one column *, and the inclination of their orbits to the ecliptic in another. The obliquity of the ecliptic is inserted according to the same *Sástra*. Its diminution

* This I must however at present omit, not having as yet discovered the corrections of this kind that will bring even the Sun's place, computed by the *Súrya Siddhánta*, exactly to an agreement with the astronomical books in present use. Of these books, the principal are the *Grahalághava*, composed about 268 years ago, the tables of *Mocarand* used at *Benares* and *Tahir*, and the *Siddhánta Rahasya* used at *Nádyá*; the last written in 1513 *Saca*, or 198 years ago.

does

does not appear to have been noticed in any ſubſequent treatiſe: in the tables of *Macaranda*, and alſo in the *Grahalighava*, the latter written only 268 years ago, it is expreſsly ſtated at twenty four degrees.

THE motion of the equinoxes, termed in *Sanſcrit* the *cranti*, and ſpoken of in the *Tica*, or commentary, on the *Súrya Siddhanta* as the Sun's *Pata* or node, is noticed in the foregoing paſſage of that book; and, as the *Hindu* aſtronomers ſeem to entertain an idea of the ſubject different from that of its revolution through the *Platonic* year, I ſhall farther on give a tranſlation of what is mentioned, both in the original and commentary, concerning it.

THE next requiſite for the computation of the eclipſe is the portion of the *Calpa* expired to the preſent time, which is determined in the following manner:

THE *Súrya Siddhanta* is ſuppoſed to have been received through divine revelation, towards the cloſe of the *Satya* age, at the end of which 50 of the years of *Brahmá* were expired, and of the next *Calpa* or day, 6 *Manwanteras*, 27 greater *Yugs*, and the *Satya* age of the 28th *Yug*, together with the *Sandhyá* or twilight at the beginning of the *Calpa*; the aggregate of which ſeveral periods is 1970784000 years elapſed of the *Calpa* to the beginning of the laſt *Trétá* age; to which add the *Trétá* and *Dwápar* ages, together with the years elapſed of the preſent *Cali* age, for the whole amount of ſydereal years from the beginning of the *Calpa* to the preſent *Bengal* year. But in the foregoing quotation it is obſerved, from that amount of years muſt be made a deduction of 47400 divine, or 17064000 human or ſydereal years, the term of BRAHMA'S

THE TABLE. See page 236.

[illegible]e Pla[illegible] in t[illegible] order	Sidereal Period	Period of the Apsides	Period of the Nodes	Mean motion per day [illegible]	Inclination of the Orbit	C[illegible] circumference of the Orbit.
	Days D P V.	Days D	Days D			Years
[illegible]e Moon.	27 19 18 1 &c	3232 57 —	6794 23	790 35	4 [illegible]	324000
M[illegible]	87 58 10	4237820154 1 —	9233742455 11	1[illegible] 24	2 —	1043208
	2[illegible] 39 33 ——	2149379117 45 &c	174741750[illegible] 45	97	2 —	25646637
	365 15 31 31 24	4077307049 5 —	Precession of the equinoxes 54 per year	59 8	Obliquity of the Ecliptic 24	4331500
		7735087302 9 &c	[illegible]737344779[illegible] 23 &c		1 [illegible]	8146909
		[illegible]	9008495264 22 &c		1 —	5[illegible]5764
			2[illegible]8355167[illegible] 42 &c		2 —	127668255

THE longitude of the sun's apogee in the *Hindu* sphere is $2^s, 17^\circ, 17', 15''$, to which add the *Ayanáṅśa* $19^\circ, 21', 27''$, the sum $3^s, 6^\circ, 38', 42''$ is its place according to *European* expression. In this the *Hindu* account differs about $1^\circ\ 22'$ from the observations of *European* astronomers, who determine the place of the earth's aphelion in the present age to be in $9^s, 8^\circ, 1'$. There is a much greater disagreement with respect to the aphelia and nodes of the other planets.

ON supposition that the obliquity of the ecliptic was accurately observed by the ancient *Hindus*, as 24°, and that its decrease has been from that time half a second a year, the date of the *Surya Siddhánta* will be about 3840 years. It is remarkable that the *Hindus* do not appear to have noticed its decrease.

THE *Cacshás* are explained farther on.

employment in the work of creation; for, as the univerſe was not completed, the planetary motions did not commence until that portion of the *Calpa* was elapſed.

THIS deduction appears to have been intended as a correction; which, without altering the date of the *Calpa*, as ſettled, probably, by yet more ancient aſtronomers, might (joined perhaps with other regulations) bring the computed places of the planets to an agreement with their obſerved places, when the *Surya Siddhánta* was written; and, as the arguments of its commentator in ſupport of the propriety of it, without prejudice to other authors, contain ſome curious particulars, I hope I may be excuſed for departing from my immediate object to inſert a tranſlation of them.

" IN the *Súrya Siddhánta*, *Sóma Siddhánta*, *Prajapeti*, *Vaſiſht'ha*, and " other *Sáſtras*, this deduction is required to be made from the *Calpa*, " becauſe at the end of that term the planetary motions commenced. The " ſon of JISHNU, who underſtood four *Védas*, and BHA'SCARA'CHA'RYA, " conſidered theſe motions as commencing with the *Calpa*: it may ſeem " ſtrange that there ſhould be ſuch a diſagreement. Some men ſay, as it " is written that the *Calpa* is the day of BRAHMA', and as a day is de- " pendent on the riſing and ſetting of the ſun, the motion of the ſun and " planets muſt have begun with the *Calpa*; and therefore BRAHMAGUPTA " ſhould be followed; but I think otherwiſe. The *Calpa*, or BRAHMA's " day, is not to be underſtood as analogous to the ſolar day, otherwiſe " than as containing a determined portion of time; neither is it at all de- " pendent on the commencement of the *Calpa*; but, being compoſed of " the ſame periods as the latter, it will not end until the term of years here " deducted

" deducted ſhall be expired of the next *Calpa*. The motions of the " *Grahas* muſt therefore be computed from the point of time here ſtated " as the beginning of BRAHMA"s day, and not, as BRAHMAGUPTA and " others direct, from the beginning of the *Calpa*, which will not be found " to anſwer.

" OTHER men ſay, that rules derived from the *Ganita Sáſtra* and agree- " ing with obſervation, are right; that any period deduced from ſuch a " mode of computation, and the planets determined to have been then " in the firſt of *Méſha*, may be aſſumed; that it will therefore anſwer " either way, to conſider theſe motions as beginning with the *Calpa*, or " after the above-mentioned period of it was expired. This however is " not true; for in the inſtance of *Mangala* there will be found a great " difference, as is here ſhown. The revolutions of *Mangala* in a *Calpa*, " according to BRAHMAGUPTA, are 2296828522; and, by the rule of " proportion, the revolutions of *Mangala* in 1706400o years are 9072472 " Signs. 9 ′ ″ 7 28 0 16 ′. For any other planet, on trial, a ſimilar diſagree- " ment will be found, and the propoſition of computing from either " period muſt be erroneous. Moreover, of what uſe is it to make " computations for a ſpace of time, when the planets and their motions " were not in being?

IT might, however, from the foregoing circumſtances, be imputed to " BRAHMAGUPTA and the reſt, that they have given precepts through

Becauſe $\frac{2296828522 \times 17064000}{4320000000}$ = Revolutions 9072472 S. 7 ° 28 ′ 0 ″ 16.

" ignorance,

" ignorance, or with intent to deceive: That, having ſtated the revo-
" lutions of the planets different from the account revealed by SU'RYA,
" they, muſt certainly have been in error: That BRAHMAGUPTA
" could not have counted the revolutions from the beginning of the
" *Calpa*; neither could he from the mean motion of the planets have ſo
" determined them: he was a mortal, and therefore could not count the
" revolutions.—Although the rule of proportion ſhould be granted to
" have ſerved his purpoſe for the revolutions of the planets, yet
" it certainly could not for thoſe of their *Mandochcha*, becauſe it
" was not within the term of a man's life to determine the mean
" motion of the *Mandochcha*; and this aſſertion is juſtified by the
" opinion of BHA'SCARA'CHARYA. But the rule of proportion could not
" have anſwered even for the planets; for, although their mean motion be
" obſerved one day, and again the next, how can a man be certain of
" the exact time elapſed between the two obſervations? And if there be
" the ſmalleſt error in the elapſed time, the rule of proportion cannot
" anſwer for ſuch great periods. An error of the $\frac{1}{1000000}$ part of
" a ſecond (*Vicalà*) in one day, amounts to forty degrees * in the com-
" putation of a *Calpa*, and the miſtake of $\frac{1}{100}$ of a reſpiration in one
" *Saura* year, makes a difference in the ſame period of 20000 days.
" That it is therefore evident, BRAHMAGUPTA's motive for directing
" the planetary motions to be computed as commencing with the *Calpa*,
" was to deceive mankind; and that he had not the authority of the
" *Munis*, becauſe he differs from the *Súrya Siddhanta*, *Brahma Siddhánta*,
" *Sóma Siddhánta*; from VASISHTHA and other *Munis*.

* The error would be more than 43°.

" Such

" Such opinions would have no foundation, as I ſhall proceed " to ſhow. BRAHMAGUPTA's rules are conſiſtent with the practice of " the *Pandits* his predeceſſors; and he formed them from the *Purana* ' *Viſhnu Dherméttara*, wherein is contained the *Brahma Siddhánta*; " and the periods given by A'RYABHATTA are derived from the *Parásara* " *Siddhánta*: the precepts of the *Munis* are therefore the authorities of " BRAHMAG'UPTA, A'RYABHATTA, and BHA'SCARA'CHA'RYA, whoſe " rules cannot be deceitful. The *Munis* themſelves differed with regard to " the number of *Sávan* days in a *Yug*, which is known from the *Pancha* " *Siddhánta*, compoſed by VARA A'CHA'RYA, wherein are propoſed two " methods of computing the ſun's place; the one according to the *Súrya* " *Siddhanta*, the other according to the *Rómacá Siddhánta*; whence it ap- ' pears that there were different rules of computation even among the *Mu-* " *nis*. It is alſo mentioned in the *Tícá* on the *Varáha Sanhitá*, that, accord- " ing to the *Paulaſtya Siddhánta*, there was formerly a different number of " *Sávan* days eſtimated in a *Yug*. The maxims therefore of BRAHMA- " GUPTA and the other two, agreeing with thoſe of the *Munis*, are " right; but, ſhould it even be ſuppoſed that the *Munis* themſelves could " be miſtaken, yet BRAHMAGUPTA and the other two had the ſanction " of the *Védas*, which in their numerous *Súc'has* (branches) have diſagree- " ments of the ſame kind; and, according to the *Sácalya Sanhitá*, BRAHMA', " in the revelation he made to NA'RED, told him, although a circumſtance " or thing were not perceptible to the ſenſes, or reconcileable to reaſon, " if authority for believing it ſhould be found in the *Védas*, it muſt be " received as true.

" IF a planet's place, computed both by the *Súrya Siddhánta* and " *Paraſara Siddhánta*, ſhould be found to differ, which rule muſt be re-

" ceived

" derived as right? I anſwer, that which agrees with his place by ob-
" ſervation; and the *Munis* gave the ſame direction. If computations
" from the beginning of the *Calpa*, and from the period ſtated in the
" *Súrya Siddhánta*, give a difference, as appears in the inſtance of *Mangala*,
" which of the two periods to be computed from is founded in truth?
" I ſay, it is of no conſequence to us which, ſince our object is only
" to know which period anſwers for computation of the planetary places
" in our time, not at the beginning of the *Calpa*. The difference found
" in computing, according to BRAHMAGUPTA and the *Munis*, muſt be
" corrected by an allowance of *bíja*; or by taking that difference as the
" *cſhépa*; but the books of the *Munis* muſt not be altered, and the rules
" given by BRAHMAGUPTA, VARA'CHA'RYA, and A'RYABHATTA, may be
" uſed with ſuch precautions. Any perſon may compoſe a ſet of rules
" for the common purpoſes of aſtronomy; but, with regard to the
" duties neceſſary in eclipſes, the computation muſt be made by the books
" of the *Munis*, and the *bíja* applied; and in this manner it was that
" VARA'HA, A'RYABHATTA, BRAHMAGUPTA, and CE'SAVA SAMVAT-
" SARA, having obſerved the planets and made due allowance of *bíja*,
" compoſed their books.

" GANE'SA mentions that the *Grahas* were right in their computed
" places in the time of BRAHMA', A'CHA'RYA, VASISHT'HA, CASYAPA,
" and others, by the rules they gave; but in length of time they differed;
" after which, at the cloſe of the *Satya* age, SU'RYA revealed to MEYA a
" computation of their true places. The rules then received anſwered
" during the *Trétà* and *Dwápar* ages, as alſo did other rules formed
" by the *Munis* during thoſe periods. In the beginning of the *Cali*
" *Yug*, PARA'SERA's book anſwered; but A'RYABHATTA, many years

" after, having examined the heavens, found ſome deviation, and intro-
" duced a correction of *bîja*. After him, when further deviations were
" obſerved, DURGA' SINHA, MIHIRA, and others, made corrections.
" After them came the ſons of JISTNU and BRAHMAGUPTA, and made cor-
" rections. After them CE'SAVA ſettled the places of the planets; and
" ſixty years after CE'SAVA, his ſon GANE'SA made corrections."

WE have now, according to the *Hindu* ſyſtem, the mean motion of the planets, their nodes, and apſides, and the elapſed time ſince they were in conjunction in the firſt of *Méſha*; with which, by the rule of proportion, to determine their mean longitude for any propoſed time of the preſent year. It is however obſerved in the *Súrya Siddhánta*, that to aſſume a period ſo great is unneceſſary; for uſe the computation may be made from the beginning of the *Trétà* age, at which inſtant all the *Grahas*, or moveable points in the heavens, were again in conjunction in *Méſha*, except the apogees and aſcending nodes, which muſt therefore be computed from the creation. The ſame is true of the beginning of the preſent *Cali* age; for the greateſt common divilor of the number of days compoſing the *Mahà Yug* and the planetary revolutions in that period, is four; which quotes 394479457 days, or 1080000 years; and the *Trétà* and *Dwápar* ages contain together twice that number of years. The preſent *Hindu* aſtronomers therefore find it unneceſſary to go farther back than the beginning of the *Cali Yug* * in determining

* Neither do they in computing by the formulas in common uſe go farther back than to ſome aſſigned date of the era *Saca*; but, having the planets places determined for that point of time, they compute their mean places and other requiſites for any propoſed date afterwards by tables, or by combinations of figures contrived to facilitate the work: as in *Grahalághéva*, *Siddhánta Rahaſya*, and many other books. An inquirer into *Hindu* aſtronomy having acceſs to ſuch books only, might eaſily be led to aſſert that the *Bráhmens* compute eclipſes *by ſet forms couched in enigmatical verſes*,

determining the mean longitude of the planets themſelves; but for the poſition of their apſides and nodes, the elapſed time ſince the creation muſt be uſed; or at leaſt in inſtances, as of the ſun, when the numbers 387 and 4320000000 are incommenſurable but by unity. I have however in the accompanying computation, taken the latter period in both caſes.

For the equation of the mean to the true anomaly, in which the ſolution of triangles is concerned, and which is next to be conſidered, the *Hindus* make uſe of a canon of ſines conſtructed according to the *Súrya Siddhánta*, in the following manner:—"Divide the number of "minutes contained in one ſine 1,800 by eight, the quotient 225 is "the firſt *Jyápinda*, or, the firſt of the twenty-fourth portions of half the "ſtring of the bow. Divide the firſt *Jyápinda* by 225, the quotient 1' "deduct from the dividend, and the remainder 224' add to the firſt for "the ſecond *Jyápinda* 449'. Divide the ſecond *Jyápinda* by 225, "the quotient being 1' and the fraction more than half a minute, "deduct 2' from the foregoing remainder 224', and add the remain- "der ſo found to the ſecond for the third *Jyápinda* 671'. Divide this "by 225', the quotient 3' deduct from the laſt remainder 222'; the "remainder ſo found 219', add to the third for the fourth *Jyápinda* 890. "Divide this by 225', and the quotient deduct from the laſt remainder; the "remainder ſo found add to the fourth, for the fifth *Jyápinda* 1105, and "proceed in this manner until the twenty-four *Cramajyás* * are completed;

verſes, out of which it would be difficult to develop their ſyſtem of aſtronomy; and this I ap- prehend was the caſe with Monſ. Sonnerat. The *Jyótiſh Pandits* in general, it is true, know little more of aſtronomy than they learn from ſuch books, and they are conſequently very ignorant of the principles of the ſcience: but there are ſome to be met with, who are better informed.

* *Cramajyás*, Right Sines.

" which will be as follows: 225, 449, 671, 890, 1105, 1315, 1520,
" 1719, 1910, 2093, 2267, 2431, 2585, 2728, 2859, 2978, 3084,
" 3177, 3256, 3321, 3372, 3409, 3431, 3438. For the *utcramajyà* *,
" the twenty-third *cramajyà* deducted from the *trijyà* or twenty-fourth
" *cramajyà*, leaves the firſt *utcramajyà*; the twenty-ſecond deducted
" from the twenty-third leaves the ſecond *utcramajyà*; the twenty-firſt
" from the twenty-ſecond leaves the third; the twentieth from the
" twenty-firſt leaves the fourth. In the ſame manner proceed until the
" *utcramajyàs* are completed; which will be as follows: 7, 29, 66,
" 117, 182, 261, 354, 460, 579, 710, 853, 1007, 1171, 1345, 1528,
" 1719, 1928, 2123, 2233, 2548, 2767, 2989, 3213, 3438." So far the *Súrya Siddhánta* on the ſubject of the ſines. The commentator ſhows how they are geometrically conſtructed: " With a radius deſcribe a circle,
" the periphery of which divide into 21600 equal parts, or minutes.
" Draw (north and ſouth, and eaſt and weſt) lines through the centre;
" ſet off contrarywiſe from the eaſt point, 225 on the periphery, and
" draw a ſtring from thoſe extremities acroſs the *trijyà* †. The ſtring
" is the *jyà*; and its half the *ardhajyà*, called *jívà*. The *Pandits* ſay,
" a planet's place will correſpond with the *ardhajyá*, by which, therefore,
" computations of their places are always made; and by the term *jyà*
" is always underſtood the *ardhajyà*. The firſt *jyà* will be found to
" contain 449 minutes, and the operation, repeated to twenty-four divi-
" ſions, will complete the *cramajyà*. In each operation, the diſtance
" contained between the *jyà* and its arc, or that line which repreſents
" the arrow of a bow, muſt be examined, and the number of minutes

* *Utcramajyà*, Verſed Sines. † *Trijyà*, the Radius.

" therein

" thereby contained taken for the *uteramajyà*. The circle may repreſent " any ſpot of land; the *bhujajya* * is the *bhuja*, the *cótijyà* the *cóti*, and " the *trijya* the *carna*. The ſquare of the *bhujajyà* deducted from the ſquare " of the *trijya*, leaves the ſquare of the *cotijyà*; the root of which is the *coti-* " *jya*; and, in the ſame manner, from the *cotijyà* is determined the *bhujajyà*. " The *cótyuteramajyà* deducted from the *trijyà* leaves the *bhujaeramajyà*. " The *bhujóteramajyà* deducted from the *trijyà* leaves the *cóteramajyà*. " When the *bhujajyà* is the firſt diviſion of the *trijyà*, the *cótijyà* is the " twenty-three remaining diviſions; which *cotijyà*, deducted from the *trijyà*, " leaves the *bhujóteramajyà*. On this principle are the *jyàs* given in the " text †: they may be determined by calculation alſo, as follows:

" THE *trijyà* take as equal to 3438 minutes, and containing twenty-four " *jyápindas*: its half is the *jyà* of one ſine, or 1719′, which is the eighth " *jyápinda*, or the ſixteenth *cotijyápinda*. The ſquare of the *trijyà* multiply " by three, and divide the product by four, the ſquare root of the quotient " is the *jyà* of two ſines, or 2977′. The ſquare root of half the ſquare of " the *trijyà* is the *jyà* of one ſine and an half (45°) or 2431′; which de- " ducted from the *trijyà*, leaves the *uteramajyà* 1007′. By this *uteramajyà* " multiply the *trijyà*; the ſquare root of half the product is the *jyà* of 22°, " 30′, or 1315. The ſquare of this deduct from the ſquare of the *trijyà*, " the ſquare root of the difference is the *jyà* of 67°, 30′, or 3177′, which is " the *cótijyà* of 22°, 30′, equal to 1315′. This *bhujajyà* and *cótijyà* deducted " ſeverally from the *trijyà*, leaves the *uteramajyà* of each 2123′ and 261′." &c.

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* *Bhujajyà*, the ſine; *Cotijyà*, the ſine complement.

† A diagram might here be added for illuſtration; but it muſt be unneceſſary to any one who has the ſmalleſt knowledge of geometry.

THIS

This is sufficient to show that the *Hindus* have the right construction of the sines, although they do not appear, from any thing I can learn, ever to have carried it farther than to twenty-four divisions of the quadrant, as in the following table. Instances of the like inaccuracy will occur in the course of this paper. The table of sines may perhaps be more clearly represented in the following manner:—

Right Sines, the Radius containing 3438 *Minutes.*

Arc.	Sine	Arc.	Sine.	Arc.	Sine.
1st = 225 = 3°,45	225	9th = 2025 = 33°,45	1910	17th = 3825 = 63°,45	3064
2d = 450 = 7 ,30	449	10th = 2250 = 37 ,30	2093	18th = 4050 = 67 ,30	3177
3d = 675 = 11 ,15	671	11th = 2475 = 41 ,15	2267	19th = 4275 = 71 ,15	3256
4th = 900 = 15 ,—	890	12th = 2700 = 45 ,—	2431	20th = 4500 = 75 ,—	3321
5th = 1125 = 18 ,45	1103	13th = 2925 = 48 ,45	2585	21st = 4725 = 78 ,45	3376
6th = 1350 = 22 ,30	1315	14th = 3150 = 52 ,30	2725	22d = 4950 = 82 ,30	3409
7th = 1575 = 26 ,15	1520	15th = 3375 = 56 ,15	2850	23d = 5175 = 86 ,15	3431
8th = 1800 = 30 ,—	1719	16th = 3600 = 60 ,—	2978	24th = 5400 = 90 ,—	3438

Versed Lines.

Arc.	Sine	Arc.	Sine.	Arc.	Sine.
1st = 225 = 3°,15	7	9th = 2025 = 33°,45	579	17th = 3825 = 63°,45	1928
2d = 450 = 7 ,30	29	10th = 2250 = 37 ,30	710	18th = 4050 = 67 ,30	2123
3d = 675 = 11 ,15	66	11th = 2475 = 41 ,15	858	19th = 4275 = 71 ,15	2333
4th = 900 = 15 ,—	117	12th = 2700 = 45 ,—	1007	20th = 4500 = 75 ,—	2548
5th = 1125 = 18 ,45	182	13th = 2925 = 48 ,45	1171	21st = 4725 = 78 ,45	2767
6th = 1350 = 22 ,30	261	14th = 3150 = 52 ,30	1345	22d = 4950 = 82 ,30	2989
7th = 1575 = 26 ,15	354	15th = 3375 = 56 ,15	1528	23d = 5175 = 86 ,15	3213
8th = 1800 = 30 ,—	460	16th = 3600 = 60 ,—	1719	24th = 5400 = 90 ,—	3438

For the sines of the intermediate arcs, take a mean proportion of the tabular difference, as for the sine of 14°, which is between the third and fourth tabular arcs, or 165 minutes exceeding the third; therefore

225′

Fig. 1. Vol. 2. P. 249.

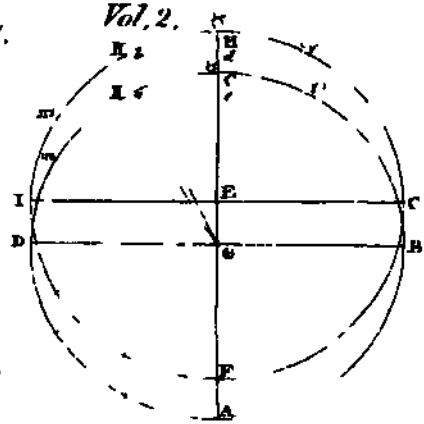


Fig 2 P. 250.

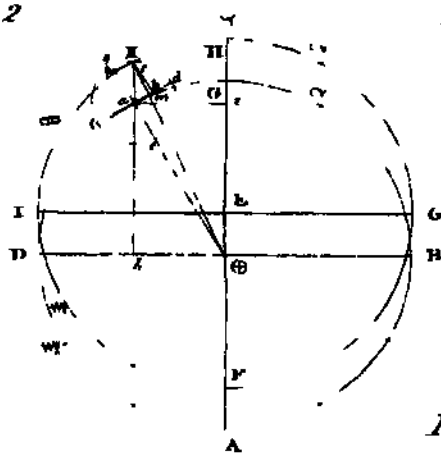
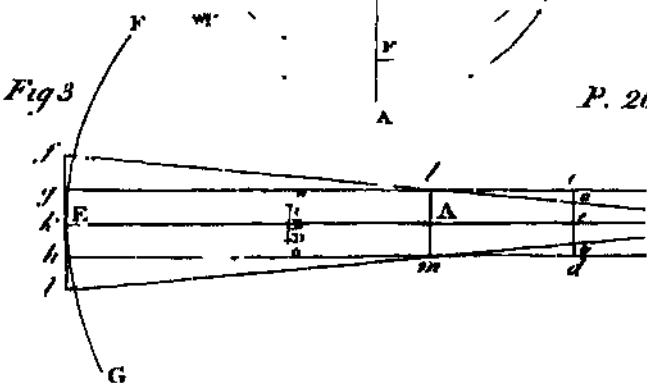


Fig 3 P. 263.



225′ being the difference of thoſe arcs, and 219 the difference of their ſines, $\frac{225' \times 219'}{307'} = 160'$, 36″, or a mean proportional number to be added to the ſine of the third tabular arc, for the ſine required of 14° or 831′ 36″. In the ſexageſimal arithmetic, which appears to be univerſally uſed in the *Hindu* aſtronomy, when the fraction exceeds half unity, it is uſually taken as a whole number: thus, 831′, 35″, 35‴, would be written 831′, 36.

To account for the apparent unequal motion of the planets, which they ſuppoſe to move in their reſpective orbits through equal diſtances in equal times, the *Hindus* have recourſe to eccentric circles, and determine the eccentricity of the orbits of the ſun and moon with reſpect to that circle, in which they place the earth as the centre of the univerſe, to be equal to the ſines of their greateſt anomaliſtic equations, and accordingly that the delineation of the path of either may be made in the following manner:—

Describe a circle, which divide as the ecliptic into ſigns, degrees, and minutes; note the place of the *Mandöchchar*, or higher apſis, which ſuppoſe in ♉. Draw a diameter to that point, and ſet off, from the centre ⊕ towards the place of the apogee, the eccentricity equal to the ſine of the greateſt equation, which of the ſun is 130′ 32″. Here the eccentricity is repreſented much greater, that the figure may be better underſtood. Round the point *E*, as the centre, deſcribe the eccentric circle FGHI, which is the ſun's orbit, and in the point H, where it is cut by the line ⊕ ♉ prolonged, is the place of the *Mandöchcha*, or higher apſis; and in the oppoſite point F is the lower. From the place of the apogee H, ſet off its longitude in reverſe, or contrary to the order of the ſigns, for the

the beginning of *Aries*, and divide this circle, as the former, into ſigns and degrees. Note the ſun's mean longitude in each circle, as ſuppoſe in *Gemini*, and from both points draw right lines to the earth at ⊕. According to the *Hindu* ſyſtem, which appears to be the ſame as the *Ptolemaic*, the angle $a \oplus C$ will be the mean anomaly, the angle $b \oplus C$ the true anomaly, and the angle $a \oplus b$ their difference, or the equation of the mean to the true place; to be ſubtracted in the firſt ſix ſines of anomaly, and added in the laſt ſix. The *Europeans* in the old aſtronomy found the angle $b \oplus C$, by the following proportion, and which ſubtracted from $a \oplus C$ left the equation, which, as the *Hindus*, they inſerted in tables calculated for the ſeveral degrees of the quadrant; as the co-ſine of the mean anomaly $\oplus\ e = Ed$ added to the eccentricity $E \oplus$, is to the ſine of the mean anomaly $a\,c = b\,d$, ſo is the radius to the tangent of the true anomaly: or, in the right angled triangle $d \oplus b$, in which are given $d \oplus$ and $b\,d$, if $d \oplus$ be made radius, $b\,d$ will be the tangent of the angle $b \oplus d$, required. The *Hindus*, who have not the invention of *tangents*, take a different method, on principles equally true. They imagine the ſmall circle or epicycle, *cdef*, drawn round the planet's mean place *a* with a radius equal to the eccentricity, which in this caſe of the ſun is 130′ 30″, and whoſe circumference in degrees, or equal diviſions of the deferent A B C D, will be in proportion as their ſemi-diameters; or, as $\oplus\ C = 3438'$, to ABCD=360°, ſo $ag = 130'\ 32''$, to $efgd = 13°\ 40'$, which is called the *paridhi-anſ.* or *paridhi* degrees. In the ſame proportion alſo will be the correſpondent ſines *hc* and *ai*, and their co-ſines *cb* and *lk*, which are therefore known by computation, in minutes or equal parts of the radius $a \oplus$, which contains, as before mentioned, 3438′. In the right angled triangle $h \oplus c$, right angled at *h*, there are given the ſides $h \oplus$ ($= a \oplus + cb$, becauſe $cb = ha$) and *hc*; to find the hypotenuſe $c \oplus$, by means of which the angle

$a \oplus m$

$a \oplus m$ may be determined; for its ſine is $l\,m$, and, in the ſimilar triangles $h\,c \oplus$ and $l\,m \oplus$, as $c \oplus$ is to $m \oplus$, ſo is $h\,c$ to $l\,m$, the ſine of the angle of equation. From the third to the ninth ſines of anomaly, the co-ſine $c\,b$ muſt be ſubtracted from the radius 3438′ for the ſide $h \oplus$.

It is, however, only in computing the retrogradations and other particulars reſpecting the planets *Mercury*, *Venus*, *Mars*, *Jupiter*, and *Saturn*, where circles greatly eccentric are to be conſidered, that the *Hindus* find the length of the *carna*, or hypotenuſe, $c \oplus$; in other caſes, as for the anomaliſtic equations of the ſun and moon, they are ſatisfied to take $h\,c$ as equal to the ſine $l\,m$, their difference, as the commentator on the *Súrya Sidhánta* obſerves, being inconſiderable.

Upon this hypotheſis are the *Hindu* tables of anomaly computed with the aid of an adjuſtment, which, as far as I know, may be peculiar to themſelves. Finding that, in the firſt degree of anomaly both from the higher and lower apſis, the difference between the mean and obſerved places of the planets was greater than became thus accounted for, they enlarged the epicycle in the apogee and perigee, proportionably to that obſerved difference; for each planet reſpectively, conceiving it to diminiſh in inverſe proportion to the ſine of the mean anomaly, until at the diſtance of three ſines, or half way between thoſe points, the radius of the epicycle ſhould be equal to the eccentricity or ſine of the greateſt equation. This aſſumed difference in the magnitude of the epicycle they called the difference of the *paridhi anſa* between *viſhama* and *ſama*; the literal meaning of which is *odd* and *even*. From the firſt to the third ſine of anomaly, or rather in the third, a planet is in *viſhama*; from the

third to the ſixth, or in the perigee, in *ſama*; in the ninth ſign, in *viſhama*; and in the twelfth, or the apogee, in *ſama*. The *paridhi* degrees, or circumference of the epicycle in *ſama* are of the ſun 14°, in *viſhama* 13° 40′; of the moon in *ſama* 32°, in *viſhama* 31° 40′; the difference aſſigned to each between *ſama* and *viſhama*, 20′.

To illuſtrate theſe matters by examples, let it be required to find the equation of the ſun's mean to his true place in the firſt degree of anomaly. The ſine of 1° is conſidered as equal to its arc, or 60. The circumference of the epicycle in *ſama*, or the *apogee*, is 14°, but diminiſhing in this caſe towards *viſhama*, in inverſe proportion to the ſine of anomaly. Therefore, as radius 3438 is to the difference between *ſama* and *viſhama* 20′, ſo is the ſine of anomaly 60′ to the diminution of the epicycle, in the point of anomaly propoſed, 20″ ($=\frac{60' \times 20'}{14\ \ 38}$) which ſubtracted from 14°, leaves 13° 59′ 40″. Then, as the circumference of the great circle 360° is to the circumference of the epicycle 13° 59′ 40″, ſo is the ſine of anomaly 60′ to its correſpondent ſine in the epicycle *hc*, which, as was obſerved, is conſidered as equal to *l m*, or true ſine of the angle of equation 2′ 19″ 56‴ ($=\frac{13^\circ\ 59'\ 40'' + 60'}{360^\circ}$) which, in the *Hindu* canon of ſines is the ſame as its arc, and is therefore the equation of the mean to the true place in 1° of anomaly, to be added in the firſt ſix ſines, and ſubtracted in the laſt ſix.

For the equation of the mean to the true place in 5° 14′ of anomaly. The ſine of 5° 14′ is 313′ 36″ 8‴ and $\frac{313'\ 36''\ 8' + 20' = 6273'\ 2''\ 4'''}{3438} = 1'\ 49''$, to be deducted from the *paridhi* degrees in *ſama*.—14° 1′ 49″ = 13° 58′ 11″, and $\frac{313', 36', 8'' + 13^\circ, 58', 11'' = 4379', 59', 37}{360^\circ} = 12'\ 9''\ 59'''$ the ſine of the angle of equation, which is equal to its arc.

For

For the ſame in 14° of anomaly. The ſine of 14°, is 831. 36.— $\frac{831' 36'' \times 20'}{3438'} = 4' 50''$ and $\frac{14^{\circ} - 4' 50'' \times 831' 36''}{360^{\circ}} = 32' 9''$ the ſine of the angle of equation.

For the ſame in two ſines of anomaly. The ſine of 60° is 2978' $\frac{2978' \times 20'}{3438'} = 17', 19''$; and $\frac{16^{\circ} - 17', 19'' \times 2978'}{360^{\circ}} = 113' 25'' 20'''$, the ſine of equation, equal to its arc.

For the equation of the mean to the true place of the moon in 1° of anomaly. The *paridhi* degrees of the moon in *ſama* arc 32°, in *viſhama* 31°, 40', the difference 20'. The ſine of 1° is 60' and $\frac{60' \times 20'}{3438'} = 21''$ to be deducted from the *paridhi* degrees in *ſama*, $32^{\circ} - 21' = 31^{\circ}\ 59'\ 39''$. $\frac{31^{\circ}, 59', 39'' + 60'}{360^{\circ}} = 5', 20''$, the equation required.

For the ſame in ten degrees of anomaly. The ſine of 10° is 597' $\frac{597' \times 20'}{3438'} = 3'\ 28''$, and $\frac{32^{\circ} - 3', 28'' \times 597'}{360^{\circ}} = 52'\ 58''$, the equation required.

For the ſame in three ſines of anomaly. The ſine of 90° is the radius, or 3438', and $\frac{3438' \times 20'}{3438'} = 20$, $\frac{32^{\circ} - 20' \times 3438'}{360^{\circ}} = 302', 25''$, the ſine of the greateſt angle of equation, equal to the radius of the epicycle in this point of anomaly, the arc correſponding with which is 302' 45', the equation required.

For the equation of the mean to the true motion in theſe ſeveral points of anomaly, ſay, as radius 3438, is to the mean motion, ſo is the co-ſine *c b* of the anomaliſtic angle *g a c* in the epicycle, to the difference between the mean and apparent motion, or the equation re-

quired, to be ſubtracted from the mean motion in the firſt three ſines of anomaly added in the next ſix, and ſubtracted in the laſt three.

EXAMPLE: For the ſun in 5° 14′ of anomaly. The co-ſine of 5° 14′ in the *Hindu* canon is 3422′ 17″ 52‴. The *paridhi* circle in this point found before, is 13° 58′ 11″; and $\frac{3422.\ 17'\ 52''' + 13^{\circ}.\ 58.\ 11''}{360^{\circ}} = 132'\ 48''$ the co-ſine $c\ b$ in the epicycle; then as radius 3438′ is to the ſun's mean motion 59′ 8″ per day, or 59″ 8‴ per *danda*, ſo is the co-ſine $c\ b = 132'\ 48''$, to the equation required, 2′ 17″ per day, or 2″ 17‴ per *danda*. The motion of the ſun's apſis is ſo ſlow as to be neglected in theſe calculations; but that of the moon is conſidered, in order to know her mean motion from her apogee, which is 783′ 54″.

IN this manner may be determined the equation of the mean to the true anomaly and motion for each degree of the quadrant, and which will be found to agree with the tables of *Macaranda*. The following tables are tranſlated from that book:

Solar

Solar Equations, *Ravi p'hala.*

Anomaly.	Eq. of the mean to the true place.			Eq. of the mean to the true motion.	
	°	′	″	′	″
1		2	20	2	18
2		4	40	2	18
3		7	—	2	18
4		9	19	2	17
5		11	37	2	17
6		13	56	2	17
7		16	15	2	16
8		18	33	2	16
9		20	51	2	15
10		23	7	2	14
11		25	23	2	14
12		27	39	2	13
13		29	55	2	13
14		32	10	2	12
15		34	24	2	11
16		36	37	2	11
17		38	39	2	10
18		41	1	2	9
19		43	12	2	8
20		45	22	2	7
21		47	31	2	6
22		49	39	2	6
23		51	47	2	5
24		53	53	2	3
25		55	57	2	2
26		58	1	2	1
27	1	—	2	2	—
28	1	2	53	1	58
29	1	4	3	1	57
30	1	6	2	1	56
31	1	8	—	1	55
32	1	9	57	1	53
33	1	11	57	1	53
34	1	13	47	1	51
35	1	15	40	1	51
36	1	17	32	1	49
37	1	19	23	1	47
38	1	21	11	1	45
39	1	22	57	1	43
40	1	24	42	1	42
41	1	26	26	1	40
42	1	28	7	1	38
43	1	29	46	1	36
44	1	31	23	1	34
45	1	32	58	1	32
46	1	34	32	1	30
47	1	36	4	1	29
48	1	37	35	1	28
49	1	39	6	1	28
50	1	40	36	1	26
51	1	42	3	1	23
52	1	43	26	1	19
53	1	44	45	1	16
54	1	46	2	1	14
55	1	47	17	1	13
56	1	48	33	1	13
57	1	49	47	1	12
58	1	51	—	1	11
59	1	52	12	1	11
60	1	53	25	1	8
61	1	54	30	1	4
62	1	55	34	1	
63	1	56	35		58
64	1	57	34		57
65	1	58	34		55
66	1	59	30		55
67	2	—	23		52
68	2	1	14		49
69	2	2	4		46
70	2	2	51		43
71	2	3	35		41
72	2	4	17		39
73	2	4	57		37
74	2	5	35		35
75	2	6	12		32
76	2	6	45		31
77	2	7	17		28
78	2	7	45		25
79	2	8	12		23
80	2	8	35		22
81	2	8	58		20
82	2	9	18		18
83	2	9	36		15
84	2	9	51		12
85	2	10	3		10
86	2	10	13		8
87	2	10	20		6
88	2	10	27		4
89	2	10	31		1
90	2	10	32		

Lunar Equations, *Chándra p'hala.*

Anomaly.	Eq. of the mean to the true place.			Eq. of the mean to the true motion.		Anomaly.	Eq. of the mean to the true place.			Eq. of the mean to the true motion.		Anomaly.	Eq. of the mean to the true place			Eq. of the mean to the true motion.	
°	°	′	″	′	″	°	°	′	″	′	″	°	°	′	″	′	″
1		5	20	69	39	31	2	36	37	59	20	61	4	25	26	33	41
2		10	40	69	38	32	2	41	11	58	41	62	4	27	36	32	39
3		16	—	69	33	33	2	45	36	58	—	63	4	29	59	31	35
4		21	19	69	28	34	2	49	58	57	19	64	4	32	19	30	29
5		26	36	69	21	35	2	54	20	56	37	65	4	34	37	29	22
6		31	54	69	13	36	2	58	39	55	56	66	4	36	47	28	13
7		37	12	69	4	37	3	2	54	55	14	67	4	38	54	27	7
8		42	29	68	54	38	3	7	5	54	30	68	4	40	54	26	1
9		47	44	68	43	39	3	11	12	53	44	69	4	42	50	24	55
10		52	58	68	28	40	3	15	16	52	58	70	4	44	40	23	49
11		58	11	68	11	41	3	19	18	51	26	71	4	46	24	22	42
12	1	3	23	67	52	42	3	23	24	50	57	72	4	48	5	21	34
13	1	8	40	67	35	43	3	27	26	50	48	73	4	49	38	20	24
14	1	13	45	67	17	44	3	30	54	49	46	74	4	51	9	19	14
15	1	18	53	66	55	45	3	34	39	48	54	75	4	52	53	18	3
16	1	24	—	66	38	46	3	38	21	48	—	76	4	53	54	16	51
17	1	29	5	66	18	47	3	41	58	47	5	77	4	55	6	15	38
18	1	34	9	65	57	48	3	45	32	46	9	78	4	56	15	14	25
19	1	39	10	65	36	49	3	48	59	45	13	79	4	57	17	13	14
20	1	44	9	65	14	50	3	52	24	44	19	80	4	58	13	12	3
21	1	49	17	64	50	51	3	55	46	43	27	81	4	59	6	10	53
22	1	54	3	64	24	52	3	59	2	42	32	82	4	59	53	9	41
23	1	58	3	63	56	53	4	2	13	41	37	83	5	—	27	8	34
24	2	3	47	63	24	54	4	5	18	40	41	84	5	1	8	7	14
25	2	8	35	62	53	55	4	8	18	39	44	85	5	1	40	6	2
26	2	13	22	62	22	56	4	11	16	38	47	86	5	2	3	4	51
27	2	18	6	61	48	57	4	14	11	37	50	87	5	2	20	3	40
28	2	22	47	61	13	58	4	17	—	36	51	88	5	2	36	2	37
29	2	27	35	60	35	59	4	19	46	35	48	89	5	2	44	1	44
30	2	32	2	59	56	60	4	22	29	34	48	90	5	2	48	—	—

HA[illegible]g the true longitude of the ſun and moon, and the place of the node, determined by the methods explained, it is eaſy to judge, from the poſition of the latter, whether at the next conjunction or oppoſition there will be a ſolar or a lunar eclipſe; in which caſe the *tit'hi*, or date of the moon's ſynodical month, muſt be computed from thence, to determine the time counted from midnight of her full or change. Her diſtance in longitude from the ſun, divided by 720′, the minutes contained in a *tit'hi*, or the thirtieth part of 360°, the quotient ſhows the *tit'hi* ſhe has paſſed, and the fraction, if any, the part performed of the next; which, if it be the fifteenth, the difference between that fraction and 720′ is the diſtance ſhe has to go to her oppoſition, which will be in time proportioned to her actual motion; and that time being determined, her longitude, the longitude of the ſun, and place of the node may be known for the inſtant of full moon, or middle of the lunar eclipſe. The *Hindu* method of computing theſe particulars is ſo obvious in the accompanying inſtance, as to require no further deſcription here; and the ſame may be ſaid with reſpect to the declination of the ſun and the latitude of the moon.

IT is evident, from what has been explained, that the *Pandits*, learned in the *Jyótiſh Sáſtra*, have truer notions of the form of the earth and the economy of the univerſe than are aſcribed to the *Hindus* in general; and that they muſt reject the ridiculous belief of the common *Bráhmans*, that eclipſes are occaſioned by the intervention of the monſter *Rahu*; with many other particulars equally unſcientific and abſurd. But, as this belief is founded on explicit and poſitive declaration, contained in the *Védas* and *Puránas*, the divine authority of which writings no devout *Hindu* can diſpute, the aſtronomers have ſome of them cautiouſly explained ſuch paſſages in thoſe writings

writings as diſagree with the principles of their own ſcience, and, where reconciliation was impoſſible, have apologized, as well as they could, for propoſitions neceſſarily eſtabliſhed in the practice of it, by obſerving that certain things, as ſtated in other *Saſtras*, "might have been ſo formerly, "and may be ſo ſtill; but for aſtronomical purpoſes, aſtronomical rules muſt "be followed." Others have with a bolder ſpirit attacked and refuted unphiloſophical opinions. BHA'SCARA argues, that it is more reaſonable to ſuppoſe the earth to be ſelf-balanced in infinite ſpace, than that it ſhould be ſupported by a ſeries of animals, with nothing aſſignable for the laſt of them to reſt upon; and NRASINHA, in his commentary, ſhows that by *Ráhu* and *Cétu*, the head and tail of the monſter, in the ſenſe they generally bear, could only be meant the poſition of the moon's nodes, and the quantity of her latitude, on which eclipſes do certainly depend; but he does not therefore deny the reality of *Ráhu* and *Cétu*; on the contrary, he ſays, that their actual exiſtence and preſence in eclipſes ought to be believed, and may be maintained as an article of faith, without any prejudice to aſtronomy. The following *Sloca*, to which a literal tranſlation is annexed, was evidently written by a *Jyótiſh*, and is well known to the *Pandits* in general:

Víp'halányanyaſaſtráni, vivádaſtéſhu cévalam:
Sup'halam jyótiſham ſáſtram, chandrárcau yatra ſácſhinau.

FRUITLESS *are all* other *Saſtras*; in them *is* contention only: Fruitful *is* the *Jyotiſh Saſtra*, where the ſun *and* moon *are* two witneſſes.

THE argument of VARA'HA ACHA'RYA concerning the monſter *Ráhu*, might here be annexed, but, as this paper will without it be ſufficiently pro-

lix,

lix, I ſhall next proceed to ſhow how the aſtronomical *Pandits* determine the moon's diſtance and diameter, and other requiſites for the prediction of a lunar eclipſe.

THE earth they conſider as ſpherical, and imagine its diameter divided into 1600 equal parts or *Yójanas*. An ancient method of finding a circle's circumference was to multiply the diameter by three; but this being not quite enough, the *Munis* directed that it ſhould be multiplied by the ſquare root of ten. This gives for the equatorial circumference of the earth in round numbers 5059 *Yójanas*, as it is determined in the *Súrya Siddhánta*. In the table of ſines, however, found in the ſame book, the radius being made to conſiſt of 3438 equal parts or minutes, of which equal parts the quadrant contains 5400, implies the knowledge of a much more accurate ratio of the diameter to the circumference; for by the firſt it is as 1. to 3. 1027, &c. by the laſt, as 1. to 3. 14136; and it is determined by the moſt approved labours of the *Europeans*, as 1. to 3. 14159, &c. In the *Puránas* the circumference of the earth is declared to be 500,000,000 *Yójans*; and to account for this amazing difference, the commentator before quoted thought "the *Yojan* ſtated in the *Súrya* "*Siddhánta* contained each 100,000 of thoſe meant in the *Puránas*: "or perhaps, as ſome ſuppoſe, the earth was really of that ſize in ſome "former *Calpa*: moreover, others ſay, that from the equator ſouthward "the earth increaſes in bulk: however, for aſtronomical purpoſes, the di- "menſions given by SU'RYA muſt be aſſumed." The equatorial circumference being aſſigned, the circumference of a circle of longitude in any latitude is determined. As radius 3438 is to the *Lambaya* or ſine of the polar diſtance, equal to the complement of the latitude to ninety degrees, ſo is the equatorial dimenſion 5059, to the dimenſion in *Yójans* required.

Of a variety of methods for finding the latitude of a place, one is by an obſervation of the *palabhà*, or ſhadow, projected from a perpendicular *Gnomon* when the ſun is in the equator. The *Sancu* or *Gnomon* is twelve *angulas* or digits in length, divided each into ſixty *vangulas*; and the ſhadow obſerved at *Benares* is $\overset{A}{5},\ \overset{V}{45}$. Then, by the proportion of a right angled triangle $\sqrt{12.^2 + 5.45.^2} = \overset{A}{13}\ \overset{V}{18}$ the *acſha-carna* (hypotenuſe) or diſtance from the top of the *Gnomon* to the extremity of the ſhadow; which take as radius, and the projected ſhadow will be the ſine of the zenith diſtance, in this caſe equal to the latitude of the place $\frac{3438' + \overset{A}{5}\ \overset{V}{45}}{\underset{13}{A}\ \underset{18}{V}} = 1487'$ the arc correſponding with which, in the canon of ſines, is 25° 26′, the latitude of *Benares*. The ſine complement of the latitude is 3101′ 57″; and again by trigonometry $\frac{3101'\ 57'' + 5559.38}{3438} = 4565,\ \overset{Y}{4}$ *Yogans*, the circumference of a circle of longitude in the latitude of *Benares*.

The longitude is directed to be found by obſervation of lunar eclipſes calculated for the firſt meridian, which the *Sùrya Siddhánta* deſcribes as paſſing over *Lancá Rohitaca*, *Avanti*, and *Sannihita-ſaras*. *Avanti* is ſaid by the commentator to be "now called *Ujjayini*," or *Ougein*: a place well known to the *Engliſh* in the *Mahratta* dominions. The diſtance of *Benares* from this meridian is ſaid to be ſixty-four *Yojan* eaſtward; and as 4565 *Yójan*, a circle of longitude at *Benares*, is to ſixty *dandas*, the natural day, ſo is ſixty-four *Yojan* to $\overset{Danda}{0},\ \overset{Pala}{50}$, the difference of longitude in time which marks the time after midnight, when, ſtrictly ſpeaking, the aſtronomical day begins at *Benares* [*]. A total lunar eclipſe was obſerved to happen

[*] "This day (*aſtronomical day*) is accounted to begin at midnight under the *rc'hà* (meridian) "of *Lancá*, and at all places eaſt or weſt of that meridian, as much ſooner or later as is their "*deſántara*

happen at *Benares* fifty-one *palas* later than a calculation gave it for *Lancá*, and $\frac{51+4565.4}{60}$ = fixty-four *Yojana*, the difference of longitude on the earth's ſurface.

ACCORDING to RENNEL's Map, in which may be found *Ougein*, and agreeably to the longitude aſſigned to *Benares*, the equinoctial point *Lancá* falls in the eaſtern ocean ſouthward from *Ceylon* and the *Maldiva Iſlands*. *Lancá* is fabulouſly repreſented as one of four cities built by *Dévatas* at equal diſtances from each other, and alſo from *Sumeru* and *Badavanal*, the north and ſouth poles, whoſe walls are of gold, &c. and with reſpect to MEYA's performing his famous devotions, in reward of which he received the aſtrononical revelations from the ſun, recorded in the *Surya Siddhánta*, the commentator obſerves, "he performed thoſe devotions in "*Sálmala*, a country a little to the eaſtward of *Lancá*. The dimenſions "of *Lancá* are equal to one-twelfth part of the equatorial circumference "of the earth," &c. Hence perhaps on inquiry may be found whether by *Sálmala* is not meant *Ceylon*. In the hiſtory of the war of RAMA with RA'WAN, the tyrant of *Lancá*, the latter is ſaid to have married the daughter of an *Aſura*, named MEYA. But theſe diſquiſitions are foreign to my purpoſe.

FOR the dimenſions of the moon's *caſhá* (orbit) the rule in the *Sanſcrit* text is more particular than is neceſſary to be explained to any perſon who has informed himſelf of the methods uſed by *European* aſtrono-

"*deſantara* (longitude) reduced to time, according to the *Súrya Siddhánta*, *Brahma Siddhánta*, "*Vaſisht'ha Siddhánta*, *Sóma Siddhánta*, *Paráſara Siddhánta*, and *Aryabhatta*. According to *Brahmagupta* and others, it begins at ſunriſe; according to the *Rómaca* and others, it begins at "noon; and according to the *Laſhta Siddhánta*, at ſunſet." (*Tíca* on the *Súrya Siddhánta*.)

mers to determine the moon's horizontal parallax. In general terms, it is to obſerve the moon's altitude, and thence with other requiſites to compute the time of her aſcenſion from the ſenſible *cſhitija*, or horizon, and her diſtance from the ſun when upon the rational horizon, by which to find the time of her paſſage from the one point to the other; or, in other words, 'to find the difference in time between the meridian to which the 'eye referred her at riſing, and the meridian ſhe was actually upon;' in which difference of time ſhe will have paſſed through a ſpace equal to the earth's ſemidiameter, or 800 *Yójan:* and by proportion, as that time is to her periodical month, ſo is 800 *Yójan* to the circumference of her *cacſhá*, 324000 *Yójan*. The errors ariſing from refraction, and their taking the moon's motion as along the ſine inſtead of its arc, may here be remarked; but it does not ſeem that they had any idea of the firſt *; and the latter they perhaps thought too inconſiderable to be noticed. Hence it appears that they made the horizontal parallax 53′ 20″; and her diſtance from the earth's centre 51570 *Yójan*; for $\frac{1^{R}.0^{\circ}+1600}{324000}=53'\ 20''$; and as 90′ or 5400′ is to the radius 3438′, ſo is one-fourth of her orbit 81000 *Yojan* to 51570, and $\frac{51570\times 21600}{5059}$ 220184, the ſame diſtance in geographical miles. *European* aſtronomers compute the mean diſtance of the moon about 240000, which is ſomething above a fifteenth part more than the *Hindus* found it ſo long ago as the time of MEYA, the author of the *Súrya Siddhánta*.

BY the *Hindu* ſyſtem the planets are ſuppoſed to move in their reſpective orbits at the ſame rate; the dimenſions therefore of the moon's orbit

* But they are not wholly ignorant of optics: they know the angles of *incidence* and *reflection* to be equal, and compute the place of a ſtar or planet as it would be ſeen reflected from water or a mirror.

being

being known, thoſe of the other planets are determined, according to their periodical revolutions, by proportion. As the ſun's revolutions in a *Muhá Yug* 4320000 are to the moon's revolutions in the ſame cycle 5753336, ſo is her orbit 324000 *Yójan* to the ſun's orbit 4331500 *Yójan*; and in the ſame manner for the *cacſhás* or orbits of the other planets. All true diſtance and magnitude derivable from parallax, is here out of the queſtion; but the *Hindu* hypotheſis will be found to anſwer their purpoſe in determining the duration of eclipſes, &c.

For the diameters of the ſun and moon, it is directed to obſerve the time between the appearance of the limb upon the horizon and the inſtant of the whole diſc being riſen, when their apparent motion is at a mean rate, or when in three ſines of anomaly; then, by proportion, as that time is to a natural day, ſo are their orbits to their diameters reſpectively, which of the ſun is 6500 *Yójan*; of the moon 480 *Yójan*. Theſe dimenſions are increaſed or diminiſhed, as they approach the lower or higher apſis, in proportion as their apparent motion exceeds or falls ſhort of the mean, for the purpoſe of computing the diameter of the earth's ſhadow at the moon, on principles which may perhaps be made more intelligible by a figure.

Let the earth's diameter be $lm=gh=cd$; the diſtance of the moon from the earth A B, and her diameter C D. By this ſyſtem, which ſuppoſes all the planets moving at the ſame rate, the dimenſions of the ſun's orbit will exceed the moon's, in proportion as his period in time exceeds hers; let his diſtance be A E, and E F G part of his orbit. According to the foregoing computation alſo, the ſun's apparent diameter fi, at this diſtance from the earth, is 6500 *Yójan*, or rather, the angle his diameter ſubtends,

ſubtends, when viewed in three ſines of anomaly, would be 6500 parts of the circumference of a circle conſiſting of 4331500, and deſcribed round the earth as a centre with a radius equal to his mean diſtance, which is properly all that is meant by the *viſhcambha*, and which, therefore, is increaſed or diminiſhed according to his equated motion. This in three ſines of anomaly is equivalent to 32′ 24″; for, as 4331500 is to 360°, ſo is 6500 to 32′ 24″. The *Europeans* determine the ſame to be 32′ 22″. In the ſame manner the ſun's *viſhcambha* in the mean *racſhà* of the moon, or the portion of her orbit in *Yójans*, included in this angle, is found as 4331500 is to 324000, ſo is 6500 to 486 *Yójan* or *n*, *o*, of uſe in ſolar eclipſes; but this I am endeavouring to explain is a lunar one. It is evident that the diameter of the earth's ſhadow at the moon will be *c*, *d*,—*c*, *a*,+*b*, *d*, or *a b* when her diſtance is *A c*; and that *c a* and *b d* will be found by the following proportion: as *A k* is to *f i*—*g h* = *f g*+*h i*, ſo is *A c* to *c a*+*b d*. But it has been obſerved that *A k* and *f i* are proportioned by the *Hindus* according to the moon's diſtance *A c*, the apparent motion of the ſun and moon, and the angles ſubtended by their diameters. The *Hindu* rule therefore ſtates, as the ſun's *viſhcambha*, or diameter, is to the moon's, ſo is the difference of the diameters of the ſun and earth in *Yójans*, to a fourth number, equal to *c a*+*b d* to be ſubtracted from the *ſachi*, or *lm*=*cd* to find *ab*; alſo, that the number of *Yójans*, thus determined as the diameters of the moon and ſhadow, may be reduced to minutes of a great circle by a diviſor of fifteen. For, as the minutes contained in 360°=21600 are to the moon's orbit in *Yójan* 324000, ſo is one minute to fifteen *Yójan*.

THE diameter of the moon's diſc, of the earth's ſhadow, and the place of the node being found for the inſtant of oppoſition, or full moon, the remaining

remaining part of the operation differs in no reſpect, that I know of, from the method of *European* aſtronomers to compute a lunar eclipſe. The tranſlation of the formula for this purpoſe in the *Súrya Siddhánta* is as follows: — " The earth's ſhadow is always ſix ſigns diſtant from *Súrya*, " and *Chandra* is eclipſed whenever at the *párnimá* the *páta* is found " there; as is alſo *Súrya*, whenever at the end of the *amávásyá* the *páta* " is found in the place of *Súrya*; or, in either caſe, when the *páta* is " nearly ſo ſituated. At the end of the *amavaſyá tit'hi*, the ſigns, degrees, " and minutes of *Súrya* and *Chandra* are equal; and at the end of the " *purnimá tit'hi* the difference is exactly ſix ſigns: take therefore the " time unexpired of either of thoſe *tit'his*, and the motion for that " time add to the *madhyama*, and the degrees and minutes of *Súrya* and " *Chandra* will be equal. For the ſame inſtants of time compute " the place of the *páta* in its retrograde motion; and, if it ſhould be in " conjunction with *Súrya* and *Chandra*, then, as from the intervention " of a cloud, there will be an obſcurity of *Súrya* or of *Chandra*. " *Chandra*, from the weſt, approaches the earth's ſhadow, which on en- " tering he is obſcured. For the inſtant of the *purnimá*, from the " half ſum of the *chandramána* and the *tamúlíptamana* ſubtract the " *vikſhépa*, the remainder is the *ch'channa*. If the *ch'channa* is greater* " than the *grahyamána*, the eclipſe will be total; and if leſs, the " eclipſe will be proportionally leſs. The *grahya* and *grahaca* deduct " and alſo add; ſquare the difference and the ſum ſeverally; ſubtract " the ſquare of the *vikſhépa* from each of thoſe ſquares, and the ſquare " root of each remainder multiply by ſixty; divide each product by " the difference of the *gati* of *Súrya* and *Chandra*; the firſt quotient

* Or, when the *ch'channa* and *grahyamána* are equal, the eclipſe is *total*.

" will

" will be half the duration of the eclipſe in *dandas* and *palas*; and " the ſecond quotient will be half the *vimardárdha* duration in *dandas* " and *palas*," &c. The *ch'channa*, or portion of the diſc eclipſed, is here found in degrees and minutes of a great circle; it may alſo be eſtimated in *digits*; but the *angulas* or digits of the *Hindus* are of various dimenſions in different books.

THE beginning, middle, and end of the eclipſe may now be ſuppoſed found for the time in *Hindu* hours, when it will happen after midnight; but for the correſponding hour of the civil day, which begins at ſun-riſe, it is further neceſſary to compute the length of the artificial day and night; and for this purpoſe muſt be known the *ayanánſa*, or diſtance of the vernal equinox from the firſt of *méſha*, the ſun's right aſcenſion and declination: which ſeveral requiſites ſhall be mentioned in their order.

RESPECTING the preceſſion of the equinoxes and place of the colure, the following is a tranſlation of all I can find on the ſubject in the *Súrya Siddhánta* and its commentary.

TEXT. " The *ayanánſa* moves eaſtward thirty times twenty in each " *Mahá Yug*; by that number (600) multiply the *ahargana* (number of " mean ſolar days for which the calculation is made) and divide the pro- " duct by the *ſávan* days in a *Yug*, and of the quotient take the *bhuja*, " which multiply by three, and divide the product by ten; the quotient " is the *ayanánſa*. With the *ayanánſa* correct the *graha*, *cránti*, the " *ch'háyà*, *charadala*, and other requiſites, to find the *puſhti* and the two " *viſhuvas*. When the *carna* is leſs than the *ſúrya ch'háyà*, the *prác-*

" *chacra*

" *chacra* moves eaſtward, and the *ayanánſa* muſt be added; and when " more, it moves weſtward, and the *ayanánſa* muſt be ſubtracted.

COMMENTARY. " By the text, the *ayana bhagana* is underſtood to conſiſt " of 600 *bhaganas* (periods) in a *Maha Yug*; but ſome perſons ſay the " ing is thirty *bhaganas* only, and accordingly that there are 30000 *bhaga-* " *nas*. Alſo that BHA'SCAR ACHA'RYA obſerves, that, agreeably to what " has been delivered by *Sárya*, there are 30000 *bhaganas* of the *ayanánſa* in " a *Calpa*. This is erroneous; for it diſagrees with the *Saſtras* of the *Riſhis*. " The *Sácalya Sanhitá* ſtates that the *bhaganas* of the *Chandrapata* in a *Maha* " *Yug* are 600 eaſtward. The ſame is obſerved in the *Vaſiſht'ha Sidhanta*, " and the rule for determining the *ayanánſa* is as follows: The expired years " divide by 600, of the quotient make the *bhaja*, which multiply by three, " and divide the product by ten. The meaning of the BHA'SCAR ACHA- " RYA was not that SURYA gave 30000 as the *bhaganas* of the *ayanánſa* in a " *Calpa*, the name he uſed being *Sanna*, not *Surya*, and applied to ſome other " book. From the *natánſa* is known the *crantijyá*, and from the *crantijya* " the *bhujajyá*, the arc of which is the *bhujánſa* of *Sárya*, including the *aya-* " *nánſa*: this for the firſt three months; after which, for the next three " months, the place of *Sárya*, found by this mode of calculation, muſt be " deducted from ſix ſigns. For the next three months the place of *Surya* " muſt be added to ſix ſigns; and for the laſt three months, the place of *Su-* " *rya* muſt be deducted from twelve ſigns. Thus from the ſhadow may be " computed the true place of *Sárya*. For the ſame inſtant of time compute " his place by the *ahargana*, from which will appear whether the *ayanánſa* is " to be added or ſubtracted. If the place found by the *ahargana* be leſs " than the place found by the ſhadow, the *ayanánſa* muſt be added. In the " preſent time the *ayanánſa* is added. According to the author of the

" *Varásanhità*, it was said to have been deducted*; and the southern " *ayanánsa* of *Súrya* to have been in the first half of the *nacshatra Aslèshà* †; " and the northern *ayana* in the beginning of *Dhanishta*: that in his time " the southern *ayana* was in the beginning of *Carcata*, or Cancer; and the " northern in the beginning of *Mancara*, or Capricorn.

" The *bhaganas* of the *ayanánsa* in a *Mahá Yug* are 600, the *saura* " years in the same period 4320000; one *bhagana* of the *ayanánsa* there- " fore contains 7,200 years. Of a *bhagana* there are four *pádas*. *First* " *páda*: When there was no *ayanánsa*; but the *ayanánsa* beginning from " that time and increasing, it was added. It continued increasing 1,800 " years; when it became at its utmost, or twenty-seven degrees. *Second* " *páda*: After this it diminished; but the amount was still added, until, at " the end of 1,800 years more, it was diminished to nothing. *Third páda*:

* " It was said to have been formerly *rina*." In the *Hindu* specious arithmetic, or algebra, *dhana* signifies affirmation or addition, and *rina* negation or subtraction: the sign of the latter is a point placed over the figure, or the quantity noted down; thus, 4 added to 7, is equal to 8. See the *Víja ganita*, where the mode of computation is explained thus: When a man has four pieces of money, and owes seven of the same value, his circumstances reduced to the form of an equation, or his books balanced, show a deficiency of three pieces.

† This describes the place of the solstitial colure; and according to this account of the *ayanánsa*, the equinoctial colure must then have passed through the tenth degree of the *nacshatra Bharaní* and the 3° 20′ of *Viśác'há*. The circumstance, as it is mentioned in the *Vara Sanhità*, is curious and deserving of notice. I shall only observe here, that, although it does not disagree with the present system of the *Hindus* in regard to the motion of the equinoctial points, yet the commentator of the *Varásanhita* supposes that it must have been owing to some preternatural cause. The place here described of the colure is, on comparison of the *Hindu* and *European* spheres, about 3° 40′ eastward of the position which it is supposed by Sir I. Newton, on the authority of Eudoxus, to have had in the *primitive* sphere at the time of the Argonautic expedition.

" The

" The *ayanánsa* for the next 1,800 years was deducted; and the amount " deducted at the end of that term was twenty-seven degrees. *Fourth* " *f* . The amount deduction diminished; and at the end of the next term " of 1,800 years, there was nothing either added or subtracted. The " *Munis*, having observed these circumstances, gave rules accordingly: " If in the *sávan* days of a *Mahá Yug* there are 600 *bhaganas*, what will " be found in the *ahargana* proposed? Which statement will produce *bhaga-* " *nas*, signs, &c. reject the *bhaganas*, and take the *bhuja* of the remainder, " which multiply by three and divide by ten, because there are four *pádas* " in the *bhagana*; for if in 90° there is a certain number found, as the *bhuja*, " when the *bhuja* degrees are twenty-seven, what will be found? And the " numbers twenty-seven and ninety used in the computation, being in the " ratio of three to ten, the latter are used to save trouble.

" THERE is another method of computing the *ayanánsa*; the *cránti páta* " *gati* is taken at one minute per year; and according to this rule the *ayanánsa* " increases to twenty-four degrees; the time necessary for which, as *one páda*, " is 1440 years. This is the *gati* of the *nacshatras* of the *cránti mandala*.

" THE *nacshatra Révatì* rises where the *nári mandala* and the *cshitija* " intersect *, but it has been observed to vary twenty-seven degrees north and

* This can happen only when there is no *ayanánsa*. The *nári mandala* is the equator. The *yóga* star of *Révati* is in the last of *Mína* (Pisces) or, which is the same, in the *first* of *Mésha* (Aries) and has no latitude in the *Hindu* tables. Hence from the *ayanánsa* and the time of the beginning of the *Hindu* year may be known their zodiacal stars. *Révati* is the name of the twenty-seventh *Lunar* mansion, which comprehends the last 13° 20′ of *Mína*. When the *ayanánsa* was 0, as at the creation, the beginning of the *Cali Yug*, &c. the colure passed through the *yóga* star of *Revati*. It is plain, that in this passage *Révati* applies either to the particular

" and ſouth. The ſame variation is obſerved in the other *nacſhatras*: " it is therefore rightly ſaid, that the *chacra* moves eaſtward. The *chacra* " means all the *nacſhatras*. The planets are always found in the *nacſhatras*; " and the *crànti páta-gati* is owing to them, not to the planets; and hence " it is obſerved in the text, that the *páta* draws *chandra* to a diſtance equal " to the *crànti* degrees."

HERE, to my apprehenſion, inſtead of a revolution of the equinoxes through all the ſigns in the courſe of the *Platonic* year, which would carry the firſt of *Vaiſhe'k* through all the ſeaſons, is clearly implied a libration of thoſe points from the third degree of *Piſces* to the twenty-ſeventh of *Aries*, and from the third of *Virgo* to the twenty-ſeventh of *Libra* and back again in 7,200 years; but as this muſt ſeem to *Europeans* an extraordinary circumſtance to be ſtated in ſo ancient a treatiſe as the *Súrya Siddhánta*, and believed by *Hindu* aſtronomers ever ſince, I hope the above quotations may attract the attention of thoſe who are qualified for a critical examination of them, and be compared with whatever is to be found in other *Sáſtras* on the ſame ſubject. Whatever may be the reſult of ſuch an inveſtigation, there is no miſtaking the rule for determining the *ayanánſa*, which was at the beginning of the preſent year 19°, 21′, and conſequently the vernal equinox in *Piſces* 10° 39′, of the *Hindu* ſphere; or, in other words, the ſun entered *Méſha* or *Aries*, and the *Hindu* year began when he was advanced 19° 21′ into the northern ſigns, according to *European* expreſſion.

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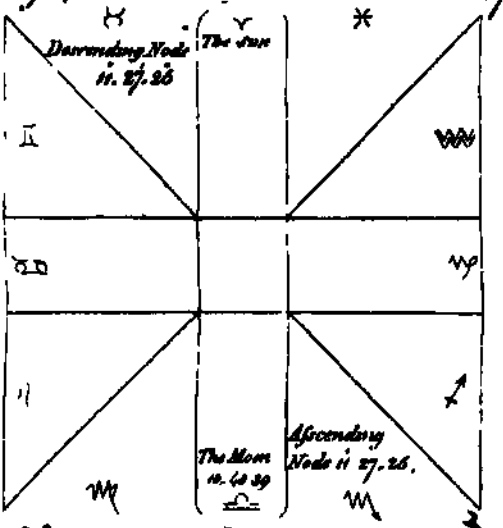
particular *yóga* ſtar of that name, or to the laſt, or twenty-ſeventh *Luna* manſion, in which it is ſituated. See a former note. In each *nacſhatra*, or planetary manſion, there is *one* ſtar called the *yóga*, whoſe latitude, longitude, and right aſcenſion the *Hindus* have determined and inſerted in their aſtronomical tables.

THE

THE *ayanánſa* added to the ſun's longitude in the *Hindu* ſphere, gives his diſtance from the vernal equinox: of the ſum take the *bhuja*, that is, if it exceeds three ſigns, ſubtract it from ſix ſigns; if it exceeds ſix ſigns, ſubtract ſix from it; and if it exceeds nine ſigns, ſubtract it from twelve. The quantity ſo found will be the ſun's diſtance from the neareſt equinoctial point from which is found his declination—as radius is to the *paramápacramajyà*, or ſine of the greateſt declination 24°, ſo is the ſun's diſtance from the neareſt equinoctial point to the declination ſought; which will agree with the table of declination in preſent uſe, to be found in the tables of *Macaranda*, and calculated for the ſeveral degrees of the quadrant. The declination thus determined for one ſign, two ſigns, and three ſigns, is 11° 43′, 20° 38′; and the greateſt declination, or the angle of inclination of the ecliptic and equator, 24°. The co-ſines of the ſame in the *Hindu* canon are 3366′, 3217′ and 3141′; and as the co-ſine of the declination for one ſign is to the co-ſine of the greateſt declination, ſo is the ſine of 30° to the ſine of the right aſcenſion for a point of the ecliptic at that diſtance from either of the two *viſhuvas*, or equinoctial points. In this manner is found the right aſcenſion for the twelve ſigns of the ecliptic reckoned from the vernal equinox; and alſo, by the ſame management of triangles, the aſcenſional difference and oblique aſcenſion for any latitude: which ſeveral particulars are inſerted in the *Hindu* books as in the following table, which is calculated for *Bhágalpur* on ſuppoſition that the *palabhà*, or equinoctial ſhadow, is 5 30. By the *Lagna* of *Lancà*, *Madhyama*, or mean *Lagna*, the *Hindus* mean thoſe points of the equator which riſe reſpectively with each thirtieth degree of the ecliptic counted from *Aries* in a right ſphere, anſwering to the right aſcenſion nine by latitude; by the *Lagna* of a particular place, the oblique aſcenſion, or the diviſions of the equator which riſe in ſucceſſion with each ſign in an oblique ſphere; and by the *chara*, the aſcenſional difference.

Signs.	Lagna of Lanca.		Chara of Bhagalpur.		Ullagna.	
Hindy Names.	In respirations answering to minutes of the equator.	In palas or minutes of time 3600 to a Nacshatra Day	In respirations answering to minutes of the equator	In palas of minutes of time 3600 to a Nacshatra day	In respiration answering to minutes of the equator	In palas or minutes of time 3600 to a Nacshatra day
Méſha	1670	278	327	55	1343	224
Vrisha,	1795	299	268	45	1527	255
Mit'huna,	1935	323	110	18	1825	304
Carcata,	1935	323	110	18	2045	341
Sinha,	1795	299	268	45	2063	343
Canyà,	1670	278	327	55	1997	333
Tula,	1670	278	327	55	1997	333
Vrischica,	1795	299	268	45	2063	343
Dhanus,	1935	323	110	18	2045	341
Macara,	1935	323	110	18	1825	304
Cumbha,	1795	299	268	45	1527	255
Mina,	1670	278	327	55	1343	224
	21600	3600			21600	3600

Fig. 4. Vol. 2. P. 273



瞻彼淇澳菉竹猗猗
有斐君子如切如磋
如琢如磨瑟兮僴兮
赫兮喧兮有斐君子
終不可諠

Chinese Ode. P. 199.

THE COMPUTATION OF THE ECLIPSE.

LET it be premiſed that the poſition of the ſun, moon, and nodes, by calculation, will on the firſt of next *Vaſàc'h* be as here repreſented in the *Hindu* manner, excepting the characters of the ſigns.

BY inſpection of the figure, and by conſidering the motion of the ſun, moon, and nodes, it appears, that, when the ſun comes to the ſign *Tulà*, *Libra*, correſponding with the month of *Cártic*, the deſcending node will have gone back to *Aries*, and that conſequently a *Lunar* eclipſe may be expected to happen at the end of the *purnimà tit'hi*, or time of full moon, in that month.

FIRST OPERATION.

To find the number of mean ſolar days from the creation to ſome part of the *purnimà tit'hi* in *Cártic* of the 4891ſt year of the *Cali Yug*.

Years expired of the *Calpa* to the end of the *Satya Yug*,	1970784000
Deduct the term of BRAHMA's employment in the creation,	17064000
From the creation, when the planetary motions began, to the end of the *Satya Yug*, - - -	1953720000
Add the *Tréta Yug*, - - - -	1296000
Dwápar Yug, - - - -	864000
Preſent year of the *Cali Yug*, - - -	4890
From the creation to the next approaching *Bengal* year,	1955884890
Or Solar months, (× 12) - - - -	23470618680
Add ſeven months, - - -	7[2]
	23470618680

As

As the ſolar months in a *Yug*, 51840000, are to the intercalary *lunar* months in that cycle 1593336, ſo are the ſolar months 2347061868⅞, to their correſponding intercalary *lunar* months 721384677; which added together give 24192003364 lunations. This number multiplied by thirty produces 725760100920 *tit'his*, or lunar days, from the creation to the new moon in *Cártic*; to which add fourteen *tit'his* for the ſame, to the *purnimà tit'his* in that month 725760100934. Then, as the number of *tit'his* in a *Yug*, 1603000080, is to their difference exceeding the mean ſolar days in that cycle (called *eſhaya tit'his*) 25082252, ſo are 725760100934 *tit'his*, to their exceſs in number over the ſolar days 11356017987; which ſubtracted, leaves 714404082947, as the number of mean ſolar days from the creation, or when the planetary motions began, to a point of time which will be midnight under the firſt meridian of *Lancà*, and near the time of full moon in *Cártic* *. The firſt day after the creation being *Ravi-vár*, or *Sunday*, divide the number of days by ſeven for the day of the week, the remainder after the diviſion being two, marks the day *Sóma-vár*, or *Monday*.

SECOND OPERATION.

For the mean longitude of the ſun, moon, and the aſcending node. Say, as the number of mean ſolar days in a *Mahà Yug* is to the revolutions of any planet in that cycle, ſo are the days from the creation to even revolutions, which reject; and the fraction, if any, turned into ſigns, &c. is the mean longitude required.

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* In the Year of the *Cali Yug* 4891 correſponding with 1196, *Bengal* ſtyle, and with the months of *October* or *November* (hereafter to be determined) in the year of Christ 1789.

The

1*st.* OF THE SUN.

$\frac{71440408294 7 \times 4320000}{1577917828} = (1955884890)$ Revolutions, Signs, ° ′ ″ ‴

6 22 44 2 12

2*d.* OF THE MOON.

$\frac{71440408294 7 \times 57753336}{1577917828} = (26147888255)$ 0 21 21 58 56

3*d.* OF THE MOON'S APOGEE.

$\frac{71440408294 7 \times 488203}{1577917828} = (221034460)$ 11 5 31 13 35

CORRECTION OF THE BI'JA ADD.

$\frac{71440408294 7 \times 4}{1577917828} = (\text{-----})$ $\frac{0\ 37\ 37\ 52\ 28}{11\ 7\ 9\ 0\ 3}$

4*th.* OF THE MOON'S ASCENDING NODE.

$\frac{71440408294 7 \times 232238}{1577917828} = (105147017)$ 4 27 49 48 —

CORRECTION OF THE BI'JA ADD.

$\frac{71440408294 7 \times 4}{1577917828} = (\text{-----})$ $\frac{0\ 1\ 37\ 52\ 28}{4\ 29\ 27\ 40\ 28}$

5*th.* OF THE SUN'S APOGEE.

$\frac{71440408294 7 \times 387}{1577917828} = (175\text{----})$ 2 17 17 15 —

	Mean longitude for midnight under the meridian of *Lancà*.	Deduct for the longitude of *Bhágalpur*, as * 8° 50′ of the Equator east.	Mean longitude for midnight at *Bhágalpur*.
Of the Sun,	6s 21° 44′ 2″ 12‴	1′ 27″	6 21 42 35 12
Moon,	— 21 21 58 56	19 34	— 21 2 25 —
Node,	4 29 27 40 28	— 4	☊ 29 27 36 —
Sun's Apogee,	2 17 17 15 —	inconsiderable	♊ 17 17 16 —
Moon's Apogee,	11 7 9 6 3	— 9	11 7 8 57 —

THIRD OPERATION.

For the equated longitude of the Sun and Moon, &c.

I. OF THE SUN.

The mean longitude of the sun is 6s 21° 42′ 35″ 12‴; of the apogee 2 17 17 15, the difference, or mean anomaly, 4s 4° 25′ 20″; its complement to 6 signs, or distance from the perigee, 1s 25° 34′ 40″, the equation for which is required. This may either be taken from the foregoing table translated from *Macaranda*, or calculated in the manner explained as follows:

The sine of 1s 25° 34′ 40″ is 2835′ 31″ and $\frac{2835' 31'' \times 20''}{3438} = 14' 30''$ to be subtracted from the *paridhi* degrees in *sama*; 14° — 14′ 30″ = 13° 53′ 30″, the circumference of the epicycle in this point of anomaly; and $\frac{13° 41' 30'' \times 2815' 31''}{360°} = 108' 61''$ the sine of the angle of equation, considered as equal to its arc, or 1° 48′ 6″, to be deducted from the mean, for the

* This longitude assigned to *Bhágalpur* is erroneous; but the error does not in the least affect the main object of the Paper.

true

true longitude; 6s 21° 42′ 35″—1° 48′ 6″ = 6s 19° 54′ 29″ for midnight agreeing with mean time; but as, in this point of anomaly, the true or apparent midnight precedes that eſtimated for mean time, for which the computation has been made, a proportionable quantity muſt be deducted from the ſun's place, which is thus found. Say, as the minutes contained in the ecliptic are to the ſun's mean motion in one day 59′ 8″, ſo is the equation of his mean to his true place 180′ 6″, to the equation of time required, 0′ 18″ ($=\frac{59' 8'' \times 108' 6''}{21600}$) and 6s 19° 54′ 29″ — 18″ = 6s 19° 54′ 11″ the ſun's true longitude for the apparent midnight.

For the ſun's true motion. The co-ſine of the ſun's diſtance from the perigee is 1941′ 0″ 1‴, and $\frac{1941' 0'' 1''' \times 13\ 43\ 30}{3600''} = 74'$ the co-ſine of the epicycle, and $\frac{59' 8'' \times 74}{3438} = 1' 16''$ equation, to be added to the mean for the true motion, 59′ 8″ × 1′ 16″ = 60′ 24′ per day, or 60″ 24‴ per *danda*.

II. OF THE MOON.

The Moon's mean longitude for the mean midnight is 0s 21° 2′ 25″, which exceeds her mean longitude for the true midnight, but $\frac{108' 7''' \times 35}{21600} = 3' 57''$ her motion in the difference of time between the mean and true midnight 0s 21° 2′ 25′—3′ 57″ = 0 20 58 28 mean longitude, for which the anomaliſtic equation is to be found. Place of the apogee 11s 7° 8′ 55′, and the moon's diſtance from it 1s 13° 49′ 33′. The ſine of the latter, 2379′ 39″. By the rule before explained $\frac{2379' 39'' \times 20'}{3438} = 13' 51''$ and $\frac{3° — 13' 51'' \times 2379' 39''}{360} = 210'$, the ſine of the angle of equation equal to its arc, or 3° 30′, to be ſubtracted, 0° 20′ 58″ 28‴—3° 30″ = 0° 17′ 28″ 28‴ the moon's true place, agreeing with the true or apparent midnight.

For the moon's true motion. The co-fine of her diſtance from the apogee 2179. 13. Circumference of the epicycle 31° 46′ 9″, and $\frac{31^\circ\ 46'\ 9'' \times 2179'\ 13''}{360^\circ} =$ 218′ 47 co-ſine in the epicycle. The moon's mean motion from her apogee is 790′ 35″—6′ 41=783′ 54″, and $\frac{783'\ 54'' \times 218'\ 47''}{3438'} =$49′ 53″ the equation of her mean to her true motion, to be ſubtracted, 790. 35—49. 53= 740. 42 the moon's mean motion per day, or 740″ 42‴ *per danda.*

For the place of the moon's apogee reduced to the apparent midnight. The motion of the apogee is 6′ 41″ per day. $\frac{10^h\ 6' \times 6'\ 41''}{21600'} = 2''$, 11ſ 7° 8′ 57′ —2″=11ſ 7° 8′ 55″ its place.

For the ſame of the node. Its motion per day is 3′ 11″ and $\frac{10^h\ 6' \times 3'\ 11''}{21600'} = 1''$, and 4ſ 29° 27′ 36″—1″= 4ſ 29° 27′ 35″ its place.

The true longitude and motion, therefore, for the apparent time of midnight at *Bhágalpur*, 714404082947 ſolar days after the creation, or commencement of the planetary motions, will be

	Longitude.				Motion per day.	
	ſ	°	′	″	″	′
Of the Sun,	6	19	54	11	60	24
Moon,	—	17	28	28	740	42
Sun's Apogee,	2	17	17	15	inconſiderable	
Moon's Apogee,	11	7	8	55	6	41
Moon's Node.	4	29	27	35	3	11

FOURTH OPERATION.

Having the longitude and motion as above, to determine the *til'hi* and time remaining unexpired to the inſtant of oppoſition, or full moon.

The

THE moon's longitude ſubtracted from the ſun's, leaves 5s 27° 34′ 17″, or 10654′ 17″; which divided by 720′, the minutes in a mean *tit'hi*, quotes fourteen even *tit'his* expired; and the fraction, or remainder, 574′ 17″, is the portion expired of the 15th, or *purnimà tit'hi*; which, ſubtracted from 720′, leaves 145′ 43″ remaining unexpired of the ſame; which, divided by the moon's motion per *danda* from the ſun, will give the time remaining unexpired from midnight to the inſtant of full moon with as much preciſion as the *Hindu* aſtronomy requires. Deduct the ſun's motion, 60″ 24‴ per *danda* from the moon's, 740″ 42‴, the remainder 680″ 8‴, is the moon's motion from the ſun; by this divide the part remaining unexpired of the *purnimà tit'hi*, 145′ 43″.

$$\frac{145' \; 43'' = 524580''}{680'' \; 8''' = 40818'''} = \begin{matrix} \text{D.} & \text{P} \\ 12 & 51 \end{matrix}$$

therefore 12 *dandas*, 51 *palas* after midnight, will be the end of the *purnimà tit'hi*, or inſtant of oppoſition of the ſun and moon.

FIFTH OPERATION.

HAVING the inſtant of oppoſition as above, to find the true longitude and motion of the ſun and moon, the latitude of the latter, and the place of the node.

ADD the mean motion of each for $\begin{matrix} \text{D.} & \text{P.} \\ 12 & 51 \end{matrix}$ to the mean place, found before for the true midnight; and for the mean places ſo found, compute again the anomaliſtic equations. This being but a repetition of operation, the third is unneceſſary to be detailed. Theſe ſeveral particulars are as follow:

	Mean longitude for midnight.	Mean longitude at full moon.	Equation.	True longit. at full moon
Of the Sun -	6s 21° 42′ 17″	6s 21° 54′ 17″	1° 47′ 50″	6s 20° 7′ 7′
Moon -	— 20 58 28	— 23 47 47	3 40 20	— 20 7 27
Moon's Apogee	11 7 8 55	11 7 10 21	———	———
Moon's Node	4 29 27 35	4 29 28 16	———	———

	Mean motion.	Equation.	True longit. at full moon.
Of the Sun	59′ 8″	× 1′ 16″	60′ 24″
Moon	790 35	— 47 28	743 7

HENCE it appears, that at the oppoſition the moon will be near her deſcending node; for 4s 29° 28′ 16″ × 6s = 10s 29° 28′ 16″, the place of the deſcending node *in antecedentia*, and 12s — 10s 29° 28′ 16″ = 1s 0° 31′ 44″ its longitude according to the order of the ſigns, and 1s 0° 31′ 44″ — 20° 7′ 27″ = 10° 24′ 17″, the moon's diſtance from her deſcending node; which, being within the limit of a lunar eclipſe, ſhows that the moon will be then eclipſed. For her latitude at this time, ſay, as radius is to the inclination of her orbit to the ecliptic 4° 30′, or 270′, ſo is the ſine of her diſtance from the node 620′ 57″ to her latitude 48′ 45″ ($=\frac{279' \times 620' 57''}{3438'}$)

SIXTH OPERATION.

FROM the elements now found, to compute the diameters of the moon and ſhadow, and the duration of the eclipſe.

	Yojan.
The Sun's mean diameter is	6500
Moon's - -	480
Earth's - -	1600

Sun's

Sun's mean motion	59′	8″
Moon's -	790	35
Sun's true motion	60	24
Moon's -	743	7
Moon's latitude -	48	45

As the moon's mean motion is to her mean diameter, ſo is her true motion to her true diameter for the time of oppoſition $\frac{743' \; 7'' \times 480}{790, \; 35} = 451 \; 11$ *Yójan*; which, divided by fifteen, quotes 30′ 5″ of a great circle.

As the ſun's mean motion is to his mean diameter, ſo is his true motion to his diameter at the inſtant of oppoſition $\frac{60' \; 24'' \times 6600}{59' \; 8''} = 6639 \; 14$ *Yójan*.

As the moon's mean motion is to the earth's diameter, ſo is the moon's equated motion to the *Sfchi*, or a fourth number, which muſt be taken as the earth's diameter, for the purpoſe of proportioning its ſhadow to the moon's diſtance and apparent diameter $\frac{1600 \times 743' \; 7''}{790 \; 35'} = 1503 \; 56$ *Yójan*, the *Sfchi*.

Equated diameter of the ſun		6639 14
Of the earth - -		1503 56
	Difference	5039 14

As the ſun's mean diameter is to the moon's mean diameter, ſo is the difference above 5039 14, to a fourth number; which, deducted from the *Suchi*, or equated diameter of the earth, leaves the diameter of the earth's

ſhadow

shadow at the moon, $\frac{480 \times 5^{r}\ 39^{r}\ 14}{6550} = 372.\ 7$, and $1503.\ 56 - 372.\ 7 = 1131.\ 49$ *Yójan*; which, divided by fifteen, quotes $75'\ 27'$ of a great circle for the same.

From the half sum of the diameters of the moon and shadow $\frac{75'\ 27'' \times 30'\ 5''}{2} = 52'\ 46''$, subtract the moon's latitude $48'\ 45''$, the remainder is the *Chch'-annu*, or portion of the moon's diameter eclipsed, $4'\ 1''$ of a great circle; and by the nature of a right angled triangle, the square root of the difference of the squares of the moon's latitude, and the half sum of the diameters of the shadow and moon, will be the path of the moon's centre, from the beginning to the middle of the eclipse.

The diameter of the shadow is	75	27
Of the moon - - -	30	5
Sum,	105	32
Half sum	52	46
The moon's latitude is -	48	45

$\sqrt{52.\ 46^2 \times 48.\ 45^2} = 20'\ 11''$; which, divided by the moon's motion from the sun, quotes the half duration of the eclipse in *dandas* and *palas*, or *Hindu* mean solar hours, $\frac{20'\ 11' = 1211'}{682'\ 43''}$ $\overset{D}{1}\ \overset{P}{46}\ \overset{V}{25}$; which doubled, is $\overset{D}{3}\ \overset{P}{32}\ \overset{V}{50}$, the whole duration of the eclipse; which will be partial, the moon's latitude being greater than the difference between the semidiameters of the moon's disc and the earth's shadow.

SEVENTH

SEVENTH OPERATION.

To find the poſition of the equinoctial colures, and thence the declination of the ſun, the length of day and night, and the time counted from ſun-riſe, or hour of the civil day when the eclipſe will happen.

1*ſt*. For the *ayanánſa*, or diſtance of the vernal equinox from the 1ſt of *Meſha*. $\frac{114404082947 \times 600}{1577917828} = \overset{\text{Period.}}{(271650)}\ 8s\ 4^\circ\ 31'\ 30''\ 52'''$, of which take the *bhuja* $8s\ 4^\circ\ 31'\ 30''\ 52''' - 6s = 2s\ 4^\circ\ 31'\ 30''\ 52'''$, which multiply by three, and divide by ten, $\frac{64^\circ\ 31'\ 30''\ 52''' \times 3}{10} = 19^\circ\ 21'\ 27''$ the *ayanánſa*, which in the preſent age is added to the ſun's longitude, to find his diſtance from the vernal equinox. The ſun's equated longitude is $6s\ 19^\circ\ 54'\ 11''$, and $6s\ 19^\circ\ 54'\ 11'' \times 19^\circ\ 21'\ 27'' = 7s\ 9^\circ\ 15'\ 38''$, his diſtance from the vernal equinox.

2*d*. For the declination, right aſcenſion, and aſcentional difference. The ſun's place is $7s\ 9^\circ\ 15'\ 38''$, and $1s\ 9^\circ\ 15'\ 38''$ his diſtance from the autumnal equinox; the ſine of which is $2174'\ 41''$; and as radius is to the ſine of the greateſt declination 24°, termed the *paramapacramajyà* $1397'$, ſo is 2174.41 to the ſine of his declination $883'\ 40''$, the arc correſponding with which, in the canon of ſines, is $14^\circ\ 55'$ $\left(\frac{1397 \times 2174.41}{3438} = 883'\ 40''\right)$. The equinoctial ſhadow at *Bhágalpur* is $\overset{A}{5},\ \overset{V}{30}$; and, as the *Gnomon* of twelve *angulas* is to the equinoctial ſhadow, ſo is the ſine of the declination 883.40, to the *cſhitijyà*, $\frac{\overset{A\ V}{5.30} \times 883'\ 40''}{3438} = 405'\ 1''$. And as the co-ſine of the declination is to radius, ſo is the *cſhitijya* to the ſine of the *chara*, or aſcenſional difference $\frac{405.1 \times 3438}{3322.36} = 419'\ 4''$, its arc is $419'\ 56''$, the aſcenſional difference.

3*d*. For the length of the day and night.

THE modern *Hindus* make their computations in mean ſolar time; the *Surya Siddhánta* directs, that they be made in ſydereal time. A ſydereal day contains ſixty *dandas*; each *danda* ſixty *viculas*, and each *vicula* ſix reſpirations; in all 21600 reſpirations, anſwering to the minutes of the equator. A *nacſhatra* day is exceeded in length by the *ſávan* or ſolar day, by reaſon of the ſun's proper motion in the ecliptic; the former meaſures time equably, but the latter varies in its length, from the inequality of the ſun's motion and the obliquity of the ecliptic. The ſun's equated motion for the middle of the eclipſe was found 60′ 24″; and the oblique aſcenſion for the eighth ſign from the vernal equinox, in which he will be found at that time, is taken from the foregoing table 343 *palas*, or 2058 reſpirations. As the number of minutes contained in one ſign 1800, is to the number of reſpirations, or the arc of the equator in minutes anſwering to the oblique aſcenſion of the ſign the ſun is in 2058, as above, ſo is the equated motion 60′ 24″, to the exceſs in reſpirations of the *ſávan*, or ſolar day, over the *nacſhatra*, or ſydereal day, $\frac{2058' \times 6' \cdot 4''}{1800} = 69' \ 3''$; which, added to 21600′, gives the length of the ſolar day by civil account from ſun-riſe to ſun-riſe, ſydereal time 21669. 3 reſpirations. From one-fourth of this deduct the aſcenſional difference, the ſun being declined towards the ſouth pole, for the ſemidiurnal arc; and add it for the ſemnocturnal arc. The former is 4997′ 19″, and the latter 5837′ 11′; which may be reduced to *dandas*, or *Hindu* hours, by a diviſion of 360. Hence half the day is $^{D}13 \ ^{P}52 \ ^{V}53$, and half the night $^{D}16 \ ^{P}12 \ ^{V}52$. The whole day added to half the night, ſhows the hour counted from the preceding ſun-riſe to midnight $^{D}43 \ ^{P}58 \ ^{V}38$; to which add the time at midnight unexpired of the *purnimà tit'hi*, for the hour of the civil day correſponding with the middle of the eclipſe. The hour from midnight to the end of the *purnimà tit'hi* is already found $^{D}12 \ ^{P}51$ in mean ſolar time; and

to

to reduce it to ſydereal time, ſay, as 21600′ is to 21600″ × 59′ 8,″ ſo is
D P D P D P
12 51, to ſidereal hours 12 53, equal to 12 51 ſolar hours.

From the preceding ſun-riſe to midnight is -	43	59	
At midnight will remain of the *purnimà tit'hi* -	12	53	
Hour of the civil day at the middle of the eclipſe,	56	52	
Deduct the half duration - - - -	1	46	
Beginning of the eclipſe, - - -	55	5	35
Add the whole duration, - - -	3	32	50
End of the eclipſe, - - -	58	38	25

D P U
And the day and night containing together 60 11 30, the eclipſe ſhould
D P V
end 1 33 5 before ſun-riſe, according to this calculation.

THE firſt day after the creation, according to the *Hindus*, was *rávi-vár*, or *Sunday*: the number of days, for which the above calculation has been made, is 714404082947; which divided by ſeven, the number of days in a week are 102057726135 weeks and two days. the aſtronomical day therefore of *ſoma-vár*, or *Monday*, will end at midnight preceding the eclipſe; but the *ſoma-vár* by civil computation will continue to the next enſuing ſun-riſe; and this *ſom-vár*, by calculating the number of days elapſed from the inſtant the ſun entered the ſign *Tulà*, to his advance of 19′ 54 on that ſign, will be found to fall on the 19th of the month of *Cártic*, anſwering to the 3d of November.

THE time of the full moon and the duration of the eclipſe, found by

this computation, differ conſiderably from the Nautical Almanack. The *Siddhánta Rahaſya* and *Grahalághava*, comparatively modern treatiſes, are nearer the truth, yet far from correct. The *Hindus*, in determining theſe phenomena, are ſatisfied when within a few minutes of the true time.

A Com-

A Comparative Statement of this Eclipse, as predicted in the Nautical Almanack, with Computations of it made by different Hindu Books.

Those marked *, are made for different meridians, the last, I believe, for *Delhi*.

NAMES	Equated longitude for midnight at [illegible] supposed in [illegible] from *Lanca* and [illegible] from *Greenwich*. The Sun s ° ′ ″	The Moon s ° ′ ″	The Node s ° ′ ″
Surya Siddhanta, - - -	6 19 54 11	— 17 28 26	1 — 31 44
Tables of Macaranda, - -	6 19 55 9	— 17 30 0	1 — 32 7
*Grahalaghava, - - - -			
Siddhanta Rahasya, - - -	6 19 54 2	— 17 16 25	1 — 27 35

NAMES	Add to each the *ayanansa* 19° 21′ 27″ for the longitude counted according to *European* Astronomers from the equinoctial colure. s ° ′ ″	s ° ′ ″	s ° ′ ″
Surya Siddhanta, - - -	7 9 15 36	1 6 49 55	1 19 53 11
Tables of Macaranda, - -	7 9 16 36	1 6 51 56	1 19 53 41
*Grahalaghava, - - - -			
Siddhanta Rahasya, - - -	7 9 15 56	1 6 37 52	1 19 10 2
Nautical Almanack, - - -	7 10 47 6	1 7 50 58	1 19 45 50

NAMES	From midnight to the middle of the Eclipse. Hindu time. D P V	English time. H M S	Duration of the Eclipse. Hindu time. D P V	English time. H M S
Surya Siddhanta, - - -	12 53 —	5 9 12	3 12 50	1 17 8
Tables of Macaranda, - -			4 50 —	1 46 20
*Grahalaghava, - - - -	*14 50 —	5 56 —	5 18 —	1 56 36
Siddhanta Rahasya, - -	13 53 —	5 33 —	4 58 —	1 49 16
* Grahana Mala, a Catalogue of Eclipses, - - - -	16 6 —	6 26 24	5 26 —	2 10 24
Nautical Almanack, - -	16 37	6 24 15	5 22 2½	2 9 —

XVI.

ON THE ANTIQUITY OF THE INDIAN ZODIAC.

BY THE PRESIDENT.

I ENGAGE to ſupport an opinion (which the learned and induſtrious M. MONTUCLA ſeems to treat with extreme contempt) that the *Indian* diviſion of the Zodiac was not borrowed from the *Greeks* or *Arabs*, but, having been known in this country from time immemorial, and being the ſame in part with that uſed by other nations of the old *Hindu* race, was probably invented by the firſt progenitors of that race before their diſperſion. "The *Indians*," he ſays, "have two divi-"ſions of the Zodiac; one, like that of the *Arabs*, relating to the moon, "and conſiſting of *twenty-ſeven* equal parts, by which they can tell "very nearly the hour of the night; another relating to the ſun, and, "like ours, containing twelve ſigns; to which they have given as many "names, correſponding with thoſe which we have borrowed from the "*Greeks*." All that is true; but he adds, "It is highly probable that "they received them at ſome time or another by the intervention of the "*Arabs*; for no man, ſurely, can perſuade himſelf that it is the ancient "diviſion of the Zodiac, formed, according to ſome authors, by the "forefathers of mankind, and ſtill preſerved among the *Hindus*." Now I undertake to prove that the *Indian* Zodiac was not borrowed mediately or directly from the *Arabs* or *Greeks*; and, ſince the ſolar diviſion of it in *India* is the ſame in ſubſtance with that uſed in *Greece*, we may reaſonably conclude that both *Greeks* and *Hindus* received it from an older nation,

nation, who firſt gave names to the luminaries of heaven, and from whom both *Greeks* and *Hindus*, as their ſimilarity in language and religion fully evinces, had a common deſcent.

THE ſame writer afterwards intimates, that "the time when *Indian* "Aſtronomy received its moſt conſiderable improvement" (from which it has now, as he imagines, wholly declined) "was either the age when "the *Arabs*, who eſtabliſhed themſelves in *Perſia* and *Sogdiana*, had a "great intercourſe with the *Hindus*; or that, when the ſucceſſors of "CHENGI'Z united both *Arabs* and *Hindus* under one vaſt dominion." It is not the object of this eſſay to correct the hiſtorical errors in the paſſage laſt cited, nor to defend the aſtronomers of *India* from the charge of groſs ignorance in regard to the figure of the earth and the diſtances of the heavenly bodies: a charge which MONTUCLA very boldly makes on the authority, I believe, of Father SOUCIET: I will only remark, that in our converſations with the *Pandits* we muſt never confound the ſyſtem of the *Jyautiſhicas*, or mathematical aſtronomers, with that of the *Pauranicas*, or poetical fabuliſts; for to ſuch a confuſion alone muſt we impute the many miſtakes of *Europeans* on the ſubject of *Indian* ſcience. A venerable mathematician of this province, named RA'MACHANDRA, now in his eightieth year, viſited me lately at *Criſhnanagar*; and part of his diſcourſe was ſo applicable to the inquiries which I was then making, that, as ſoon as he left me, I committed it to writing. "The *Puráṇics*," he ſaid, "will tell you, that our earth is a "plane figure ſtudded with eight mountains, and ſurrounded by ſeven ſeas "of milk, nectar, and other fluids; that the part which we inhabit is "one of ſeven iſlands, to which eleven ſmaller iſles are ſubordinate; that "a God, riding on a huge *elephant*, guards each of the eight regions; and

"that

" that a mountain of gold riſes and gleams in the centre; but we believe the " earth to be ſhaped like a *Cadamba*-fruit, or ſpheroidal, and admit only " four oceans of ſalt water; all which we name from the four cardinal points, " and in which are many great peninſulas, with innumerable iſlands. They " will tell you that a dragon's head ſwallows the moon, and that its tail cauſes " an eclipſe; but we know that the ſuppoſed head and tail of the dragon " mean only the nodes, or points formed by interſections of the ecliptic " and the moon's orbit. In ſhort, they have imagined a ſyſtem, which exiſts " only in their fancy; but we conſider nothing as true, without ſuch evi- " dence as cannot be queſtioned." I could not perfectly underſtand the old Gymnoſophiſt, when he told me that the *Rás'ichacra*, or *Circle of Signs* (for ſo he called the zodiac) was like a *Dhuſtúra* flower; meaning the *Datura*, to which the *Sanſcrit* name has been ſoftened, and the flower of which is conical, or ſhaped like a funnel. At firſt I thought that he alluded to a projection of the hemiſphere on the plane of the colure, and to the angle formed by the ecliptic and equator; but a younger aſtronomer, named VINA'YACA, who came afterwards to ſee me, aſſured me that they meant only the circular mouth of the funnel, or the baſe of the cone; and that it was uſual among their ancient writers to borrow from fruits and flowers their appellations of ſeveral plane and ſolid figures.

FROM the two *Bráhmans*, whom I have juſt named, I learned the following curious particulars; and you may depend on my accuracy in repeating them, ſince I wrote them in their preſence, and corrected what I had written, till they pronounced it perfect. They divide a great circle, as we do, into three hundred and ſixty degrees, called by them *anſas*, or *portions*; of which they, like us, allot thirty to each of the twelve ſigns in this order:

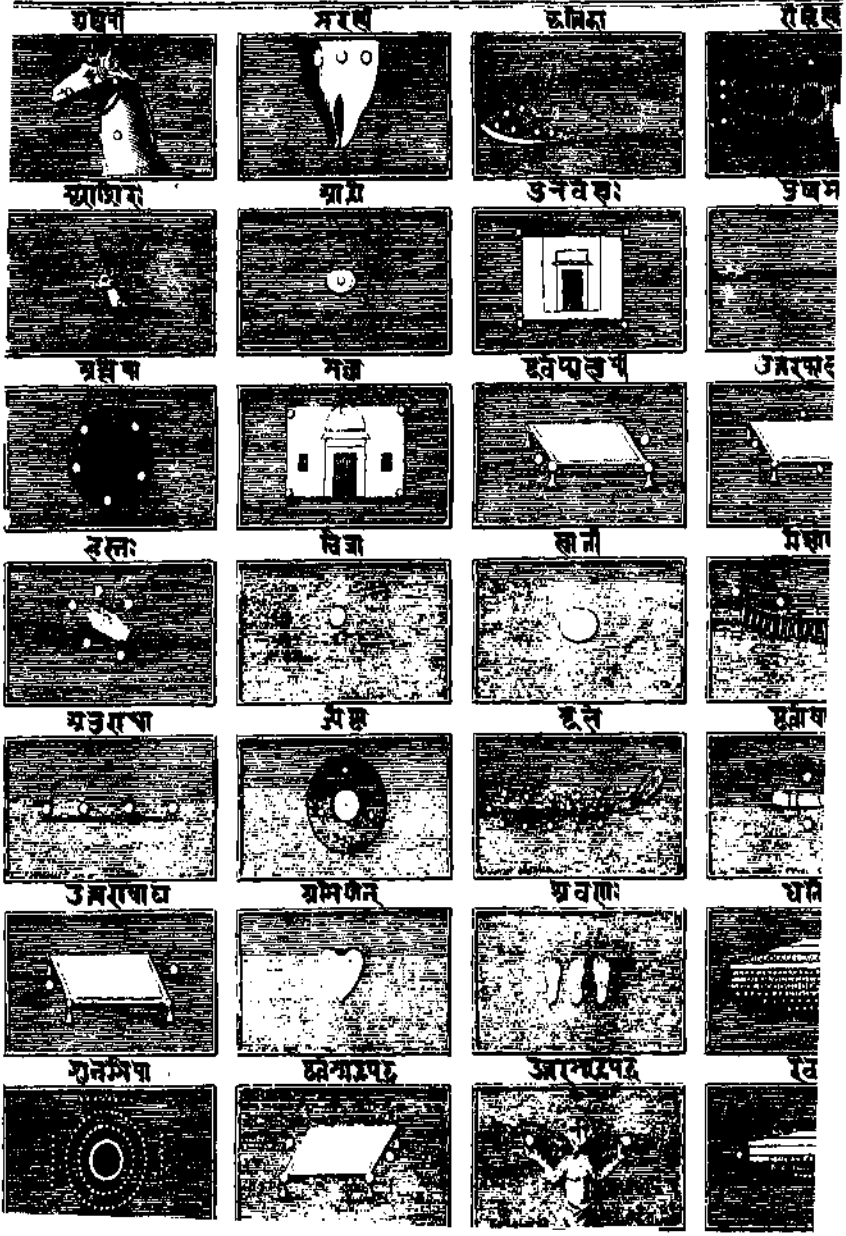
Méſha, the Ram.
Vrifha, the Bull.
Mit'huna, the Pair.
4. *Carcat'a*, the Crab.
Sinha, the Lion.
Canyà, the Virgin.
Tulà, the Balance.
8. *Vrifchica*, the Scorpion.
Dhanus, the Bow.
Macara, the Sea-Monſter.
Cumbha, the Ewer.
12. *Mina*, the Fiſh.

THE figures of the twelve aſteriſms, thus denominated with reſpect to the ſun, are ſpecified, by SRI'PETI, author of the *Retnamálà*, in *Sanſcrit* verſes; which I produce, as my vouchers, in the original, with a verbal tranſlation:

Méſhádayó náma ſamánarúpì,
Vínágadádhyam mit'hunam nriyugmam,
Pradipasaſyé dadhati carábhyám
Návi ſt'hitá várin'i canyacaiva.
Tulá tulábhrit pretimánapánir
Dhanur dhanuſhmán hayawat parángah,
Mrigánanáh ſyán macaró't'ha cumbhah
Scandhé neró ricteghátam dadhánah,
Anyanyapuchch'hábhimuc'hó hi mínah
Matſyadwayam ſwaſt'halachárinómì.

"THE *ram*, *bull*, *crab*, *lion*, and *ſcorpion*, have the figures of thoſe five "animals reſpectively: the *pair* are a damſel playing on a *Vínà*, and a "youth wielding a mace: the *virgin* ſtands on a boat in water, holding "in one hand a lamp, in the other an ear of rice-corn: the *balance* is "held by a weigher with a weight in one hand: the *bow*, by an archer,

"whoſe


अश्विनी
भरणी
कृत्तिका
रोहिणी
मृगशिरः
आर्द्रा
पुनर्वसुः
पुष्य
अश्लेषा
मघा
पूर्वफल्गुनी
उत्तरफल्गुनी
हस्तः
चित्रा
स्वाती
विशाखा
अनुराधा
ज्येष्ठा
मूले
पूर्वाषाढा
उत्तराषाढा
श्रवणः
धनि
शतभिषा
पूर्वभाद्रपदा
उत्तरभाद्रपदा
रे

" whoſe hinder parts are like thoſe of a horſe: the *ſea-monſter* has the face " of an antelope: the *ewer* is a water-pot borne on the ſhoulder of a man, " who empties it: the *fiſh* are two, with their heads turned to each other's " tails; and all theſe are ſuppoſed to be in ſuch places as ſuit their ſeveral " natures."

To each of the *twenty-ſeven* lunar ſtations, which they call *nacſhatras*, they allow thirteen *anſus* and one-third, or *thirteen degrees twenty minutes*; and their names appear in the order of the ſigns, but without any regard to the figures of them:

Aſwinì.	*Maghà.*	Mula.
Bharanì.	Púrva p'halgunì.	Púrváſhád'há.
Critticà.	Uttara *p'halgunì.*	Uttaráſhádhà.
Róhiní.	Haſta.	*Sravanà.*
Mrigaſiras.	*Chitrà.*	Dhaniſh'tà.
A'rdrà.	Swátì.	Satabhiſhà.
Punarvaſu.	*Viſac'hà.*	Púrva *bhadrapadá.*
Puſhya.	Anurádhà.	Uttarabhadrapadá.
9. Aſléſhà.	18. *Jyéſhi'hà.*	27. Révatì.

Between the twenty-firſt and twenty-ſecond conſtellations, we find in the plate three ſtars called *Abhijit*; but they are the laſt quarter of the aſteriſm immediately preceding, or the latter *Aſhár*, as the word is commonly pronounced. A complete revolution of the moon, with reſpect to the ſtars, being made in twenty-ſeven days, odd hours, minutes and ſeconds, and perfect exactneſs being either not attained by the *Hindus*,

or not required by them, they fixed on the number twenty-ſeven, and inſerted *Abhijit* for ſome aſtrological purpoſe in their nuptial ceremonies. The drawing, from which the plate was engraved, ſeems intended to repreſent the figures of the twenty-ſeven conſtellations, together with *Abhijit*, as they are deſcribed in three ſtanzas by the author of the *Retnamálá:*

1. Turagamuc'haſadricſham yónirúpam cſhurábham,
Saca'taſamam at'hain'aſyottamángéna tulyam,
Man'igrihas'ara chacrábháni s'álópamam bham,
Sayanaſadris'amanyachchátra paryancarúpam.
2. Haſtácárayutam cha maućticaſamam chanyat pravalópamam,
Dhriſhyam tórana ſannibham balinibham, ſatcund'alabham param;
Crudhyatcaſarivicraména ſadris'am, s'ayyáſamánam param,
Anyad dentiviláſavat ſt'hitamatah s'ringát'acavyaćti bham.
3. Trivicramábham cha mridangarúpam,
Vrittam tatónyadyamalábhwayábham,
Paryancarúpam murajánucáram,
Ityévam as'wádibhachacrarúpam.

"A HORSE's head; *yóni*, or *bhaga*; a razor; a wheeled carriage; the "head of an antelope; a gem; a houſe; an arrow; a wheel; another "houſe; a bedſtead; another bedſtead; a hand; a pearl; a piece of "coral; a feſtoon of leaves; an oblation to the Gods; a rich ear-ring; "the tail of a fierce lion; a couch; the tooth of a wanton elephant, "near

" near which is the kernel of the *sringáṭaca*-nut; the three footſteps of " VISHNU; a tabor; a circular jewel; a two-faced imag ; another couch; " and a ſmaller ſort of tabor: ſuch are the figures of *Aſwini*, and the reſt in " the circle of lunar conſtellations."

THE *Hindu* draughtſman has very ill repreſented moſt of the figures; and he has tranſpoſed the two *Aſhàras* as well as the two *Bhadrapads*; but his figure of *Abhijit*, which looks like our Ace of Hearts, has a reſemblance to the kernel of the *trapa*, a curious water-plant deſcribed in a ſeparate eſſay. In another *Sanſcrit* book the figures of the ſame conſtellations are thus varied:

A horſe's head.	A ſtraight tail.	A couch.
Yóni or *bhaga*.	Two ſtars S. to N.	A winnowing fan.
A flame.	Two, N. to S.	Another.
A waggon.	A hand.	An arrow.
A cat's paw.	A pearl.	A tabor.
One bright ſtar.	Red ſaffron.	A circle of ſtars.
A bow.	A feſtoon.	A ſtaff for burdens.
A child's pencil.	A ſnake.	The beam of a balance.
9. A dog's tail.	18. A boar's head.	27. A fiſh.

FROM twelve of the aſteriſms juſt enumerated are derived the names of the twelve *Indian* months in the uſual form of patronymics; for the *Paurànics*, who reduce all nature to a ſyſtem of emblematical mythology, ſuppoſe a celeſtial nymph to preſide over each of the conſtellations, and feign that the God SO'MA, or *Lunus*, having wedded twelve of them, became the father of twelve *Genii*, or Months, who are named after

after their ſeveral mothers; but the *Jyautiſhicas* aſſert, that when their lunar year was arranged by former aſtronomers, the moon was at the full in each month on the very day when it entered the *nacſhatra*, from which that month is denominated. The manner in which the derivatives are formed, will beſt appear by a compariſon of the months with their ſeveral conſtellations:

A's'wina,	Chaitra.
Cártica.	8. Vaiſác'ha.
Márgas'irſha.	Jyaiſh't'ha.
4. Pauſha.	A'ſhára.
Mágha.	Srávana.
P'hálguna.	12. Bhádra.

THE third month is alſo called *A'grahâyana* (whence the common word *Agran* is corrupted) from another name of *Mrigas'iras*.

NOTHING can be more ingenious than the memorial verſes in which the *Hindus* have a cuſtom of linking together a number of ideas otherwiſe unconnected, and of chaining, as it were, the memory by a regular meaſure: thus, by putting *teeth* for thirty-two, *Rudra* for eleven, *ſeaſon* for ſix, *arrow* or *element* for five,—*ocean*, *Véda*, or *age*, for four,—RA'MA, *fire*, or *quality* for three,—*eye*, or CUMA'RA for two—and *earth* or *moon* for one, they have compoſed four lines, which expreſs the number of ſtars in each of the twenty-ſeven aſteriſms:

Vahni tri ritwiſhu gunéndu critágnibhúta,
Bánás'winétra s'ara bhúcu yugábdhi rámáh,

Rudráb-

Rudrábdhirámagunavédas'atá dwiyugma,
enta budhairabhihitáh cramas'o bhatárah.

THAT is, "Three, three, ſix; five, three, one; four, three, five; "five, two, two; five, one, one; four, four, three; eleven, four, and "three; three, four, a hundred; two, two, thirty-two: thus have the ſtars "of the lunar conſtellations, in order as they appear, been numbered by "the wiſe."

IF the ſtanza was correctly repeated to me, the *two Aſhárás* are conſidered as one aſteriſm, and *Abhijit* as three ſeparate ſtars; but I ſuſpect an error in the third line, becauſe *dwibhána*, or *two and five*, would ſuit the metre as well as *bdhibhana*; and becauſe there were only three *Védas* in the early age, when it is probable the ſtars were enumerated, and the technical verſe compoſed.

Two lunar ſtations (or *manſions*) and a quarter are co-extenſive, we ſee, with one ſign; and nine ſtations correſpond with four ſigns: by counting, therefore, thirteen degrees and twenty minutes from the firſt ſtar in the head of the Ram, incluſively, we find the whole extent of *Aſwiní*, and ſhall be able to aſcertain the other ſtars with ſufficient accuracy; but firſt let us exhibit a comparative table of both *Zodiacs*, denoting the manſions, as in the *Párdnes* almanack, by the firſt letters or ſyllables of their names:

MONTHS

MONTHS.	SOLAR ASTERISMS.	MANSIONS.
A'ſwin Cártic A'grahâyan Pauſh	Méſh Vriſh Mit'hun Carca't 4.	A + bh + $\frac{c}{4}$ $\frac{3c}{4}$ + ıo + $\frac{M}{2}$ $\frac{M}{2}$ + á + $\frac{3P}{4}$ $\frac{P}{4}$ + p + sl. 9.
Mágh P'hálgun Chaitr Vaiſác'h	Sinh Canyà Tulà Vriſchic 8.	m + PU + $\frac{U}{4}$ $\frac{3U}{4}$ + h + $\frac{ch}{2}$ $\frac{ch}{2}$ + s + $\frac{3v}{4}$ $\frac{v}{4}$ + a + j 18.
Jaiſh't'h A'ſhar 'Srávan Bhádr	Dhan Macar Cumbh Mín 12.	mú + pù + $\frac{a}{4}$ $\frac{3v}{4}$ + S + $\frac{dh}{2}$ $\frac{dh}{2}$ + s' + $\frac{3m'}{4}$ $\frac{ph}{4}$ + u + r. 27.

HENCE we may readily know the ſtars in each manſion, as they follow in order:

LUNAR MANSIONS.	SOLAR ASTERISMS.	STARS.
Aſwiní.	Ram	*Three* in and near the head.
Bharaní.		*Three* in the tail.
Critică.	Bull.	*Six* of the Pleiads.
Róhiní.		*Five* in the head and neck.
Mrigaſiras.	Pair.	*Three* in or near the feet, perhaps in the Galaxy.
A'rdrà.		*One* on the knee.

LUNAR

LUNAR MANSIONS.	SOLAR ASTERISMS.	STARS.
Punarvafu.	——	*Four* in the heads, breaſt and ſhoulder.
Puſhya.	Crab	*Three*, in the body and claws.
Aſléſhà.	Lion	*Five*, in the face and mane.
Maghà.	——	*Five*, in the leg and haunch.
Purvap'halgunì.	——	*Two*, one in the tail.
Uttarap'halgunì.	Virgin	*Two*, on the arm and zone
Haſta.	——	*Five*, near the hand.
Chitrà.	——	*One*, in the ſpike.
Swáti.	Balance	*One*, in the N. Scale.
Vis'ác'hà.	——	*Four*, beyond it.
Anurádhà.	Scorpion	*Four*, in the body.
Jyéſht'ha.	——	*Three*, in the tail.
Múla.	Bow	*Eleven*, to the point of the arrow.
Púrvaſhára.	——	*Two*, in the leg.
Uttaráſhára.	Sea-monſter.	*Two*, in the horn.
Sravanà.	——	*Three*, in the tail
Dhaniſht'à.	Ewer	*Four*, in the arm.
Satabhiſhà.	——	*Many*, in the ſtream.
Purvabhadrapadà.	Fiſh	*Two*, in the firſt fiſh.
Uttarabhadrapadà	——	*Two*, in the cord.
Révatì.	——	*Thirty-two*, in the ſecond fiſh and cord.

WHEREVER the *Indian* drawing differs from the memorial verſe in the

Retnamálà, I have preferred the authority of the writer to that of the painter, who has drawn ſome terreſtrial things with ſo little ſimilitude, that we muſt not implicitly rely on his repreſentation of objects merely celeſtial: he ſeems particularly to have erred in the ſtars of *Dhaniſht'à*.

For the aſſiſtance of thoſe who may be inclined to re-examine the twenty-ſeven conſtellations with a chart before them, I ſubjoin a table of the degrees, to which the *nacſhatras* extend reſpectively from the firſt ſtar in the aſteriſm of *Aſwa*, which we now ſee near the beginning of the ſign *Taurus*, as it was placed in the ancient ſphere.

N.	D.	M.	N.	D.	M.	N.	D.	M.
I.	13°.	20.	X.	133°.	20′.	XIX.	253°.	20′.
II.	26°.	40.	XI.	146°.	40′.	XX.	266°.	40′.
III.	40°.	0′.	XII.	160°.	0′.	XXI.	280°.	0
IV.	53°.	20′.	XIII.	173°.	20′.	XXII.	293°.	20′.
V.	66°.	40′.	XIV.	186°.	40′.	XXIII.	306°.	40′.
VI.	80°.	0′.	XV.	200°.	0′.	XXIV.	320°.	0′.
VII.	93°.	20′.	XVI.	213°.	20.	XXV.	333°.	20′.
VIII.	106°.	40.	XVII.	226°.	40′.	XXVI.	346°.	40′.
IX.	120°.	0.	XVIII.	240°.	0′.	XXVII.	360°.	0′.

The aſteriſms of the *firſt* column are in the ſigns of *Taurus*, *Gemini*, *Cancer*, *Leo*; thoſe of the *ſecond*, in *Virgo*, *Libra*, *Scorpio*, *Sagittarius*; and thoſe of the *third*, in *Capricornus*, *Aquarius*, *Piſces*, *Aries*. We cannot err much, therefore, in any ſeries of *three* conſtellations; for, by counting 13° 20 forwards and backwards, we find the ſpaces occupied by the

two

two extremes, and the intermediate space belongs of course to the middlemost. It is not meant that the division of the *Hindu Zodiack* into such spaces is exact to a minute, or that every star of each asterism must necessarily be found in the space to which it belongs; but the computation will be accurate enough for our purpose, and no lunar mansion can be very remote from the path of the moon. How Father Souciet could dream that *Visácha* was in the Northern Crown, I can hardly comprehend; but it surpasses all comprehension that M. Bailly should copy his dream, and give reasons to support it, especially as four stars, arranged pretty much like those in the *Indian* figure, perfectly show its position near the Balance, or the Scorpion. I have not the boldness to exhibit the individual stars in each mansion, distinguished in Bayer's method by Greek letters, because, though I have little doubt that the five stars of *Maghá* in the form of a wheel, are η γ ζ μ ε of the Lion, and those of *Hasta*, γ ε δ ζ φ τ σ ν ι ζ π, of the Virgin, and though I think many of the others equally clear, yet, where the number of stars in a mansion is less than three or even than four, it is not easy to fix on them with confidence; and I must wait until some young *Hindu* astronomer, with a good memory and good eyes, can attend my leisure on serene nights at the proper seasons, to point out in the firmament itself the several stars of all the constellations for which he can find names in the *Sanscrit* language. The only stars, except those in the *Zodiac*, that have yet been distinctly named to me, are the *Septarshi*, *Dhruva*, *Arundhati*, *Vishnupad*, *Mátrimandel*, and, in the southern hemisphere, *Agastya*, or *Canopus*. The twenty seven *Yoga* stars, indeed, have particular names, in the order of the *mansions*,

to which they belong; and since we learn * that the *Hindus* have determin'd *the latitude, longitude, and right ascension of each*, it might be useful to exhibit the list of them; but at present I can only subjoin the names of twenty-seven *Yogas*, or divisions of the ecliptic.

Vishcambha.	*Ganda.*	*Parigha.*
Príti.	*Vriddhi.*	*Siva.*
Ayushmat.	*Dhruva.*	*Siddha.*
Saubhágya.	*Vyághàta.*	*Sádhya.*
Sóbhana.	*Hershana.*	*Subha.*
Atiganda.	*Vajra.*	*Sucra.*
Sucarman.	*Asrij.*	*Brahman.*
Dhriti.	*Vyatipáta.*	*Indra.*
Súla	*Varíyas.*	*Vaidhriti.*

HAVING shown in what manner the *Hindus* arrange the *Zodiacal* stars with respect to the sun and moon, let us proceed to our principal subject, *the antiquity of that double arrangement*. In the first place, the *Bráhmans* were always too proud to borrow their science from the *Greeks*, *Arabs*, *Moguls*, or any nation of *Mléch'h'has*, as they call those who are ignorant of the *Védas*, and have not studied the language of the Gods. They have often repeated to me the fragment of an old verse, which they now use proverbially, *na nícho yavanátparah*, or *no base creature can be lower than a Yavan*; by which name they formerly meant an *Ionian* or *Greek*, and now mean a *Mogul*, or, generally, a *Muselman*. When I mentioned to different *Pandits*, at several times and in several places, the opinion of MONTUCLA, they could not prevail on themselves to oppose it by serious

* See p. 270.

argument;

ORIENTAL ZODIAC.

From 1 to 12 are the 12 Signs a the Sun b the Moon c Mars d Mercury e Jupiter f Venus g Saturn h Dragons Head or Ascending Node i Dragons Tail or Descending Node

argument; but ſome laugh'd heartily; others, with a ſarcaſtic ſmile, ſaid it was a *pleaſant imagination*; and all ſeemed to think it a notion bordering on phrenzy. In fact, although the figures of the twelve *Indian* ſigns bear a wonderful reſemblance to thoſe of the *Grecian*, yet they are ſo much varied for a mere copy, and the nature of the variation proves them to be original; nor is the reſemblance more extraordinary than that, which has often been obſerved, between our *Gothic* days of the week and thoſe of the *Hindus*, which are dedicated to the ſame luminaries, and (what is yet more ſingular) revolve in the ſame order: *Ravi*, the Sun; *Sóma*, the Moon; *Mangala*, Tuiſco; *Budha*, Woden; *Vrihaſpati*, Thor; *Sucra*, Freya; *Sani*, Sater; yet no man ever imagined that the *Indians* borrowed ſo remarkable an arrangement from the *Goths* or *Germans*. On the planets I will only obſerve, that SUCRA, the regent of *Venus*, is, like all the reſt, a *male* deity, named alſo USANAS, and believed to be a ſage of infinite learning; but ZOHRAH, the NA'HID of the *Perſians*, is a goddeſs like the FREYA of our *Saxon* progenitors: the drawing, therefore, of the planets, which was brought into *Bengal* by Mr. JOHNSON, relates to the *Perſian* ſyſtem, and repreſents the genii ſuppoſed to preſide over them, exactly as they are deſcribed by the poet HA'FIZ': "He bedecked the firmament with ſtars, and ennobled this earth with the race of men: he gently turned the auſpicious new moon of the feſtival, like a bright jewel, round the ankle of the ſky; he placed the *Hindu* SATURN on the ſeat of that reſtive elephant, the revolving ſphere, and put the rainbow into his hand, as a hook to coerce the intoxicated beaſt; he made ſilken ſtrings of ſunbeams for the lute of VENUS; and preſented JUPITER, who ſaw the felicity of true religion, with a roſary of cluſtering Pleiads. The bow of the ſky became that of MARS, when he was honoured with the command of the celeſtial hoſt; for GOD conferred ſovereignty on the Sun, and ſquadrons of ſtars were his army."

THE

THE names and forms of the lunar conſtellations, eſpecially of *Bharanì* and *Abhijit*, indicate a ſimplicity of manners peculiar to an ancient people; and they differ entirely from thoſe of the *Arabian* ſyſtem, in which the very firſt aſteriſm appears in the dual number, becauſe it conſiſts only of two ſtars. *Menzil*, or *the place of alighting*, properly ſignifies a *ſtation* or *ſtage*, and thence is uſed for an ordinary day's *journey*; and that idea ſeems better applied than *manſion* to ſo inceſſant a traveller as the moon. The *menazilu'l kamar*, or *lunar ſtages* of the *Arabs*, have *twenty-eight* names, in the following order, the particle *al* being underſtood before every word:

Sharatan.	Nathrah.	Ghafr.	Dhábih'.
Bu'tain	Tarf.	Zubániyah.	Bulaâ.
Thurayyà.	Jabhah.	Iclil.	Sund.
Delarân.	Zubrah.	Kalb.	Akhbíya.
Hakaah.	Sarfah.	Shaulah.	Mukdim.
Hanaah.	Awwà.	Na'um.	Múkhir.
Dhirâ.	14. Simàc.	21. Beldah.	28. Rifhà.

Now, if we can truſt the *Arabian* lexicographers, the number of ſtars in their ſeveral *menzils* rarely agrees with thoſe of the *Indians*; and two ſuch nations muſt naturally have obſerved, and might naturally have named, the principal ſtars near which the moon paſſes in the courſe of each day, without any communication on the ſubject. There is no evidence indeed, of a communication between the *Hindus* and *Arabs* on any ſubject of literature or ſcience; for, though we have reaſon to believe that a commercial intercourſe ſubſiſted in very early times between *Yemen* and the weſtern coaſt of *India*, yet the *Bráhmans*, who alone are permitted to read the

the ſix *Védángas*, one of which is the aſtronomical *Saſtra*, were not then commercial, and, moſt probably, neither could nor would have converſed with *Arabian* merchants. The hoſtile irruptions of the *Arabs* into *Hinduſtán*, in the eighth century, and that of the *Moguls* under CHENGI'Z, in the thirteenth, were not likely to change the aſtronomical ſyſtem of the *Hindus*; but the ſuppoſed conſequences of *modern* revolutions are out of the queſtion; for, if any hiſtorical records be true, we know with as poſitive certainty, that AMARSINH and CA'LIDA'S compoſed their works before the birth of CHRIST, as that MENANDER and TERENCE wrote before that important epoch. Now the twelve *ſigns* and twenty-ſeven *manſions* are mentioned by ſeveral names before exhibited, in a *Sanſcrit* vocabulary by the firſt of thoſe *Indian* authors; and the ſecond of them frequently alludes to *Róhiní* and the reſt by name in his *Fatal Ring*, his *Children of the Sun*, and his *Birth* of CUMA'RA; from which poem I produce two lines, that my evidence may not ſeem to be collected from mere converſation:

Maitrè muhúrtè sasalánch'hanena,
Yógam gatáſúttarap'halgun.ſhu.

"When the ſtars of *Uttarap'halgun* had joined in a fortunate hour the "fawn-ſpotted moon."

THIS teſtimony being deciſive againſt the conjecture of M. MONTUCLA, I need not urge the great antiquity of MENU's Inſtitutes, in which the twenty-ſeven aſteriſms are called the daughters of DACSHA and the conſorts of SOMA, or the Moon, nor rely on the teſtimony of the *Bráhmans*, who aſſure me with one voice, that the names of the *Zodiacal* ſtars occur in the *Védas*; three of which I firmly believe, from internal and external evidence,

evidence, to be more than *three thousand* years old. Having therefore proved what I engaged to prove, I will close my essay with a general observation. The result of NEWTON's researches into the history of the primitive sphere was, "That the practice of observing the stars began in *Egypt* in the days "of AMMON, and was propagated thence by conquest in the reign of "his son SISAC, into *Asiruk*, *Europe*, and *Asia*; since which time "ATLAS formed the sphere of the *Lybians*; CHIRON, that of the *Greeks*; "and the *Chaldeans*, a sphere of their own." Now I hope, on some other occasions, to satisfy the public, as I have perfectly satisfied myself, that "the practice of observing the stars began, with the rudiments of civil "society, in the country of those whom we call *Chaldeans*; from which it "was propagated into *Egypt*, *India*, *Greece*, *Italy*, and *Scandinavia*, before "the reign of SISAC or SA'CYA, who by conquest spread a new system of "religion and philosophy from the *Nile* to the *Ganges* about a thousand "years before CHRIST; but that CHIRON and ATLAS were allegorical or "mythological personages, and ought to have no place in the serious history "of our species."

XVII.

AN ACCOUNT OF THE KINGDOM OF NEPAL,

BY FATHER GIUSEPPE,

PREFECT OF THE ROMAN MISSION.

COMMUNICATED BY JOHN SHORE, ESQ

THE kingdom of *Népál* is ſituated to the north-eaſt of *Patna*, at the diſtance of ten or eleven days journey from that city. The common road to it lies through the kingdom of *Macwanpur*; but the miſſionaries and many other perſons enter it on the *Betha* quarter. Within the diſtance of four days journey from *Népál* the road is good in the plains of *Hinduſtàn*, but in the mountains it is bad, narrow, and dangerous. At the foot of the hills the country is called *Terhur*, and there the air is very unwholeſome from the middle of *March* to the middle of *November*; and people in their paſſage catch a diſorder called in the language of that country *Aul*, which is a putrid fever, and of which the generality of people who are attacked with it die in a few days; but on the plains there is no apprehenſion of it. Although the road be very narrow and inconvenient for three or four days at the paſſes of the hills, where it is neceſſary to croſs and recroſs the river more than fifty times, yet, on reaching the interior mountain before you deſcend, you have an agreeable proſpect of the extenſive plain of *Népál*, reſembling an amphitheatre covered with populous towns and villages: the circumference of the plain is about 200 miles, a little irregular, and ſurrounded by hills on all ſides, ſo that no perſon can enter or come out of it without paſſing the mountains.

THERE are three principal cities in the plain, each of which was the capital of an independent kingdom; the principal city of the three is ſituated to the northward of the plain, and is called *Cat'hmándú*: it contains about 18,000 houſes; and this kingdom from ſouth to north extends to the diſtance of twelve or thirteen days journey as far as the borders of *Thibet*, and is almoſt as extenſive from eaſt to weſt. The king of *Cat'hmándú* has always about 50,000 ſoldiers in his ſervice. The ſecond city to the ſouth-weſt of *Cat'hmándú* is called *Lelit Pattan*, where I reſided about four years; it contains near 24,000 houſes: the ſouthern boundary of this kingdom is at the diſtance of four days journey, bordering on the kingdom of *Macwanpur*. The third principal city to the eaſt of *Lelit Pattan* is called *B'hátgún*; it contains about 12,000 families, extends towards the eaſt to the diſtance of five or ſix days journey, and borders upon another nation, alſo independent, called *Cirátas*, who profeſs no religion. Beſides theſe three principal cities, there are many other large and leſs conſiderable towns or fortreſſes, one of which is *Timi*, and another *Cipoli*, each of which contains about 8,000 houſes, and is very populous: all thoſe towns, both great and ſmall, are well built; the houſes are conſtructed of brick, and are three or four ſtories high; their apartments are not lofty; they have doors and windows of wood well worked, and arranged with great regularity. The ſtreets of all their towns are paved with brick or ſtone, with a regular declivity to carry off the water. In almoſt every ſtreet of the capital towns there are alſo good wells made of ſtone, from which the water paſſes through ſeveral ſtone-canals for the public benefit. In every town there are large ſquare varandas well built, for the accommodation of travellers and the public; theſe varandas are called *Puli*; and there are alſo many of them, as well as wells, in different parts of the country for public uſe. There are alſo,

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on the outſide of the great towns, ſmall ſquare reſervoirs of water faced with brick, with a good road to walk upon, and a large flight of ſteps for the convenience of thoſe who chooſe to bathe. A piece of water of this kind on the outſide of the city of *Cat'hmándú* was at leaſt 200 feet long on each ſide of the ſquare, and every part of its workmanſhip had a good appearance.

The religion of *Népál* is of two kinds; the more ancient is profeſſed by many people who call themſelves *Baryeſu:* they pluck out all the hair from their heads; their dreſs is of coarſe red woollen cloth, and they wear a cap of the ſame: they are conſidered as people of the religious order; and their religion prohibits them from marrying, as it is with the *Lamas* of *Thibet*, from which country their religion was originally brought; but in *Népál* they do not obſerve this rule, except at their diſcretion: they have large monaſteries, in which every one has a ſeparate apartment or place of abode; they obſerve alſo particular feſtivals, the principal of which is called *Yátrà* in their language, and continues a month or longer, according to the pleaſure of the king. The ceremony conſiſts in drawing an idol (which at *Lelit Pattan* is called Baghero *) in a large and richly ornamented car, covered with gilt copper. Round about the idol ſtand the king and the principal *Baryeſus*; and in this manner the vehicle is almoſt every day drawn through ſome one of the ſtreets of the city by the inhabitants, who run about beating and playing upon every kind of inſtrument their country affords, which make an inconceivable noiſe.

* I ſuppoſe a name of *Bhagavat* or *Criſhna*; but *Bhàgo* is *Mahadeva*, and *Bara* or *Vara* means the *Thunderer*.

THE other religion, the more common of the two, is that of the *Bráhmens*, and is the ſame as is followed in *Hindoſtan*, with the difference that in the latter country the *Hindus* being mixed with the *Mohammedans*, their religion alſo abounds with many prejudices, and is not ſtrictly obſerved; whereas in *Népál*, where there are no *Muſelmans* (except one *Caſhmirian* merchant) the *Hindu* religion is practiſed in its greateſt purity. Every day of the month they claſs under its proper name, when certain ſacrifices are to be performed, and certain prayers offered up in their temples. The places of worſhip are more in number in their towns than, I believe, are to be found in the moſt populous and moſt flouriſhing cities of *Chriſtendom*; many of them are magnificent, according to their ideas of architecture, and conſtructed at a very conſiderable expence; ſome of them have four or five ſquare cupolas; and in ſome of the temples two or three of the extreme cupolas, as well as the doors and windows of them, are decorated with gilt copper.

IN the city of *Lelit Pattan* the temple of BAGHERO was contiguous to my habitation, and was more valuable, on account of the gold, ſilver, and jewels it contained, than even the houſe of the king. Beſides the large temples, there are alſo many ſmall ones, which have ſtairs, by which a ſingle perſon may aſcend on the outſide all around them; and ſome of thoſe ſmall temples have four ſides, others ſix, with ſmall ſtone or marble pillars poliſhed very ſmooth, with two or three pyramidal ſtories, and all their ornaments well gilt and neatly worked, according to their ideas of taſte: and I think, that, if *Europeans* ſhould ever go into *Népál*, they might take ſome models from thoſe little temples, eſpecially from the two which are in the great court of *Lelit Pattan* before the royal palace. On the outſide of ſome of their temples there are alſo great

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ſquare pillars of ſingle ſtones, from twenty to thirty feet high, upon which they place their idols, ſuperbly gilt. The greateſt number of their temples have a good ſtone ſtaircaſe in the middle of the four ſquares, and at the end of each flight of ſtairs, there are lines cut out of ſtone on both ſides. Round about their temples there are alſo bells, which the people ring on particular occaſions; and when they are at prayers, many cupolas are alſo quite filled with little bells hanging by cords in the inſide, about the diſtance of a foot from each other, which make a great noiſe on that quarter where the wind conveys the ſounds. There are not only ſuperb temples in their great cities, but alſo within their caſtles.

To the eaſtward of *Cat'hmándú*, at the diſtance of about two or three miles, there is a place called *Tolu*, by which there flows a ſmall river, the water of which is eſteemed holy, according to their ſuperſtitious ideas; and thither they carry people of high rank, when they are thought to be at the point of death. At this place there is a temple, which is not inferior to the beſt and richeſt in any of the capital cities. They alſo have it on tradition, that, at two or three places in *Népál*, valuable treaſures are concealed under ground: one of thoſe places they believe is *Tolu*, but no one is permitted to make uſe of them except the king, and that only in caſes of neceſſity. Thoſe treaſures, they ſay, have been accumulated in this manner: When any temple had become very rich from the offerings of the people, it was deſtroyed, and deep vaults dug under ground, one above another, in which the gold, ſilver, gilt copper, jewels, and every thing of value were depoſited. When I was in *Népál*, GAIN PRE'JAS, king of *Cat'hmándú*, being in the utmoſt diſtreſs for money to pay his troops, in order to ſupport himſelf againſt PRIT'HWI'NA'RA'YAN, ordered ſearch to be made for the treaſures of *Tolu*; and, having dug to a conſiderable depth under ground, they came

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to the firſt vault, from which his people took the value of a lac of rupees in gilt copper, with which GAINPREJAS paid his troops, excluſive of a number of ſmall figures in gold or gilt copper, which the people who had made the ſearch had privately carried off: and this I know very well; becauſe one evening as I was walking in the country alone, a poor man whom I met on the road, made me an offer of a figure of an idol in gold or copper gilt, which might be five or ſix ſicca weight, and which he cautiouſly preſerved under his arm; but I declined accepting it. The people of GAINPREJAS had not completely emptied the firſt vault when the army of PRIT'HWI'VA'RA'YAN arrived at *Tolu*, poſſeſſed themſelves of the place where the treaſure was depoſited, and cloſed the door of the vault, having firſt replaced all the copper there had been on the outſide.

To the weſtward alſo of the great city of *Lelit Pattan*, at the diſtance of only three miles, is a caſtle called *Banga*, in which there is a magnificent temple. No one of the miſſionaries ever entered into this caſtle, becauſe the people who have the care of it, have ſuch a ſcrupulous veneration for this temple, that no perſon is permitted to enter it with his ſhoes on; and the miſſionaries, unwilling to ſhew ſuch reſpect to their falſe deities, never entered it. But when I was at *Nipal*, this caſtle being in the poſſeſſion of the people of *Gorc'ha*, the commandant of the caſtle and of the two forts which border on the road, being a friend of the miſſionaries, gave me an invitation to his houſe, as he had occaſion for a little phyſic for himſelf and ſome of his people: I then, under the protection of the commandant, entered the caſtle ſeveral times, and the people durſt not oblige me to take off my ſhoes. One day, when I was at the commandant's houſe, he had occaſion to go into the varanda, which is at the bottom of the great court facing the temple, where all the chiefs dependent upon his orders

orders were aſſembled, and where alſo was collected the wealth of the temple; and, wiſhing to ſpeak to me before I went away, he called me into the varanda. From this incident I obtained a ſight of the temple, as I then paſſed by the great court which was in front: it is entirely marble, almoſt blue, but interſperſed with large flowers of bronze well diſpoſed to form the pavement of the great court-yard, the magnificence of which aſtoniſhed me; and I do not believe there is another equal to it in *Europe*.

BESIDES the magnificence of the temples which their cities and towns contain, there are many other rarities. At *Cat'hmándu*, on one ſide of the royal garden, there is a large fountain, in which is one of their idols, called *Nárâyan*. This idol is of blue ſtone, crowned and ſleeping on a mattreſs alſo of the ſame kind of ſtone; and the idol and the mattreſs appear as floating upon the water. This ſtone-machine is very large: I believe it to be eighteen or twenty feet long, and broad in proportion, but well worked, and in good repair.

IN a wall of the royal palace of *Cat'hmándú*, which is built upon the court before the palace, there is a great ſtone of a ſingle piece, which is about fifteen feet long, and four or five feet thick; on the top of this great ſtone there are four ſquare holes at equal diſtances from each other. In the inſide of the wall they pour water into the holes; and in the court-ſide, each hole having a cloſed canal, every perſon may draw water to drink: at the foot of the ſtone is a large ladder, by which people aſcend to drink; but the curioſity of the ſtone conſiſts in its being quite covered with characters of different languages cut upon it. Some lines contain the characters of the language of the country; others the characters of

Thibet;

Thibet; others *Perſian*; others *Greek*, beſides ſeveral others of different nations; and in the middle there is a line of *Roman* characters, which appears in this form, AVTOMNEW INTER LHIVERT; but none of the inhabitants have any knowledge how they came there, nor do they know whether or not any *European* had ever been in *Népal* before the miſſionaries, who arrived there only the beginning of the preſent century. They are manifeſtly two *French* names of ſeaſons, with an *Engliſh* word between them.

THERE is alſo to the northward of the city of *Cat'hmándú* a hill called *Sumbi*, upon which are ſome tombs of the *Lamas* of *Thibet*, and other people of high rank of the ſame nation. The monuments are conſtructed after various forms; two or three of them are pyramidal, very high and well ornamented; ſo that they have a good appearance, and may be ſeen at a conſiderable diſtance. Round theſe monuments are remarkable ſtones, covered with characters, which probably are the inſcriptions of ſome of the inhabitants of *Thibet*, whoſe bones were interred there. The natives of *Népál* not only look upon the hill as ſacred, but imagine it is protected by their idols; and from this erroneous ſuppoſition, never thought of ſtationing troops there for the defence of it, although it be a poſt of great importance, and only at a ſhort mile's diſtance from the city: but during the time of hoſtilities, a party of PRITHWI'NA'RA'YAN's troops being purſued by thoſe of GAINPRE'JAS, the former, to ſave themſelves, fled to this hill, and, apprehending no danger from its guardian idols, they poſſeſſed themſelves of it, and erected a fortification (in their own ſtyle) to defend themſelves. In digging the ditches round the fort, which were adjoining to the tombs, they found conſiderable pieces of gold, with a quantity of which metal the corpſes of the grandees of *Thibet*

are always interred, and when the war was ended, I myſelf went to ſee the monuments upon the hills.

I BELIEVE that the kingdom of *Népál* is very ancient, becauſe it has always preſerved its peculiar language and independence; but the cauſe of its ruin is the diſſention which ſubſiſts among the three kings. After the death of their ſovereign, the nobles of *Lelit Pattan* nominated for their king GAINPREJAS, a man poſſeſſed of the greateſt influence in *Népál*; but ſome years afterwards they removed him from his government, and conferred it upon the king of *Bhatgáu*; but he alſo a ſhort time afterwards was depoſed; and, after having put to death another king who ſucceeded him, they made an offer of the government to PRIT'HWI'NA'RA'YAN, who had already commenced war. PRIT'HWI'NA'RA'YAN deputed one of his brothers, by name DELMERDEN SA'H, to govern the kingdom of *Lelit Pattan*, and he was in the actual government of it when I arrived at *Népál*; but the nobles perceiving that PRIT'HWI'NA'RA'YAN ſtill continued to interrupt the tranquillity of the kingdom, they diſclaimed all ſubjection to him, and acknowledged for their ſovereign DELMERDEN SA'H, who continued the war againſt his brother PRIT'HWI'NA'RA'YAN: but ſome years afterwards, they even depoſed DELMERDEN SA'H, and elected in his room a poor man of *Lelit Pattan*, who was of royal origin.

THE king of *Bhatgáu*, in order to wage war with the other kings of *Népál* had demanded aſſiſtance from PRIT'HWINA'RA'YAN, but ſeeing that PRIT'HWI'NA'RA'YAN was poſſeſſing himſelf of the country, he was obliged to deſiſt, and to take meaſures for the defence of his own poſſeſſions; ſo that the king of *Górc'há*, although he had been formerly a ſubject of GAINPRIJAS, taking advantage of the diſſentions which prevailed among the other kings of

Népál, attached to his party many of the mountain-chiefs, promiſing to keep them in poſſeſſion, and alſo to augment their authority and importance; and, if any of them were guilty of a breach of faith, he ſeized their country as he had done to the kings of *Murreeja*, although his relations.

THE king of *Górc'hà* having already poſſeſſed himſelf of all the mountains which ſurround the plain of *Népál*, began to deſcend into the flat country, imagining he ſhould be able to carry on his operations with the ſame facility and ſucceſs as had attended him on the hills; and, having drawn up his army before a town, containing about 8000 houſes, ſituate upon a hill called *Cirtipur*, about a league's diſtance from *Cat'hmándú*, employed his utmoſt endeavours to get poſſeſſion of it. The inhabitants of *Cirtipur* receiving no ſupport from the king of *Lelit Pattan*, to whom they were ſubject, applied for aſſiſtance to GAINPREJAS, who immediately marched with his whole army to their relief, gave battle to the army of the king of *Górc'hà*, and obtained a complete victory. A brother of the king of *Górc'hà* was killed on the field of battle; and the king himſelf, by the aſſiſtance of good bearers, narrowly eſcaped with his life by fleeing into the mountains. After the action, the inhabitants of *Cirtipur* demanded GAINPREJAS for their king, and the nobles of the town went to confer with him on the buſineſs; but, being all aſſembled in the ſame apartment with the king, they were all ſurpriſed and ſeized by his people. After the ſeizure of thoſe perſons, GAINPREJAS, perhaps to revenge himſelf of thoſe nobles, for having refuſed their concurrence to his nomination as king, privately cauſed ſome of them to be put to death; another, by name DANUVANTA, was led through the city in a woman's dreſs, along with ſeveral others, clothed in a ridiculous and whimſical manner, at the expence of the nobles of *Lelit Pattan*.

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They were then kept in close confinement for a long time: at last, after making certain promises, and interesting all the principal men of the country in their behalf, GAINPREJAS set them at liberty.

THE king of *Górc'há*, despairing of his ability to get possession of the plain of *Népal* by strength, hoped to effect his purpose by causing a famine; and with this design stationed troops at all the passes of the mountains to prevent any intercourse with *Népal*; and his orders were most rigorously obeyed, for every person who was found in the road, with only a little salt or cotton about him, was hung upon a tree; and he caused all the inhabitants of a neighbouring village to be put to death in a most cruel manner: even the women and children did not escape, for having supplied a little cotton to the inhabitants of *Népal*; and, when I arrived in that country at the beginning of 1769, it was a most horrid spectacle to behold so many people hanging on trees in the road. However, the king of *Górc'ha* being also disappointed in his expectations of gaining his end by this project, fomented dissentions among the nobles of the three kingdoms of *N'pal*, and attached to his party many of the principal ones, by holding forth to them liberal and enticing promises; for which purpose he had about 2000 *Brahmens* in his service. When he thought he had acquired a party sufficiently strong, he advanced a second time with his army to *Cirtipur*, and laid siege to it on the north-west quarter, that he might avoid exposing his army between the two cities of *Cat'hmándú* and *Lelit Pattan*. After a siege of several months, the king of *Górc'há* demanded the regency of the town of *Cirtipur*; when the commandant of the town, seconded by the approbation of the inhabitants, dispatched to him by an arrow a very impertinent and exasperating answer. The king of *Górc'há* was so much enraged at this mode of proceeding, that he gave immediate orders to all his troops to storm

the town on every ſide: but the inhabitants bravely defended it, ſo that all the efforts of his men availed him nothing; and, when he ſaw that his army had failed of gaining the precipice, and that his brother, named SURU'PARATNA, had fallen wounded by an arrow, he was obliged to raiſe the ſiege a ſecond time, and to retreat with his army from *Cirtipur*. The brother of the king was afterwards cured of his wound by our Father MICHAEL ANGELO, who is at preſent in *Bettia*.

AFTER the action the king of *Góre'hà* ſent his army againſt the king of *Lamji* (one of the twenty-four kings who reign to the weſtward of *Népál*) bordering upon his own kingdom of *Góre'hà*. After many deſperate engagements, an accommodation took place with the king of *Lamji*: and the king of *Góre'hà* collecting all his forces, ſent them for the third time to beſiege *Cirtipur*; and the army on this expedition was commanded by his brother SURU'PARATNA. The inhabitants of *Cirtipur* defended themſelves with their uſual bravery; and after a ſiege of ſeveral months, the three kings of *Népál* aſſembled at *Cat'hmándú* to march a body of troops to the relief of *Cirtipur*. One day in the afternoon they attacked ſome of the *Tanas* of the *Góre'hians*, but did not ſucceed in forcing them, becauſe the king of *Góre'hà*'s party had been reinforced by many of the nobility, who to ruin GAINPEJAS were willing to ſacrifice their own lives. The inhabitants of *Cirtipur* having already ſuſtained ſix or ſeven months ſiege, a noble of *Lelit Pattan* called DANUVANTA fled to the *Góre'hà* party, and treacherouſly introduced their army into the town. The inhabitants might ſtill have defended themſelves, having many other fortreſſes in the upper parts of the town to retreat to; but the people at *Góre'hà* having publiſhed a general amneſty, the inhabitants, greatly exhauſted by the fatigue of a long ſiege, ſurrendered themſelves priſoners upon the faith

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of that promiſe. In the mean time the men of *Górc'hà* ſeized all the gates and fortreſſes within the town; but two days afterwards PRIT'HWI'NA'RA'YAN, who was at *Navaćóta* (a long day's journey diſtant) iſſued an order to SURU'PARATNA his brother, to put to death ſome of the principal inhabitants of the town, and to cut off the noſes and lips of every one, even the infants, who were not found in the arms of their mothers; ordering at the ſame time all the noſes and lips which had been cut off to be preſerved, that he might aſcertain how many ſouls there were, and to change the name of the town into *Noſkatápur*, which ſignifies the *town of cut-noſes*. The order was carried into execution with every mark of horror and cruelty, none eſcaping but thoſe who could play on wind inſtruments; although Father MICHAEL ANGELO, who, without knowing that ſuch an inhuman ſcene was then exhibited, had gone to the houſe of SURU'PARATNA, and interceded much in favour of the poor inhabitants. Many of them put an end to their lives in deſpair; others came in great bodies to us in ſearch of medicines; and it was moſt ſhocking to ſee ſo many living people with their teeth and noſes reſembling the ſkulls of the deceaſed.

AFTER the capture of *Cirtipur*, PRIT'HWI'NA'RA'YAN diſpatched immediately his army to lay ſiege to the great city of *Lelit Pattan*. The *Górc'hians* ſurrounded half the city to the weſtward with their *Tánas*; and, my houſe being ſituated near the gate of that quarter, I was obliged to retire to *Cat'hmándú* to avoid being expoſed to the fire of the beſiegers. After many engagements between the inhabitants of the town of *Lelit Pattan* and the men of *Górc'hà*, in which much blood was ſpilled on both ſides, the former were diſpoſed to ſurrender themſelves, from the fear of having their noſes cut off, like thoſe at *Cirtipur*, and alſo their right hands: a barbarity the *Górc'hians* had threatened them with, unleſs they would ſurrender within five days. One night all the *Górc'hians* quitted the ſiege of *Lelit Pat-*

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tan to purſue the *Engliſh* army, which, under the command of Captain KINLOCH, had already taken *Sidúli*, an important fort at the foot of the *Nípál* hills, which border upon the kingdom of *Tirhut*: but Captain KINLOCH not being able to penetrate the hills, either on the *Sidúli* quarter or by the paſs at *Harcapur*, in the kingdom of *Macwanpur*, the army of *Górc'hà* returned to *Népál* to direct their operations againſt the city of *Cat'hmandú*, where GAINPRIJAS was, who had applied for ſuccour to the *Engliſh*. During the ſiege of *Cat'hmándú* the *Bráhmens* of *Górc'hà* came almoſt every night into the city, to engage the chiefs of the people on the part of their king: and the more effectually to impoſe upon poor GAINPRIJAS, many of the principal *Bráhmens* went to his houſe, and told him to perſevere with confidence, that the chiefs of the *Górc'hà* army were attached to his cauſe, and that even they themſelves would deliver up their king PRITHWINA'RA'YAN into his hands. Having by theſe artifices procured an opportunity of detaching from his party all his principal ſubjects, tempting them with liberal promiſes according to their cuſtom, one night the men of *Górc'hà* entered the city without oppoſition; and the wretched GAINPRIJAS, perceiving he was betrayed, had ſcarce time to eſcape with about three hundred of his beſt and moſt faithful *Hinduſtán* troops towards *Lelit Pattan*; which place however he reached the ſame night.

THE king of *Górc'hà* having made himſelf maſter of *Cat'hmándú* in the year 1768, perſiſted in the attempt of poſſeſſing himſelf alſo of the city of *Lelit Pattan*, promiſing all the nobles that he would ſuffer them to remain in the poſſeſſion of their property, that he would even augment it; and, becauſe the nobles of *Lelit Pattan* placed no reliance on the faith of his promiſes, he ſent his domeſtic prieſt to make this proteſtation; that, if he failed

to

to acquit himſelf of his promiſe, he ſhould draw curſes upon himſelf and his family even to the fifth paſt and ſucceeding generation; ſo that the unhappy GAINPREJAS and the king of *Lelit Pattan*, ſeeing that the nobility were diſpoſed to render themſelves ſubject to the king of *Gorc'hà*, with 'ow themſelves with their people to the king of *B'hatgàn*. When the city of *Lelit Pattan* became ſubject to the king of *Gorc'hà*, he continued for ſome time to treat the nobility with great attention, and propoſed to appoint a viceroy of the city from among them. Two or three months afterwards, having appointed the day for making his formal entrance into the city of *Lelit Pattan*, he made uſe of innumerable ſtratagems to get into his poſſeſſion the perſons of the nobility, and in the end ſucceeded; he had prevailed upon them to permit their ſons to remain at court as companions of his ſon; he had diſpatched a noble of each houſe to *Nawakót*, or *New Fort*, pretending that the apprehenſions he entertained of them had prevented his making a public entrance into the city; and the remaining nobles were ſeized at the river without the town, where they went to meet him agreeably to a prior engagement. Afterwards he entered the city, made a viſit to the temple of BAGHERO, adjoining to our habitation, and paſſing in triumph through the city amidſt immenſe numbers of ſoldiers, who compoſed his train, entered the royal palace, which had been prepared for his reception: in the mean time parties of his ſoldiers broke open the houſes of the nobility, ſeized all their effects, and threw the inhabitants of the city into the utmoſt conſternation. After having cauſed all the nobles who were in his power to be put to death, or rather their bodies to be mangled in a horrid manner, he departed with a deſign of beſieging *B'hatgàn*: and we obtained permiſſion, through the intereſt of his ſon, to retire with all the *Chriſtians* into the poſſeſſions of the *Engliſh*.

At the commencement of the year 1769, the king of *Górc'há* acquired poſſeſſion of the city of *B'hatgán* by the ſame expedients to which he owed his former ſucceſſes; and on his entrance with his troops into the city, GAIAPREJAS, ſeeing he had no reſource left to ſave himſelf, ran courageouſly with his attendants towards the king of *Górc'há*, and, at a ſmall diſtance from his palanquin, received a wound in his foot, which a few days afterwards occaſioned his death. The king of *Lelit Pattan* was confined in irons till his death; and the king of *B'hatgán*, being very far advanced in years, obtained leave to go and die at *Banares*. A ſhort time afterwards, the mother of GAINPREJAS alſo procured the ſame indulgence, having from old age already loſt her eye-ſight; but before her departure, they took from her a necklace of jewels, as ſhe herſelf told me, when ſhe arrived at *Patna* with the widow of her grandſon: and I could not refrain from tears, when I beheld the miſery and diſgrace of this blind and unhappy queen.

THE king of *Górc'há*, having thus in the ſpace of four years effected the conqueſt of *Népál*, made himſelf maſter alſo of the country of the *Cirátas*, to the eaſt of it, and of other kingdoms, as far as the borders of *Coch Bihár*. After his deceaſe, his eldeſt ſon, PRAIA'P SINH, held the government of the whole country; but ſcarcely two years after, on PRAI'PA SINH's death, a younger brother, by name BAHA'DAR SA'H, who reſided then at *Bettia* with his uncle DELMERDIN SA'H, was invited to accept of the government; and the beginning of his government was marked with many maſſacres. The royal family is in the greateſt confuſion, becauſe the queen lays claim to the government in the name of her ſon, whom ſhe had by PRAIA'P SINH; and perhaps the oath violated by PRIT'HWI'NA'RA'YAN, will in the progreſs of time have its effect. Such have been the ſucceſſors of the kingdoms of *Népal*, of which PRIT'HWI'NA'RA'YAN had thus acquired poſſeſſion.

ON

XVIII.

ON THE CURE OF PERSONS BITTEN BY SNAKES.

BY JOHN WILLIAMS, ESQ.

THE following ſtatement of facts relative to the cure of perſons bitten by ſnakes, ſelected from a number of caſes which have come within my own knowledge, require no prefatory introduction, as it points out the means of obtaining the greateſt ſelf-gratification the human mind is capable of experiencing,—that of the preſervation of the life of a fellow-creature, and ſnatching him from the jaws of death, by a method which every perſon is capable of availing himſelf of. Eau de Luce, I learn from many communications which I have received from different parts of the country, anſwers as well as the pure Cauſtic Alkali Spirit; and though, from its having ſome eſſential oils in its compoſition, it may not be ſo powerful, yet, as it muſt be given with water, it only requires to increaſe the doſe in proportion; and ſo long as it retains its milky white colour, it is ſufficiently efficacious.

FROM the effect of a ligature applied between the part bitten and the heart, it is evident that the poiſon diffuſes itſelf over the body by the returning venous blood; deſtroying the irritability, and rendering the ſyſtem paralytic. It is therefore probable that the Volatile Cauſtic Alkali, in reſiſting the diſeaſe of the poiſon, does not act ſo much as a ſpecific in deſtroying its quality as by counteracting the effect on the ſyſtem, by ſtimulating the fibres, and preſerving that irritability which it tends to deſtroy.

CASE I.

IN the month of *Auguſt* 1780, a ſervant of mine was bitten in the heel, as he ſuppoſed, by a ſnake; and in a few minutes was in great agony, with convulſions about the throat and jaws, and continual grinding of the teeth. Having a wiſh to try the effects of Volatile Alkali in ſuch caſes, I gave him about forty drops of Eau de Luce in water, and applied ſome of it to the part bitten; the doſe was repeated every eight or ten minutes, till a ſmall phial full was expended: it was near two hours before it could be ſaid he was out of danger. A numbneſs and pricking ſenſation was perceived extending itſelf up to the knee, where a ligature was applied ſo tight as to ſtop the returning venous blood, which ſeemingly checked the progreſs of the deleterious poiſon. The foot and leg, up to where the ligature was made, were ſtiff and painful for ſeveral days; and, which appeared very ſingular, were covered with a branny ſcale.

THE above was the firſt caſe in which I tried the effects of the Volatile Alkali, and, apprehending that the eſſential oils in the compoſition of Eau de Luce, though made of the ſtrong Cauſtic Volatile Spirit, would conſiderably diminiſh its powers, I was induced, the next opportunity that offered, to try the effects of pure Volatile Cauſtic Alkali Spirit, and accordingly prepared ſome from Quicklime and the Sal Ammoniac of this country.

CASE II.

IN *July* 1782, a woman of the *Brâhman* caſt, who lived in my neighbourhood at *Chunâr*, was bitten by a *Cobra de Capello* between the thumb and fore-finger of her right hand. Prayers and ſuperſtitious incantations were practiſed by the *Brâhmens* about her, till ſhe became ſpeechleſs and convulſed, with locked jaws, and a profuſe diſcharge of ſaliva running from her

her mouth. On being informed of the accident, I immediately ſent a ſervant with a bottle of the Volatile Cauſtic Alkali Spirit, of which he poured about a tea-ſpoon full, mixed with water, down her throat, and applied ſome of it to the part bitten. The doſe was repeated a few minutes after, when ſhe was evidently better, and in about half an hour was perfectly recovered.

This accident happened in a ſmall hut, where I ſaw the ſnake, which was a middle-ſized *Cobra de Capello*. The *Brahmens* would not allow it to be killed. In the above caſe, no other means whatever were uſed for the recovery of the patient than are here recited.

CASE III.

A woman-ſervant in the family of a gentleman at *Benares* was bitten in the foot by a *Cobra de Capello*: the gentleman immediately applied to me for ſome of the Volatile Cauſtic Alkali, which I fortunately had by me. I gave her about ſixty drops in water, and alſo applied ſome of it to the part bitten: in about ſeven or eight minutes after, ſhe was quite recovered. In the above caſe, I was not witneſs to the deleterious effect of the poiſon on the patient; but ſaw the ſnake after it was killed.

CASE IV.

In *July* 1784, the wife of a ſervant of mine was bitten by a *Cobra de Capello* on the outſide of the little toe of her right foot. In a few minutes ſhe became convulſed, particularly about the jaws and throat; with a continued gnaſhing of the teeth. She at firſt complained of a numbneſs extend-

ing from the wound upwards, but no ligature was applied to the limb. About ſixty drops of the Volatile Cauſtic Spirit were given to her in water, by forcing open her mouth, which was ſtrongly convulſed. In about ſeven minutes the doſe was repeated, when the convulſions left her; and in three more ſhe became ſenſible, and ſpoke to thoſe who attended her. A few drops of the ſpirit had alſo been applied to the wound. The ſnake was killed and brought to me, which proved to be a *Cobra de Capello*.

CASE V.

As it is generally believed that the venom of ſnakes is more malignant during hot dry weather than at any other ſeaſon, the following caſe, which occurred in the month of *July* 1788, when the weather was extremely hot, no rain, excepting a ſlight ſhower, having fallen for many months, may not be unworthy of notice.

A SERVANT belonging to an Officer at *Juanpoor*, was bitten by a ſnake on the leg, about two inches above the outer ankle. As the accident happened in the evening, he could not ſee what ſpecies of ſnake it was: he immediately tied a ligature above the part bitten, but was in a few minutes in ſuch exquiſite torture from pain, which extended up his body and to his head, that he ſoon became dizzy and ſenſeleſs. On being informed of the accident, I ſent my ſervant with a phial of the Volatile Cauſtic Alkali; who found him, when he arrived, quite torpid, with the ſaliva running out of his mouth, and his jaws ſo faſt locked, as to render it neceſſary to uſe an inſtrument to open them and adminiſter the medicine. About forty drops of the Volatile Cauſtic Spirit were given to him in water, and applied to the wound; and the ſame doſe repeated a few minutes after. In about half an hour he

was perfectly recovered. On examining the part bitten, I could diſcover the marks of three fangs; two on one ſide, and one one the other; and, from the diſtance they were aſunder, I ſhould judge it a large ſnake. More than ten minutes did not appear to have elapſed from the time of his being bitten till the medicine was adminiſtered. The wounds healed immediately; and he was able to attend to his duty the next day. Though the ſpecies of ſnake was not aſcertained, yet I judge from the flow of ſaliva from the mouth, convulſive ſpaſms of the jaws and throat, as well as from the marks of three fangs, that it muſt have been a *Cobra de Capello*; and, though I have met with five and ſix fangs of different ſizes in ſnakes of that ſpecies, I never obſerved the marks of more than two having been applied in biting in any other caſe which came within my knowledge.

CASE VI.

In *September* 1786, a ſervant belonging to Captain S——, who was then at *Benares*, was bitten in the leg by a large *Cobra de Capello*. He ſaw the ſnake coming towards him, with his neck ſpread out in a very tremendous manner, and endeavoured to avoid him; but, before he could get out of his way, the ſnake ſeized him by the leg, and ſecured his hold for ſome time, as if he had not been able to extricate his teeth. Application was immediately made to his maſter for a remedy, who ſent to conſult me; but, before I arrived, had given him a quantity of ſweet oil, which he drank. So ſoon as I ſaw him, I directed the uſual doſe of Volatile Cauſtic Alkali to be given, which fortunately brought away the oil from his ſtomach, or it is probable that the ſtimulating effect of the Volatile Spirit would have been ſo much blunted by it, as to have become ineffıcacious. A ſecond doſe was immediately adminiſtered, and ſome time after a third. The man recovered

in the courſe of a few hours. As oil is frequently adminiſtered as a remedy in the bite of ſnakes, I think it neceſſary to caution againſt the uſe of it with the Volatile Alkali, as it blunts the ſtimulating quality of the ſpirit, and renders it uſeleſs.

Of the numerous ſpecies of ſnakes which I have met with, not above ſix were provided with poiſonous fangs; though I have examined many which have been conſidered by the natives as dangerous, without being able to diſcover any thing noxious in them.

The following is an inſtance of the deleterious effect of the bite of a ſnake, called by the natives *Krait*, a ſpecies of the *Boa*, which I have frequently met with in this part of the country.

CASE VII.

On the 16th *September* 1788, a man was brought to me who had been bitten by a ſnake, with the marks of two fangs on two of his toes; he was ſaid to have been bitten above an hour before I ſaw him: he was perfectly ſenſible, but complained of great pain in the parts bitten, with an univerſal languor. I immediately gave him thirty drops of the Volatile Cauſtic Alkali Spirit in water, and applied ſome of it to the wounds: in a few minutes he became eaſier, and in about half an hour was carried away by his friends, with perfect confidence in his recovery, without having taken a ſecond doſe of the medicine, which indeed did not appear to have been neceſſary; but whether from the effect of the bite of the ſnake, or the motion of the dooly on which he was carried, I know not; but he became ſick at the ſtomach, threw up the medicine, and died in about a quarter of an hour after. The man ſaid, that the ſnake came up to him while

while he was ſitting on the ground; and that he put him away with his hand once, but that he turned about and bit him as deſcribed. The ſnake was brought to me, which I examined; it was about two feet and a half long, of a lightiſh brown colour on the back, a white belly, and annulated from head to end with 208 abdominal, and forty-ſix tail ſcuta. I have met with ſeveral of them from thirteen inches to near three feet in length. It had two poiſonous fangs in the upper jaw, which lay naked, with their points without the upper lip. It does not ſpread its neck, like the *Cobra de Capello*, when enraged; but is very active and quick in its motion.

I HAVE ſeen inſtances of perſons bitten by ſnakes, who have been ſo long without aſſiſtance, that, when they have been brought to me they have not been able to ſwallow, from convulſions of the throat and fauces, which is, I obſerve, a conſtant ſymptom of the bite of the *Cobra de Capello*; and indeed I have had many perſons brought to me who had been dead ſome time; but never knew an inſtance of the Volatile Cauſtic Alkali failing in its effect, where the patient has been able to ſwallow it.

ON

XIX.

ON SOME ROMAN COINS FOUND AT NELORE.

TO THE PRESIDENT OF THE ASIATIC SOCIETY.

SIR,

I HAVE the honour to preſent you with an extract of a letter from Mr. ALEXANDER DAVIDSON, late Governor of *Madras*, giving an account of ſome *Roman Coins* and *Medals* lately found near *Nellor*, together with a drawing of them, copied from one tranſmitted by Mr. DAVIDSON; which, I imagine, may be acceptable to the *Aſiatic* Society.

I have the honour to be,

SIR,

Your moſt obedient humble ſervant,

S. DAVIS.

Calcutta, March 20, 1788.

EXTRACT OF A LETTER FROM ALEXANDER DAVIDSON, ESQ.

DATED MADRAS, JULY 12, 1787.

AS a peaſant near *Nelòr*, about 100 miles north-weſt of *Madras*, was ploughing on the ſide of a ſtony craggy hill, his plough was obſtructed by ſome brickwork: he dug, and diſcovered the remains of a ſmall *Hindu* temple, under which a little pot was found with *Roman* coins and medals of the ſecond century.

HE ſold them as old gold; and many, no doubt, were melted; but the *Nawáb* AMI'RUL UMARA' recovered upwards of thirty of them. This happened while I was Governor; and I had the choice of two out of the whole. I choſe an ADRIAN and a FAUSTINA.

SOME of the TRAJANS were in good preſervation. Many of the coins could not have been in circulation: they were all of the pureſt gold, and many of them as freſh and beautiful as if they had come from the mint but yeſterday: ſome were much defaced and perforated, and had probably been worn as ornaments on the arm, and others pending from the neck.

I SEND you drawings of my two Coins, and have no objection to your publiſhing an account of them in the Tranſactions of the *Aſiatic* Society. I received my information reſpecting them from the young *Nawáb*; and if my name be neceſſary to authenticate the facts I have related, you have my permiſſion to uſe it.

ON

XX.

ON TWO HINDU FESTIVALS, AND THE INDIAN SPHINX.

BY THE LATE COLONEL PEARSE, MAY 12, 1785.

I BEG leave to point out to the Society, that the *Sunday* before laſt was the feſtival of BHAVA'NI', which is annually celebrated by the *Gópas*, and all other *Hindus* who keep horned cattle for uſe or profit: on this feaſt they viſit gardens, erect a pole in the fields, and adorn it with pendants and garlands. The *Sunday* before laſt was our *firſt* of *May*, on which the ſame rites are performed by the ſame claſs of people in *England*, where it is well known to be a relique of ancient ſuperſtition in that country: it ſhould ſeem, therefore, that the religion of the Eaſt and the old religion of *Britain* had a ſtrong affinity. BHAVA'NI' has another feſtival; but that is not kept by any one ſet of *Hindus* in particular, and this is appropriated to one claſs of people: this is conſtantly held on the *ninth* of *Baiſác'h*; which does not always fall on our *firſt* of *May*, as it did this year. Thoſe members of the Society who are acquainted with the rules which regulate the feſtivals, may be able to give better information concerning this point: I only mean to point out the reſemblance of the rites performed here and in *England*, but muſt leave abler hands to inveſtigate the matter further, if it ſhould be thought deſerving of the trouble. I find that the feſtival which I have mentioned, is one of the moſt ancient among the *Hindus*.

II. DURING the *Hóli*, when mirth and feſtivity reign among *Hindus* of every claſs, one ſubject of diverſion is to ſend people on errands and expeditions that are to end in diſappointment, and raiſe a laugh at the expence of the perſon ſent. The *Hóli* is always in *March*, and the laſt day is the greateſt holiday. All the *Hindus* who are on that day at *Jagannát'h*, are entitled to certain diſtinctions, which they hold to be of ſuch importance, that I found it expedient to ſtay there till the end of the feſtival; and I am of opinion, and ſo are the reſt of the officers, that I ſaved above five hundred men by the delay. The origin of the *Hóli* ſeems loſt in antiquities; and I have not been able to pick up the ſmalleſt account of it.

IF the rites of MAY-DAY ſhow any affinity between the religion of *England* in times paſt, and that of the *Hindus* in theſe times, may not the cuſtom of making *April-fools*, on the firſt of that month, indicate ſome traces of the *Hóli*? I have never yet heard any account of the origin of the *Engliſh* cuſtom; but it is unqueſtionably very ancient, and is ſtill kept up even in great towns, though leſs in them than in the country. With us it is chiefly confined to the lower claſſes of people; but in *India* high and low join in it; and the late SHUJA'UL DAULAH, I am told, was very fond of making *Hóli*-fools, though he was a *Muſſelman* of the higheſt rank. They carry it here ſo far, as to ſend letters making appointments, in the names of perſons who, it is known, muſt be abſent from their houſe at the time fixed on; and the laugh is always in proportion to the trouble given.

III. AT *Jagannát'h* I found the *Sphinx* of the *Egyptians*; and preſent the Society with a drawing of it. MURA'RI *Pandit*, who was deputy *Faujdár* of *Baluſor*, attended my detachment on the part of the *Mahrátas*: he

he is now the principal *Faujdàr*, and is much of the gentleman, a man of learning, and very intelligent. From him I learned, that the *Sphinx*, here called *Singh*; is to appear at the end of the world, and, as ſoon as he is born, will prey on an elephant: he is, therefore, figured ſeizing an elephant in his claws, and the elephant is made ſmall, to ſhow that the *Singh*, even a moment after his birth, will be very large in proportion to it.

When I told Mura'ri that the *Egyptians* worſhipped a bull, and choſe the God by a black mark on his tongue, and that they adored birds and trees, he immediately exclaimed, "their religion then was the ſame with ours; "for we alſo chuſe our *ſacred bulls* by the *ſame marks*; we reverence the "*hanſa*, the *garura*, and other birds; we reſpect the *pippal* and the "*vata* among trees, and the *tulasì* among ſhrubs; but as for onions," which I had mentioned, "they are eaten by low men, and are fitter to be "eaten than worſhipped."

REMARK BY THE PRESIDENT.

Without preſuming to queſtion the authority of Mura'ri *Pandit*, I can only ſay, that ſeveral *Bráhmans*, now in *Bengal*, have ſeen the figure at *Jagannát'h*, where one of the gates is called *Sinhadwár*; and they aſſure me that they always conſidered it as a mere repreſentation of a *Lion* ſeizing a young elephant; nor do they know, they ſay, any ſenſe for the word *Sinha*, but a *Lion*, ſuch as Mr. Hastings kept near his garden. The *Húlì*, called *Hólàcà* in the *Védas*, and *P'halgútſava* in common *Sanſcrit* books, is the feſtival of the vernal ſeaſon, or *Nauróz* of the *Perſians*.

A SHORT

XXI.

A SHORT DESCRIPTION OF CARNICOBAR,

BY MR. G. HAMILTON.

COMMUNICATED BY MR. ZOFFANY.

THE iſland of which I propoſe to give a ſuccinct account, is the northernmoſt of that cluſter in the *Bay of Bengal*, which goes by the name of the *Nicobars*. It is low, of a round figure, about forty miles in circumference, and appears at a diſtance as if entirely covered with trees However, there are ſeveral well-cleared and delightful ſpots upon it. The ſoil is a black kind of clay, and marſhy. It produces in great abundance, and with little care, moſt of the tropical fruits; ſuch as pine-apples, plantains, papayas, cocoa-nuts, and areca-nuts; alſo excellent yams, and a root called *cachu*. The only four-footed animals upon the iſland are hogs, dogs, large rats, and an animal of the lizard kind, but large, called by the natives *tolouqui*; theſe frequently carry off fowls and chickens. The only kind of poultry are hens, and thoſe not in great plenty. There are abundance of ſnakes of many different kinds; and the inhabitants frequently die of their bites. The timber upon the iſland is of many ſorts, in great plenty, and ſome of it remarkably large, affording excellent materials for building or repairing ſhips.

THE natives are low in ſtature but very well made, and ſurprizingly active and ſtrong; they are copper-coloured, and their features have a caſt of the *Malay*; quite the reverſe of elegant. The women in particular are extremely ugly. The men cut their hair ſhort; and the women have their heads ſhaved quite bare, and wear no covering but a ſhort petticoat, made of a ſort of ruſh, or dry graſs, which reaches half-way down the thigh. This graſs is not interwoven, but hangs round the perſon, ſomething like the thatching of a houſe. Such of them as have

received

received preſents of cloth-petticoats from the ſhips, commonly tie them round immediately under the arms. The men wear nothing but a narrow ſtrip of cloth about their middle, in which they wrap up their privities ſo tight, that there is hardly any appearance of them. The ears of both ſexes are pierced when young, and by ſqueezing into the holes large plugs of wood, or hanging heavy weights of ſhells, they contrive to render them wide, and diſagreeable to look at. They are naturally ſuppoſed to be good-humoured and gay, and are very fond of ſitting at table with *Europeans*, where they eat every thing that is ſet before them; and they eat moſt enormouſly. They do not care much for wine, but will drink bumpers of arrack as long as they can ſee. A great part of their time is ſpent in feaſting and dancing. When a feaſt is held at any village, every one that chuſes goes uninvited, for they are utter ſtrangers to ceremony. At thoſe feaſts they eat immenſe quantities of pork, which is their favourite food. Their hogs are remarkably fat, being fed upon the cocoa-nut kernel and ſea-water; indeed all their domeſtic animals, fowls, dogs, &c. are fed upon the ſame. They have likewiſe plenty of ſmall ſea-fiſh, which they ſtrike very dexterouſly with lances, wading into the ſea about knee-deep. They are ſure of killing a very ſmall fiſh at ten or twelve yards diſtance. They eat the pork almoſt raw, giving it only a haſty grill over a quick fire. They roaſt a fowl by running a piece of wood through it, by way of ſpit, and holding it over a briſk fire until the feathers are burnt off, when it is ready for eating, in their taſte. They never drink water; only cocoa-nut milk and a liquor called *foura*, which oozes from the cocoa-nut tree after cutting off the young ſprouts or flowers. This they ſuffer to ferment before it is uſed, and then it is intoxicating; to which quality they add much by their method of drinking it, by ſucking it ſlowly through a ſmall ſtraw. After eating, the young men and women, who

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are fanciſully dreſt with leaves, go to dancing, and the old people ſurround them, ſmoking *tobacco* and drinking *fouva*. The dancers, while performing, ſing ſome of their tunes, which are far from wanting harmony, and to which they keep exact time. Of muſical inſtruments they have only one kind, and that the ſimpleſt. It is a hollow bamboo, about 2½ feet long, and three inches in diameter, along the outſide of which there is ſtretched from end to end a ſingle ſtring made of the threads of a ſplit cane; and the place under the ſtring is hollowed a little, to prevent it from touching. This inſtrument is played upon in the ſame manner as a guitar. It is capable of producing but few notes; the performer however makes it ſpeak harmoniouſly, and generally accompanies it with the voice.

What they know of phyſic is ſmall and ſimple. I had once occaſion to ſee an operation in ſurgery performed on the toe of a young girl, who had been ſtung by a ſcorpion, or centipee. The wound was attended with a conſiderable ſwelling; and the little patient ſeemed in great pain. One of the natives produced the under jaw of a ſmall fiſh, which was long, and planted with two rows of teeth as ſharp as needles. Taking this in one hand, and a ſmall ſtick by way of hammer in the other, he ſtruck the teeth three or four times into the ſwelling, and made it bleed freely: the toe was then bound up with certain leaves; and next day the child was running about perfectly well.

Their houſes are generally built upon the beach in villages of fifteen or twenty houſes each; and each houſe contains a family of twenty perſons and upwards. Theſe habitations are raiſed upon wooden pillars about ten feet from the ground; they are round, and, having no windows, look like bee-hives, covered with thatch. The entry is through a trap-

door below, where the family mount by a ladder, which is drawn up at night. This manner of building is intended to ſecure the houſes from being infeſted with ſnakes and rats; and for that purpoſe the pillars are bound round with a ſmooth kind of leaf, which prevents animals from being able to mount; beſides which, each pillar has a broad round flat piece of wood near the top of it, the projecting of which effectually prevents the further progreſs of ſuch vermin as may have paſſed the leaf. The flooring is made with thin ſtrips of bamboos, laid at ſuch diſtances from one another as to leave free admiſſion for light and air; and the inſide is neatly finiſhed, and decorated with fiſhing-lances, nets, &c.

THE art of making cloth of any kind is quite unknown to the inhabitants of this iſland; what they have is got from the ſhips that come to trade in cocoa-nuts. In exchange for their nuts (which are reckoned the fineſt in this part of *India*) they will accept of but few articles: what they chiefly with for is cloth of different colours, hatchets, and hanger-blades, which they uſe in cutting down the nuts. Tobacco and arrack they are very fond of; but expect theſe in preſents. They have no money of their own, nor will they allow any value to the coin of other countries, further than as they happen to fancy them for ornaments; the young women ſometimes hanging ſtrings of dollars about their necks. However, they are good judges of gold and ſilver; and it is no eaſy matter to impoſe baſer metals upon them as ſuch.

THEY purchaſe a much larger quantity of cloth than is conſumed upon their own iſland. This is intended for the *Choury* market. *Choury* is a ſmall iſland to the ſouthward of theirs, to which a large fleet of their boats ſails every year, about the month of *November*, to exchange cloth for

canoes;

canoes; for they cannot make theſe themſelves. This voyage they perform by the help of the ſun and ſtars, for they know nothing of the compaſs.

In their diſpoſition there are two remarkable qualities. One is their entire neglect of compliment and ceremony; and the other, their averſion to diſhoneſty. A *Carnicobarian* travelling to a diſtant village upon buſineſs or amuſement, paſſes through many towns in his way, without perhaps ſpeaking to any one. If he is hungry, or tired, he goes up into the neareſt houſe, and helps himſelf to what he wants, and ſits till he is reſted, without taking the ſmalleſt notice of any of the family, unleſs he has buſineſs or news to communicate. Theft or robbery is ſo very rare amongſt them, that a man going out of his houſe never takes away his ladder, or ſhuts his door, but leaves it open for any body to enter that pleaſe, without the leaſt apprehenſion of having any thing ſtolen from him.

Their intercourſe with ſtrangers is ſo frequent, that they have acquired in general the barbarous *Portugueſe* language, ſo common over *India*. Their own has a ſound quite different from moſt others, their words being pronounced with a kind of ſtop, or catch in the throat, at every ſyllable. The few following words will ſerve to ſhew thoſe who are acquainted with other *Indian* languages, whether there is any ſimilitude between them.

A man,	*Kegonia.*	To eat,	*Guia.*
A woman,	*Kecanna.*	To drink,	*Okk.*
A child,	*Chu.*	Yams,	*T'owla.*
To laugh	*Ayelaur.*	To weep,	*P'oing.*
A canoe,	*App.*	A pine-apple,	*Prung.*

A houſe,	*Alhaum.*	To ſleep,	*Loom loom.*
A fowl,	*Haydm.*	A dog,	*T'amam.*
A hog,	*Hown.*	Fire,	*T'amia.*
Fiſh,	*Ka.*	Rain,	*Koomra.*

THEY have no notion of a God, but they believe firmly in the Devil, and worſhip him from fear. In every village there is a high pole erected, with long ſtrings of ground-rattans hanging from it, which, it is ſaid, has the virtue to keep him at a diſtance. When they ſee any ſigns of an approaching ſtorm, they imagine that the Devil intends them a viſit; upon which many ſuperſtitious ceremonies are performed. The people of every village march round their own boundaries, and fix up at different diſtances ſmall ſticks ſplit at the top, into which ſplit they put a piece of cocoa-nut, a wiſp of tobacco, and the leaf of a certain plant. Whether this is meant as a peace-offering to the Devil, or a ſcare-crow to frighten him away, does not appear.

WHEN a man dies, all his live ſtock, cloth, hatchets, fiſhing-lances, and in ſhort every moveable thing he poſſeſſed is buried with him, and his death is mourned by the whole village. In one view this is an excellent cuſtom, ſeeing it prevents all diſputes about the property of the deceaſed amongſt his relations. His wife muſt conform to cuſtom, by having a joint cut off from one of her fingers; and, if ſhe refuſes this, ſhe muſt ſubmit to have a deep notch cut in one of the pillars of her houſe.

I WAS once preſent at the funeral of an old woman. When we went into the houſe which had belonged to the deceaſed, we found it full of her female relations. Some of them were employed in wrapping up the corpſe

in

in leaves and cloth, and others tearing to pieces all the cloth which had belonged to her. In another houſe hard by, the men of the village, with a great many others from the neighbouring towns, were ſitting drinking *fourri* and ſmoking tobacco. In the mean time two ſtout young fellows were buſy digging a grave in the ſand near the houſe. When the women had done with the corpſe, they ſet up a moſt hideous howl, upon which the people began to aſſemble round the grave, and four men went up into the houſe to bring down the body; in doing this they were much interrupted by a young man, ſon to the deceaſed, who endeavoured with all his might to prevent them, but finding it in vain, he clung round the body, and was carried to the grave along with it: there, after a violent ſtruggle, he was turned away, and conducted back to the houſe. The corpſe being now put into the grave, and the laſhings, which bound the legs and arms, cut, all the live ſtock which had been the property of the deceaſed, conſiſting of about half a dozen hogs, and as many fowls, were killed, and flung in above it: a man then approached with a bunch of leaves ſtuck upon the end of a pole, which he ſwept two or three times gently along the corpſe, and then the grave was filled up. During the ceremony the women continued to make the moſt horrible vocal concert imaginable: the men ſaid nothing. A few days afterwards a kind of monument was erected over the grave, with a pole upon it, to which long ſtrips of cloth of different colours were hung.

POLYGAMY is not known among them; and their puniſhment of adultery is not leſs ſevere than effectual. They cut, from the man's offending member, a piece of the foreſkin proportioned to the frequent commiſſion or enormity of the crime.

THERE

THERE ſeems to ſubſiſt among them a perfect equality. A few perſons, from their age, have a little more reſpect paid to them; but there is no appearance of authority one over another. Their ſociety ſeems bound rather by mutual obligations continually conferred and received: the ſimpleſt and beſt of all ties.

THE inhabitants of the *Andamans* are ſaid to be *Cannibals*. The people of *Carnicobar* have a tradition among them, that ſeveral canoes came from *Andaman* many years ago, and that the crews were all armed, and committed great depredations, and killed ſeveral of the *Nicobarians*. It appears at firſt remarkable that there ſhould be ſuch a wide difference between the manners of the inhabitants of iſlands ſo near to one another; the *Andamans* being ſavage *Cannibals*, and the others the moſt harmleſs inoffenſive people poſſible. But it is accounted for by the following hiſtorical anecdote, which I have been aſſured is matter of fact. Shortly after the *Portugueſe* had diſcovered the paſſage to *India* round the *Cape of Good Hope*, one of their ſhips, on board of which were a number of *Mozambique* negroes, was loſt on the *Andaman Iſlands*, which were till then uninhabited. The blacks remained on the iſland and ſettled there: the *Europeans* made a ſmall ſhallop, in which they ſailed to *Pegu*. On the other hand, the *Nicobar Iſlands* were peopled from the oppoſite main and the coaſt of *Pegu*; in proof of which the *Nicobar* and *Pegu* languages are ſaid, by thoſe acquainted with the latter, to have much reſemblance.

ON

XXII.

THE DESIGN OF A TREATISE ON THE PLANTS OF INDIA.

BY THE PRESIDENT.

THE greateſt, if not the only, obſtacle to the progreſs of knowledge in theſe provinces, except in thoſe branches of it which belong immediately to our ſeveral profeſſions, is our want of leiſure for general reſearches; and, as ARCHIMEDES, who was happily maſter of his time, had not *ſpace* enough to move the greateſt weight with the ſmalleſt force, thus we, who have ample ſpace for our inquiries, really want *time* for the purſuit of them. "Give me a place to ſtand on," ſaid the great mathematician, "and I will "move the whole earth:" *Give us time*, we may ſay, *for our inveſtigations, and we will tranſfer to* Europe *all the ſciences, arts, and literature of* Aſia. "Not to have deſpaired," however, was thought a degree of merit in the *Roman* General, even though he was defeated; and, having ſome hope that others may occaſionally find more leiſure than it will ever, at leaſt in this country, be my lot to enjoy, I take the liberty to propoſe a work, from which very curious information, and poſſibly very ſolid advantage, may be derived.

SOME hundreds of plants, which are yet imperfectly known to *European* botaniſts, and with the virtues of which they are wholly unacquainted, grow wild on the plains and in the foreſts of *India*: the *Amarcòſh*, an excellent vocabulary of the *Sanſcrit* language, contains in one chapter the names of about three hundred medicinal vegetables; the *Médiní* may comprize

prize many more; and the *Dravyábhidhána*, or *Dictionary of Natural Productions*, includes, I believe, a far greater number; the properties of which are diſtinctly related in medical tracts of approved authority. Now the firſt ſtep, in compiling a treatiſe on the plants of *India*, ſhould be to write their true names in *Roman* letters, according to the moſt accurate orthography, and in *Sanſcrit* preferably to any vulgar dialect; becauſe a learned language is fixed in books, while popular idioms are in conſtant fluctuation, and will not perhaps be underſtood a century hence by the inhabitants of theſe *Indian* territories, whom future botaniſts may conſult on the common appellations of trees and flowers. The childiſh denominations of plants from the perſons who firſt deſcribed them, ought wholly to be rejected; for *Champaca* and *Hinna* ſeem to me not only more elegant, but far properer deſignations of an *Indian* and an *Arabian* plant, than *Michelia* and *Lawſonia*; nor can I ſee without pain, that the great *Swediſh* botaniſt conſidered it as *the ſupreme and only reward of labour* in this part of natural hiſtory, to preſerve a name by hanging it on a bloſſom, and that he declared this mode of promoting and adorning botany, worthy of being *continued with holy reverence*, though ſo high an honour, he ſays, *ought to be conferred with chaſte reſerve, and not proſtituted for the purpoſe of conciliating the good-will, or eternizing the memory of any but his choſen followers; no, not even of ſaints.* His liſt of *an hundred and fifty* ſuch names clearly ſhows that his excellent works are the true baſis of his juſt celebrity, which would have been feebly ſupported by the ſtalk of the *Linnæa*. From what proper name the *Plantain* is called *Muſa*, I do not know; but it ſeems to be the *Dutch* pronunciation of the *Arabic* word for that vegetable, and ought not, therefore, to have appeared in his liſt, though, in my opinion, it is the only rational name in the muſter-roll. As to the ſyſtem of LINNÆUS, it is the ſyſtem of Nature, ſubordinate indeed to the beautiful arrangement of *natural orders*,

of

of which he has given a rough ſketch, and which may hereafter, perhaps, be completed: but the diſtribution of vegetables into *claſſes*, according to the number, length, and poſition of the ſtamens and piſtils, and of thoſe *claſſes* into *kinds* and *ſpecies*, according to certain marks of diſcrimination, will ever be found the cleareſt and moſt convenient of methods, and ſhould therefore be ſtudiouſly obſerved in the work which I now ſuggeſt; but I muſt be forgiven if I propoſe to reject the *Linnean* appellations of the twenty-four *claſſes*, becauſe, although they appear to be *Greek* (and, if they really were ſo, that alone might be thought a ſufficient objection) yet in truth they are not *Greek*, nor even formed by analogy to the language of *Grecians*; for *Polygamos*, *Monandros*, and the reſt of that form, are both maſculine and feminine; *Polyandria*, in the abſtract, never occurs, and *Polyandrion* means a public cemetery; *diœcea* and *diœcus* are not found in books of authority; nor, if they were, would they be derived from *dis*, but from *dia*, which would include the *trandria*. Let me add, that the *twelfth* and *thirteenth* claſſes are ill diſtinguiſhed by their appellations, independently of other exceptions to them, ſince the real diſtinction between them conſiſts not ſo much in the *number* of their ſtamens as in the *place* where they are inſerted; and that the *fourteenth* and *fifteenth* are not more accurately diſcriminated by two words formed in defiance of grammatical analogy, ſince there are but *two* powers, or two *diverſities of length*, in each of thoſe claſſes. *Calycopolyandros* might, perhaps, not inaccurately denote a flower of the *twelfth* claſs; but ſuch a compound would ſtill favour of barbariſm or pedantry; and the beſt way to amend ſuch a ſyſtem of words is to efface it, and ſupply its place by a more ſimple nomenclature, which may eaſily be found. Numerals may be uſed for the *eleven* firſt claſſes, the former of two numbers being always appropriated to the *ſtamens*, and the latter to the *piſtils*: ſhort phraſes, as, *on the calyx*

or *calyx, in the receptacle, two long, four long, from one base, from two* or *many bases, with anthers connected on the pistils, in two flowers, in two distinct plants, mixed, concealed,* or the like, will answer every purpose of discrimination; but I do not offer this as a perfect substitute for the words which I condemn. The allegory of *sexes* and *nuptials*, even if it were complete, ought, I think, to be discarded, as unbecoming the gravity of men, who, while they search for truth, have no business to inflame their imaginations; and, while they profess to give descriptions, have nothing to do with metaphors. Few passages in *Aloisia*, the most impudent book ever composed by man, are more wantonly indecent than the hundred-and-forty-sixth number of the *Botanical Philosophy*, and the broad comment of its grave author, who *dares*, like OCTAVIUS in his epigram, *to speak with* Roman *simplicity*; nor can the *Linnean* description of the *Arum*, and many other plants, be read in *English*, without exciting ideas which the occasion does not require. Hence it is, that no well-born and well-educated woman can be advised to amuse herself with botany, as it is now explained, though a more elegant and delightful study, or one more likely to assist and embellish other female accomplishments, could not possibly be recommended.

WHEN the *Sanscrit* names of the *Indian* plants have been correctly written in a large paper-book, one page being appropriated to each, the fresh plants themselves, procured in their respective seasons, must be concisely, but accurately, *classed* and *described*; after which their several *uses* in medicine, diet, or manufactures, may be collected, with the assistance of *Hindu* physicians, from the medical books in *Sanscrit*, and their accounts either disproved or established by repeated experiments, as fast as they can be made with exactness.

BY

By way of example, I annex the deſcriptions of five *Indian* plants, but am unable, at this ſeaſon, to re-examine them, and wholly deſpair of leiſure to exhibit others, of which I have collected the names, and moſt of which I have ſeen in bloſſom.

I. MUCHUCUNDA.

Twenty, from One Baſe.

Cal. Five-parted, thick; leaflets oblong.

Cor. Five petals, oblong.

Stam. From twelve to fifteen, rather long, fertile; five ſhorter, ſterile. In ſome flowers, the *unprolific* ſtamens longer.

Piſt. Style cylindric.

Peric. A capſule, with five cells, many-ſeeded.

Seeds, roundiſh, compreſſed, winged.

Leaves, of many different ſhapes.

Uſes. The quality refrigerant.

One flower, ſteeped a whole night in a glaſs of water, forms a cooling mucilage of uſe in virulent gonorrhœas. The *Muchucunda*, called alſo *Pichuca*, is exquiſitely fragrant: its calyx is covered with an odoriferous duſt; and the dried flowers in fine powder, taken like ſnuff, are ſaid, in a *Sanſcrit* book, almoſt inſtantaneouſly to remove a nervous head-ach.

Note. This plant differs a little from the *Pentapetes* of Linnæus.

II. BILVA, OR MA'LU'RA.

Many on the Receptacle, and One

Cal. Four or five, cleft beneath.

Cor. Four or five petals; moſtly reflex.

Stam. Forty to forty-eight filaments; anthers moſtly erect.

Piſt. Germ roundiſh; *Style* ſmooth, ſhort; *Stigma* clubbed.

Perik. A ſpheriodal berry, very large; many-ſeeded.

Seeds, toward the ſurface, ovate, in a pellucid mucus.

Leaves ternate; common petiole, long; leaflets, ſubovate, obtuſely notched, with ſhort petioles; ſome almoſt lanced.

Stem armed with ſharp thorns.

Uſes. The fruit nutritious, warm, cathartic; in taſte, delicious; in fragrance, exquiſite: its aperient and deterſive quality, and its efficacy in removing habitual coſtiveneſs, have been proved by conſtant experience. The mucus of the ſeed is, for ſome purpoſes, a very good cement.

Note. This fruit is called *Srip'hala*, becauſe it ſprang, ſay the *Indian* poets, from the milk of *Sri*, the goddeſs of abundance, who beſtowed it on mankind at the requeſt of ISWARA, whence he alone wears a chaplet of *Bilwa* flowers; to him only the *Hindus* offer them; and, when they ſee any of them fallen on the ground, they take them up with reverence, and carry them to his temple. From the firſt bloſſom of this plant, that I could inſpect, I had imagined that it belonged to the ſame claſs with the *Durio*, becauſe the filaments appeared to be diſtributed in five ſets; but in all that I have ſince examined, they are perfectly diſtinct.

III. SRINGATACA.

Four and One.

Cal. Four cleft, with a long peduncle above.

Cor. Four petals.

Stam.

Stam. Anthers kidney-ſhaped,

Piſt. *Germ* roundiſh; *Style* long as the filaments; *Stigma* clubbed.

Seed; a *nut* with four oppoſite angles (two of them *ſharp* thorns) formed by the *Calyx*.

Leaves. Thoſe which float on the water are rhomboïdal; the two upper ſides unequally notched; the two lower, right lines. Their petioles buoyed up by ſpindle ſhaped ſpongy ſubſtances, not bladders.

Root, knotty, like coral.

Uſes. The freſh kernel, in ſweetneſs and delicacy, equals that of the filbert A mucus, ſecreted by minute glands, covers the wet leaves, which are conſidered as cooling.

Note. It ſeems to be the floating *Trapa* of LINNÆUS.

IV. PUTI CARAJA.

Ten and One.

Cal. Five-cleft.

Cor. Five equal petals.

Peric. A thorny legumen; two ſeeds.

Leaves oval, pinnated.

Stem. Armed.

Uſes. The ſeeds are very bitter, and, perhaps tonic; ſince one of them, bruiſed and given in two doſes, will, as the *Hindus* aſſert, cure an intermittent fever.

V. MADHUCA. (*See Vol. I. page* 300.)

Many, not on the Receptacle, and One.

Col. *Perianth* four or five-leaved.

Cor.

Cor. One-petaled. *Tube* inflated, fleſhy. *Border* nine, or ten, parted.

Stam. *Anthers* from twelve to twenty-eight, erect, acute, ſubvillous.

Piſt. *Germ* roundiſh; *Style* long, awl-ſhaped.

Peric. A *drupe*, with two or three *nuts?*

Leaves oval, ſomewhat pointed.

Uſes. The *tubes* eſculent, nutritious; yielding, by diſtillation, an inebriating ſpirit, which, if the ſale of it were duly reſtrained by law, might be applied to good purpoſes. A uſeful oil is expreſſed from the ſeed.

Note. It reſembles the *Baſſia* of KOENIG.

SUCH would be the method of the work which I recommend; but even the ſpecimen which I exhibit, might, in ſkilful hands, have been more accurate. Engravings of the plants may be annexed; but I have more than once experienced, that the beſt anatomical and botanical prints give a very inadequate, and ſometimes a very falſe, notion of the objects which they were intended to repreſent. As we learn a new language, by reading approved compoſitions in it with the aid of a Grammar and Dictionary, ſo we can only ſtudy with effect the natural hiſtory of vegetables by analyſing the plants themſelves with the *Philoſophia Botanica*, which is the *Grammar*, and the *Genera et Species Plantarum*, which may be conſidered as the *Dictionary* of that beautiful language in which Nature would teach us what plants we muſt avoid as noxious, and what we muſt cultivate as ſalutary, for that the qualities of plants are *in ſome degree* connected with the *natural orders* and *claſſes* of them, a number of inſtances would abundantly prove.

XXIII.

ON THE DISSECTION OF THE PANGOLIN.

IN A LETTER TO GENERAL CARNAC,

FROM ADAM BURT, ESQ.

COMMUNICATED BY THE GENERAL.

SIR,

IN compliance with your desire, I most willingly do myself the honour to present to you my observations and reflections on the dissection of one of those animals, of which we have a print, with a very short account, in the FIRST VOL. of the TRANSACTIONS of the ASIATIC SOCIETY. The animal from which that likeness has been taken, was sent by Mr. LESLIE, from *Chitra*, to the President Sir WILLIAM JONES. It is distinguished in the TRANSACTIONS by a name which I do not at present remember; but probably the animal is of the same genus with the *Manis*, as described in the former edition of ENCYCLOPÆDIA BRITANNICA, or, perhaps, not different from the *Pangolin* of BUFFON.

THE representation of this animal in the MEMOIRS of the ASIATIC SOCIETY, makes it unnecessary for me to enter into any general description of its external figure and appearance. There are on each foot five claws, of which the outer and inner are small when compared with the other three. There are no distinct toes; but each nail is moveable by a joint at its root. This creature is extremely inoffensive. It has *no teeth*; and its feet are unable to grasp. Hence it would appear, that Nature, having furnished it with a coat of mail for its protection, has, with some regard to justice, denied it the powers of acting with hostility against its fellow-creatures. The nails are well adapted for digging in the ground; and the animal is so dexterous in

cluding.

eluding its enemies by concealing itſelf in holes and among rocks, that it is extremely difficult to procure one.

The upper jaw is covered with a croſs cartilaginous ridge, which though apparently not at all ſuited to any purpoſes of maſtication, may, by encreaſing the ſurface of the palate, extend the ſenſe of taſte. The œſophagus admitted my foreſinger with eaſe. The tongue, at the bottom of the mouth, is nearly about the ſize of the little finger, from whence it tapers to a point. The animal at pleaſure protrudes this member a great way from the mouth. The tongue ariſes from the enſiform cartilage and the contiguous muſcles of the belly, and paſſes in form of a round diſtinct muſcle from over the ſtomach, through the thorax, immediately under the ſternum, and interior to the windpipe in the throat. When diſſected out, the tongue could be eaſily elongated ſo as to reach more than the length of the animal, excluſive of its tail. There is a cluſter of ſalivary glands ſeated around the tongue, as it enters the mouth. Theſe will neceſſarily be compreſſed by the action of the tongue, ſo as occaſionally to ſupply a plentiful flow of their ſecretion.

The ſtomach is *cartilaginous*, and analogous to that of the gallinaceous tribe of birds. It was filled with ſmall ſtones and gravel, which in this part of the country are almoſt univerſally calcareous. The inner ſurface of the ſtomach was rough to the feel, and formed into folds, the interſtices of which were filled with a frothy ſecretion. The guts were filled with a ſandy pulp, in which, however, were interſperſed a few diſtinct ſmall ſtones. No veſtiges of any animal or vegetable food could be traced in the whole *primæ viæ*. The gall-bladder was diſtended, with a fluid reſembling in colour and conſiſtence the dregs of beer.

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THE ſubject was a female: its dugs were two, ſeated on the breaſt. The uterus and organs of generation were evidently thoſe of a viviparous animal.

FORCIBLY ſtruck with the phenomena which this quadruped exhibited, my imagination at once overleaped the boundaries by which Science endeavours to circumſcribe the productions and the ways of Nature; and, believing with BUFFON, *que tout ce qui peut être eſt*, I did not heſitate to conjecture that this animal might poſſibly derive its nouriſhment from mineral ſubſtances. This idea I accordingly hazarded in an addreſs to Colonel KYD. The ſpirit of inquiry natural to that gentleman, could be ill ſatisfied by ideas thrown out apparently at random; and he ſoon called on me to explain my opinion and its foundation.

THOUGH we have perhaps no clear idea of the manner in which vegetables extract their nouriſhment from earth, yet the fact being ſo, it may not be unreaſonable to ſuppoſe that ſome animal may derive nutriment by a proceſs ſomewhat ſimilar. It appears to me, that facts produced by SPALLANZANI directly invalidate the experiments, from which he has drawn the inference, that fowls ſwallow ſtones merely from ſtupidity; and that ſuch ſubſtances are altogether unneceſſary to thoſe animals. He reared fowls, without permitting them ever to ſwallow ſand or ſtones; but he alſo eſtabliſhed the fact, that carnivorous animals may became frugivorous; and herbivorous animals may come to live on fleſh. A wood-pidgeon he brought to thrive on putrid meat. The experiment on fowls, then, only corroborates the proof, that we have it in our power by habits to alter the natural conſtitution of animals. Again, that eminent inveſtigator of truth found, that fowls died when fed on ſtones alone; but ſurely

that fact is far ſhort of proving that ſuch ſubſtances are not agreeable to the original purpoſes of nature in the digeſtive proceſs of theſe animals. When other ſubſtances ſhall have been detected in the ſtomach of this animal, my inference, from what I have ſeen, muſt neceſſarily fall to the ground. But if, like other animals with muſcular and cartilaginous ſtomachs, this ſingular quadruped conſumes grain, it muſt be ſurprizing that no veſtige of ſuch food was found preſent in the whole alimentary canal, ſince in that thinly inhabited country the wild animals are free to feed without intruſion from man. Nor can it be inferred from the ſtructure of the ſtomach, that this animal lives on ants or on inſects. Animals devoured as food, though of conſiderable ſize and ſolidity, with a proportionally ſmall extent of ſurface to be acted on by the gaſtric juice and the action of the ſtomach, are readily diſſolved and digeſted by animals poſſeſſing not a cartilaginous, but a membranaceous ſtomach; as for inſtance, a frog in that of a ſnake.

In the ſtomach many minerals are ſoluble, and the moſt active things which we can ſwallow. Calcareous ſubſtances are readily acted on. Dr. Priestly has aſked, "May not phlogiſtic matter be the moſt eſſential part of the "food and ſupport of both vegetable and animal bodies?" I confeſs, that Dr. Priestly's finding cauſe to propoſe the queſtion, inclines me to ſuppoſe that the affirmative to it may be true. Earth ſeems to be the baſis of all animal matter. The growth of the bones muſt be attended with a conſtant ſupply; and in the human ſpecies there is a copious diſcharge of calcareous matter thrown out by the kidneys and ſalivary glands. May not the quadruped in queſtion derive phlogiſton from earth? ſalt from mineral ſubſtances? And, as it is not deprived of the power of drinking water, what elſe is neceſſary to the ſubſiſtence of his corporeal machine?

Conſidering

CONSIDERING the ſcaly covering of this animal, we may conceive that it may be at leaſt neceſſary for its exiſtence, on that account, to imbibe a greater proportion of earth than is neceſſary to other animals. It may deſerve conſideration, that birds are covered with feathers, which in their conſtituent principles approach to the nature of horn and bone. Of theſe animals the gallinaceous tribe ſwallow ſtones; and the carnivorous take in the feathers and bones of their prey: the latter article is known to be ſoluble in the membranaceous ſtomachs; and hence is a copious ſupply of the earthy principles. In truth, I do not know that any thing is ſoluble in the ſtomach of animals which may not be thence abſorbed into their circulating ſyſtem; and nothing can be ſo abſorbed without affecting the whole conſtitution.

WHAT I have here ſtated is all that I could advance to the Colonel; but my opinion has been ſince not a little confirmed by obſerving the report of experiments by M. BRUGUATELLI of *Pavia*, on the authority of M. CRELL; by which we learn, that ſome birds have ſo great a diſſolvent power in the gaſtric juice as to diſſolve in their ſtomachs flints, rock-cryſtal, calcareous ſtones, and ſhells.

I BEG only farther to obſerve, that ſome things in BUFFON's deſcription of the Pangolin, not apparently quite applicable to this animal, might have been owing to his deſcription being only from the view of a dried preparation, in which the organs of generation would be obliterated and the dugs ſhrivelled away ſo as to be imperceptible, elſe that elegant philoſopher could not have aſſerted that, "*tous les animaux quadrupedes, qui ſont couverts* "*d'écailles, ſont ovipares.*"

Excuse my prolixity, which is only in me the neceſſary attendant of my ſuperficial knowledge of things. In ingenuouſneſs, however, I hope that I am not inferior to any man: and I am proud to ſubſcribe myſelf,

Sir,

Your moſt obedient humble ſervant,

Adam Burt.

Gya, *September* 14, 1789.

A LETTER FROM DOCTOR ANDERSON TO SIR WILLIAM JONES.

Dear Sir,

THE male *Lac* inſect having hitherto eſcaped the obſervation of naturaliſts, I ſend the encloſed deſcription, made by Mr. William Roxburgh, Surgeon on this eſtabliſhment, and Botaniſt to the Honourable Company, in hopes you will give it a place in the publication of your Society, as Mr. Roxburgh's diſcovery will bring Lac a genus into the claſs Hemiptera of Linnæus.

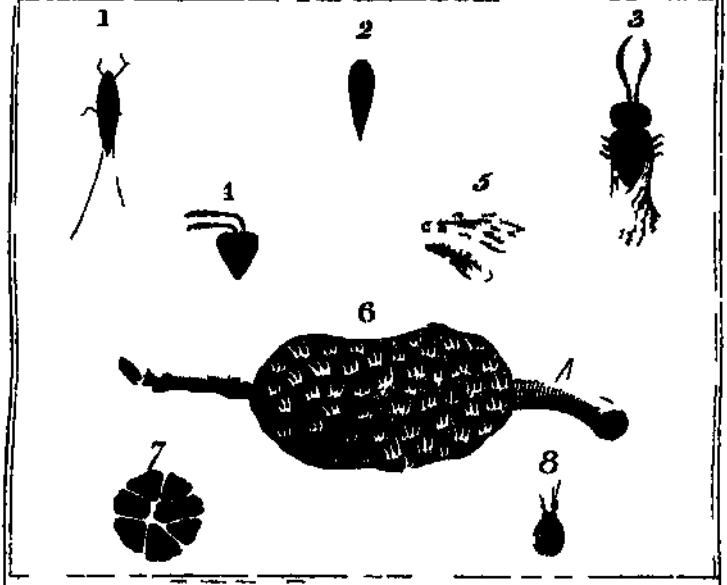
I am, with eſteem,

Dear Sir,

Your very obedient ſervant,

James Anderson.

Fort St. George, January 2, 1790.



P. 333

P. 333

XXIV.

ON THE LA'CSHA', OR LAC INSECT *.

BY MR. W. ROXBURGH.

SOME pieces of very freſh-looking lac, adhering to ſmall branches of *mimoſa cinerea*, were brought me from the mountains on the 20th of laſt month. I kept them carefully; and to-day, the 4th of *December*, fourteen days from the time they came from the hills, myriads of exceedingly minute animals were obſerved creeping about the lac and branches it adhered to, and more ſtill iſſuing from ſmall holes over the ſurface of the cells. Other ſmall and perforated excreſcences were obſerved with a glaſs amongſt the perforations from which the minute inſects iſſued, regularly two to each hole, and crowned with ſome very fine white hairs. When the hairs were rubbed off, two white ſpots appeared. The animals, when ſingle, ran about pretty briſkly; but in general they were ſo numerous as to be crowded over one another. The body is oblong, tapering moſt towards the tail, below plain, above convex, with a double, or flat margin: laterally on the back part of the thorax are two ſmall tubercles, which may be the eyes: the body behind the thorax is croſſed with twelve rings: legs ſix: feelers (antennæ) half the length of the body, jointed, hairy, each ending in two hairs as long as the antennæ: rump, a white point,

* See the Plate, Fig. 1. The female inſect in its *larva* ſtate. 2. The egg, which produces the male. 3. The male inſect. 4. The head with jointed antennæ. 5. The wings on one ſide. The preceding figures are much magnified, but in juſt proportion. 6. A piece of *Lac*, of its natural ſize. 7. The inſide of the external coat of the cells. 8. One of the *muſcle*. The two laſt figures are a little magnified.

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between two terminal hairs, which are as long as the body of the animal. The mouth I could not ſee. On opening the cells, the ſubſtance that they were formed of cannot be better deſcribed, with reſpect to appearance, than by ſaying it is like the tranſparent amber that beads are made of: the external covering of the cells may be about half a line thick, is remarkably ſtrong, and able to reſiſt injuries: the partitions are much thinner: the cells are in general irregular ſquares, pentagons and hexagons, about an eighth of an inch in diameter, and ¼ deep: they have no communication with each other: all thoſe I opened during the time the animals were iſſuing, contained in one half a ſmall bag filled with a thick red jelly-like liquor, replete with what I take to be eggs; theſe bags, or *utriculi*, adhere to the bottom of the cells, and have each two necks, which paſs through perforations in the external coat of the cells, forming the fore-mentioned excreſcences, and ending in ſome very fine hairs. The other half of the cells have a diſtinct opening, and contain a white ſubſtance, like ſome few filaments of cotton rolled together, and numbers of the inſects themſelves ready to make their exit. Several of the ſame inſects I obſerved to have drawn up their legs, and to lie flat: they did not move on being touched, nor did they ſhow any ſigns of life with the greateſt irritation.

December 5. The ſame minute hexapedes continue iſſuing from their cells in numbers; they are more lively, of a deepened red colour, and fewer of the motionleſs ſort. To-day I ſaw the mouth: it is a flattened point about the middle of the breaſt, which the little animal projects on being compreſſed.

December 6. The male inſects I have found to-day: a few of them are conſtantly running among the females moſt actively: as yet they are ſcarce more, I imagine, than one to 5000 females, but twice their ſize. The head

head is obtuſe; eyes black, very large; antennæ clavated, feathered, about ⅓ the length of the body: below the middle an articulation, ſuch as thoſe in the legs: colour between the eyes a beautiful ſhining green: neck very ſhort: body oval, brown: abdomen oblong, the length of body and ½: legs ſix: wings membranaceous, four, longer than the body, fixed to the ſides of the thorax, narrow at their inſertions, growing broader for ⅓ of their length, then rounded: the anterior pair is twice the ſize of the poſterior: a ſtrong fibre runs along their anterior margins: they lie flat, like the wings of a common fly, when it walks or reſts: no hairs from the rump: it ſprings moſt actively to a conſiderable diſtance on being touched: mouth in the under part of the head: *maxillæ* tranſverſe. To-day the female inſects continue iſſuing in great numbers, and move about as on the 4th.

December 7. The ſmall red inſects ſtill more numerous, and move about as before: winged inſects, ſtill very few, continue active. There have been freſh leaves and bits of the branches of both *mimoſa cinerea* and *corinda* put into the wide-mouthed bottle with them: they walk over them indifferently, without ſhowing any preference, nor inclination to work nor copulate. I opened a cell whence I thought the winged flies had come, and found ſeveral, eight or ten, more in it, ſtruggling to ſhake off their incumbrances: they were in one of thoſe *utriculi* mentioned on the 4th, which ends in two mouths, ſhut up with fine white hairs, but one of them was open for the exit of the flies; the other would no doubt have opened in due time. This *utriculus* I found now perfectly dry, and divided into cells by exceeding thin partitions. I imagine, before any of the flies made their eſcape, it might have contained about twenty. In theſe minute cells with the living flies, or whence they had made their eſcape, were ſmall dry dark coloured compreſſed grains; which may be the dried excrements of the flies.

NOTE BY THE PRESIDENT.

THE *Hindus* have ſix names for *Lac*; but they generally call it *Lácſhà*, from the *multitude* of ſmall inſects, who, as they believe, diſcharge it from their ſtomachs, and at length deſtroy the tree on which they form their colonies. A fine *Pippala*, near *Criſhnanagar*, is now almoſt wholly deſtroyed by them.

XXV.

THE SEVENTH
ANNIVERSARY DISCOURSE,

DELIVERED 25 FEBRUARY, 1790.

BY THE PRESIDENT.

GENTLEMEN,

ALTHOUGH we are at this moment conſiderably nearer to the frontier of *China* than to the fartheſt limit of the *Britiſh* dominions in *Hinduſtán*, yet the firſt ſtep that we ſhall take in the philoſophical journey, which I propoſe for your entertainment at the preſent meeting, will carry us to the utmoſt verge of the habitable globe known to the beſt geographers of old *Greece* and *Egypt*; beyond the boundary of whoſe knowledge we ſhall diſcern from the heights of the northern mountains an empire nearly equal in ſurface to a ſquare of fifteen degrees; an empire, of which I do not mean to aſſign the preciſe limits, but which we may conſider, for the purpoſe of this diſſertation, as embraced on two ſides by *Tartary* and *India*, while the ocean ſeparates its other ſides from various *Aſiatic* iſles of great importance in the commercial ſyſtem of *Europe*. Annexed to that immenſe track of land is the peninſula of *Corea*, which a vaſt oval baſon divides from *Niſon*, or *Japan*, a celebrated and imperial iſland, bearing in arts and in arms in advantage of ſituation, but not in felicity of government:—a pre-eminence among eaſtern kingdoms, analogous to that of *Britain* among the nations of the weſt. So many climates are included in ſo prodigious an area, that, while the principal emporium of *China* lies nearly under the tropic, its

metropolis enjoys the temperature of *Samarkand*; ſuch too is the diverſity of ſoil in its fifteen provinces, that, while ſome of them are exquiſitely fertile, richly cultivated, and extremely populous, others are barren and rocky, dry and unfruitful, with plains as wild or mountains as rugged as any in *Scythia*, and thoſe either wholly deſerted, or peopled by ſavage hordes, who, if they be not ſtill independent, have been very lately ſubdued by the perfidy, rather than the valour, of a monarch, who has perpetuated his own breach of faith in a *Chineſe* poem, of which I have ſeen a tranſlation.

THE word *China*, concerning which I ſhall offer ſome new remarks, is well known to the people whom we call the *Chineſe*; but they never apply it (I ſpeak of the learned among them) to themſelves or to their country. Themſelves, according to Father VISDELOU, they deſcribe as the *people of* HAN, or of ſome other illuſtrious family, by the memory of whoſe actions they flatter their national pride; and their country they call *Chim-cuè*, or the *Central Kingdom*, repreſenting it in their ſymbolical characters by a parallelogram exactly biſſected; at other times they diſtinguiſh it by the words *Tien-hia*, or *What is under Heaven*, meaning *all that is valuable on earth*. Since they never name themſelves with moderation, they would have no right to complain, if they knew that *European* authors have ever ſpoken of them in the extremes of applauſe or of cenſure. By ſome they have been extolled as the oldeſt and the wiſeſt, as the moſt learned and moſt ingenious of nations; whilſt others have derided their pretenſions to antiquity, condemned their government as abominable, and arraigned their manners as inhuman, without allowing them an element of ſcience, or a ſingle art, for which they have not been indebted to ſome more ancient and more civilized race of men. The truth perhaps lies, where we uſually find it, between the extremes; but it is not my deſign to accuſe or to defend

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the *Chineſe*, to depreſs or to aggrandize them: I ſhall confine myſelf to the diſcuſſion of a queſtion connected with my former diſcourſes, and far leſs eaſy to be ſolved than any hitherto ſtated. "Whence came the ſingu-"lar people who long had governed *China* before they were conquered "by the *Tartars?*" On this problem, the ſolution of which has no concern, indeed, with our political or commercial intereſts, but a very material connection, if I miſtake not, with intereſts of a higher nature, four opinions have been advanced; and all rather peremptorily aſſerted than ſupported by argument and evidence. By a few writers it has been urged, that the *Chineſe* are an original race, who have dwelt for ages, if not from eternity, in the land which they now poſſeſs: by others, and chiefly by the miſſionaries, it is inſiſted that they ſprang from the ſame ſtock with the *Hebrews* and *Arabs:* a third aſſertion is that of the *Arabs* themſelves, and of M. PAUW, who hold it indubitable that they were originally *Tartars*, deſcending in wild clans from the ſteeps of *Imaus:* and a fourth, at leaſt as dogmatically pronounced as any of the preceding, is that of the *Brâhmens*, who decide, without allowing any appeal from their deciſion, that the *Chinas* (for ſo they are named in *Sanſcrit*) were *Hindus* of the *Cſhatriya*, or military claſs, who, abandoning the privileges of their tribe, rambled in different bodies to the north-eaſt of *Bengal*; and forgetting by degrees the rites and religion of their anceſtors, eſtabliſhed ſeparate principalities, which were afterwards united in the plains and valleys which are now poſſeſſed by them. If any one of the three laſt opinions be juſt, the firſt of them muſt neceſſarily be relinquiſhed; but of thoſe three, the firſt cannot poſſibly be ſuſtained; becauſe it reſts on no firmer ſupport than a fooliſh remark, whether true or falſe, that *Sem* in *Chineſe* means *life* and *procreation*; and becauſe a tea-plant is not more different from a palm than a *Chineſe* from an *Arab*. They are men, indeed, as

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the tea and the palm are vegetables; but human ſagacity could not, I believe, diſcover any other trace of reſemblance between them. One of the *Arabs*, indeed, an account of whoſe voyage to *India* and *China* has been tranſlated by RENAUDOT, thought the *Chineſe* not only handſomer (according to his ideas of beauty) than the *Hindus*, but even more like his own countrymen in features, habiliments, carriage, manners, and ceremonies; and this may be true, without proving an actual reſemblance between the *Chineſe* and *Arabs*, except in dreſs and complexion. The next opinion is more connected with that of the *Bráhmens* than M. PAUW probably imagined; for though he tells us expreſsly, that by *Scythians* he meant the *Turks* or *Tartars*; yet the dragon on the ſtandard, and ſome other peculiarities, from which he would infer a clear affinity between the old *Tartars* and the *Chineſe*, belonged indubitably to thoſe *Scythians* who are known to have been *Goths*; and the *Goths* had manifeſtly a common lineage with the *Hindus*, if his own argument, in the preface to his Reſearches on the Similarity of Language be, as all men agree that it is, irrefragable. That the *Chineſe* were anciently of a *Tartarian* ſtock, is a propoſition which I cannot otherwiſe diſprove for the preſent, than by inſiſting on the total diſſimilarity of the two races in manners and arts, particularly in the fine arts of imagination, which the *Tartars*, by their own account, never cultivated; but, if we ſhow ſtrong grounds for believing that the firſt *Chineſe* were actually of an *Indian* race, it will follow that M. PAUW and the *Arabs* are miſtaken. It is to the diſcuſſion of this new and, in my opinion, very intereſting point, that I ſhall confine the remainder of my diſcourſe.

IN the *Sanſcrit* Inſtitutes of Civil and Religious Duties, revealed, as the *Hindus* believe, by MENU, the ſon of BRAHMA', we find the following various paſſage: "Many families of the military claſs, having gradually

"abandoned

" abandoned the ordinances of the *Véda* and the company of *Bráhmens*, " lived in a ſtate of degradation; as the people of *Pundraca* and *Odra*, " the *Dravira* and *Cambója*, the *Yavanas* and *Sacas*, the *Páradas* and " *Pahlavas*, the *Chinas*, and ſome other nations." A full commentary on this text would here be ſuperfluous; but, ſince the teſtimony of the *Indian* author, who, though certainly not a divine perſonage, was as certainly a very ancient lawyer, moraliſt, and hiſtorian, is direct and poſitive, diſintereſted and unſuſpected, it would, I think, decide the queſtion before us, if we could be ſure that the word *China* ſignified a *Chineſe*, as all the *Pandits*, whom I have ſeparately conſulted, aſſert with one voice. They aſſure me, that the *Chinas* of MENU ſettled in a fine country to the north-eaſt of *Gaur*, and to the eaſt of *Cámarùp* and *Népàl*; that they have long been and ſtill are famed as ingenious artificers; and that they had themſelves ſeen old *Chineſe* idols, which bore a manifeſt relation to the primitive religion of *India* before BUDDHA's appearance in it. A well-informed *Pandit* ſhowed me a *Sanſcrit* book in *Caſhmirian* letters, which, he ſaid, was revealed by SIVA himſelf, and entitled *Sacſiſangama*. He read to me a whole chapter of it on the heterodox opinions of the *Chinas*, who were divided, ſays the author, into near two hundred clans. I then laid before him a map of *Aſia*; and, when I pointed to *Caſhmir*, his own country, he inſtantly placed his finger on the north-weſtern provinces of *China*, where the *Chinas*, he ſaid, firſt eſtabliſhed themſelves; but he added, that *Maháchina*, which was alſo mentioned in his book, extended to the eaſtern and ſouthern oceans. I believe, nevertheleſs, that the *Chineſe* empire, as we now call it, was not formed when the laws of MENU were collected; and for this belief, ſo repugnant to the general opinion, I am bound to offer my reaſons. If the outline of hiſtory and chronology for the laſt two thouſand years be correctly traced (and we muſt be hardy ſceptics to doubt it) the poems of CA'LIDA's were

compoſed

compoſed before the beginning of our era. Now it is clear, from internal and external evidence, that the *Rámáyan* and *Mahábhárat* were conſiderably older than the productions of that poet; and it appears, from the ſtyle and metre of the *Dherma Sástra*, revealed by MENU, that it was reduced to writing long before the age of VA'LMIC or VYA'SA, the ſecond of whom names it with applauſe. We ſhall not therefore be thought extravagant, if we place the compiler of thoſe laws between a thouſand and fifteen hundred years before CHRIST; eſpecially as BUDDHA, whoſe age is pretty well aſcertained, is not mentioned in them; but in the twelfth century before our era, the *Chineſe* empire was at leaſt in its cradle. This fact it is neceſſary to prove; and my firſt witneſs is CONFUCIUS himſelf. I know to what keen ſatire I ſhall expoſe myſelf by citing that philoſopher, after the bitter ſarcaſms of M. PAUW againſt him and againſt the tranſlators of his mutilated but valuable works; yet I quote without ſcruple the book entitled *Lún Yú*, of which I poſſeſs the original, with a verbal tranſlation, and which I know to be ſufficiently authentic for my preſent purpoſe. In the ſecond part of it CON-FU-TSU declares, that "Although he, like other men, could relate, as mere leſſons of "morality, the hiſtories of the firſt and ſecond imperial houſes, yet, *for* "*want of evidence*, he could give no certain account of them." Now, if the *Chineſe* themſelves do not even pretend that any hiſtorical monument exiſted in the age of CONFUCIUS preceding the riſe of their third dynaſty, about eleven hundred years before the *Chriſtian* epoch, we may juſtly conclude, that the reign of VU'VAM was in the infancy of their empire, which hardly grew to maturity till ſome ages after that prince; and it has been aſſerted by very learned *Europeans*, that even of the third dynaſty, which he has the fame of having raiſed, no unſuſpected memorial can now be produced. It was not till the eighth century before the birth of our Saviour,

Saviour, that a ſmall kingdom was erected in the province of *Shen-ſi*, the capital of which ſtood nearly in the *thirty-fifth* degree of northern latitude, and about *five* degrees to the weſt of *Si-gan*: both the country and its metropolis were called *Chín*; and the dominion of its princes was gradually extended to the eaſt and weſt. A king of *Chín*, who makes a figure in the *Shâhnámah* among the allies of AFRA'SIYA'B, was, I preſume, a ſovereign of the country juſt mentioned; and the river of *Chín*, which the poet frequently names as the limit of his eaſtern geography, ſeems to have been the *Yellow River*, which the *Chineſe* introduce at the beginning of their fabulous annals. I ſhould be tempted to expatiate on ſo curious a ſubject; but the preſent occaſion allows nothing ſuperfluous, and permits me only to add, that *Mangukhán* died in the middle of the thirteenth century, before the city of *Chín*, which was afterwards taken by KUBLAI, and that the poets of *Irán* perpetually allude to the diſtricts around it, which they celebrate, with *Chegil* and *Khoten*, for a number of muſk-animals roving on their hills. The territory of *Chín*, ſo called by the old *Hindus*, by the *Perſians*, and by the *Chineſe* (while the *Greeks* and *Arabs* were obliged by their defective articulation to miſcall it *Sín*) gave its name to a race of emperors, whoſe tyranny made their memory ſo unpopular, that the modern inhabitants of *China* hold the word in abhorrence, and ſpeak of themſelves as the people of a milder and more virtuous dynaſty; but it is highly probable that the whole nation deſcended from the *Chínas* of MENU, and, mixing with the *Tartars*, by whom the plains of *Honan* and the more ſouthern provinces were thinly inhabited, formed by degrees the race of men whom we now ſee in poſſeſſion of the nobleſt empire in *Aſia*.

IN ſupport of an opinion which I offer as the reſult of long and anxious inquiries, I ſhould regularly proceed to examine the language and letters,

religion and philoſophy, of the preſent *Chineſe*, and ſubjoin ſome remarks on their ancient monuments, on their ſciences, and on their arts, both liberal and mechanical; but their ſpoken *language*, not having been preſerved by the uſual ſymbols of articulate ſounds, muſt have been for many ages in a continual flux; their *letters*, if we may ſo call them, are merely the ſymbols of ideas; their popular *religion* was imported from *India* in an age comparatively modern; and their *philoſophy* ſeems yet in ſo rude a ſtate, as hardly to deſerve the appellation; they have no *ancient monuments* from which their origin can be traced even by plauſible conjecture; their *ſciences* are wholly exotic; and their *mechanical arts* have nothing in them characteriſtic of a particular family; nothing which any ſet of men in a country ſo highly favoured by nature, might not have diſcovered and improved. They have indeed, both national muſic and national poetry, and both of them beautifully pathetic; but of painting, ſculpture, or architecture, as arts of imagination, they ſeem (like other *Aſiatics*) to have no idea. Inſtead therefore of enlarging ſeparately on each of thoſe heads, I ſhall briefly inquire, how far the literature and religious practices of *China* confirm or oppoſe the propoſition which I have advanced.

THE declared and fixed opinion of M. DE GUIGNES on the ſubject before us, is nearly connected with that of the *Bráhmens*: he maintains, that the *Chineſe* were emigrants from *Egypt*; and the *Egyptians*, or *Ethiopians*, (for they were clearly the ſame people) had indubitably a common origin with the old natives of *India*, as the affinity of their languages, and of their inſtitutions, both religious and political, fully evinces; but that *China* was peopled a few centuries before our era by a colony from the *Banks of the Nile*, though neither *Perſians* nor *Arabs*, *Tartars* nor *Hindus*, ever heard of ſuch an emigration, is a paradox, which the bare authority even of ſo learned

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a man cannot ſupport; and, ſince reaſon grounded on fact can alone decide ſuch a queſtion, we have a right to demand clearer evidence and ſtronger arguments than any he has adduced. The hieroglyphics of *Egypt* bear, indeed, a ſtrong reſemblance to the mythological ſculptures and paintings of *India*, but ſeem wholly diſſimilar to the ſymbolical ſyſtem of the *Chineſe*, which might eaſily have been invented (as they aſſert) by an individual, and might very naturally have been contrived by the firſt *Chinas*, or outcaſt *Hindus*, who either never knew, or had forgotten, the alphabetical characters of their wiſer anceſtors. As to the table and buſt of Isis, they ſeem to be given up as modern forgeries; but, if they were indiſputably genuine, they would be nothing to the purpoſe; for the letters on the buſt appear to have been deſigned as alphabetical; and the fabricator of them (if they really were fabricated in *Europe*) was uncommonly happy, ſince two or three of them are exactly the ſame with thoſe on a metal pillar yet ſtanding in the north of *India*. In *Egypt*, if we can rely on the teſtimony of the *Greeks*, who ſtudied no language but their own, there were two ſets of alphabetical characters; the one *popular*, like the various letters uſed in our *Indian* provinces; and the other *ſacerdotal*, like the *Dévanágarì*, eſpecially that form of it which we ſee in the *Véda*; beſides which they had two ſorts of *ſacred ſculpture*; the one ſimple, like the figures of Buddha and the three Ra'mas; and the other allegorical, like the images of Gane'sa, or *Divine Wiſdom*, and Isa'ni', or *Nature*, with all their emblematical accompanyments; but the *real character* of the *Chineſe* appears wholly diſtinct from any *Egyptian* writing, either myſterious or popular; and, as to the fancy of M. de Guignes, that the complicated ſymbols of *China* were at firſt no more than *Phenician* monograms, let us hope that he has abandoned ſo wild a conceit, which he ſtarted probably with no other view than to diſplay his ingenuity and learning.

We have ocular proof that the few radical characters of the *Chineſe* were originally (like our aſtronomical and chymical ſymbols) the pictures or outlines of viſible objects, or figurative ſigns for ſimple ideas, which they have multiplied by the moſt ingenious combinations and the livelieſt metaphors; but as the ſyſtem is peculiar, I believe, to themſelves and the *Japaneſe*, it would be idly oſtentatious to enlarge on it at preſent; and, for the reaſons already intimated, it neither corroborates nor weakens the opinion which I endeavour to ſupport. The ſame may as truly be ſaid of their *ſpoken* language; for, independently of its conſtant fluctuation during a ſeries of ages, it has the peculiarity of excluding four or five ſounds; which other nations articulate, and is clipped into monoſyllables, even when the ideas expreſſed by them, and the written ſymbols for thoſe ideas, are very complex. This has ariſen, I ſuppoſe, from the ſingular habits of the people; for though their common tongue be ſo *muſically* accented as to form a kind of recitative, yet it wants thoſe *grammatical* accents, without which all human languages would appear monoſyllabic: thus *Amita*, with an accent on the firſt ſyllable, means, in the *Sanſcrit* language, *immeaſureable*; and the natives of *Bengal* pronounce it *Omito*; but, when the religion of BUDDHA, the ſon of MA'YA', was carried hence into *China*, the people of that country, unable to renounce the name of their new God, called him FOE, the ſon of MO-YE, and divided his epithet *Amita* into three ſyllables: O MI-TO annexing to them certain ideas of their own, and expreſſing them in writing by three diſtinct ſymbols. We may judge from this inſtance, whether a compariſon of their ſpoken tongue with the dialects of other nations can lead to any certain concluſion as to their origin; yet the inſtance which I have given, ſupplies me with an argument from analogy, which I produce as conjectural only, but which appears more and more plauſible the oftener I conſider it. The

BUDDHA

BUDDHA of the *Hindus* is unqueſtionably the FOE of *China*; but the great progenitor of the *Chineſe* is alſo named by them FO-HI, where the ſecond monoſyllable ſignifies, it ſeems, a *victim*. Now the anceſtor of that military tribe whom the *Hindus* call the *Chandravanſa*, or Children of the MOON, was, according to their *Puránas* or legends, BUDHA, or the genius of the planet *Mercury*, from whom, in the *fifth* degree, deſcended a prince named DRUHYA; whom his father YAYA'TI ſent in exile to the eaſt of *Hinduſtán*, with this imprecation, "May thy progeny be ignorant of the *Véda*." The name of the baniſhed prince could not be pronounced by the modern *Chineſe*; and, though I dare not conjecture that the laſt ſyllable of it has been changed into YAO, I may, nevertheleſs, obſerve that YAO was the *fifth* in deſcent from FO-HI, or at leaſt the fifth mortal in the firſt imperial dynaſty; that all *Chineſe* hiſtory before him is conſidered by *Chineſe* themſelves as poetical or fabulous; that his father TI-CO, like the *Indian* king YAYA'TI, was the firſt prince who married ſeveral women; and that FO-HI, the head of their race, appeared, ſay the *Chineſe*, in a province of the weſt, and held his court in the territory of *Chin*, where the rovers, mentioned by the *Indian* legiſlator, are ſuppoſed to have ſettled. Another circumſtance in the parallel is very remarkable:—According to Father DE PREMARE, in his tract on *Chineſe* mythology, the mother of FO-HI was the *Daughter of Heaven*, ſurnamed *Flower-loving*; and, as the nymph was walking alone on the bank of a *river* with a ſimilar name, ſhe found herſelf on a ſudden encircled by a *rainbow*; ſoon after which ſhe became pregnant, and at the end of twelve years was delivered of a ſon radiant as herſelf, who, among other titles, had that of SU'I, or *Star of the Year*. Now, in the mythological ſyſtem of the *Hindus*, the nymph RO'HINI', who preſides over the fourth lunar manſion, was the favourite miſtreſs of SO'MA, or the Moon; among whoſe numerous epithets

we find *Cumudandyara*, or *Delighting in a* ſpecies of *water-flower* that bloſſoms at night; and their offspring was BUDHA, regent of a planet, and called alſo, from the names of his parents, RAUHINE'YA, or SAUMYA. It is true that the learned miſſionary explains the word SU,I by *Jupiter*; but an exact reſemblance between two ſuch fables could not have been expected; and it is ſufficient for my purpoſe that they ſeem to have a family likeneſs. The God BUDHA, ſay the *Indians*, married ILA', whoſe father was preſerved in a miraculous ark from an univerſal deluge. Now, although I cannot inſiſt with confidence, that the *rainbow* in the *Chineſe* fable alludes to the *Moſaic* narrative of the flood, nor build any ſolid argument on the divine perſonage NIU-VA, of whoſe character, and even of whoſe ſex, the hiſtorians of *China* ſpeak very doubtfully, I may, nevertheleſs, aſſure you, after full inquiry and conſideration, that the *Chineſe*, like the *Hindus*, believe this earth to have been wholly covered with water, which, in works of undiſputed authenticity, they deſcribe as *flowing abundantly, then ſubſiding, and ſeparating the higher from the lower age of mankind*; that the *diviſion of time*, from which their poetical hiſtory begins, juſt preceded the appearance of FO-HI on the mountains of *Chin*, but that the great *inundation* in the reign of YAO was either confined to the lowlands of his kingdom, if the whole account of it be not a fable, or, if it contain any alluſion to the flood of NOAH, has been ignorantly miſplaced by the *Chineſe* annaliſts.

THE importation of a new religion into *China* in the firſt century of our era, muſt lead us to ſuppoſe that the former ſyſtem, whatever it was, had been found inadequate to the purpoſe of reſtraining the great body of the people from thoſe offences againſt conſcience and virtue, which the civil power could not reach; and it is hardly poſſible that, without ſuch reſtrictions, any government could long have ſubſiſted with felicity; for no

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government can long ſubſiſt without equal juſtice, and juſtice cannot be adminiſtered without the ſanctions of religion. Of the religious opinions entertained by CONFUCIUS and his followers, we may glean a general notion from the fragments of their works tranſlated by COUPLET: they profeſſed a firm belief in the ſupreme GOD, and gave a demonſtration of his being and of his providence from the exquiſite beauty and perfection of the celeſtial bodies, and the wonderful order of nature in the whole fabric of the viſible world. From this belief they deduced a ſyſtem of ethics, which the philoſopher ſums up in a few words at the cloſe of the *Lún-yù*: "He," ſays CONFUCIUS, "who ſhall be fully perſuaded that the Lord of Heaven governs "the univerſe, who ſhall in all things chuſe moderation, who ſhall perfectly "know his own ſpecies, and ſo act among them that his life and manners "may conform to his knowledge of GOD and man, may be truly ſaid to diſ-"charge all the duties of a ſage, and to be far exalted above the common herd "of the human race." But ſuch a religion and ſuch morality could never have been general; and we find that the people of *China* had an ancient ſyſtem of ceremonies and ſuperſtitions, which the government and the philoſophers appear to have encouraged, and which has an apparent affinity with ſome parts of the oldeſt *Indian* worſhip. They believed in the agency of genii, or tutelary ſpirits, preſiding over the ſtars and the clouds, over lakes and rivers, mountains, valleys, and woods, over certain regions and towns, over all the elements (of which, like the *Hindus*, they reckoned *five*) and particularly over *fire*, the moſt brilliant of them: to thoſe deities they offered victims on high places; and the following paſſage from the *Shí-cin*, or *Book of Odes*, is very much in the ſtyle of the *Bráhmans*: "Even they who per-"form a ſacrifice with due reverence, cannot perfectly aſſure themſelves "that the divine ſpirits accept their oblations; and far leſs can they who "adore the Gods with languor and oſcitancy, clearly perceive their ſacred il-

"lapſes."

" lapſes " Theſe are imperfect traces indeed, but they are traces of an affinity between the religion of MENU and that of the *Chinas*, whom he names among the apoſtates from it. M. LE GENTIL obſerved, he ſays, a ſtrong reſemblance between the funeral rites of the *Chineſe* and the *Sraddha* of the *Hindus*; and M. BAILLY, after a learned inveſtigation, concludes, that " Even the puerile and abſurd ſtories of the *Chineſe* fabuliſts contain a rem- " nant of ancient *Indian* hiſtory, with a faint ſketch of the firſt *Hindu* ages." As the *Bauddhas*, indeed, were *Hindus*, it may naturally be imagined that they carried into *China* many ceremonies practiſed in their own country; but the *Bauddhas* poſitively forbade the immolation of cattle; yet we know that various animals, even bulls and men, were anciently ſacrificed by the *Chineſe*; beſides which we diſcover many ſingular marks of relation between them and the old *Hindus*;—as in the remarkable period of *four hundred and thirty-two thouſand*, and the cycle of *ſixty*, years; in the predilection for the myſtical number *nine*; in many ſimilar faſts and great feſtivals, eſpecially at the ſolſtices and equinoxes; in the juſt-mentioned obſequies conſiſting of rice and fruits offered to the manes of their anceſtors; in the dread of dying childleſs, leſt ſuch offerings ſhould be intermitted; and, perhaps, in their common abhorrence of *red* objects, which the *Indians* carried ſo far, that MENU himſelf, where he allows a *Brâhmen* to trade, if he cannot otherwiſe ſupport life, abſolutely forbids " his trafficking in any ſort of *red* cloths, " whether linen or woollen, or made of woven bark." All the circumſtances, which have been mentioned under the two heads of *literature* and *religion*, ſeem collectively to prove (as far as ſuch a queſtion admits proof) that the *Chineſe* and *Hindus* were originally the ſame people; but having been ſeparated near four thouſand years, have retained few ſtrong features of their ancient conſanguinity, eſpecially as the *Hindus* have preſerved their old language and ritual, while the *Chineſe* very ſoon loſt both; and the *Hindus* have

have conſtantly intermarried among themſelves, while the *Chineſe*, by a mixture of *Tartarian* blood from the time of their firſt eſtabliſhment, have at length formed a race diſtinct in appearance both from *Indians* and *Tartars*.

A SIMILAR diverſity has ariſen, I believe, from ſimilar cauſes, between the people of *China* and *Japan*; on the ſecond of which nations we have now, or ſoon ſhall have, as correct and as ample inſtruction as can poſſibly be obtained without a perfect acquaintance with the *Chineſe* characters. KÆMPFER has taken from M. TITSINGH the honour of being the firſt, and he from KÆMPFER that of being the only, *European* who, by a long reſidence in *Japan*, and a familiar intercourſe with the principal natives of it, has been able to collect authentic materials for the natural and civil hiſtory of a country *ſecluded*, as the *Romans* uſed to ſay of our own iſland, *from the reſt of the world*. The works of thoſe illuſtrious travellers will confirm and embelliſh each other; and when M. TITSINGH ſhall have acquired a knowledge of *Chineſe*, to which a part of his leiſure in *Java* will be devoted, his precious collection of books in that language, on the laws and revolutions, the natural productions, the arts, manufactures, and ſciences of *Japan*, will be in his hands an inexhauſtible mine of new and important information. Both he and his predeceſſor aſſert with confidence, and, I doubt not, with truth, that the *Japaneſe* would reſent, as an inſult on their dignity, the bare ſuggeſtion of their deſcent from the *Chineſe*, whom they ſurpaſs in ſeveral of the mechanical arts, and, what is of greater conſequence, in military ſpirit; but they do not, I underſtand, mean to deny that they are a branch of the ſame ancient ſtem with the people of *China*; and, were that fact ever ſo warmly conteſted by them, it might be proved by an invincible argument, if the preceding part of this diſcourſe, on the Origin of the *Chineſe*, be thought to contain juſt reaſoning. In the

firſt place, it ſeems inconceivable that the *Japaneſe*, who never appear to have been conquerors or conquered, ſhould have adopted the whole ſyſtem of *Chineſe* literature with all its inconveniences and intricacies, if an immemorial connexion had not ſubſiſted between the two nations, or, in other words, if the bold and ingenious race who peopled *Japan* in the middle of the thirteenth century before CHRIST, and, about ſix hundred years afterwards, eſtabliſhed their monarchy, had not carried with them the letters and learning which they and the *Chineſe* had poſſeſſed in common; but my principal argument is, that the *Hindu* or *Egyptian* idolatry has prevailed in *Japan* from the earlieſt ages; and among the idols worſhipped, according to KAMPFER, in that country before the innovations of SA'CYA or BUDDHA (whom the *Japaneſe* alſo call AMIDA) we find many of thoſe which we ſee every day in the temples of *Bengal*; particularly *the goddeſs with many arms*, repreſenting the powers of Nature (in *Egypt* named ISIS, and here ISA'NI', or ISI') whoſe image, as it is exhibited by the *German* traveller, all the *Brahmans*, to whom I ſhowed it, immediately recognized with a mixture of pleaſure and enthuſiaſm. It is very true that the *Chineſe* differ widely from the natives of *Japan* in their vernacular dialects, in external manners, and perhaps in the ſtrength of their mental faculties; but as wide a difference is obſervable among all the nations of the *Gothic* family; and we might account even for a greater diſſimilarity, by conſidering the number of ages during which the ſeveral ſwarms have been ſeparated from the great *Indian* hive, to which they primarily belonged. The modern *Japaneſe* gave KAMPFER the idea of poliſhed *Tartars*; and it is reaſonable to believe that the people of *Japan*, who were originally *Hindus* of the martial claſs and advanced farther eaſtward than the *Chinas*, have, like them, inſenſibly changed their features and characters by intermarriages with various *Tartarian* tribes, whom they found looſely ſcattered over their iſles, or who afterwards fixed their abode in them.

HAVING

HAVING now ſhown in five diſcourſes that the *Arabs* and *Tartars* were originally diſtinct races, while the *Hindus*, *Chineſe*, and *Japaneſe* proceeded from another ancient ſtem, and that all the three ſtems may be traced to *Iran* as to a common centre, from which it is highly probable that they diverged in various directions about four thouſand years ago, I may ſeem to have accompliſhed my deſign of inveſtigating the origin of the *Aſiatic* nations; but the queſtions which I undertook to diſcuſs are not yet ripe for a ſtrict analytical argument; and it will firſt be neceſſary to examine with ſcrupulous attention all the detached or inſulated races of men who either inhabit the borders of *India*, *Arabia*, *Tartary*, *Perſia*, and *China*, or are interſperſed in the mountainous and uncultivated parts of thoſe extenſive regions. To this examination I ſhall, at our next annual meeting, allot an entire diſcourſe; and if, after all our inquiries, no more than *three* primitive races can be found, it will be a ſubſequent conſideration, whether thoſe three ſtocks had one common root; and if they had, by what means that root was preſerved amid the violent ſhock which our whole globe appears evidently to have ſuſtained.

XXVI.

THE TRANSLATION OF AN INSCRIPTION IN THE MAGA LANGUAGE,

ENGRAVED ON A SILVER PLATE, FOUND IN A CAVE NEAR ISLA'MABA'D.

COMMUNICATED BY JOHN SHORE, ESQ.

ON the 14th of *Mágha* 904, *Chándi Láh Rájà* *, by the advice of *Bowangari Rauli*, who was the director of his ſtudies and devotions, and in conformity to the ſentiments of twenty-eight other *Raulu*, formed the deſign of eſtabliſhing a place of religious worſhip; for which purpoſe a cave was dug, and paved with bricks, three cubits in depth, and three cubits alſo in diameter, in which there were depoſited one hundred and twenty brazen images of ſmall dimenſions, denominated *Tahmúdas*; alſo twenty brazen images larger than the former, denominated *Lúngúla*; there was likewiſe a large image of ſtone, called *Lúngúlagári*, with a veſſel of braſs, in which were depoſited two of the bones of *T'hácur*: on a ſilver plate were inſcribed the *Hauca*, or the mandates of the Deity; with that alſo ſtyled *Taumah Chuckſowna Tahma*, to the ſtudy of which twenty-eight *Raulis* devote their time and attention; who, having celebrated the preſent work of devotion with feſtivals and rejoicings, erected over the cave a place of religious worſhip for the *Magas*, in honour of the Deity.

GOD ſent into the world BUDDHA AVATA'R to inſtruct and direct the ſteps of angels and of men; of whoſe birth and origin the following is a relation: When BUDDHA AVATA'R deſcended from the region of ſouls in the

* Perhaps, *Sándilyah*.

month

month of *Mágh*, and entered the body of MAHA'MA'YA', the wife of SOOTAH DANNAH, *Rájà* of *Cailàs*, her womb ſuddenly aſſumed the appearance of clear tranſparent cryſtal, in which BUDDHA appeared, beautiful as a flower, kneeling and reclining on his hands. After ten months and ten days of her pregnancy had elapſed, MAHA'MA'YA' ſolicited permiſſion from her huſband the *Rájà* to viſit her father; in conformity to which the roads were directed to be repaired and made clear for her journey; fruit-trees were planted, water-veſſels placed on the road-ſide, and great illuminations prepared for the occaſion. MAHA'MA'YA' then commenced her journey, and arrived at a garden adjoining to the road, where inclination led her to walk and gather flowers. At this time, being ſuddenly attacked with the pains of child-birth, ſhe laid hold on the trees for ſupport, which declined their boughs at the inſtant, for the purpoſe of concealing her perſon while ſhe was delivered of the child; at which juncture BRAHMA' himſelf attended, with a golden veſſel in his hand, on which he laid the child, and delivered it to INDRA, by whom it was committed to the charge of a female attendant; upon which the child, alighting from her arms, walked ſeven paces, whence it was taken up by MAHA'MA'YA' and carried to her houſe; and, on the enſuing morning, news were circulated of a child being born in the *Rájà*'s family. At this time TAPASWI *Muni*, who, reſiding in the woods, devoted his time to the worſhip of the Deity, learned by inſpiration that BUDDHA was come to life in the *Rájà*'s palace: he flew through the air to the *Rájà*'s reſidence, where, ſitting on a throne, he ſaid, "I have repaired hi-"ther for the purpoſe of viſiting the child." BUDDHA was accordingly brought into his preſence. The *Muni* obſerved two feet fixed on his head, and, divining ſomething both of good and bad import, began to weep and to laugh alternately. The *Rajà* then queſtioned him with regard to his preſent impulſe: to whom he anſwered, "I muſt not reſide in the ſame place

"with

" with BUDDHA when he ſhall arrive at the rank of AVATA'R: this is the " cauſe of my preſent affliction; but I am even now affected with gladneſs " by his preſence, as I am hereby abſolved from all my tranſgreſſions." The *Muni* then departed; and, after five days had elapſed, he aſſembled four *Pandits* for the purpoſe of calculating the deſtiny of the child; three of whom divined that, as he had marks on his hands reſembling a wheel, he would at length become a *Rájà Chacraverti*; another divined that he would arrive at the dignity of *Avatàr*.

THE boy was now named SA'CYA, and had attained the age of ſixteen years; at which period it happened that the *Rájà* CHHIDA'N had a daughter named VASUTA'RA', whom he had engaged not to give in marriage to any one, till ſuch time as a ſuitor ſhould be found who could brace a certain bow in his poſſeſſion, which hitherto many *Rájas* had attempted to accompliſh without effect. SA'CYA now ſucceeded in the attempt, and accordingly obtained the *Rája*'s daughter in marriage, with whom he repaired to his own place of reſidence.

ONE day, as certain myſteries were revealed to him, he formed the deſign of relinquiſhing his dominion; at which time a ſon was born in his houſe, whoſe name was RAGHU. SA'CYA then left his palace with only one attendant and a horſe, and, having croſſed the river GANGA', arrived at *Balhédli*, where, having directed his ſervant to leave him and carry away his horſe, he laid aſide his armour.

WHEN the world was created there appeared five flowers, which BRAHMA' depoſited in a place of ſafety: three of them were afterwards delivered to the three *T'hácurs*; and one was preſented to SA'CYA, who

diſcovered

diſcovered that it contained ſome pieces of wearing apparel, in which he clothed himſelf, and adopted the manners and life of a mendicant. A traveller one day paſſed by him with eight bundles of graſs on his ſhoulders, and addreſſed him, ſaying, "a long period of time has elapſed, ſince I "have ſeen the *T'hácu*; but now ſince I have the happineſs to meet him, "I beg to preſent him an offering, conſiſting of theſe bundles of graſs." SA'CYA accordingly accepted of the graſs, and repoſed on it. At that time there ſuddenly appeared a golden temple, containing a chair of wrought gold, and the height of the temple was thirty cubits, upon which BRAHMA' alighted, and held a canopy over the head of SA'CYA: at the ſame time INDRA deſcended, with a large fan in his hand; and NA'GA, the *Rájà* of ſerpents, with ſhoes in his hand, together with the four tutelar deities of the four corners of the univerſe; who all attended to do him ſervice and reverence. At this time likewiſe the chief of *Aſurs* with his forces arrived, riding on an elephant, to give battle to SA'CYA; upon which BRAHMA', INDRA, and the other deities deſerted him and vaniſhed. SA'CYA, obſerving that he was left alone, invoked the aſſiſtance of the earth; who, attending at his ſummons, brought an inundation over all the ground, whereby the *Aſur* and his forces were vanquiſhed, and compelled to retire.

AT this time five holy ſcriptures deſcended from above, and SA'CYA was dignified with the title of BUDDHA *Avatàr*. The ſcriptures confer powers of knowledge and retroſpection, the ability of accompliſhing the impulſes of the heart, and of carrying into effect the words of the mouth. SA'CYA reſided here, without breaking his faſt, twenty-one days, and then returned to his own country, where he preſides over *Rájàs*, governing them with care and equity.

WHOEVER

WHOEVER reads the *Càric*, his body, apparel, and the place of his devotions muſt be purified; he ſhall be thereby delivered from the evil machinations of demons and of his enemies; and the ways of redemption ſhall be open to him. BUDDHA *Avatàr* inſtructed a certain *Rauli*, by name ANGULI MA'LA, in the writings of the *Càric*, ſaying, "whoever ſhall read "and ſtudy them, his ſoul ſhall not undergo a tranſmigration:" and the ſcriptures were thence called *Anguli Màlà*. There were likewiſe five other books of the *Càric* denominated *Vachanam*, which, if any one peruſe, he ſhall thereby be exempted from poverty and the machinations of his enemies; he ſhall alſo be exalted to dignity and honours, and the length of his days ſhall be protracted: the ſtudy of the *Càric* heals afflictions and pains of the body; and whoever ſhall have faith therein, Heaven and bliſs ſhall be the reward of his piety.

XXVII.

A SUPPLEMENT TO THE ESSAY ON INDIAN CHRONOLOGY.

BY THE PRESIDENT.

OUR ingenious aſſociate Mr. SAMUEL DAVIS, whom I name with reſpect and applauſe, and who will ſoon, I truſt, convince M. BAILLY that it is very poſſible for an *European* to tranſlate and explain the *Súrya Siddhánta*, favoured me lately with a copy, taken by his *Pandit*, of the original paſſage, mentioned in his paper on the Aſtronomical Computations of the *Hindus*, concerning the places of the colures in the time of VARA'HA, compared with their poſition in the age of a certain *Muni*, or ancient *Indian* philoſopher; and the paſſage appears to afford evidence of two actual obſervations, which will aſcertain the chronology of the *Hindus*, if not by rigorous demonſtration, at leaſt by a near approach to it.

THE copy of the *Váráhíſanhitá*, from which the three pages, received by me, had been tranſcribed, is unhappily ſo incorrect (if the tranſcript itſelf was not haſtily made) that every line of it muſt be diſfigured by ſome groſs error; and my *Pandit*, who examined the paſſage carefully at his own houſe, gave it up as inexplicable; ſo that, if I had not ſtudied the ſyſtem of *Sanſcrit* proſody, I ſhould have laid it aſide in deſpair; but though it was written as proſe, without any ſort of diſtinction or punctuation, yet, when I read it aloud, my ear caught in ſome ſentences the cadence of verſe, and of a particular metre, called *Aryá*, which is regulated (not by the *number* of ſyllables, like other *Indian* meaſures, but) by the proportion of times, or

ſyllabic moments, in the four diviſions of which every ſtanza conſiſts. By numbering thoſe moments and fixing their proportion, I was enabled to reſtore the text of VARA'HA, with the perfect aſſent of the learned *Bráhmen* who attends me; and with his aſſiſtance I alſo corrected the comment, written by BHATTO'TPALA, who, it ſeems, was a ſon of the author, together with three curious paſſages which are cited in it. Another *Pandit* afterwards brought me a copy of the whole original work, which confirmed my conjectural emendations, except in two immaterial ſyllables, and except that the firſt of the ſix couplets in the text is quoted in the commentary from a different work, entitled *Panchaſiddhántiká*. Five of them were compoſed by VARA'HA himſelf; and the third chapter of his treatiſe begins with them.

BEFORE I produce the original verſes, it may be uſeful to give you an idea of the *Aryá* meaſure; which will appear more diſtinctly in *Latin* than in any modern language of *Europe*:

> Tigridas, apros, thoas, tyrannos, peſſima monſtra, venemur:
> Dic hinnulus, dic lepus male quid egerint graminivori.

The couplet might be ſo arranged as to begin and end with the cadence of an hexameter and pentameter, ſix *moments* being interpoſed in the middle of the long, and ſeven in that of the ſhort hemiſtich:

> Thoas, apros, tigridas nos *venemur*, pejoreſque tyrannos:
> Dic tibi cerva, lepus *tibi dic male quid* egerit herbivorus.

Since the *Aryá* meaſure, however, may be almoſt infinitely varied, the couplet would have a form completely *Roman*, if the proportion of *ſyllabic inſtants*,

ſtants, in the long and ſhort verſes, were *twenty four* to *twenty*, inſtead of *thirty* to *twenty-ſeven*:

Venor apros tigridaſque, et, peſſima monſtra, tyrannos:
Cerva mali quid agunt herbivoruſque lepus?

I NOW exhibit the five ſtanzas of VARA'HA in *European* characters, with an etching of the two firſt, which are the moſt important, in the original *Dévanágarì*:

As'léſhárdhádacſhinamuttaramayanan ravérdhaniſh't'hádyan
Núnan cadáchidáſidyénóctan púrva s'aſtréſhu.
Sámpratamayanan ſavituh carca'tacádyan mrigáditas'chanyat:
Uctábhávè vicritih pratyacſhapericſhanair vyactih.
Dúraſt'hachihnavédyádudayé'ſtamayé'pivà ſahaſránſóh,
Ch'háyápravés'anirgamachihnairvà mandálè mahati.
Aprápya macaramarcò vinivrittò hanti ſáparán yámyán,
Carca'tacamaſanpráptò vinivrittas'chóttarán ſaindrin.
Uttaramayanamatítya vyávrittah cſhémas'aſya vriddhicarah,
Pracritiſt'has'chápyévan vicritigatir bhayacriduſhnáns'uh.

OF the five couplets thus exhibited, the following tranſlation is moſt ſcrupulouſly literal:

"CERTAINLY the ſouthern ſolſtice was once in the middle of *As'léſhà*, "the northern in the firſt *degree* of *Dhaniſh't'hà*, by what *is* recorded in former *Sáſtras*. At preſent one ſolſtice is in the firſt *degree* of *Carcata*, and "the other in the firſt of *Macara*: that which *is* recorded not appearing,

"a change

" a change *muſt have happened*; *and* the proof ariſes from ocular demon-
" ſtrations; *that is*, by obſerving the remote object and its marks at the
" riſing or ſetting of the ſun, or by the marks, in a large *graduated* circle,
" of the ſhadow's ingreſs and egreſs. The ſun, by turning back without
" having reached *Macara*, deſtroys the ſouth and the weſt; by turning
" back without having reached *Carcata*, the north and eaſt. By returning,
" when he has juſt paſſed the winter ſolſtitial point, he makes wealth ſecure
" and grain abundant, ſince he moves thus according to nature; but
" the ſun, by moving unnaturally, excites terror."

Now the *Hindu* aſtronomers agree, that the 1ſt of *January* 1790, was in the year 4891 of the *Caliyuga*, or their *fourth* period; at the beginning of which, they ſay, the equinoctial points were in the firſt degrees of *Méſha* and *Tulà*; but they are alſo of opinion, that the vernal equinox oſcillates from the third of *Mína* to the twenty-ſeventh of *Méſha*, and back again, in 7200 years; which they divide into four *pádas*, and conſequently that it moves, in the two intermediate *pádas*, from the firſt to the twenty-ſeventh of *Méſha*, and back again, in 3600 years; the colure cutting their ecliptic in the firſt of *Méſha*, which coincides with the firſt of *Aſwiní*, at the beginning of every ſuch oſcillatory period. VARA'HA, ſurnamed MIHIRA, or the Sun, from his knowledge of aſtronomy, and uſually diſtinguiſhed by the title of *Achárya*, or teacher of the *Véda*, lived confeſſedly when the *Caliyuga* was far advanced; and, ſince by actual obſervation he found the ſolſtitial points in the firſt degrees of *Carcata* and *Macara*, the equinoctial points were at the ſame time in the firſt of *Méſha* and *Tulà*: he lived, therefore, in the year 3600 of the fourth *Indian* period, or 1291 years before 1ſt *January* 1790, that is, about the year 499 of our era. This date

correſponds

correſponds with the *ayanánſa*, or preceſſion, calculated by the rule of the *Súrya Siddhánta*; for 19° 21′ 54″ would be the preceſſion of the equinox in 1291 years, according to the *Hindu* computation of 54″ annually, which gives us the origin of the *Indian* zodiac nearly; but, by NEWTON's demonſtrations, which agree as well with the phenomena as the varying denſity of our earth will admit, the equinox recedes about 50″ every year, and has receded 17° 55′ 50″ ſince the time of VARA'HA, which gives us more nearly in our own ſphere the firſt degree of *Méſha* in that of the *Hindus*. By the obſervation recorded in older *Sáſtras*, the equinox had gone back 23° 20′, or about 1680 years had intervened between the age of the *Muni* and that of the modern aſtronomer: the former obſervation, therefore, muſt have been made about 2971 years before the 1ſt *January* 1790, that is 1181 before CHRIST.

WE come now to the commentary, which contains information of the greateſt importance. By former *Sáſtras* are meant, ſays BHATTO'TPALA, the books of PARA'SARA and of other *Munis*; and he then cites from the *Párásarà Sanhitá* the following paſſage, which is in modulated proſe, and in a ſtyle much reſembling that of the *Védas*:

SRAVISHTA'DYA'T pauſhnárdhantan charah s'is'irò; vaſantah pauſhnárdhát ròhinyántan; ſaumyádyáda'sléſhárdhántan grílhmah; právridasleſhárdhát haſtántan; chitrádyát jyéſht'hárdhàntan s'arat; hemantò jyéſht'hárdhat vaiſhnavántan.

"THE ſeaſon of *Sis'ira* is from the firſt of *Dhaniſht'hà* to the middle of "*Révati*; that of *Vaſanta* from the middle of *Révati* to the end of *Róhini*; "that of *Gríſhma* from the beginning of *Mrigas'iras* to the middle of "*Aſléſhà*;

" *Aśléſhà*; that of *Varſhà* from the middle of *Aśléſhà* to the end of *Haſta*;
" that of *Sarad* from the firſt of *Chitrà* to the middle of *Jyéſht'hà*; that of
" *Hémanta* from the middle of *Jyéſht'hà* to the end of *Sravaṇà*."

THIS account of the ſix *Indian* ſeaſons, each of which is co-extenſive with two ſigns, or four lunar ſtations and a half, places the ſolſtitial points, as VARA'HA has aſſerted, in the firſt degree of *Dhaniſht'hà*, and the middle, or 6° 40′, of *Aśléſhà*, while the equinoctial points were in the *tenth* degree of *Bharaṇì* and 3° 20′ of *Viśác'hà*; but in the time of VARA'HA, the ſolſtitial colure paſſed through the 10th degree of *Punarvaſu* and 3° 20′ of *Uttaráſhá-ṛà*, while the equinoctial colure cut the *Hindu* ecliptic in the firſt of *Aſvinì* and 6° 40′ of *Chitrà*, or the *Yóga* and only ſtar of that manſion, which, by the way, is indubitably the *Spike* of the Virgin; from the known longitude of which all other points in the *Indian* Zodiac may be computed. It cannot eſcape notice, that PARA'SARA does not uſe in this paſſage the phraſe *at preſent* which occurs in the text of VARA'HA; ſo that the places of the colures might have been aſcertained *before* his time, and a conſiderable change might have happened in their true poſition without any change in the phraſes, by which the ſeaſons were diſtinguiſhed, as our popular language in aſtronomy remains unaltered, though the zodiacal aſteriſms are now removed a whole ſign from the places where they have left their names: it is manifeſt, nevertheleſs, that PARA'SARA muſt have written *within twelve centuries* before the beginning of our era; and that ſingle fact, as we ſhall preſently ſhow, leads to very momentous conſequences in regard to the ſyſtem of *Indian* hiſtory and literature.

ON the compariſon, which might eaſily be made, between the colures of PARA'SAR and thoſe aſcribed by EUDOXUS to CHIRON, the ſuppoſed aſ-

ſiſtant

ſiſtant and inſtructor of the *Argonauts*, I ſhall ſay very little, becauſe the whole *Argonautic* ſtory (which neither was, according to HERODOTUS, nor, indeed, could have been originally *Grecian*) appears, even when ſtripped of its poetical and fabulous ornaments, extremely diſputable; and, whether it was founded on a league of the *Helladian* princes and ſtates, for the purpoſe of checking, on a favourable opportunity, the overgrown power of *Egypt*, or with a view to ſecure the commencement of the *Euxine* and appropriate the wealth of *Colchis*, or, as I am diſpoſed to believe, on an emigration from *Africa* and *Aſia* of that adventurous race who had firſt been eſtabliſhed in *Chaldea*; whatever, in ſhort, gave riſe to the fable, which the old poets have ſo richly embelliſhed, and the old hiſtorians have ſo inconſiderately adopted, it ſeems to me very clear, even on the principles of NEWTON, and on the ſame authorities to which he refers, that the voyage of the *Argonauts* muſt have preceded the year in which his calculations led him to place it. BATTUS built *Cyrene*, ſays our great philoſopher, on the ſite of *Iraſa*, the city of ANTÆUS, in the year 633 before CHRIST; yet he ſoon after calls EURIPYLUS, with whom the *Argonauts* had a conference, king of *Cyrene*; and in both paſſages he cites PINDAR, whom I acknowledge to have been the moſt learned, as well as the ſublimeſt of poets. Now, if I underſtand PINDAR (which I will not aſſert, and I neither poſſeſs nor remember at preſent the *Scholia*, which I formerly peruſed) the fourth *Pythian* Ode begins with a ſhort panegyric on ARCESILAS of *Cyrene*; "Where," ſays the bard, "the prieſteſs, who ſat near the golden "eagles of JOVE, propheſied of old, when APOLLO was not abſent from his "manſion, that BATTUS, the colonizer of fruitful *Lybia*, having juſt left the "ſacred iſle (*Thera*) ſhould build a city excelling in cars, on the ſplendid "breaſt of earth, and, *with the ſeventeenth generation*, ſhould refer to him-"ſelf the *Therean* prediction of MEDEA, which that princeſs of the *Col-*

" *chians*, that impetuous daughter of ÆETES, breathed from her immortal
" mouth, and thus delivered to the half-divine mariners of the warrior
" JASON." From this introduction to the nobleſt and moſt animated of the *Argonautic* poems, it appears that *fifteen complete generations* had intervened between the voyage of JASON and the emigration of BATTUS; ſo that, conſidering *three* generations as equal to *an hundred*, or *an hundred and twenty* years, which NEWTON admits to be the *Grecian* mode of computing them, we muſt place that voyage at leaſt *five* or *ſix hundred* years before the time fixed by NEWTON himſelf, according to his own computation, for the building of *Cyrene*; that is, *eleven* or *twelve hundred and thirty-three* years before CHRIST: an age very near on a medium to that of PARA'SARA. If the poet means afterwards to ſay, as I underſtand him, that ARCESILAS, his contemporary, was the *eighth* in deſcent from BATTUS, we ſhall draw nearly the ſame concluſion, without having recourſe to the unnatural reckoning of *thirty-three* or *forty* years to a generation; for PINDAR was forty years old when the *Perſians*, having croſſed the *Helleſpont*, were nobly reſiſted at *Thermopylæ*, and gloriouſly defeated at *Salamis*: he was born, therefore, about the ſixty-fifth *Olympiad*, or five hundred and twenty years before our era; ſo that, by allowing more naturally *ſix* or *ſeven hundred* years to *twenty-three* generations, we may at a medium place the voyage of JASON about one thouſand one hundred and ſeventy years before our Saviour, or about *forty-five* years before the beginning of the *Newtonian* chronology.

THE deſcription of the old colures by EUDOXUS, if we implicitly rely on his teſtimony and on that of HIPPARCHUS, who was, indiſputably, a great aſtronomer for the age in which he lived, affords, I allow, a ſufficient evidence of ſome rude obſervation about 937 years before the *Chriſtian* epoch; and, if the cardinal points had receded from thoſe colures 36° 29′ 10″

at

at the beginning of the year 1690, and 37° 52′ 30″ on the firſt of *January* in the preſent year, they muſt have gone back 3° 23′ 20″ between the obſervation implied by PARA'SAR and that recorded by EUDOXUS; or in other words, 244 years muſt have elapſed between the two obſervations: but this diſquiſition having little relation to our principal ſubject, I proceed to the laſt couplets of our *Indian* aſtronomer VARA'HA MIHIRA, which, though merely aſtrological and conſequently abſurd, will give occaſion to remarks of no ſmall importance. They imply, that, when the ſolſtices are not in the firſt degrees of *Carcata* and *Macara*, the motion of the ſun is contrary to nature; and being cauſed, as the commentator intimates, by ſome *utpáta*, or preternatural agency, muſt neceſſarily be productive of misfortune, and this vain idea ſeems to indicate a very ſuperficial knowledge even of the ſyſtem which VARA'HA undertook to explain; but he might have adopted it ſolely as a religious tenet, on the authority of GARGA, a prieſt of eminent ſanctity, who expreſſes the ſame wild notion in the following couplet:

Yadà nivertatè'práptah ſraviſhtámuttaráyanè,
Aſléſhán dacſhiné'práptastadàvidyànmahadbhayam.

"WHEN *the ſun* returns, not having reached *Dhaniſht'hà* in the northern "ſolſtice, *or* not having reached *Aſléſhà* in the ſouthern, then let *a man* "feel great apprehenſion of danger."

PARA'SARA himſelf entertained a ſimilar opinion, that any irregularity in the ſolſtices would indicate approaching calamity: *Yadàpráptò vaiſhuvántam*, ſays he, *udanmárgè prepadyatè, dacſhiné aſléſhám và mahábhayáya*; that is, "When, having reached the end of *Sravanà*, in the northern path, "or half of *Aſléſhà*, in the ſouthern, he ſtill advances, *it is* a cauſe of great "fear." This notion poſſibly had its riſe before the regular preceſſion of

the cardinal points had been obſerved; but we may alſo remark, that ſome of the lunar manſions were conſidered as inauſpicious, and others as fortunate: thus MENU, the firſt *Indian* lawgiver, ordains, that certain rites ſhall be performed under the influence of a happy *Nacſhatra*; and, where he forbids any female name to be taken from a conſtellation, the moſt learned commentator gives *Ardra* and *Révati* as examples of ill omened names, appearing by deſign to ſkip over others, that muſt firſt have occurred to him. Whether *Dhaniſht'hà* and *Aſléſhà* were inauſpicious or proſperous, I have not learned; but, whatever might be the ground of VARA'HA'S aſtrological rule, we may collect from his aſtronomy, which was grounded on obſervation, that the ſolſtice had receded *at leaſt* 23° 20′ between his time and that of PARA'SARA; for, though he refers its poſition to the *Aſgns* inſtead of the *lunar manſions*, yet all the *Pandits* with whom I have converſed on the ſubject, unanimouſly aſſert, that the firſt degrees of *Méſha* and *Aſwini* are coincident. Since the two ancient ſages name only the lunar aſteriſms, it is probable that the ſolar diviſion of the zodiac into twelve ſigns was not generally uſed in their days; and we know from the comment on the *Sárya Siddhánta*, that the lunar month, by which all religious ceremonies are ſtill regulated, was in uſe before the ſolar. When M. BAILLY aſks, "why the *Hindus* eſtabliſhed the beginning of the "preceſſion, according to their ideas of it, in the year of CHRIST 499?" to which his calculations alſo had led him, we anſwer, Becauſe *in that year* the vernal equinox was found by obſervation in the origin of their ecliptic; and ſince they were of opinion that it muſt have had the ſame poſition in the firſt year of the *Calyuga*, they were induced by their erroneous theory to fix the beginning of their fourth period 3600 years before the time of VARA'HA, and to account for PARA'SARA'S obſervation by ſuppoſing an *utpata*, or *prodigy*.

To

To what purpoſe, it may be aſked, have we aſcertained the age of the *Munis*? Who was PARA'SARA? Who was GARGA? With whom were they contemporary, or with whoſe age may theirs be compared? What light will theſe inquiries throw on the hiſtory of *India* or of mankind? I am happy in being able to anſwer thoſe queſtions with confidence and preciſion.

ALL the *Bráhmens* agree, that only one PARA'SARA is named in their ſacred records; that he compoſed the aſtronomical book before cited, and a law-tract, which is now in my poſſeſſion; that he was the grandſon of VASISHT'HA, another aſtronomer and legiſlator, whoſe works are ſtill extant, and who was the preceptor of RA'MA, king of *Ayódhyà*; that he was the father of VYA'SA, by whom the *Védas* were arranged in the form which they now bear, and whom CRISHNA himſelf names with exalted praiſe in the *Gità*; ſo that by the admiſſion of the *Pandits* themſelves, we find only three generations between two of the RA'MAS, whom they conſider as incarnate *portions* of the divinity; and PARA'SAR might have lived till the beginning of the *Caliyuga*, which the miſtaken doctrine of an oſcillation in the cardinal points has compelled the *Hindus* to place 1920 years too early. This error, added to their fanciful arrangement of the four ages, has been the ſource of many abſurdities; for they inſiſt that VA'LMIC, whom they cannot but allow to have been contemporary with RA'MACHANDRA, lived in the age of VYA'SA, who conſulted him on the compoſition of the *Mahábhárat*, and who was perſonally known to BALARA'MA, the brother of CRISHNA. When a very learned *Bráhmen* had repeated to me an agreeable ſtory of a converſation between VA'LMIC and VYA'SA, I expreſſed my ſurprize at an interview between two bards, whoſe ages were ſeparated by a period of 864,000; but he ſoon reconciled himſelf to ſo monſtrous an anachroniſm,

anachronism, by observing that the longevity of the *Munis* was preternatural, and that no limit could be set to divine power. By the same recourse to miracles or to prophesy, he would have answered another objection equally fatal to his chronological system. It is agreed by all, that the lawyer YA'GYAWALCYA was an attendant on the court of JANACA, whose daughter SI'TA' was the constant but unfortunate wife of the great RA'MA, the hero of VALMIC's poem; but that lawyer himself, at the very opening of his work, which now lies before me, names both PARA'SAR and VYA'SA among twenty authors, whose tracts form the body of original *Indian* law. By the way, since VASISHT'HA is more than once named in the *Mánavásanhità*, we may be certain that the laws ascribed to MENU, in whatever age they might have been first promulgated, could not have received the form in which we now see them above *three thousand* years ago. The age and functions of GARGA lead to consequences yet more interesting: he was confessedly the *puróhita*, or officiating priest, of CRISHNA himself, who, when only a herdsman's boy at *Mat'hurà*, revealed his divine character to GARGA, by running to him with more than mortal benignity on his countenance, when the priest had invoked NA'RA'YAN. His daughter was eminent for her piety and her learning; and the *Bráhmans* admit, without considering the consequence of their admission, that she is thus addressed in the *Véda* itself: *Yata ūrdhwan nò và samópi*, GA'RGI, *ésha ádityò dyámúrdhánan tapati, dyà và bhúmin tapati, bhúmyà subhran tapati, lócán tapati, antaran tapatyanantaran tapati*; or, "That Sun, O daughter of GARGA, "than which nothing is higher, to which nothing is equal, enlightens "the summit of the sky; with the sky enlightens the earth; with the "earth enlightens the lower worlds; enlightens the higher worlds, enlightens other worlds; it enlightens the breast, enlightens all besides the "breast." From these facts, which the *Bráhmans* cannot deny, and from these

theſe conceſſions which they unanimouſly make, we may reaſonably infer, that, if VYA'SA was not the compoſer of the *Vidas*, he added at leaſt ſomething of his own to the ſcattered fragments of a more ancient work, or perhaps to the looſe traditions, which he had collected, but, whatever be the comparative antiquity of the *Hindu* ſcriptures, we may ſafely conclude that the *Moſaic* and *Indian* chronologies are perfectly conſiſtent; that MENU, ſon of BRAHMA', was the *Adima*, or *firſt* created mortal, and conſequently our ADAM; that MENU, child of the Sun, was preſerved with *ſeven* others in a *bahitra*, or capacious ark, from an univerſal deluge, and muſt therefore be our NOAH; that HIRANYACASIPU, *the giant with a golden axe*, and *Vali*, or *Buli*, were impious and arrogant monarchs,* and muſt probably our NIMROD and BELUS; that the three RAMAS, two of whom were invincible warriors, and the third, not only valiant in war but the patron of agriculture and *wine*, which derives an epithet from his name, were different repreſentations of the *Grecian* BACCHUS, and either the RA'MA of Scripture, or his colony perſonified, or the Sun firſt adored by his idolatrous family; that a conſiderable emigration from *Chaldea* into *Greece*, *Italy*, and *India*, happened about *twelve* centuries before the birth of our Saviour; that SA'CYA, or SI'SAK, about two hundred years after VYA'SA, either in perſon or by a colony from *Egypt*, imported into this country the mild hereſy of the ancient *Bauddhas*; and that the dawn of true *Indian* hiſtory appears only three or four centuries before the *Chriſtian* era, the preceding ages being clouded by allegory or fable.

As a ſpecimen of that fabling and allegorizing ſpirit which has ever induced the *Bráhmens* to diſguiſe their whole ſyſtem of hiſtory, philoſophy, and religion, I produce a paſſage from the *Bhágavat*, which, however ſtrange

ſtrange and ridiculous, is very curious in itſelf, and cloſely connected with the ſubject of this eſſay: it is taken from the fifth *Scandha*, or ſection, which is written in modulated proſe. "There are ſome," ſays the *Indian* author, "who, for the purpoſe of meditating intenſely on the holy ſon of VASU-"DE'VA, imagine yon celeſtial ſphere to repreſent the figure of that aqua-"tic animal which we call *Sis'umára*. Its head being turned downwards, "and its body bent in a circle, they conceive *Dhruva*, or the pole-ſtar, "to be fixed on the point of its tail; on the middle part of the tail they "ſee four ſtars, *Prajápati*, *Agni*, *Indra*, *Dherma*; and on its baſe two others, "*Dhátri* and *Vidhátri*: on its rump are the *Saptarſhis*, or ſeven ſtars of the "*Sacata*, or *Wain*; on its back the path of the Sun, called *Ajavít'hì*, or "the *Steps of Kúls*; on its belly the *Gangà* of the ſky: *Punarvaſu* and *Pu-"ſhya* gleam reſpectively on its right and left haunches; *Ardrà* and *Aſléſhà* "on its right and left feet, *or fins*; *Abhijit* and *Uttaráſhá'dhà* in its right and "left noſtrils; *Sravaná* and *Purváſhá'dhà* in its right and left eyes; *Dha-"niſht'hà* and *Múla* on its right and left ears. Eight conſtellations be-"longing to the ſummer ſolſtice, *Maghá*, *Púrvap'halgunì*, *Uttarap'hal-"gunì*, *Haſta*, *Chitrà*, *Swáti*, *Viſác'hà*, and *Anurádhà*, may be conceived in "the ribs of its left ſide; and as many aſteriſms, connected with the "winter ſolſtice, *Mrigaſiras*, *Róhiní*, *Critticà*, *Bharaní*, *Aſwiní*, *Révatì*, *Ut-"tarabhadrapadà*, and *Púrvabhadrapadà*, may be imagined on the ribs of its "right ſide in an inverſe order: let *Satabhiſhá* and *Jyéſht'ha* be placed on its "right and left ſhoulders. In its upper jaw is *Agaſtya*, in its lower *Yama*; "in its mouth the planet *Mangala*; in its part of generation *Sanaiſ'chara*; "on its hump *Vrihaſpati*; in its breaſt the Sun; in its heart *Náráyan*; "in its front the Moon; in its navel *Uſanas*; on its two nipples the two "*Aſwinas*; in its aſcending and deſcending breath *Budha*; on its throat "*Ráhu*; in all its limbs *Cétus*, or comets; and in its hairs, or briſtles,

"the

" the whole multitude of ſtars." It is neceſſary to remark, that, although the *ſiſumara* be generally deſcribed as the *ſea-hog* or *porpoiſe*, which we frequently have ſeen playing in the *Ganges*, yet *ſiſumár*, which ſeems derived from the *Sanſcrit*, means in *Perſian* a large *lizard*. The paſſage muſt exhibited may nevertheleſs relate to an animal of the cetaceous orde , and poſſibly to the dolphin of the antients. Before I leave the ſphere of the *Hindus*, I cannot help mentioning a ſingular fact :—In the *Sanſcrit* language *Richſha* means a *conſtellation* and a *bear*, ſo that *Maharcſha* may denote either a *great bear* or a *great aſteriſm*. Etymologiſts may, perhaps, derive the *Megas arctos* of the *Greeks* from an *Indian* compound ill underſtood; but I will only obſerve, with the wild *American*, that a bear *with a very long tail* could never have occurred to the imagination of any one who had ſeen the animal. I may be permitted to add, on the ſubject of the *Indian* Zodiac, that, if I have erred in a former eſſay, where the longitude of the lunar manſions is computed from the firſt ſtar in our conſtellation of the Ram, I have been led into an error by the very learned and ingenious M. BAILLY, who relied, I preſume, on the authority of M. LE GENTIL. The origin of the *Hindu* Zodiac, according to the *Súrya Siddhánta*, muſt be nearly ♈ 19° 21′ 54″, in our ſphere; and the longitude of *Chitrà*, or the Spike, muſt of courſe be 199° 21′ 54″ from the vernal equinox; but, ſince it is difficult by that computation to arrange the twenty-ſeven manſions and their ſeveral ſtars as they are delineated and enumerated in the *Ratnamálà*, I muſt for the preſent ſuppoſe with M. BAILLY, that the *Zodiac* of the *Hindus* had two origins, one conſtant and the other variable: and a farther inquiry into the ſubject muſt be reſerved for a ſeaſon of retirement and leiſure.

Vol 2 P 405.

JATAMANSI,

or Indian Spikenard

P 391

XXVIII.

ON THE SPIKENARD OF THE ANTIENTS.

BY THE PRESIDENT.

IT is painful to meet perpetually with words that convey no diſtinct ideas; and a natural deſire of avoiding that pain excites us often to make inquiries, the reſult of which can have no other uſe than to give us clear conceptions. Ignorance is to the mind what extreme darkneſs is to the nerves: both cauſe an uneaſy ſenſation; and we naturally love knowledge, as we love light, even when we have no deſign of applying either to a purpoſe eſſentially uſeful. This is intended as an apology for the pains which have been taken to procure a determinate anſwer to a queſtion of no apparent utility, but which ought to be readily anſwered in *India*, "What is *Indian* Spikenard? All agree that it is an odoriferous plant, the beſt ſort of which, according to PTOLEMY, grew about *Rangamritica*, or *Rangamáti*, and on the borders of the country now called *Butàn*: it is mentioned by DIOSCORIDES, whoſe work I have not in my poſſeſſion; but his deſcription of it muſt be very imperfect, ſince neither LINNÆUS nor any of his diſciples pretend to claſs it with certainty; and, in the lateſt botanical work that we have received from *Europe*, it is marked as *unknown*. I had no doubt, before I was perſonally acquainted with KOENIG, that he had aſcertained it; but he aſſured me that he knew not what the *Greek* writers meant by the nard *India*: he had found, indeed, and deſcribed a ſixth ſpecies of the nardus, which is called *Indian* in the

Supplement to *Linnæus*; but the *nardus* is a graſs which, though it bear a *ſpike*, no man ever ſuppoſed to be the *true* Spikenard, which the great Botanical Philoſopher himſelf was inclined to think a ſpecies of *Andropogon*, and places, in his *Materia Medica*, but with an expreſſion of doubt, among his polygamous plants. Since the death of KOENIG I have conſulted every botaniſt and phyſician with whom I was acquainted, on the ſubject before us; but all have confeſſed without reſerve, though not without ſome regret, that they were ignorant what was meant by the *Indian* Spikenard.

IN order to procure information from the learned natives, it was neceſſary to know the *name* of the plant in ſome *Aſiatic* language. The very word *nard* occurs in the Song of SOLOMON: but the name and the thing were both exotic: the *Hebrew* lexicographers imagine both to be *Indian*; but the word is in truth *Perſian*, and occurs in the following diſtich of an old poet:

A'n chu bikheſt, ín chu nardeſt, án chu ſhákheſt, ín chu bár,
A'n chu bikhì páyidáreſt ín chu nardì páyidár.

IT is not eaſy to determine in this couplet, whether *nard* means the *ſtem*, or, as ANJU' explains it, the *pith*; but it is manifeſtly a part of a vegetable, and neither the *root*, the *fruit*, nor the *branch*, which are all ſeparately named. The *Arabs* have borrowed the word *nard* but in the ſenſe, as we learn from the *Kámùs*, of a *compound medicinal unguent*. Whatever it ſignified in old *Perſian*, the *Arabic* word *ſumbul*, which, like *ſumbalah*, means an *ear* or *ſpike*, has long been ſubſtituted for it; and there can be no doubt that by the *ſumbul* of *India* the *Muſelmáns* underſtand the ſame plant with the *nard* of PTOLEMY and the *Nardoſtachys*, or *Spikenard*, of GALEN;

GALEN; who, by the way, was deceived by the dry ſpecimens which he had ſeen, and miſtook them for *roots*.

A SINGULAR deſcription of the *ſumbul* by ABU'LFAZL, who frequently mentions it as an ingredient in *Indian* perfumes, had for ſome time almoſt convinced me that the *true Spikenard* was the *Cétaca*, or *Pandanus* of our botaniſts: his words are, *Sumbul panj berg dárad, ceh dudah an dah angoſhteſtu pahnái ſch*, or, "The *ſumbul* has five leaves, ten fingers long, and "three broad." Now I well knew that the miniſter of ACBAR was not a botaniſt, and might eaſily have miſtaken a thyrſus for a ſingle flower: I had ſeen no bloſſom, or aſſemblage of bloſſoms, of ſuch dimenſions, except the male *Cétaca*; and, though the *Perſian* writer deſcribes the female as a different plant, by the vulgar name *Cyóra*, yet ſuch a miſtake might naturally have been expected in ſuch a work: but what moſt confirmed my opinion, was the exquiſite fragrance of the *Cétaca*-flower, which to my ſenſe far ſurpaſſed the richeſt perfumes of *Europe* or *Aſia*. Scarce a doubt remained when I met with a deſcription of the *Cétaca* by FORSKOHL, whoſe words are ſo perfectly applicable to the general idea which we are apt to form of *Spikenard*, that I give you a literal tranſlation of them: "The *Pandanus* is an incomparable plant, and cultivated for its odour, "which it breathes ſo richly, that one or two *ſpikes*, in a ſituation rather "humid, would be ſufficient to diffuſe an odoriferous air for a long time "through a ſpacious apartment; ſo that the natives in general are not ſolicitous about the living plants, but *purchaſe the ſpikes at a great price*." I learned alſo, that a fragrant eſſential oil was extracted from the flowers; and I procured from *Banáres* a large phial of it, which was adulterated with ſandal; but the very adulteration convinced me that the genuine eſſence muſt be valuable, from the great number of thyrſi that muſt

be

be required in preparing a ſmall quantity of it. Thus had I nearly perſuaded myſelf that the true nard was to be found on the *Banks of the Ganges*, where the *Hindu* women roll up its flowers in their long black hair after bathing in the holy river; and I imagined that the *precious alabaſter-box* mentioned in the Scripture, and the *ſmall onyx*, in exchange for which the poet offers to entertain his friend with *a caſk of old wine*, contained an eſſence of the ſame kind, though differing in its degree of purity with the nard which I had procured. But an *Arab* of *Mecca*, who ſaw in my ſtudy ſome flowers of the *Cétaca*, informed me that the plant was extremely common in *Arabia*, where it was named *Cádhi*; and ſeveral *Mahomedans* of rank and learning have ſince aſſured me that the true name of the *Indian Sumbul* was not *Cétaca*, but *Jatámánsí*. This was important information: finding therefore that the *Pandanus* was not peculiar to *Hinduſtán*, and conſidering that the *Sumbul* of ABU'LFAZL differed from it in the preciſe number of leaves on the thyrſus, in the colour, and in the ſeaſon of flowering, though the length and breadth correſponded very nearly, I abandoned my firſt opinion, and began to inquire eagerly for the *Jatámánsí*, which grew, I was told, in the garden of a learned and ingenious friend, and fortunately was then in bloſſom. A freſh plant was very ſoon brought to me: it appeared on inſpection to be a moſt elegant *Cyperus*, with a poliſhed three-ſided culm, an umbella with three or four enſiform leaflets minutely ſerrated, naked proliferous peduncles, crowded ſpikes, expanded daggers; and its branchy root had a pungent taſte with a faint aromatic odour; but no part of it bore the leaſt reſemblance to the drug known in *Europe* by the appellation of *Spikenard*; and a *Muſelman* phyſician from *Dehli* aſſured me poſitively, that the plant was not *Jatámánsí*, but *Súd*, as it is named in *Arabic*; which the author of the *Tohfatu'l Mámenin* particularly diſtinguiſhes from the *Indian Sumbul*. He produced on the next day an extract from

from the Dictionary of Natural Hiſtory, to which he had referred; and I preſent you with a tranſlation of all that is material in it.

" 1. SUD has a roundiſh olive-ſhaped root, externally black, " white " internally, and ſo fragrant as to have obtained in *Perſia* the name of " *Subterranean Muſk*: its leaf has ſome reſemblance to that of a leek, but " is longer and narrower, ſtrong, ſomewhat rough at the edges, and taper- " ing to a point. 2. SUMBUL means a *ſpike* or *ear*, and was called *nard* " by the *Greeks*. There are three ſorts of *Sumbul* or *Nardin*; but when " the word ſtands alone, it means the *Sumbul* of *India*, which is an herb " *without flower or fruit* (he ſpeaks of the drug only) like the tail of an " ermine, or of a ſmall weaſel, but not quite ſo thick, and about the length " of a finger. It is darkiſh, inclining to yellow, and very fragrant: it is " brought from *Hinduſtán*, and its medicinal virtue laſts three years." It was eaſy to procure the dry *Jatámánsì*, which correſponded perfectly with the deſcription of the *Sumbul*; and, though a native *Muſulman* afterwards gave me a *Perſian* paper, written by himſelf, in which he repreſents the *Sumbul* of *India*, the *Sweet Sumbul*, and the *Jatámánsì* as three different plants, yet the authority of the *Tohfatu'l Múmenìn* is deciſive that the *ſweet Sumbul* is only another denomination of nard; and the phyſician who produced that authority, brought, as a ſpecimen of *Sumbul*, the very ſame drug which my *Pandit*, who is alſo a phyſician, brought as a ſpecimen of the *Jatámánsì*. A *Bráhmen* of eminent learning gave me a parcel of the ſame ſort, and told me that it was uſed in their ſacrifices; that, when freſh, it was exquiſitely ſweet, and added much to the ſcent of rich eſſences, in which it was a principal ingredient; that the merchants brought it from the mountainous country to the north-eaſt of *Bengal*; that it was the entire plant, not a part of it, and received its *Sanſcrit* names

from

from its reſemblance to *locks of hair*; as it is called *Spikenard*, I ſuppoſe, from its reſemblance to a ſpike, when it is dried, and not from the conſiguration of its flowers, which the *Greeks*, probably, never examined. The *Perſian* author deſcribes the whole plant as reſembling the tail of an ermine; and the *Jatámánsì*, which is manifeſtly the *Spikenard* of our druggiſts, has preciſely that form, conſiſting of withered ſtalks and ribs of leaves, cohering in a bundle of yellowiſh brown capillary fibres, and conſtituting a ſpike about the ſize of a ſmall finger. We may on the whole be aſſured, that the *nardus* of PTOLEMY, the *Indian Sumbul* of the *Perſians* and *Arabs*, the *Jatámánsì* of the *Hindus*, and the *Spikenard* of our ſhops, are one and the ſame plant; but to what claſs and genus it belongs in the *Linnæan* ſyſtem, can only be aſcertained by an inſpection of the freſh bloſſoms. Dr. PATRICK RUSSEL, who always communicates with obliging facility his extenſive and accurate knowledge, informed me by letter, that "Spikenard is carried over the deſert (from *India* I preſume) "to *Aleppo*, where it is uſed in ſubſtance, mixed with other perfumes, "and worn in ſmall bags, or in the form of eſſence, and kept in little boxes "or phials, like *ittar* of roſes." He is perſuaded, and ſo am I, that the *Indian* nard of the antients and that of our ſhops, is one and the ſame vegetable.

THOUGH diligent reſearches have been made at my requeſt on the borders of *Bengal* and *Behàr*, yet the *Jatámánsì* has not been found growing in any part of the *Britiſh* territories. Mr. SAUNDERS, who met with it in *Bután*, where, as he was informed, it is very common, and whence it is brought in a dry ſtate to *Rangpúr*, has no heſitation in pronouncing it a ſpecies of the *Baccharis*; and, ſince it is not poſſible that he could miſtake the *natural order* and *eſſential character*

racter of the plant which he examined, I had no doubt that the *Jatámánsì* was a compoſit and corymbiferous with flamens connected by the anthers, and with female prolific florets intermixed with hermaphrodites. The word *Spike* was not uſed by the antients with botanical preciſion; and the *Stachys* itſelf is verticillated, with only two ſpecies out of fifteen that could juſtify its generic appellation. I therefore concluded, that *the true Spikenard* was a *Baccharis*, and that, while the philoſopher had been ſearching for it to no purpoſe,

——————————— the dull ſwain
Trod on it daily with his clouted ſhoon,

for the *Baccharis*, it ſeems, as well as the *Conyza*, is called by our gardeners, *Ploughmens Spikenard*. I ſuſpected, nevertheleſs, that the plant which Mr. SAUNDERS deſcribed was not *Jatámánsì*, becauſe I knew that the people of *Bután* had no ſuch name for it, but diſtinguiſhed it by very different names in different parts of their hilly country. I knew alſo that the *Butías*, who ſet a greater value on the drug than it ſeems as a perfume to merit, were extremely reſerved in giving information concerning it; and might be tempted, by the narrow ſpirit of monopoly, to miſlead an inquirer for the freſh plant. The friendly zeal of Mr. PURLING will probably procure it in a ſtate of vegetation; for, when he had the kindneſs at my deſire to make inquiries for it among the *Bután* merchants, they aſſured him that the living plants could not be obtained without an order from their ſovereign the *Dévarájà*, to whom he immediately diſpatched a meſſenger, with an earneſt requeſt that eight or ten of the growing plants might be ſent to him at *Rangpùr*. Should the *Dévarájà* comply with that requeſt, and ſhould the vegetable flouriſh in the plain of *Bengal*, we ſhall have ocular proof of its claſs, order, genus, and ſpecies; and, if it prove the ſame with the *Jatámánsì* of *Népál*, which I now muſt introduce to

your acquaintance, the queſtion with which I began this eſſay will be ſatisfactorily anſwered.

HAVING traced the *Indian* Spikenard, by the name of *Jatámánsí*, to the mountains of *Nípál*, I requeſted my friend Mr. Law, who then reſided at *Gayá*, to procure ſome of the recent plants by the means of the *Népaleſe* pilgrims; who, being orthodox *Hindus* and poſſeſſing many rare books in the *Sanſcrit* language, were more likely than the *Butias* to know the true *Jatámánsí*, by which name they generally diſtinguiſh it. Many young plants were accordingly ſent to *Gayá*, with a *Perſian* letter, ſpecifically naming them, and apparently written by a man of rank and literature; ſo that no ſuſpicion of deception or of error can be juſtly entertained. By a miſtake of the gardener they were *all* planted at *Gayá*, where they have bloſſomed, and at firſt ſeemed to flouriſh: I muſt therefore deſcribe the *Jatámánsí* from the report of Mr. BURT, who favoured me with a drawing of it, and in whoſe accuracy we may perfectly confide; but, before I produce the deſcription, I muſt endeavour to remove a prejudice, in regard to the *natural order* of the ſpikenard, which they who are addicted to ſwear by every word of their maſter LINNÆUS, will hardly abandon, and which I, who love truth better than him, have abandoned with ſome reluctance. *Nard* has been generally ſuppoſed to be a *graſs*; and the word *ſtachys*, or *ſpike*, which agrees with the habit of that natural order, gave riſe, perhaps, to the ſuppoſition. There is a plant in *Java* which moſt travellers and ſome phyſicians call *ſpikenard*; and the Governor of *Chinſura*, who is kindly endeavouring to procure it thence in a ſtate fit for examination, writes me word, that "a *Dutch* author pronounces it "*a graſs like the Cyperus*; but inſiſts that what we call the *ſpike* is the "fibrous part above the root, as long as a man's little finger; of a "browniſh

" browniſh hue, inclining to red or yellow, rather fragrant, and with " a pungent but aromatic ſcent." This is too ſlovenly a deſcription to have been written by a botaniſt; yet I believe the latter part of it to be tolerably correct, and ſhould imagine that the plant was the ſame with our *Jatámánsì*, if it were not commonly aſſerted that the *Javan* ſpikenard was uſed as a condiment; and if a well-informed man, who had ſeen it in the iſland, had not aſſured me that it was a ſort of *Pimento*, and conſequently a ſpecies of *Myrtle*, and of the order now called *Heſperian*. The reſemblance before mentioned between the *Indian ſumbul* and the *Arabian Sûd*, or *Cyperus*, had led me to ſuſpect that the true nard was a *graſs* or a *reed*; and, as this country abounds in *odoriferous graſſes*, I began to collect them from all quarters. Colonel KYD obligingly ſent me two plants with ſweet-ſmelling roots; and as they were known to the *Pandits*, I ſoon found their names in a *Sanſcrit* dictionary: one of them is called *gandhas'at'hì*, and uſed by the *Hindus* to ſcent the red powder of *Sapan*, or *Bukkam*-wood, which they ſcatter in the feſtival of the vernal ſeaſon; the other has many names, and, among them, *nágaramaſtac* and *gónarda*, the ſecond of which means *ruſtling in the water*; for all the *Pandits* inſiſt that *nard* is never uſed as a noun in *Sanſcrit*, and ſignifies, as the root of a verb, *to ſound* or *to ruſtle*. Soon after, Mr. BURROW brought me from the *Banks of the Ganges*, near *Heridwàr*, a very fragrant graſs, which in ſome places covers whole acres, and diffuſes, when cruſhed, ſo ſtrong an odour, that a perſon, he ſays, might eaſily have ſmelt it (as ALEXANDER is reported to have ſmelt the nard of *Gedroſia*) from the back of an elephant: its bloſſoms were not preſerved, and it cannot therefore be deſcribed. From Mr. BLANE of *Lucnow* I received a freſh plant, which has not flowered at *Calcutta*; but I rely implicitly on his authority, and have no doubt that it is a ſpecies of *Andropogon*: it has rather a rank aromatic odour; and, from the virtue

aſcribed to it of curing intermittent fevers, is known by the *Sanſcrit* name of *jwarânkuſa*, which literally means a *fever-hook*, and alludes to the *iron-hook* with which elephants are managed. Laſtly, Dr. ANDERSON of *Madras*, who delights in uſeful purſuits, and in aſſiſting the purſuits of others, favoured me with a complete ſpecimen of the *Andropogon Nardus*, one of the moſt common graſſes on the coaſt, and flouriſhing moſt luxuriantly on the mountains, never eaten by cattle, but extremely grateful to bees; and containing an eſſential oil, which, he underſtands, is extracted from it in many parts of *Hindoſtân*, and uſed as an *âtar* or *perfume*. He adds a very curious philological remark, that, in the *Tamul* dictionary, moſt words beginning with *nâr* have ſome relation to *fragrance*; as *nârukeradu*, to yield an odour; *nârtam pillu*, lemon-graſs; *nârtei*, citron; *nârta manum*, the wild orange-tree; *nârum panei*, the *Indian Jaſmin*; *nârum alleri*, a ſtrong ſmelling-flower; and *nârtu*, which is put for *nard* in the *Tamul* verſion of our Scriptures; ſo that not only the *nard* of the *Hebrews* and *Greeks*, but even the *copia narium* of HORACE, may be derived from an *Indian* root. To this I can only ſay, that I have not met with any ſuch root in *Sanſcrit*, the oldeſt poliſhed language of *India*; and that in *Perſian*, which has a manifeſt affinity with it, *nâr* means a *pomegranate*, and *nârgîl* (a word originally *Sanſcrit*) a *cocoa-nut*; neither of which has any remarkable fragrance.

SUCH is the evidence in ſupport of the opinion given by the great *Swediſh* naturaliſt, that the true nard was a gramineous plant, and a ſpecies of *Andropogon*; but ſince no graſs that I have yet ſeen bears any reſemblance to the *Jatâmânsi*, which I conceive to be the *nardus* of the antients, I beg leave to expreſs my diſſent, with ſome confidence as a philologer, though with humble diffidence as a ſtudent in botany. I am not, indeed, of opinion that the *nardum* of the *Romans* was merely the eſſential oil

of

of the plant from which it was denominated, but am ſtrongly inclined to believe that it was a *generic* word, meaning what we now call *ātar*, and either the *ātar* of roſes from *Caſhmīr* and *Perſia*; that of *Cētaca*, or *Pandanus*, from the weſtern coaſt of *India*; or that of *Agarū*, or aloe-wood, from *Aſām* or *Cochinchina*, the proceſs of obtaining which is deſcribed by ABU'LFAZL, or the mixed perfume, called *ābīr*, of which the principal ingredients were yellow ſandal, violets, orange-flowers, wood of aloes, roſe-water, muſk, and true ſpikenard: all thoſe eſſences and compoſitions were coſtly; and, moſt of them being ſold by the *Indians* to the *Perſians* and *Arabs*, from whom, in the time of OCTAVIUS, they were received by the *Syrians* and *Romans*, they muſt have been extremely dear at *Jeruſalem* and at *Rome*. There might alſo have been a pure *nardine oil*, as ATHENÆUS calls it; but *nardum* probably meant (and KOENIG was of the ſame opinion) an *Indian* eſſence *in general*, taking its name from that ingredient which had, or was commonly thought to have, the moſt exquiſite ſcent. But I have been drawn by a pleaſing ſubject to a greater length than I expected, and proceed to the promiſed deſcription of the *true nard*, or *Jatámánsí*, which by the way has other names in the *Amarcóſh*; the ſmootheſt of which are *jatilá* and *lómaſá*, both derived from words meaning *hair*. Mr. BURT, after a modeſt apology for his imperfect acquaintance with the language of botaniſts, has favoured me with an account of the plant; on the correctneſs of which I have a perfect reliance, from which I collect the following *natural characters*:

AGGREGATE.

Cal. Scarce any. *Margin*, hardly diſcernible.

Cor. One petal. *Tube* ſomewhat gibbous. *Border* five-cleft.

Stam. Three *Anthers*.

Piſt. *Germ* beneath. One *Style* erect.

Seed

Seed ſolitary, crowned with a pappus.

Root fibrous.

Leaves hearted, fourfold; *radical* leaves petioled.

It appears, therefore, to be the *Proteau* plant, VALERIAN, a ſiſter of the Mountain and *Celtic* Nard, and of a ſpecies which I ſhould deſcribe in the *Linnean* ſtyle: VALERIANA JATA'MA'NSI *floribus triandris, foliis cordatis quaternis, radicalibus petiolatis.* The radical leaves, riſing from the ground and enfolding the young ſtem, are plucked up with a part of the root, and, being dried in the ſun or by an artificial heat, are ſold as a drug, which from its appearance has been called *ſpikenard*; though, as the *Perſian* writer obſerves, it might be compared more properly to the *tail of an ermine:* when nothing remains but the dry fibres of the leaves, which retain their original form, they have ſome reſemblance to a *lock of hair*, from which the *Sanſcrit* name, it ſeems, is derived. Two mercantile agents from *Bután*, on the part of the *Dévarája*, were examined at my requeſt by Mr. HARINGTON, and informed him that the drug, which the *Bengaleſe* called *Jatamánsi*, "grew erect above the ſurface of the ground, reſembling in "colour an ear of green wheat; that when recent it had a faint odour, "which was greatly increaſed by the ſimple proceſs of drying it; that it "abounded on the hills, and even on the plains, of *Bután*, where it was "collected and prepared for medicinal purpoſes." What its virtues are, experience alone can aſcertain; but, as far as botanical analogy can juſtify a conjecture, we may ſuppoſe them to be antiſpaſmodic; and in our provinces, eſpecially in *Bahar*, the plant will probably flouriſh; ſo that we may always procure it in a ſtate fit for experiment. On the deſcription of the *Indian* ſpikenard, compared with the drawing, I muſt obſerve that, though all the leaves as delineated may not appear of the ſame ſhape,

yet

yet all of them are not fully expanded. Mr. BURT aſſures me, that the four radical leaves are *heart'd and petioled*; and it is moſt probable that the cauline and floral leaves would have a ſimilar form in their ſtate of perfect expanſion; but, unfortunately, the plants at *Gayá* are now ſhriveled; and they who ſeek farther information muſt wait with patience until new ſtems and leaves ſhall ſpring from the roots, or other plants ſhall be brought from *Népál* and *Bután*. On the propoſed inquiry into the virtues of this celebrated plant, I muſt be permitted to ſay, that, although many botaniſts may have waſted their time in enumerating the qualities of vegetables, without having aſcertained them by repeated and ſatisfactory experiments, and although *mere botany* goes no farther than technical arrangement and deſcription, yet it ſeems indubitable, that the great end and aim of a botanical philoſopher is to diſcover and prove the ſeveral uſes of the vegetable ſyſtem; and while he admits, with HIPPOCRATES, the *fallaciouſneſs of experience*, to rely on experiment alone as the baſis of his knowledge.

APPENDIX.

METEOROLOGICAL DIARY,

KEPT AT CALCUTTA,

BY HENRY TRAIL, ESQ

From 1st February 1784, to 31st December 178..

REMARKS.

IN the following Diary of the weather, begun the 1ſt February 1784, every change in the air was marked down with the greateſt preciſion three times every day, and always nearly at the ſame hours, viz. at ſunriſing, at three, or half paſt three o'clock in the afternoon, and at eleven o'clock at night.

WHILE the wind continued ſoutherly, the Thermometer was placed in a Verandah open to the Eſplanade, where there was at all times a free circulation of air; and when the wind became northerly, the inſtrument was removed to the oppoſite ſide of the houſe, and equally expoſed, as in the preceding part of the year.

THE Barometer continued always in the ſame place.

THE Hygrometer made uſe of was a bit of fine ſponge, ſuſpended in a ſcale (on the end of a ſteelyard) firſt prepared for more eaſily imbibing the moiſture, by dipping it in a ſolution of Salt of Tartar, afterwards drying it well, and bringing it to an equilibrium by a weight in the oppoſite ſcale, at a time when the atmoſphere appeared to have the leaſt degree of moiſture.

A SEMICIRCULAR ſcale at the top, divided from 0 to 90° on each ſide, with the needle of the yard, pointed out the quantity of moiſture gained or loſt daily; but in the following Diary the degrees of moiſture have ſeldom been taken down.

EVERY fall of rain was likewiſe taken, and the quantity in cubic inches daily noted down.

THE winds were alſo obſerved; and the figures (0, 1, 2, 3, 4) denote the force thereof.

HERE it may be remarked, that at ſun-riſing there is ſeldom or ever any wind; but no ſooner is the air a little rarefied by its rays, than a little breeze begins, and this generally increaſes till about noon, when again it begins to loſe its force and dies away, from the ſame cauſe.

IN order to aſcertain the influence of the Moon upon the weather, the mean temperature, as well as the weight of the atmoſphere of each quarter, is accurately marked down by taking in the three days preceding and the three days after the change, with the intermediate day. From theſe the denſity is diſcovered, by the following rule given by Dr. BRADLEY, viz.

a, altitude of Barometer; b, altitude of Thermometer; d, Denſity.

$$\frac{A}{B \times 350} = D - \text{or Denſity.}$$

N. B. In this, the mean morning denſity is only taken; however, the mean denſity for the whole day may be found by the ſame rule.

JANUARY 1, 1785. From an examination of one year's obſervations on the influence of the Moon on the mercury in the Barometer, it does not appear that there is any certain rule to be laid down regarding it; however,

ever, it may be affirmed that the direction of the winds has more effect upon it, as we never fail to ſee the mercury higheſt when the wind blows from the NW; in a leſſer degree from the N, and loweſt of all when it proceeds from the SE quarters.

A General State of the Weather for February 1785.

	M.	E.	
Greateſt altitude of the Thermometer,	75°	76	
Leaſt ditto, - -	66	68	74 Mean temperature.
Mean ditto, - -	72	73	

Clear, - - 3 days.
Cloudy, - - 26 do.
N° of days on which it rained, 8 do.
Quantity of rain, - 4 a Inch.

THIS month the wind very variable, and the atmoſphere for the moſt part cloudy, and ſometimes ſeveral days ſucceeding without any ſun; the air alſo damp and cold. Frequently thunder, and on the 8th there was a fall of hail in the afternoon accompanied with thunder.

THE mornings generally foggy.

Calcutta

Calcutta, February 1784.

Day.	Thermom. M	N	E	Mean morning denfity of each quarter of the Moon.	Rain Inch	Wind. Point	Force	Appearance of the air.	REMARKS.
1	68	75	72			W	0	Cloudy	SUNDAY
2	68	78	72			N	0	—	Heavy, with a great appearance of rain.
3	67	74	69			NE	0	—	
4	68	77	68			S	0	—	Ditto.
5	71	79	72			SW	1	—	—
6	72	80	74	Full M. 70 $\frac{1}{7}$		NW	1	—	A thick fog all day.
7	71	82	75			S	2	Clear	
8	70	80	74		1.		1	Cloudy	Some hail in the afternoon, with thunder.
9	74	80	75				2	—	
10	75	80	74				2	—	A great appearance of rain; very dark.
11	71	77	75				1	—	
12	73	79	76		.2	NW	1	—	Ditto; few drops of rain.
13	73	80	74		.1	S	3	—	— — —
14	74	80	75	L. Q. 71 $\frac{2}{7}$	.1	NW	2	—	— — —
15	70	82	72				1	—	Much thunder this morning, with a heavy shower.
16	72	78	74		0.5	S	2	—	
17	70	81	72				0	Clear	
18	69	76	72			var.	1	Hazy	
19	69	79	74			S	0	—	A few drops of rain.
20	70	77	75			W	2	—	
21	73	77	74	New M. 70 $\frac{1}{7}$			1	Cloudy	Very gloomy, and a great appearance of rain, very close, no fun all day.
22	70	75	73			N	0	Hazy	
23	70	83	75			W	0	—	
24	72	84	74				0	Cloudy	Ditto.
25	71	76	73		0.5		1	—	Clear at intervals.
26	68	70	68		.2		0	—	Ditto.
27	67	74	69			NW	0	—	Very thick.
28	67	79	71	F. Q. 67 $\frac{2}{7}$	1.	W	1	—	Thunder, very moist and wet.
29	66	78	71			NW	2	Clear	Very chilly.
mean	72	79	73		4.2	var.	2	Cloudy	Mean ſtate of the atmoſphere.

A General State of the Weather for March.

| M. | N. | E.

Greateſt altitude of Thermometer,
Leaſt ditto, - - -
Mean —— - - -

79½ Mean temperature.

Clear, - 16 days.
Cloudy, - 15 —
Rain, - 3 —
Quantity of do. 1-8 inch.

The wind almoſt continually ſoutherly, and ſtrong blaſts towards the end of the month; the weather throughout clear and ſerene, and heavy dews at night, which indeed muſt always be the caſe when they are proceeded by a clear warm ſun.

In blowing weather dews are ſeldom ſeen, the moiſture as it falls being diſpelled by the wind.

The heat of the earth this month, about mid-day, about 120°.

Calcutta,

Calcutta, March 1784.

Day.	Thermom. M.	Thermom. N.	Thermom. E.	Mean morning heat at each quarter of the Moon.	Rain Inch.	Wind. Point.	Wind. Force	Appearance of the air.	Remarks.
1	66	80	71			SW	1	Clear	MONDAY.
2	67	80	71			W	1	ditto	Moist.
3	70	82	76			S	2	ditto	Thunder, but no rain.
4	72	85	76		1	W	4	Cloudy	Thunder early this morning.
5	73	84	74			SE	0	Hazy	
6	71	83	74				2	Cloudy	
7	70	78	74	Full M. 70 1/7			1	ditto	Great appearance of rain.
8	69	75	74			S	1	Clear	
9	70	80	74				1	ditto	The weather very fine and dry.
10	70	82	75				0	ditto	Ditto.
11	70	83	75			var.	2	ditto	Ditto.
12	69	85	75				1	ditto	Ditto.
13	70	88	79			S	3	ditto	Ditto.
14	75	86	81	L. Q. 71 6/7			1	ditto	The morning foggy.
15	76	86	80				0	Cloudy	Very close and sultry.
16	79	86	81				0	Clear	Ditto.
17	78	86	81				0	ditto	Ditto.
18	79	87	83			var.	0	Hazy	Ditto.
19	80	88	83				3	Clear	The wind high.
20	80	86	82		0.3		3	Cloudy	Ditto thunder.
21	77	85	83	New M. 70 3/7		W	3	ditto	Ditto.
22	80	86	83			S	2	Clear	
23	80	88	84				0	Cloudy	Moist.
24	80	89	83				1	ditto	Do.
25	81	88	85				1	ditto	Very thick.
26	83	89	84			var.	1	ditto	A great appearance of rain.
27	84	86	80		0.5	S	4	ditto	The wind boisterous.
28	77	82	81	F. Q. 67 3/7			3	ditto	Ditto.
29	78	87	81				2	ditto	Ditto.
30	79	86	83				1	Clear	
31	80	84	81				1	ditto	
mean	75	84	79		1.8	S	3	Clear.	Mean state of the atmosphere.

A General State of the Weather for April.

	M.		N.	
Greateſt altitude of the Thermometer, -	86		37	}
Leaſt ditto,	71	87	79	} 86½ Mean temperature.
Mean ditto,	83	91	85	}

Clear, -	14 days.
Cloudy, -	16 do.
Rain, -	6 do.
Quantity of rain,	3·1 inch.

THE prevailing wind this month, as well as the former, South; the mean heat of the earth at mid-day 126. Blowing and heavy weather in general, and frequent thunder-ſtorms about the end, although many of the nights were cloſe and ſultry.

THE thunder-ſtorms that generally prevail at this time of the year, always happen in the afternoon or evening, and come from the NW, and are attended with loud peals and heavy fall of rain. Before theſe ſtorms begin, the clouds become very dark and low; and the winds being thus confined between the clouds and earth, muſt of courſe be greatly augmented.

Calcutta,

Calcutta, April, 1784.

Day.	Thermom M	N	E	Mean morning heat at each quarter of the Moon.	Rain Inch.	Wind. Point	Force	Appearance of the air	Remarks
1	79	89	85			S	1	Clear	THURSDAY.
2	81	87	83				0	ditto	
3	81	91	85				4	Cloudy	Disagreeable blowing weather.
4	83	89	85				3	ditto	Ditto.
5	83	89	86				3	ditto	Ditto.
6	83	88	85	Full M 82 6/7			4	Cloudy	Ditto
7	83	91	86				3	Hazy	Ditto
8	83	91	85				2	Clear	
9	84	92	86				1	ditto	
10	84	94	87				0	ditto	
11	85	97	87				0	ditto	
12	86	95	87				0	ditto	The night very close.
13	85	93	85	L. Q. 14 3/7			0	ditto	Ditto.
14	86	92	83			SE	3	ditto	Hard blowing weather, with much
15	83	91	85			S	3	Cloudy	dust.
16	83	90	86		0.4		3	ditto	Ditto.
17	84	89	80		1.5		4	ditto	A heavy thunder-storm in the
18	80	88	79		0.5	SW	2	ditto	evening
19	74	67	85			NW	3	ditto	High wind.
20	83	90	85	New M 81 3/7		S	0	Clear	Very close.
21	83	91	86				3	ditto	Strong wind.
22	83	92	85				3	ditto	Ditto.
23	83	93	87				0	Hazy	And close and sultry.
24	83	92	66				3	Clear	
25	84	90	86				3	ditto	
26	84	89	84		0.4		4	Cloudy	With rain and thunder
27	80	88	85	F. Q. 83 2/7	0.2		4	ditto	Ditto from NW
28	83	90	86				2	ditto	Ditto Ditto
29	85	88	85		0.1		0	ditto	Ditto
30	84	89	85				3	ditto	High wind
mean	83	91	85		3.1	S	4	Cloudy	Mean state of the atmosphere

A General State of the Weather for May.

	M.	N.	F.	
Greateſt altitude of the Thermometer,		93		
Leaſt ditto, - -		82	74	84½ Mean temperature.
Mean ditto, - -		89	84	

Clear, -	7 days.
Cloudy, -	24 do.
Rain, -	14 do.
Quantity of do.	9·6 inches.

THE wind ſoutherly, with a few pretty violent ſtorms from the NW, at the beginning of the month, while the latter part was cloſe, gloomy, and warm; but in general the whole month was exceedingly cloudy, and ſcarcely a ſingle day of bright ſun-ſhine.

THE rains began on the 22d, and from that day to the end; the nights were very cloſe and ſultry, and the air very damp.

Calcutta,

Calcutta, May, 1784.

Day.	Thermom. M	Thermom. N	Thermom. E	Mean temperature of each quarter of the Moon	Rain Inches	Wind Course	Wind Force	Apparent state of the air	REMARKS
1	82	86	82		2.	S	3	Cloudy	SATURDAY, a violent storm.
2	77	8[illegible]	74		1		3	ditto	Very heavy. Do no sun.
3	75	82	79		0.6		4	ditto	Ditto.
4	8[illegible]	87	84				1	Hazy	And close.
5	82	89	84	Full M. 79 $\frac{5}{7}$			1	ditto	No sun all day.
6	81	90	85		0.5		2	ditto	A thunder storm in the evening.
7	84	90	85				3	ditto	High wind at times.
8	82	90	86				3	Clear	Ditto
9	83	9[illegible]	87				2	Hazy	
10	84	90	87		0.4		3	Cloudy	Very thick and dark.
11	85	89	78			SE	2	ditto	
12	75	88	84	L. Q. 79 $\frac{5}{7}$	0.8	b	2	ditto	A thunder storm in the evening.
13	77	85	80		2.	S	1	ditto	
14	75	85	83			var	0	ditto	No wind.
15	80	88	84			S	0	Clear	
16	80	90	83				1	ditto	Thunder in the evening.
17	78	91	86		0.2		0	ditto	The weather very close and sultry
18	83	91	87				0	ditto	Ditto
19	84	90	87	New M. 82 $\frac{6}{7}$			1	ditto	Ditto
20	85	92	87				1	Cloudy	At intervals.
21	85	93	88				0	Clear	Very still
22	85	91	85		0.6		2	Cloudy	Thunder in the evening.
23	84	90	83		0.4		2	ditto	Ditto.
24	82	89	85				2	ditto	Ditto.
25	83	92	86		0.2		1	ditto	Ditto.
26	84	86	84		0.1		2	ditto	Ditto.
27	81	82	83	F. Q. 81 $\frac{6}{7}$	0.2	SE	2	ditto	Ditto.
28	80	86	83			NW	3	ditto	A great appearance of rain
29	81	89	84		0.4	NW	2	ditto	The nights very sultry
30	82	89	85			NW	3	ditto	Ditto.
31	82	92	86		0.2	S	2	ditto	Thunder do
mean	81	89	84		9.6	S	2	Cloudy	Mean state of the atmosphere.

A General State of the Weather for June.

		M.	N.	E.	
	Thermometer	84	90	86	83 Mean temperature.
Least do.	-	77	80	78	
Mean do.	-	81	85	83	

Clear,	-	1 days.
Cloudy	-	29 do.
Rain	-	14 do.
Quantity of do.		17·4 inches.

The wind this month inclining sometimes to the E of S. The atmosphere exceedingly moist and wet, and much rain from the 10th to 17th, the sky mostly clouded throughout, and very little variation in the temperature of the air.

Calcutta,

Calcutta, June, 1784.

Day.	Thermom. M	N	E	Mean morning heat at each quarter of the Moon	Rain Inches	Wind from	fore	Appearance of the air	Remarks
1	82	82	82		0.7	o	1	Cloudy	Tuesday, thunder.
2	80	86	84		1.2		1	ditto	
3	82	84	83				1	ditto	
4	82	83	82	Full M. 79 3/7	0.2		1	ditto	A gentle shower.
5	81	87	85			var.	0	ditto	Close.
6	92	90	85				0	ditto	
7	83	85	84		0.5		1	ditto	
8	81	84	82		1.6	NE	1	ditto	Several showers.
9	80	84	83				0	ditto	
10	81	94	92	L. Q. 79 3/7	1.1		0	ditto	No sun all day.
11	79	80	80		1.6	S	1	ditto	Incessant rain all day.
12	78	78	78		4.6		3	ditto	Ditto
13	77	80	80		0.1		1	ditto	
14	80	85	80		0.4		2	ditto	Thunder in the evening.
15	81	85	82		0.1	W	2	Hazy	No sun all day.
16	80	82	79		2.5	var.	1	Cloudy	Ditto
17	80	83	83		0.8	S	0	ditto	Ditto
18	81	89	85	New M. 82 3/7			1	Hazy	Ditto.
19	81	88	85				1	ditto	Sun very faint.
20	82	88	86				1	ditto	Very thick, and no sun.
21	84	90	85			SE	1	ditto	The nights very close.
22	84	88	85			SE	1	ditto	Ditto.
23	82	88	85				1	ditto	Ditto.
24	82	90	84				1	ditto	Ditto.
25	83	90	86			var.	0	ditto	Ditto.
26	84	89	84	F. Q. 82		SE	0	Cloudy	Ditto.
27	82	87	84			S	0	Hazy	Ditto.
28	83	87	83				0	Cloudy	
29	81	81	81		2.1	var.	1	ditto	Thunder.
30	81	88	83			S	3	Clear	High wind
mean	81	85	83		17.4	S&SE	1	Cloudy	Mean state of the atmosphere.

A General State of the Weather for July.

	M.	N.	E.	
Greateſt altitude of Thermometer	84	90	85	83 Mean temperature.
Leaſt ditto - -	77	77	78	
Mean ditto - -	81	85	83	

Clear -	1	days.
Cloudy	30	do.
Rain -	20	do.
Quantity of do.	15	inches.

THE prevailing wind SE., and the atmoſphere as the former month, exceedingly thick and humid, and very little ſun-ſhine. The mean temperature exactly the ſame as laſt month, and very little variation between the heat at mid-day and that of the morning and evening.

DURING the rains the wind is often variable, but commonly it comes round to the eaſtward, when there falls much rain.

Calcutta,

Calcutta, July, 1784.

Day.	Thermom. M.	N	L	Mean morning heat at each quarter of the moon	Rain Inch.	Wind. Point	Force.	Appearance of the air	Remarks.
1	81	89	84	THURSDAY.		S	3	Clear	The wind strong in the morning,
2	83	88	84				2	Cloudy	but the nights very fill and
3	83	83	83	Full M. 82		SE	2	ditto	close.
4	80	86	84				3	ditto	
5	84	89	84				2	Hazy	
6	84	88	84		0.4		1	Cloudy	The night very bright
7	83	85	84				0	ditto	Ditto thunder.
8	82	85	84		0.3		0	ditto	Ditto
9	82	86	84		0.1		1	ditto	Ditto.
10	82	90	85	L. Q. 82 $\frac{7}{7}$	0.1		1	ditto	Much lightning in the evening.
11	83	86	83		1.1	var.	1	ditto	
12	82	86	84		0.9		1	ditto	Several small showers.
13	83	86	84		0.5		2	ditto	
14	81	84	82		0.2		1	ditto	
15	79	83	82		2.6		1	ditto	Rained all day.
16	82	83	82			SE	0	ditto	
17	78	83	82	New M. 79 $\frac{5}{7}$	0.9		1	ditto	Small rain, very dark.
18	79	85	82		0.1		2	ditto	On the 7th there had been no
19	79	84	82		0.1		1	ditto	rain at Chunar, many persons
20	80	85	80			S	3	ditto	sick, but chiefly among the
21	77	83	80		0.1	SE	1	ditto	natives.
22	79	84	82		0.3		1	ditto	
23	80	85	79		1.7		0	ditto	Much thunder and lightning.
24	79	83	80				1	ditto	
25	79	83	81	F. Q. 79 $\frac{6}{7}$	0.1	E	1	ditto	
26	80	86	82		0.1	SE	1	ditto	Thunder.
27	81	86	83		0.2		1	ditto	
28	81	86	84			SW	1	ditto	
29	83	86	83			S	3	ditto	High winds
30	81	82	79		1.8	SW	1	ditto	Thunder.
31	78	77	78		3.6		1	ditto	Rain all day.
mean	81	85	83		15.	S&SE	1	Cloudy	Mean state of the atmosphere.

A General State of the Weather for Auguſt.

		M	N	E	
THERMOMETER,	Greateſt altitude,	83°	89°	84°	82° Mean temperature.
	Leaſt do. -	77	80	80	
	Mean do. -	81	85	82	
BAROMETER,	Greateſt do. in.	29.75	29.75	29.76	Mean ſtate of the atmoſphere.—29.57.
	Leaſt do. -	29.57	29.56	29.61	
	Mean do. -	29.67	29.67	29.70	
	Greateſt variation,	.18	.18	.15	
	Mean denſity,	.688	.682	.688	.686 denſity.
HYGROMETER,	Greateſt moiſture,	50°	45°	45°	
	Ditto drought,	15	10	10	
	Mean drought &moiſt.	3d 28m	1d 18m	1d 15m	

Clear - 5 days.
Cloudy - 26 do.
Rain - 23 do.
Quantity do. 16·9 inches.

THE air ſtill very moiſt, and very little ſun-ſhine, although the nights in general were very bright and fine: frequently thunder, and on the 22d, an exceeding loud peal early in the morning. The quantity of rain that fell this month was very conſiderable, and every thing imbibing the moiſture to the higheſt degree.

THE Barometer is almoſt invariably higher at night than in the morning, and loweſt always at mid-day. The air being much loaded with moiſture the whole of this month, the variation of the mercury was very inſenſible. The ſame cauſes kept the Thermometer nearly ſtationary alſo.

Calcutta,

Calcutta, Auguſt, 1784.

Day.	Thermom. M	Thermom. N	Thermom. L	Moon's mean daily motion each quarter	Barometer M	Barometer N.	Barometer I	Hygrometer M d	Hygrometer M m	Hygrometer N d	Hygrometer N m	Hygrometer I d	Hygrometer I m	Rain	Wind and Force Points	Wind and Force M	Wind and Force N	Wind and Force I	
1	77	83	80	I. M.	29 04	29 64	29 73	10	15	10				1.2	S	0	1	0	Cloudy
2	80	86	82	SUN-	.69	.69	.73		15	5				0.4		0	1	0	ditto
3	81	86	83	DAY.	.70	.63	.70	15	20		20					1	1	1	ditto
4	82	88	83		.66	.64	.66	15	25		20			0.4	SE	0	1	0	Clear
5	82	86	83		64	.63	.71	15	30		15			0.3	E	1	1	0	Cloudy
6	81	86	83		.70	.70	.75	12	30	0	0			0.1	SE	1	1	1	ditto
7	82	86	83	L. Q.	.71	.70	.74	10	40		5			0.2		0	1	0	ditto
8	81	89	84	687	.74	.72	.72	10	35		10				S	1	2	1	Clear
9	82	87	83		.70	.70	73	15	35		30					0	1	0	ditto
10	82	87	83		.73	.73	.75	40	40		30		30			1	0	1	ditto
11	83	82	83		.72	72	.73		40		40		40	0.4		1	2	0	Cloudy
12	82	83	81		.70	72	.74		45	2			8	0 7	SE	1	2	0	ditto
13	81	87	83		.72	.72	.76		15	10			10			0	1	1	ditto
14	81	83	81		73	.73	.77		20		20	10		0 6		1	1	0	ditto
15	81	83	81		.74	.72	74		10		35		25	0 7	S	0	0	0	ditto
16	79	84	82	N. M.	.70	.60	64		40		35		25	1 5	SE.	1	0	0	ditto
17	81	83	80	689	.60	.50	61		25		40		30	2 5		1	1	0	ditto
18	79	83	80		.58	.56	64		45		30		40	2.8		0	1	1	ditto
19	77	80	80		.65	.69	.74		45		45		30	0.8		1	1	1	ditto
20	78	84	81		.74	.75	.72		40		35		45	0.5		1	2	2	ditto
21	79	87	83		.72	.63	69		50		15		15		SW	0	1	0	Clear
22	80	86	83		.65	.64	.69		45		25		12	1.9		2	0	0	Hazy
23	82	87	83	F. Q.	.67	.61	.67		30	0	0		10	0.2	S	0	0	0	Cloudy
24	82	87	84	689	.64	.59	.66		30	0	0		5		SE	0	1	0	ditto
25	83	86	84		.64	.64	64		15	0			5	0.2	E	0	1	1	ditto
26	81	85	81		.60	.56	.63		10		5	10		0 3	SE	1	2	1	ditto
27	80	84	81		.60	.59	.62		8		5		6	0 1		2	3	2	ditto
28	80	85	82	F. M.	.59	.64	.65		10		14		20	0 7		2	3	2	ditto
29	91	87	83	688	.64	.68	.66		33	0	0		5	0.6	SW	3	3	3	ditto
30	81	85	83		.66	.66	.69		20		15		10		SW	2	2	2	ditto
31	80	84	83		.66	.69	.74		25		25		35	0.1	S	2	2	1	ditto
mean	81	85	82		9.0,	29 60	29.70	1	28	1	1	1	15	16 9	5.81	1	1½	1	Cloudy

A General State of the Weather for September.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	84°	90°	85°	82 ½ mean temperature.
	Leaſt do. -	76	77	78	
	Mean do. -	80	85	81½	
BAROMETER,	Greateſt do. in.	29.95	29.90	29.97	Mean ſtate of the atmoſphere, 29.81.
	Leaſt do. -	29.72	29.68	29.75	
	Mean do. -	29.81	29.80	29.83	
	Greateſt variation	0.23	0.22	0.22	
	Mean denſity	.693	.685	.692	.690 denſity.
HYGROMETER,	Greateſt moiſture	60°	60°	60°	
	Ditto drought	10	40	25	
	Mean denſity & moiſt.	5d 24m	10d 14m	5d 15m	

Clear -	10 days.
Cloudy -	20 do.
Rain -	12 do.
Quantity of do.	11-3 inches.

THE wind generally S and SE, much lightning in the evenings, but not attended either with rain or thunder. The air ſtill damp and cloudy, although the Barometer ſtood conſiderably higher than the preceding month.

IT is worthy of obſervation, that upon the rains going off, the water falls in larger drops than at any other period of the ſeaſon, and probably this may be occaſioned from the height it has to fall: and in proof of this, the oppoſite ſtations of the barometer need only be conſulted, where it appeared that the weight of the atmoſphere was greatly increaſed about the laſt period of the rains.

Calcutta,

Calcutta, September, 1784.

Day	Thermom. M	N	E	Moon's mean density each quarter.	Barometer M	N	E	Hygrometer M d	m	N d	m	F d	m	Rain	Wind and Force Point		N	E	
1	81	86	83	Wan.	29.72	29 72	29 79		40		5		20		S	0	1	1	Cloudy
2	81	89	84		.79	.82	.84		25	5			5		SE	0	1	0	Clear
3	83	83	82		.84	.81	.84		25		20		25	2 0	SW	0	1	0	Cloudy
4	81	87	83		.82	.78	.76		35		20		15			1	1	1	Hazy
5	81	88	83		.74	.78	.75		30		20		20			1	1	0	ditto
6	82	89	83	L. Q.	.75	.77	.78		20		20		5			0	1	1	Cloudy
7	81	89	83	691	.77	.82	.81		25	15	0		20		S	1	1	1	Clear
8	81	88	83		80	.83	.80		15	12		10			S	0	1	1	ditto
9	82	89	84		.79	.72	.78		5	30		5			SW	0	2	0	ditto
10	82	90	83		.76	.72	.78		5	35		20			SE	0	1	2	ditto
11	84	90	85		78	.78	.81	10		40		25			NE	0	2	1	ditto
12	84	87	84		.81	.80	.79		0	20		20		0.5		0	1	0	Cloudy
13	81	87	93		.77	.75	.76		25	20		20			N	1	1	0	Heavy
14	82	84	82	New M	.72	.68	.78		15	10		10			NE	1	1	1	ditto
15	77	82	80	691	.77	.80	.80		15	0	0	0		0.7	SE	1	1	1	ditto
16	79	81	81		.78	.80	.76		20		5		15	0.3		1	1	1	ditto
17	79	80	79		.93	.70	.78		18		25		30	1 5		1	2	1	ditto
18	77	81	78		.79	.77	84		35		38		38	0.9		0	1	1	ditto
19	76	77	78		.84	.89	.87		50		53		55	1.2		1	1	1	ditto
20	78	80	79		.88	.89	.91		60		60		55	1.1		1	0	1	ditto
21	78	80	78		.92	.89	.95		60		55		60	0.3	SE	1	1	1	ditto
22	79	80	80	Full Q.	.95	.90	.97		60		45		45	1.1	E	1	0	0	ditto
23	78	83	80	698	.94	.88	.92		45		30		35	0.1	SE	0	1	0	ditto
24	79	84	80		.92	.84	.88		40		20		30		S	0	1	0	ditto
25	79	85	80		.88	.84	.86		35		0		5		SE	0	1	0	ditto
26	78	86	82		.87	.84	.86		20	20		5			SE	0	1	1	Clear
27	80	83	79		.80	.84	.80		5		0	5		1.6	var.	0	2	1	Cloudy
28	79	85	82	Full M	.80	.77	.83		15	20		5			S	0	2	1	Clear
29	80	88	84	694	.84	.81	.89		10	35		20			SE	0	1	1	ditto
30	83	89	83		.89	.87	.91	5		35		15				0	1	0	ditto
Mean	80	85	81½		29.81	29.80	29.83	5	24	10	14	5	15	11 3	SE &	1	1	1	Cloudy

A General State of the Weather for October.

		M	N	E	
THERMOMETER,	Greateſt altitude	81	90	85	82½ mean temperature.
	Leaſt do. -	74	77	76	
	Mean do. -	79	86½	82½	
BAROMETER,	Greateſt do. in.	30.04	30.00	30.02	Mean ſtate of the atmoſphere. — 29.91.
	Leaſt do. -	29.74	29.77	29.76	
	Mean do. -	29.92	29.91	29.92	
	Greateſt variation	0.30	0.23	0.26	
	Mean denſity	.697	.686	.693	.692 denſity.
HYGROMETER,	Greateſt moiſture	48	25	30	
	Ditto drought	30	50	45	
	Mean moiſt & drought	5d 7m	30d 1m	22d 2m	

Clear - 19 days.
Cloudy - 12 do.
Rain - 3 do.
Quantity of do. 0·8 inches.

THE air very clear and elaſtic, and heavy dews at night. The Barometer very high, and the wind W and NW.

ABOUT the middle of the month the mornings became a little foggy, which indicates the approach, or beginning, of the cold ſeaſon: The atmoſphere thin and dry, and cleared of its vapours; of courſe the mercury roſe in the Barometer.

As the difference between the day and the night-heat begins now to be greater than in any of the eight preceding months, the fogs we have at this ſeaſon of the year are by that means formed.

Calcutta,

Calcutta, October, 1784.

Day	Thermom. W.	Thermom. N	Thermom. E.	Moon's mean density each quarter	Barometer M	Barometer N.	Barometer F.	Hygrometer M d	Hygrometer M m	Hygrometer N. d	Hygrometer N. m	Hygrometer E. d	Hygrometer E. m	Rain	Wind and Weather Point	Wind and Weather M	Wind and Weather N	Wind and Weather E.	
1	83	89	82	FRID.	29 91	29 91	29.93	3		35		20		0.6	SE	0	3	1	Cloudy
2	81	82	80		.94	.90	.92		10	15		0		0.2	S	1	1	1	ditto
3	80	85	83		.90	.83	.87		15	15		5			SE	0	1	1	ditto
4	80	88	84		.83	.77	.8h		15	25		15			S	0	2	0	ditto
5	82	88	84		.78	.78	.75		5	25		15			NE	0	3	0	ditto
6	81	90	83	L. Q.	.76	.78	.76		0	20		15		0.1	var.	0	1	1	Clear
7	82	87	82	692	.74	.77	.77	5		20		15				0	1	1	ditto
8	82	88	83		.77	.77	.83	5		40		35			W	0	1	0	Cloudy
9	80	89	82		.83	.87	.86	10		40		35			W	1	1	0	Clear
10	79	89	82		.86	.87	.86	15		40		35				0	1	0	ditto
11	99	90	83		30.03	.96	30.	15		40		30				0	1	1	ditto
12	81	88	85		29 98	.94	29.97		25	25		15				0	2	0	ditto
13	81	89	85		.99	.93	.94		10	25		15				0	1	1	ditto
14	80	89	84	N. M.	.93	.89	.92			30		15				1	1	0	ditto
15	80	87	82	696	.92	.92	.91		10	40		30				0	1	0	ditto
16	79	83	83		.91	93	.93		10	35		30			NW	0	1	0	ditto
17	78	88	83		.94	30.	.94		0	35		30			NW	0	1	0	ditto
18	80	87	83		.94	29.97	.96		0	35		30			W	0	1	1	ditto
19	80	89	83		30.01	.98	30 01		0	10		25			NW	0	1	0	ditto
20	77	88	82		.04	.98	29.98	10		45		30				0	1	0	ditto
21	78	88	82	F. Q.	29 98	.96	.99	20		50		45				0	1	0	ditto
22	78	87	83	702	30.	.99	.98	30		50		40				0	1	0	Cloudy
23	77	80	76		29.95	94	.93	10		0			30	0 05		1	2	1	ditto
24	75	77	76		.88	.89	.92		40		25		25		N	3	3	0	ditto
25	74	84	79		.92	.88	.93		35	5		5			NW	1	1	0	ditto
26	76	83	80		.93	.90	.92		20	15		10				1	1	0	ditto
27	76	86	80		.92	89	.91		5	30		20				1	1	1	ditto
28	75	86	80	F. M.	.94	.94	.99		0	40		35				1	1	0	Clear
29	76	83	80	705	.99	30	.99	10		35		30				0	1	0	ditto
30	75	85	80		.96	29 95	30.	10		30		40				0	2	0	ditto
31	75	85	80		30.	30.	30 02	10		45		40				0	1	0	ditto
mean	79	86½	82½		29.89	29.91	29.92	5	7	30	1	22	2	0 1	WNW	¼	1	1	Clear

A General State of the Weather for Nov

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	76°	80	80	76 mean temperature.
	Leaſt do. -	66	76	71	
	Mean do. -	71¼	80¾	75½	
BAROMETER,	Greateſt do. in.	30.12	30.05	30.08	30.00 mean ſtate of atmoſphere.
	Leaſt do. -	29.60	29.88	29.92	
	Mean do. -	30.00	29.99	30.02	
	Greateſt variation	00.52	00.17	00.16	
	Mean denſity	.712	.696	.706	702 denſity.
HYGROMETER,	Greateſt moiſture	40	15	15	
	Ditto drought	45	55	50	
	Mean moiſt & drought	8m 10d	½m 35d	1m 28d	

Clear -	23 days.
Cloudy -	7 do.
Rain -	1 do.
Quantity of rain	0·9 inches.

THE NW winds prevailed this month, but nothing remarkable in the changes of the atmoſphere, although there were ſeveral appearances of rain in the courſe of it. The air more elaſtic than any of the former months, alſo more ſerene and dry. The foggy mornings ſtill keep off.

IN clear dry weather there is always a very ſenſible change on the barometer two or three hours after ſun-riſing; it being often near $\frac{1}{10}$ of an inch higher about nine o'clock than at ſix or ſun-riſe. May not this be owing to the load of vapour condenſed and kept near the ſurface of the earth, from the coldneſs of the night, which, as it is gradually rarefied by the heat of the ſun, muſt increaſe the weight and ſpring of the atmoſphere, and produce this variation? From hence, the barometer is always higher in the evening, before theſe watery particles fall, than in the morning when the air is replete.

Calcutta

Calcutta, November, 1784.

Day	Thermom. M	Thermom. N	Thermom. L	Moon's mean density each quarter.	Barometer. M	Barometer. N	Barometer. I	Hygrometer. M c	M m	N d	N m	I d	I m	Rain	Wind and Clouds. Part	M	N	I	
1	74	85	80	Mon.	30 02	29 90	30 03	20	1	45		15			NW	0	1	0	Clear
2	77	85	80		.05	.96	.00	15		40		10				0	1	0	Cloudy
3	77	86	80		.00	.98	.02	10		40		30				0	1	0	Clear
4	76	85	80		.02	30.00	.01	0		35		15				0	2	0	Cloudy
5	78	85	79	L. Q.	.00	29.97	.02	5		40		35				0	1	0	Clear
6	76	84	80	705	.00	30.00	.02	0		30		35				1	2	0	ditto
7	76	86	79		.02	.02	.02	20		45		45				0	2	1	ditto
8	73	82	78		.02	.02	.00	35		50		50				0	1	0	ditto
9	72	83	76		.02	.01	.06	45		55		50				1	1	0	ditto
10	72	81	78		.10	.08	.08	35		50		45			N	1	1	0	Cloudy
11	74	76	76		.13	.05	.07	15		0		35		0.9	NE	0	2	0	ditto
12	75	79	76	N. M.	.07	.04	.05		40		15		15		N	0	1	0	Clear
13	71	81	77	707	.05	29.98	.02		40	50			15			0	1	0	ditto
14	77	79	75		29.60	.89	29.92		10	25		20			NE	1	1	0	ditto
15	74	80	75		.94	.95	30.00		20	25		15				0	1	0	ditto
16	73	81	73		30.01	30.05	.07		20	40		25			N	0	1	0	ditto
17	66	80	72		.07	.03	.06		0	50		35			NE	1	2	1	ditto
18	67	78	74		.04	.02	.04	15		45		40			NW	0	1	1	ditto
19	68	78	72		.03	29.99	.04	10		45		40			N	1	1	0	ditto
20	69	78	75	F. Q.	.03	30.02	.05	15		40		35			NW	0	1	0	ditto
21	69	79	74	718	.02	29.97	.02	5		40		35				0	1	0	ditto
22	68	78	73		29.98	.93	29.97	0		40		30				0	0	0	Hazy
23	69	78	72		.97	.92	.94	0	5	35		15			N	1	1	0	Clear
24	70	78	73		.90	.88	.95		35	5					NW	1	1	0	Cloudy
25	68	78	71		.92	.96	30.02		35		5		5			0	2	0	ditto
26	67	79	73		30.03	30.03	.04		40	20		20				0	1	0	Clear
27	67	79	73	F. M.	.00	.00	.03	20		35		30				1	1	0	ditto
28	69	80	74	717	.00	.00	.03	10		35		30				0	1	0	ditto
29	67	80	73		.02	29.99	.04	15		15		20			N	0	1	1	ditto
30	67	80	73		.05	.04	.08	20		50		30			NW	1	2	1	ditto
mean	71½	80½	75½		30.00	29.99	30.02	10	8	35	½	28	1	90.	NW	½	1½	½	Clear

A General State of the Weather for December, 1784.

		M	N	E.	
THERMOMETER,	Greateſt altitude,	69	79	73	69⅞
	Leaſt do. -	58	68	65	Mean heat.
	Mean do. -	63½	74	68½	
BAROMETER,	Greateſt do. in.	30.17	30.14	30.17	Mean ſtate of the
	Leaſt do. -	30.02	30.00	30.02	atmoſphere,
	Mean do. -	30.09	30.07	30.09	30°.08
	Greateſt variation,	00.15	00.14	00.15	
	Mean denſity,	.727	.709	.721	.717 M. D.
HYGROMETER,	Mean moiſt & drought	24 d	48 d.	38 d	

Clear -	26 days.
Cloudy -	5 do.
Rain -	1 do.
Quantity do.	0.05 inches.

THE winds were conſtantly NW, except a few days, when it was inclined a little to the E, which always brings on cloudy thick weather. The whole month remarkably dry, and the atmoſphere of ſuch a denſity as greatly to exceed any of the former. At this ſeaſon of the year there is generally a thick diſagreeable fog in the mornings and evenings; however, this month, on the contrary, has been very clear and ſerene, and but ſeldom thick fogs at either of theſe times.

Calcutta,

Calcutta, December, 1784.

Day	Thermom. M	N	L	Moon: mean density each quarter	Barometer. M	N	E	Hygrometer M d	m	N d	m	E d	m	Rain	Wind and Force: Point	M	N	E	
1	65	79	72		30.07	30.10	30.10	20		45		30		0.05	NE	1	1	1	Cloudy
2	68	76	72		.07	.04	.07	40		50		40				1	1	0	ditto
3	69	78	72	I. Q.	.03	.01	.06	20		40		20				0	1	0	ditto
4	67	78	73	721	.06	.05	.09	15		30		15			NW	1	2	1	ditto
5	65	79	72		.10	.06	.09	5		45		25				1	2	0	Clear
6	65	75	70		.05	.05	.10	30		50		45				2	3	0	ditto
7	63	75	68		.08	.03	.05	45		55		45				1	2	1	ditto
8	61	74	68		.07	.04	.09	4		55		45				2	1	0	ditto
9	61	75	69		.07	.06	.07	30		55		55				2	1	0	ditto
10	62	75	68		.08	.06	.07	30		55		40				1	1	0	ditto
11	61	75	68	N. M.	.07	.04	.08	30		55		45				1	1	0	ditto
12	62	73	68	728	.09	.03	.08	20		40		35				1	0	0	ditto
13	62	74	69		.08	.04	.05	10		40		40				0	1	0	ditto
14	64	71	69		.05	.01	.01	10		35		25			N	0	0	0	Cloudy
15	66	73	68		.04	.07	.08	20		40		35			NNE	1	1	0	ditto
16	64	75	70		.09	.06	.08	30		45		40			NW	0	1	0	Clear
17	67	75	70		.07	.01	.02	30		40		30				0	1	0	ditto
18	66	76	72	F. Q.	.02	.00	.07	10		40		25			NE	0	2	0	ditto
19	67	75	71	725	.06	.06	.07	0		50		25			W	0	1	0	ditto
20	66	75	66		.06	.05	.08	25		55		40			NW	0	1	0	ditto
21	65	74	67		.11	.10	.13	35		60		50				0	1	0	ditto
22	61	71	65		.17	.13	.17	45		50		50				0	2	0	ditto
23	58	71	65		.17	.12	.14	35		45		40				1	1	0	ditto
24	60	72	66		.14	.13	.14	10		50		40				1	1	0	ditto
25	60	72	68	F. M.	.15	.14	.16	15		45		45				0	1	0	ditto
26	61	73	68	732	.17	.14	.14	5		45		35				1	2	0	ditto
27	61	73	68		.15	.13	.14	15		50		40				1	2	0	ditto
28	60	72	67		.14	.10	.13	20		55		40				1	1	0	ditto
29	60	70	65		.10	.10	.10	30		55		45			W	0	1	0	ditto
30	60	69	65		.10	.06	.07	40		55		45			NW	0	1	0	ditto
31	60	68	65		.08	.05	.06	40		55		45				0	1	0	ditto
Mean	63½	74	68½		30.09	30.07	30.09	24		48		38		0.05		[illegible]	1½	1/10	

A General State of the Weather for January, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	70	78	74	M. h. 66
	Leaſt do. -	57	69	64	
	Mean do. -	61	72	66⅔	
BAROMETER,	Greateſt do. in.	30.17	30.14	30.17	Mean ſtate of the atmoſphere, 30.08.
	Leaſt do. -	29.98	29.97	30.03	
	Mean do. -	30.08	30.07	30.09	
	Greateſt variation	00.19	00.17	00.14	
	Mean denſity	.732	.712	.723	72a M. D.
HYGROMETER,	Mean moiſt & drought	30 d.	50 d.	40 d.	

Clear - 29 days.
Cloudy - 2 do.

THE atmoſphere very dry and elaſtic.

THE winds variable; but from the middle of the month were almoſt conſtantly from the SW and S, and often pretty ſtrong.

THE mercury in the Barometer ſtood very high till about the end of the month, when a very ſenſible change took place, both with regard to the warmth and ſerenity of the weather. Frequent heavy dews about the ſame time.

THE mornings always very foggy.

THE medium heat of the ſun at mid-day (the inſtrument being expoſed five minutes) was 90°.

Calcutta,

Calcutta, January, 1785.

Day.	Thermom. M	N	E	Mean thermom. each quarter	Barometer M	N	E	Hygrometer M d	M m	N d	N m	E d	E m	Rain	Wind and force Point	M	N.	E	
1	0	69	4		30.09	30.09	30.09	30		50		45			NW	0	1	0	Clear
2	57	69	64		.09	.09	.11	40		50		45			NW	0	1	0	ditto
3	[illegible]	71	65		.11	.10	.07	25		45		40				0	1	0	ditto
4	59	69	65		.04	.04	.09	30		50		40			WNW	0	1	0	ditto
5	[illegible]	70	66		.10	.08	.08	35		50		40				0	2	0	ditto
6	64	70	66		.07	.08	.12	30		50		40			W	0	2	0	ditto
7	63	72	67	L. Q. 73^{2}	.13	.13	.17	35		55		50			NW	0	2	0	ditto
8	59	72	67		.14	.13	.10	35		60		50			N	1	2	0	ditto
9	58	73	65		.10	.09	.09	35		60		45			NW	1	2	0	ditto
10	60	70	65		.10	.10	.14	40		60		50				0	1	0	ditto
11	58	72	65		.13	.10	.12	35		60		50				1	2	1	ditto
12	59	72	65		.11	.11	.11	25		50		45			N	1	2	0	ditto
13	60	72	66		.11	.11	.12	30		50		45			NW	2	1	0	ditto
14	60	71	67		.12	.11	.13	40		45		45				0	1	0	ditto
15	58	71	65	N. M. 73^{6}	.14	.14	.14	35		50		50				1	2	0	ditto
16	60	70	65		.15	.15	.17	40		55		50				0	2	0	ditto
17	60	69	65		.17	.13	.10	45		55		50			N	1	1	0	ditto
18	59	70	65		.10	.10	.06	40		55		50			NW	1	2	0	ditto
19	60	70	65		.08	.05	.05	40		60		50				0	2	0	ditto
20	58	71	65		.05	.05	.05	30		55		50				0	1	0	ditto
21	64	74	67		.02	.00	.07	0		40		30			SW	0	1	0	ditto
22	60	71	65		.08	.05	.08	40		55		50			W	1	2	0	ditto
23	59	70	65	F. Q. 73^{6}	.04	.04	.05	40		60		55			SW	1	2	0	ditto
24	62	70	66		.06	.04	.05	40		55		50			W	0	2	0	ditto
25	62	75	68		.08	.06	.07	40		55		45				0	1	0	ditto
26	63	74	69		.07	.01	.03	30		45		30			SW	0	2	0	ditto
27	68	74	70		29.98	29.97	.03		15	40		30			S	0	2	0	ditto
28	67	76	69		30.01	.98	.01	10		55			10		SW	1	2	0	ditto
29	65	77	74	F. M. 72^{8}	.02	30.01	.05	40		60		50			S	0	3	0	ditto
30	66	76	71		.00	.01	.03	10		40			10			0	3	1	Cloudy
31	70	78	74		.02	.03	.05		40	0			10			0	3	2	ditto
mean	$61\frac{1}{3}$	72	$66\frac{1}{4}$		30.08	30.07	30.09	30	$1\frac{1}{4}$	50		40	1		var.	$\frac{1}{3}$	2	1	Clear

A General State of the Weather for February, 1785.

		N.	M.	E.	
THERMOMETER,	Greateſt altitude	74	86	76	
	Leaſt do. -	68	75	69	75 mean temperature.
	Mean do. -	71	79½	74	
BAROMETER,	Greateſt do. in.	30.14	30.17	30.15	
	Leaſt do. -	29.89	29.89	29.96	30.02 mean ſtate of the atmoſphere.
	Mean do. -	30.02	30.01	30.04	
	Greateſt variation	0.25	0.28	0.19	
	Mean denſity	.713	.698	.708	
HYGROMETER,	Moiſture and drought	0	28d	22d	706.

Clear -	17 days.
Cloudy -	11 do.
Rain -	4 do.
Quantity of do.	2-9 inches.

THUNDER five times. Mean heat of the ſun at mid-day, the thermometer being expoſed five minutes, 96°.

THE beginning of this month the air was very moiſt, which is generally the caſe when the wind comes from the S and SE.

ON the contrary, the NW winds which prevailed renders it very dry and elaſtic, and has always a very great effect in raiſing the mercury in the barometer. During the whole of this month the mornings were extremely thick and foggy; on the 1ſt, 8th, and 12th, moderate ſtorms from the NW.

Calcutta,

Calcutta, February, 1785.

Day.	Thermom. M.	Thermom. N.	Thermom. E.	Moon's mean density each quarter.	Barometer. M.	Barometer. N.	Barometer. E.	Hygrometer. M d.	Hygrometer. M m	Hygrometer. N. d.	Hygrometer. N. m	Hygrometer. E. d.	Hygrometer. E. m.	Rain.	Wind and Course. Point	Wind and Course. M	Wind and Course. N	Wind and Course. E	
1	71	77	74		30.00	29.90	29.95		50	0	0		40	0.5	S	1	4	1	Cloudy
2	73	76	71	L. Q.	29.89	.89	.96		40		15		20		SE	1	2	1	ditto
3	69	77	73		.96	.96	30.03		30	25		20				0	1	0	Clear
4	72	78	74	7h 14m	30.08	30.07	.12		30		5		30		S	0	1	0	Cloudy
5	72	79	75		.08	.04	.04		4	15			25			0	1	1	Clear
6	74	80	76		29.98	.03	.05		50	30			20			3	2	1	Cloudy
7	72	80	72		.98	29.99	.04		45	35		0	0		SE	1	1	1	Clear
8	75	80	73		30.05	30.04	.11		30		15		5	0.8	E	0	1	0	ditto
9	68	78	74	N. M.	.07	.03	.03		35		15		5		W	1	1	0	Cloudy
10	72	80	75	7h 11m	29.97	29.95	29 98		15	40		30			N	2	1	0	Clear
11	70	80	74		.98	.99	30.03	10		60		55				1	1	0	ditto
12	73	82	69		30.03	30.03	.12	30		50		40		1.1	NW	0	0	3	Cloudy
13	69	79	72		.05	.00	.06	25		45		40				1	0	2	ditto
14	69	81	74		.01	.00	.04	35		55		50			SW	1	1	0	Clear
15	70	81	75		.04	.01	.04	30		45		45				0	1	0	ditto
16	70	75	73	F. Q.	.07	.06	.08	35		55		50			NW	3	3	0	Cloudy
17	69	80	73	7h 17m	.06	.02	.05	40		60		55			SW	0	1	1	Clear
18	70	73	69		.02	.02	.04	35		30			5	0.7		0	2	1	Cloudy
19	67	75	71		.03	.04	.03		15			15				0	2	1	ditto
20	69	79	72		.03	.03	.03		10	25		20			NW	0	2	0	Clear
21	69	77	73		.04	.04	.04	0		20		25			W	0	2	1	ditto
22	70	82	75		29.98	29.97	29.97		10			15				0	1	1	ditto
23	74	84	76		.99	.96	30.00		20	35		45				1	2	1	ditto
24	72	82	75	F. M.	30.00	.98	29.98	35		55		45				0	1	0	ditto
25	72	86	76	7h 10m	29.96	.96	97	30		60		55			NW	0	1	0	Cloudy
26	73	81	76		.96	.96	30.00	50		60		55			NW	1	1	0	Clear
27	73	83	74		30.03	30.03	.10	50		60		55				0	1	0	ditto
28	70	81	73		.14	.17	.15	30		60		55				0	1	0	ditto
mean	71	79½	74		30.02	30.01	30.04	31	15	30	2	28	6	2.9		⅛	1⅛	½	

A General State of the Weather for March, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	80°	90°	83°	79°
	Leaſt do. -	68	80	73	
	Mean do. -	75	85	78	
BAROMETER,	Greateſt do. in.	30.12	30.10	30.13	29.95
	Leaſt do. -	29.85	29.84	29.86	
	Mean do. -	29.95	29.92	29.97	
	Greateſt variation	.27	.26	.27	
	Mean denſity	.075	.688	.700	.698
HYGROMETER,	Moiſture and drought	0.0	36d	18d	

Clear -	20 days.
Cloudy -	11 do.
Rain -	5 do.
Quantity of do.	0·5 inches.

THUNDER five times. Mean heat of the ſun 100°.

THERE were two or three thunder-ſtorms this month, but gentle and attended with very little rain. Several mornings about the beginning were very foggy and damp, and continued ſo, but in a leſſer degree, nearly throughout the month. Heavy dews from the 15th.

THE barometer continued low, which may proceed from the high winds that prevailed, as well as from the extreme rarefaction of the atmoſphere at this ſeaſon of the year. We had often the appearance of rain, as muſt always be the caſe while the wind comes from the ſouth quarter, and bringing with it ſo much vapour.

Calcutta,

Calcutta, March, 1785

Day	Thermom. M	N	L	Moon's mean density each quarter.	Barometer. M	N	E	Hygrometer M d	m	N d	m	E d	m	Rain	Winds. Point	M	N	E	
1	68	84	73		30.12	30.10	30.13	55		60		60			SW	1	2	0	Clear
2	68	84	73		.10	.07	.08	50		60		55				1	1	0	ditto
3	69	80	74		.05	.04	.07	50		55		50			SW	0	2	1	ditto
4	72	82	75	L. Q. ·713	.04	.03	.06			50		50				1	2	[illegible]	ditto
5	73	83	75		.05	.04	.04		5	35		25			SE	0	3	1	ditto
6	73	81	76		.03	29.98	.00		5	50		35				0	4	1	ditto
7	73	82	77		29.97	99	.04		0	55		40			S	0	4	1	ditto
8	73	82	77		30.02	30.03	.07	20		45		40			SE	0	3	2	Cloudy
9	73	87	77		.06	.04	.07	40		55		40			SW	1	2	0	Clear
10	74	84	74		.05	.02	.05	25		50		35		0.1	SW	0	3	1	Cloudy
11	71	83	76	N. M. 709	.02	29.98	.02	40		50		40			SE	0	2	1	Clear
12	74	85	77		29.98	.90	29.93	10		40		45				0	2	1	Cloudy
13	75	84	75		.90	.84	.89			20		40		0.3		1	3	2	Clear
14	71	84	74		.90	.88	.93	15		30		15	fine hail			0	3	1	Cloudy
15	75	84	74		.90	.85	.93			40		10				1	4	3	ditto
16	73	83	77		.87	.87	.97	10	20	20		0				1	4	4	ditto
17	77	85	80	F. Q. 702	.90	.94	.97		10	25		0			S	1	1	1	ditto
18	77	86	80		.96	.85	.93		10	21			10		SW	0	2	1	Clear
19	77	89	82		.92	.87	.92		25	50		10			SE	1	2	1	ditto
20	78	90	81		.89	.85	.88		15	40		10			SW	0	2	2	ditto
21	78	87	81		.86	.84	.87		20	20			10		SE	1	3	1	Cloudy
22	79	86	81		.87	.87	.89		30	10			10		S	1	4	2	ditto
23	79	85	81		.85	.84	.89		10	10				0.1		1	3	4	Clear
24	77	85	80		87	.85	.89		10	20						1	2	3	ditto
25	79	87	81		.89	.92	.98		30	35						0	3	2	ditto
26	79	80	81	F. M. 696	.96	.91	.01		10	10			10			0	3	3	Cloudy
27	79	86	82		.89	.93	.86		20	20						2	5	1	Clear
28	79	88	82		.85	.87	.92		15	15			5			1	2	3	ditto
29	79	88	83		.90	.87	.92		25	10			5			1	2	1	ditto
30	80	84	82		.95	.87	.90		30	20			30			0	0	0	Cloudy
31	79	88	82		.91	.85	90	25		[illegible]		[illegible]				0	1	0	Clear
Mean	75	85	78		29.95	29.92	29.97	[illegible]	13	[illegible]		[illegible]	[illegible]	[illegible]	S	[illegible]	3	[illegible]	Clear

A General State of the Weather for April, 1785.

		M	N	E	
THERMOMETER,	Greateſt altitude,	83	91	85	82½
	Leaſt do. -	69	75	74	
	Mean do. -	79	86½	82	
BAROMETER,	Greateſt do. in.	29.97	29.92	29.97	69.83
	Leaſt do. -	29.70	29.68	29.74	
	Mean do. -	29.83	29.81	29.86	
	Greateſt variation,	.27	.24	.23	
	Mean denſity,	.695	.684	.691	.690
HYGROMETER,	Mean moiſt & drought	20 m.	20 d.	4 d.	

Clear	-	17 days.
Cloudy	-	13 do.
Rain	-	6 do.
Quantity	do.	8 inches.

THE quantity of rain that fell on the ſixteenth and ſeventeenth was very conſiderable, and the variation that appeared on the mercury before and after the thunder-ſtorms was very great; ſometimes 00'.30 in the ſpace of a few minutes.

THUNDER ſix times. Mean heat of the ſun 108° to 110°.

THE temperature of the air throughout this month was leſs warm and ſultry than it is generally found at this time of the year; as alſo the ſtorms that came from the NW were fewer in number. The air rather moiſt, and little or no variation in the winds, they being always directly S and SE.

Calcutta,

Calcutta, April, 1785.

Day	Thermometer M	Thermometer N	Thermometer E	Moon and mean density each quarter	Barometer M	Barometer N	Barometer E	Hygrometer M d	Hygrometer M m	Hygrometer N d	Hygrometer N m	Hygrometer E d	Hygrometer E m	Rain	Wind and Force Point	M	N	E	
1	79	84	80		29.90	29.86	29.90	50		55		50			S	0	2	2	Clear
2	75	90	80		.89	.82	.85	25		60		30				0	1	2	ditto
3	77	90	83	L. Q.	.82	.77	.81		20	60		10				1	3	2	ditto
4	77	90	82	.697	.82	.80	.84		10	45		20				0	1	3	ditto
5	79	88	83		.83	.60	.83			45		30				0	3	1	ditto
6	79	90	83		.81	.62	.83			35		25				0	3	3	ditto
7	78	88	82		.86	.65	.85			10		20				1	4	3	ditto
8	80	88	81		.88	.83	.84		15	30						0	4	4	Cloudy
9	80	87	84	N. M.	.82	.81	.84		30	20		10				2	3	2	Clear
10	80	87	84	.694	.78	.77	.85		30	40			10			1	4	1	Cloudy
11	81	88	85		.83	.82	.86		25	50		15				1	2	3	ditto
12	81	88	85		.82	.80	.87		30		10	35				1	0	1	ditto
13	81	85	84		.82	.86	.89		25	30		35				1	0	0	ditto
14	83	84	82		.97	.87	.89		10	40		40				1	4	0	ditto
15	81	84	83		.90	.92	.97	20		30					NW	1	0	1	ditto
16	78	81	74	F. Q.	.97	.92	.96	45			40		0	2.4		3	2	4	ditto
17	69	75	75	.698	.86	.79	.83		30		20		50	3.6	NE	3	3	2	ditto
18	77	82	80		.82	.88	.94		60	15			20	0.5	S	0	0	0	Clear
19	79	84	82		.92	.84	.90		40							0	4	0	Cloudy
20	78	85	81		.85	.79	.93		20							1	2	2	Clear
21	75	84	80		.85	.83	.90		10							1	3	2	Cloudy
22	74	82	80		.85	.84	.87		20		10		10	0.9		1	2	0	Clear
23	79	85	83		.83	.80	.83		40		10		10		SE	1	2	1	Cloudy
24	81	88	85	F. M.	.80	.75	.78		40	10			20			1	3	1	Clear
25	82	89	85	.694	.77	.76	.84		40	20			10			1	2	1	ditto
26	83	89	81		.76	.77	.87		30		10		10	0.3	S	1	4	4	Cloudy
27	82	89	82		.72	.68	.83		40		20		20	0.3		3	4	4	ditto
28	79	87	83		.70	.75	.74		40	20			30			1	3	3	ditto
29	82	90	85		.76	.79	.84		50	10			15			0	3	1	ditto
30	82	91	85		.8[illegible]	.83	.84		40	10			15			1	3	1	ditto
mean	79	86½	82		29.83	19.81	29.86	4	44	24	4	12	6	6.0	S	1	3	2	Cloudy

A General State of the Weather for May, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	67	94	89	86
	Leaſt do.	79	87	80	
	Mean do.	83	89½	85	
BAROMETER,	Greateſt do. in.	29.96	29.92	30.03	29.77
	Leaſt do.	29.00	29.53	29.63	
	Mean do.	29.77	29.74	29.82	
	Greateſt variation	.36	.39	.40	
	Mean denſity	.685	.676	.685	.682
HYGROMETER,	Mean moiſt & drought	1 m	30 d.	20 d.	

Clear - 16 days.
Cloudy - 13 do.
Rain - 10 times.
Quantity of do. 6 inches.

THUNDER fourteen times. Mean heat of the ſun 110° to 111°.

THE air this month has been drier than that of the preceding, but the winds being more from the SE quarter, is the reaſon of the mercury being ſo low; much cloſe and ſultry weather about the middle. The variation on the Barometer much greater than uſual.

Calcutta,

Calcutta, May, 1785.

Day	Thermom. M.	Thermom. N	Thermom. L.	Moon's mean density each quarter	Barometer M	Barometer N.	Barometer L.	Hygrometer M d	Hygrometer M m	Hygrometer N d	Hygrometer N m	Hygrometer L d	Hygrometer L m	Rain.	Wind Point	Wind M	Wind N	Wind L	
1	82	92	80		29 82	29 80	29.81		30	10			10		S	1	-	1	Clear
2	83	91	85		,77	74	,75		30	10			10			2	2	2	ditto
3	87	91	87	L. Q.	75	66	75		30	10		20				1	1	2	ditto
4	87	91	86	688	,70	,75	,85	1		40		20				6	3	1	ditto
5	85	89	86		,78	,83	,80	0		30		20				1	4	4	Cloudy
6	83	90	83		,96	,86	30.03	15		30		20		0.5		2	3	2	Clear
7	81	87	84		,78	,78	29 94	10		0		30			E	1	2	1	Cloudy
8	82	90	87	N. M.	,95	,92	,97		10	50		30			S	0	2	0	Clear
9	83	90	85	690	,94	,89	,95		10	30		25				0	2	1	ditto
10	83	89	85		,92	,85	,89	10		45		20		0 3	SE	0	2	0	ditto
11	84	90	83		,86	,79	,83	10		30		30				0	2	2	ditto
12	83	90	83		,80	,77	,85			30		15		0.1		1		2	ditto
13	84	89	85		,80	,78	,83		10	45		35				3	3	0	ditto
14	84	91	85		,83	,77	,62	25		50		30				0	1	0	Cloudy
15	84	92	86		,84	,77	,80		10	60		25				0	1	0	Clear
16	86	93	84		,81	,76	,86	40		60		55			SW	0	0	0	ditto
17	82	92	85	F. Q.	63	,81	,90	20		56		30				0	1	0	Cloudy
18	80	86	84	688	77	86	,93		10	40		20		1.4	S	0	1	0	ditto
19	81	88	86		,89	,81	,83	10		50		40			SW	1	0	0	Clear
20	83	89	80		,80	,72	79	10		50		30			S	0	0	0	Cloudy
21	84	91	83		,75	,67	,79	10		55		40				0	1	1	Clear
22	82	90	87		,74	,65	,75	10		40		40				0	1	0	Cloudy
23	85	91	89		,69	,58	,66	10		40		35			SE	0	1	0	Clear
24	87	94	89	F. M.	,63	,53	,66	20		20		20		0.2	S	0	0	4	Cloudy
25	84	92	82	685	,60	,59	,63		10	60		10		1.3		1	0	0	Ditto
26	79	88	85		,65	,63	,70		10	50		20			SE	1	0	0	ditto
27	84	90	80		,65	,64	,76		20	40			20	0.5		0	3	1	ditto
28	82	88	85		,70	,70	,78		20	40			10			0	1	1	Clear
29	81	88	82		,73	,70	,75	10		40		20		0.4	S	3	3	1	Cloudy
30	84	90	85		,74	,66	,72		20	0				0.1		3	3	2	Clear
31	83	87	85		,61	,68	,72		40		20		40	1.2	SW	2	1	1	Cloudy
mean	83	89!	85		29.77	29.74	29.82	8	9	40	1	23	3	6.0		4	2	1	Clear

A General State of the Weather for June, 1785.

		N.	M.	E.	
THERMOMETER,	Greateſt altitude	84	90	85	
	Leaſt do. -	79	80	79	82⅞
	Mean do. -	81½	84½	82	
BAROMETER,	Greateſt do. in.	29.70	29.68	29.72	
	Leaſt do. -	29.44	29.40	29.47	29.58
	Mean do. -	29.59	29.56	29.61	
	Greateſt variation	.26	.28	.25	
	Mean denſity	.687	.681	.685	
HYGROMETER,	Mean moiſture	50 m.	30 m.	40 m.	.684

Clear -	4 days.
Cloudy -	26 do.
Rain -	24 times.
Thunder -	16 do.
Quantity of rain	24-4 inches.

MEAN heat of the ſun 106°.

THE quantity of rain this month has been uncommonly great, and ſcarce a day has paſſed without ſome falling; the weather of courſe diſagreeable and unhealthy.

THE mercury in the barometer very low, which ſeldom fails to be the caſe while the winds come from the SE and E quarters.

Calcutta,

Calcutta, June, 1785.

Day.	Thermometer			Moon's mean diurnal motion each quarter	Barometer			Hygrometer						Rain	Wind and Weather				
								M		N.		L.							
	M	N	L		M	N.	L	d	m	l	m	d	m		Point	M	N.	F	
1	84	90	83		29.61	29.51	29.65		40		10		20	0.2	S			1	Cloudy
2	83	85	82		.63	.61	.65		40		20		40		SE	1	1		ditto
3	81	90	83		.68	.67	.70		45		0		20				1	1	Clear
4	81	85	82		.70	.66	.72		40		10		50	0.7		1			Cloudy
5	81	86	83		70	.62	.64		40		30		40		NE	1		1	ditto
6	81	85	83		.62	.55	.61		60		30		40	0.1	E	1	1	1	ditto
7	82	85	82	N. M. .687	.59	61	.69		50		50		50	0.1		1	1		ditto
8	82	84	80		.64	.60	.68		60		60		60	0.5	SE	1			ditto
9	80	80	82		.68	.65	.70		60		60		60	2.7			1	1	ditto
10	80	84	84		.57	64	.68		60		40		60	1.5	S		1		Clear
11	82	84	84		.67	.64	.70		60		20		50	0.1				1	Cloudy
12	82	87	84		.70	.68	.70		50		10		30				1		Clear
13	84	87	85		.62	.68	.58		30		30		30				1		ditto
14	83	87	81		.56	.46	.50		50		30		30	0.2			1		Cloudy
15	84	84	82	F. Q. .681	.44	.40	.47		50		50		40	2.9	SE			2	ditto
16	81	84	80		.48	.49	.57		60		50		50	1.7			1		ditto
17	82	83	80		.54	.58	.65		60		60		50	1.4	E		1		ditto
18	79	82	79		.63	.62	.66		60		60		60	2.9	SE		1		ditto
19	80	82	80		.58	.56	.60		60		40		60	1.3		1	2	1	ditto
20	80	82	81		.57	.54	62		60		40		50	0.2		2	1	1	ditto
21	79	83	82		.57	.54	.60		50		40		40	0.3			1		ditto
22	81	84	82	F. M. .687	.57	55	.57		40		40		50	N			1	1	ditto
23	81	82	80		.55	.55	.59		50		30		60	5.9					ditto
24	80	84	82		.56	.52	.58		50		30		40	0.1		1	1		ditto
25	82	85	83		.53	.52	.57		50		30		40	N		1	1	2	ditto
26	82	85	83		.52	.52	.55		50		30		40	0.1		1			ditto
27	83	85	84		.47	.48	.54		50		30		30	0.1				1	ditto
28	82	84	83	L. Q. .681	.35	.45	.50		50		30		40	0.6		1			ditto
29	82	85	84		.48	.44	.46		50		30		40				2		ditto
30	82	85	84		.46	.45	.49		50		30		40	0.8	NE		1		ditto
Mean	81½	84½	82		29.59	29.56	29.61		50		30		40	24.4		½	¼	½	Cloudy

A General State of the Weather for July, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	84°	89	87	82½
	Leaſt do. -	79	80	80	
	Mean do. -	81¼	84⅝	82½	
BAROMETER,	Greateſt do. in.	29.73	29.67	29.73	29.59
	Leaſt do. -	29.44	29.45	29.47	
	Mean do. -	29.59	29.56	29.62	
	Greateſt variation	.29	.22	.26	
	Mean denſity	.686	.681	.686	.684
HYGROMETER,	Mean moiſture	50m.	35m.	45m.	

Clear -	4 days.
Cloudy -	27 do.
Rain -	24 times.
Quantity of do.	12.8 inches.
Thunder -	11 times.

MEAN heat of expoſed air 100°.

THE weather this, as the preceding, month very relaxing and diſagreeable, although the quantity of rain only about one-half. The low ſtate of the mercury is undoubtedly affected by the eaſterly winds, as is, no leſs, the animal ſpirits.

Calcutta,

Calcutta, July, 1785.

Day.	Thermom. M	Thermom. N	Thermom. E	Moon's mean distance each quarter	Barometer M	Barometer N.	Barometer E	Hygrometer M d	Hygrometer M m	Hygrometer N d	Hygrometer N m	Hygrometer E d	Hygrometer E m	Rain	Wind and) Point	Wind and) M	Wind and) N.	Wind and) E	
1	82	86	85		29 47	29.40	29.52		40		20		40	0.1	SE	0	0	0	Cloudy
2	80	80	83		.51	.50	.58		40		30		40	0.3	NE	1	1	2	ditto
3	79	83	81		.52	.53	.57		50		30		50	0.2		1	0	3	ditto
4	80	84	81		.56	.54	.60		60		40		0	2.6	S	0	1	0	ditto
5	82	82	81		.58	.54	.59		60		50		60	0.3	S	0	0	0	ditto
6	81	80	80	N. M. .684	54	.45	.47		60		60		60	2.6	SE	0	0	3	ditto
7	79	83	81		.44	47	.57		60		60		60	0 1	SW	0	2	2	ditto
8	80	82	80		.54	.57	63		60		60		60	0.4	SE	0	1	1	ditto
9	80	84	81		.60	.59	.66		60		60		60		S	1	1	1	ditto
10	80	85	83		.66	.63	.70		60		20		40			0	1	1	ditto
11	82	84	82		.68	.66	.70		60		30		40	R		0	0	1	ditto
12	81	85	83		.66	.57	.58		50		30		40	1.3	SE	0	1	2	ditto
13	83	83	82	F. Q. .686	.55	.48	.54		50		40		30	1 7		0	1	0	ditto
14	81	83	81		.58	.51	.62		50		40		50	0 1	SE	1	1	3	ditto
15	80	84	85		.63	.63	.68		50		20		30		SW	2	2	2	ditto
16	82	85	83		67	.60	.64		50		30		40	0.3	S	2	2	2	ditto
17	82	86	84		.62	.57	.57		50		20		30	0.2	S	1	1	4	Clear
18	82	83	81		.52	.49	.50		50		30		40	0.5	SW	1	2	3	Cloudy
19	80	84	80		.47	.50	57		50		20		40	0.6	SE	1	1	0	ditto
20	80	83	82		.55	.54	.60		50		30		40	0.6	SW	0	0	1	ditto
21	81	84	82		.57	.55	.63		50		10		40		S	0	1	1	ditto
22	81	83	81	F. M. .687	.60	.62	.66		50		40		40	0.1	SE	0	0	0	ditto
23	80	84	81		.66	.64	.72		50		40		30	0.1		1	1	0	ditto
24	80	85	83		.72	.67	.73		50		40		20	R		1	2	0	ditto
25	83	87	85		.73	.67	.69		25		30		10		S	1	1	0	Clear
26	84	87	84		.72	.67	.72		30		30		10	0 1	SE	0	0	1	ditto
27	84	86	84		.70	.63	.67		10		10		20		S	0	0	0	Cloudy
28	84	85	84	L. Q. .688	.67	.60	.64		30		0		0	0.3	SE	0	2	1	ditto
29	84	89	87		.64	.58	.66		40		0		20			0	1	0	Clear
30	84	87	85		.60	.56	.60		40		20		20	0.1		0	1	0	Cloudy
31	82	86	84		.57	.46	.65		40		10		20	0 1		1	0	1	ditto
mean	81½	84½	82½		29.59	29 56	29.62		50		35		45	12.8		½	1	1	Cloudy

A General State of the Weather for Auguſt, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	84	89	86	
	Leaſt do. -	79	80	80	82½
	Mean do. -	81¼	84¼	82½	
BAROMETER,	Greateſt do. in.	29.78	29.72	29.78	
	Leaſt do. -	29.50	29.49	29.57	29.62
	Mean do. -	29.62	29.59	29.64	
	Greateſt variation	.28	.23	.21	
	Mean denſity	.687	.682	.686	.685
HYGROMETER,	Mean moiſture	50 m.	30 m.	40 m.	

Clear -	3 days.
Cloudy -	28 do.
Thunder -	16 times.
Rain -	20 do.
Quantity of do.	9·3 inches.

THE heat of the ſun at mid-day 100°.

MUCH cloudy weather, but ſeldom any very heavy falls of rain, and the quantity altogether but moderate. The river very full; and accounts of heavy rains up the country.

THE barometer remarkably low the whole month: a proof of there being ſtill much water in the clouds.

Calcutta,

Calcutta, August, 1785.

Day.	Thermom. M.	Thermom. N.	Thermom. E.	Moon's mean density each quarter.	Barometer. M.	Barometer. N.	Barometer. E.	Hygrometer. M. d.	Hygrometer. M. m.	Hygrometer. N. d.	Hygrometer. N. m.	Hygrometer. E. d.	Hygrometer. E. m.	Rain.	Wind and F. Point.	Wind and F. M.	Wind and F. N	Wind and F. h.	
1	80	84	82		22.53	29.50	29.58	50	40	40	40	0.3	SE	0	1	1	Cloudy
2	81	86	83		.56	.53	.60	50	30	20				0	1	0	Clear
3	83	84	83	N. M.	.59	.56	.63	50	20	30				0	1	0	Cloudy
4	83	87	85	.085	.60	.55	.60	40	20	20	0.1			1	1	0	ditto
5	81	83	81		.59	.58	.61	40	40	40	1.3			1	1	0	ditto
6	80	83	81		.56	.54	.60	50	40	50	0.9			1	1	1	ditto
7	81	84	81		.58	.56	.65	60	40	50	0.2			0	1	0	ditto
8	80	82	81		.63	.62	.74	60	50	50	1.2			0	1	1	ditto
9	80	80	80		.74	.74	.76	60	60	50	0.1			0	0	1	ditto
10	79	84	82		.74	.68	.70	60	50	50				0	1	1	ditto
11	82	87	85		.65	.59	.62	60	30	50				0	0	1	Clear
12	82	85	83	F. Q.	.60	.61	.64	50	30	40				0	1	1	Cloudy
13	81	83	82	.686	.63	.60	.64	50	40	30				0	0	0	ditto
14	81	85	84		.58	.50	.57	50	30	40	0.3			0	1	1	ditto
15	83	86	84		.53	.49	.57	50	40	30	0.4			0	1	0	ditto
16	82	83	82		.54	.53	.57	50	30	20	0.5	NE		1	1	2	ditto
17	82	84	82		.50	.54	.62	50	20	30	0.2	SE		1	1	1	ditto
18	83	84	83		.62	.58	.64	50	30	40	1.3			1	1	1	ditto
19	84	87	85		.60	.58	.63	50	20	30				0	1	2	ditto
20	80	89	86	F. M.	.58	.60	.66	40	0	0		NE		0	1	1	Clear
21	84	85	85	.687	.62	.60	.67	20	20	20		SE		0	1	0	Cloudy
22	83	87	84		.62	.57	.64	30	10	20	0.2			4	1	1	ditto
23	83	85	83		.61	.60	.66	40	30	30	0.1			1	1	1	ditto
24	82	85	82		.63	.63	.70	40	30	30	0.3	NE		1	1	1	ditto
25	82	85	84		.68	.67	.72	40	30	40				1	1	0	ditto
26	81	84	81	L. Q.	.70	.66	.71	40	30	40	0.3			0	0	2	ditto
27	80	84	81	.690	.73	.70	.78	40	30	30	0.1			0	0	1	ditto
28	81	85	83		.78	.72	.78	40	20	30	0.1			0	0	1	ditto
29	81	85	83		.74	.67	.76	50	20	30		SE		0	0	1	ditto
30	82	84	83		.70	.67	.73	40	20	30	0.1			0	0	0	ditto
31	82	83	82		.67	.62	.69	30	30	30	1.4			1	1	1	ditto
mean	81⅛	84⅛	82½		29.62	29.59	29.64	50	30	40	9.3	SE		½	1	1	Cloudy

A General State of the Weather for September, 1785.

		N.	M.	E.	
THERMOMETER,	Greateſt altitude	84°	89°	85	82½
	Leaſt do. -	80	81	80	
	Mean do. -	81	85	82½	
BAROMETER,	Greateſt do. in.	29.83	29.82	29.87	29.71
	Leaſt do. -	29.62	29.59	29.60	
	Mean do. -	29.71	29.68	29.75	
	Greateſt variation	.21	.23	.21	
HYGROMETER,	Moiſture -	45 m.	20 m.	25 m.	.686
	Denſity -	.687	.682	.688	

Clear -	8 days.
Cloudy -	22 do.
Thunder -	13 times.
Rain -	16 do.
Quantity of do.	11-7 inches.

MEAN heat of the ſun at mid-day 110°.

THE barometer higher than the former month: about the middle and end, great quantities of rain. By account from *Berhampore*, the quantity of rain there muſt have been conſiderable, and many parts above, the whole country being under water, and the river ſwelling prodigiouſly. This month very unhealthy, and many people dying.

Calcutta,

Calcutta, September, 1785.

Day	Thermom. M	Thermom. N	Thermom. E	Moon's mean distnce each quarter	Barometer. M.	Barometer. N.	Barometer. L.	Hygrometer. M d	Hygrometer. M m	Hygrometer. N d	Hygrometer. N m	Hygrometer. E. d	Hygrometer. E. m	Rain	Wind Point.	Wind M	Wind N	Wind T	
1	80	84	82		29.65	29.64	29.74		40		20		20		NE	1	2	2	Cloudy
2	80	83	81		.70	.69	.77		30		20		30	0.2		1	1	1	ditto
3	80	85	83	N. M.	.75	.74	.82		50		20		30			1	1	1	Clear
4	81	87	85	.692	.77	.73	.80		40		10		20		SE	0	1	0	ditto
5	82	88	85		.78	.76	.84		30	10		10				0	1	0	ditto
6	83	89	85		.80	.74	.80		30	20		0	0			0	1	0	ditto
7	84	88	85		.76	.73	.77		20	20		10				1	0	0	ditto
8	82	89	85		.77	.73	.80		30	10		10				1	1		ditto
9	84	87	85		.80	.76	.85		20	10		0	0			0	1	0	Cloudy
10	83	85	83		.83	.82	.87		20		10	0	0			0	1	0	ditto
11	83	84	82	F. Q.	.82	.77	.80		40		20		30	0.5	E	0	1	0	ditto
12	82	86	83	.688	.97	.68	.73		40		20		20	0.3		1	0	1	ditto
13	82	88	83		.68	.63	.70		40		20		20	0.6		0	0	1	ditto
14	82	84	82		.66	.62	.69		40		20		20		NE	0	1	0	Clear
15	81	87	83		.64	.60	.68		40		30		20			0	1	0	Cloudy
16	81	85	83		.66	.64	.72		40		30		20	0.4	E	2	1	0	Clear
17	81	84	81		.67	.66	.73		50		40		20	0.8	NE	2	1	1	Cloudy
18	80	83	82		.68	.64	.70		50		40		40	0.3		2	1	2	ditto
19	81	84	82	F. M.	.62	.59	.66		50		40		50	0.3	SE	2	1	1	ditto
20	80	84	80	.688	.62	.60	.70		50		40		50	1.4		1	0	1	ditto
21	80	82	81		.68	.72	.78		50		40		50	0.5		1	2	2	ditto
22	80	82	81		.78	.77	.80		50		30		0	0.1		3	2	2	ditto
23	81	87	85		.78	.72	.74		40		30		20		E	1	1	0	ditto
24	84	87	85		.72	.66	.70		20		10		10			0	0	0	Clear
25	83	86	82	L. Q.	.66	.62	.70		20		0		10			0	0	0	Cloudy
26	81	83	80	.686	.66	.64	.72		20		20		10	1.3	SE	1	2	2	ditto
27	80	83	81		.66	.63	.68		30		20		20	1.7		1	1	2	ditto
28	80	81	80		.62	.60	.67		50		50		30	0.6		1	2	2	ditto
29	80	84	81		.66	.66	.72		50		30		50	3.5		2	2	3	ditto
30	80	85	83		.70	.73	.78		50		20		20	0.2		0	1	1	ditto
mean	81	85	82½		29.71	29.68	29.75		45	2	20	1	52	11.7	SE	1	1	1	

A General State of the Weather for October, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	84	88	85	83
	Leaſt do. -	77	82	79	
	Mean do. -	81	85½	82½	
BAROMETER,	Greateſt do. in.	29.98	29.96	29.98	29.91
	Leaſt do. -	22.83	29.81	29.85	
	Mean do. -	29.90	29.87	29.96	
	Greateſt variation	.15	.15	.13	
HYGROMETER,		5 d.	24 d.	7 d.	.691
	Mean denſity	.694	.684	.692	

Clear - 21 days.
Cloudy - 10 do.
Thunder - 4 times.
Rain - 7 do.
Quantity 1-4 inches.

THE mean heat of the ſun at mid-day 110°.

THE wind began to ſet in from the NW about the 12th and 13th.

Calcutta,

Calcutta, October, 1785.

Day.	Thermom. M	Thermom. N	Thermom. E	Moon's mean daily each quarter.	Barometer. M	Barometer. N	Barometer. E	Hygrometer. M d	Hygrometer. M m	Hygrometer. N d	Hygrometer. N m	Hygrometer. E d	Hygrometer. E m	Rain.	Winds. Point.	Winds. M	Winds. N	Winds. E	
1	83	85	84		29.84	29.80	29 85		30	30		10			NE	0	0	0	Clear
2	81	85	83		.83	.81	.85		10	40		30				0	0	0	ditto
3	83	87	85	N. M. .691	.83	.81	.86	10		30		10				0	0	0	ditto
4	82	87	84		.85	.85	.90	10		40		10				0	0	1	ditto
5	82	87	84		.88	.86	.93		0	30		0				0	0	0	ditto
6	84	88	85		.95	.88	.92		10	10		0				0	0	0	ditto
7	83	87	85		.90	.82	.90		0	10		0				0	0	1	ditto
8	82	85	81		.88	.82	.90		0	10		0		0.1		1	1	1	Cloudy
9	81	82	80		88	.85	.91		10	0			10	0.6		1	2	2	ditto
10	78	84	81	F. Q. .695	.91	.88	.96		10	30			10			1	1	1	ditto
11	81	85	83		.96	.90	.94		10	20		10		0.1		0	1	0	Clear
12	83	87	82		.94	.90	.96		0	30		10			NW	0	1	1	ditto
13	82	87	85		.95	.90	.96		0	40		20				0	1	0	ditto
14	83	88	85		.95	.89	.93	10		40		10				0	1	1	ditto
15	84	88	84		.93	.91	.98		0	40		20				0	1	0	ditto
16	83	85	85	F. M. .693	.98	.93	.96		0	10		0				0	1	1	ditto
17	85	87	84		.97	.92	.93		10	40		10				1	1	0	ditto
18	81	88	85		.93	.80	.93		0	30		20				1	1	0	ditto
19	82	88	83		.92	.90	.94		0	30		10				0	1	1	ditto
20	81	85	83		.90	.84	.96	10		50		30				1	1	1	ditto
21	81	86	93		.90	.85	.91	20		50		30				0	1	0	ditto
22	79	87	82		.92	.84	.89	10		50		20				0	1	1	ditto
23	79	86	82		.91	.87	.93	10		50		30				0	1	0	ditto
24	80	85	83	L. Q. .698	.92	.90	.95	20		40		20				1	0	0	ditto
25	79	86	84		.94	.90	.94		0	30		20				0	1	0	ditto
26	79	83	79		.90	.88	.90		0	20			10	0.2	SW	0	2	2	Cloudy
27	79	82	80		.86	.82	.88		30		10		20	R	NE	0	2	1	ditto
28	78	82	79		87	.84	.88		30		0		30			0	2	1	ditto
29	77	82	79		.85	.82	.92		30		10		10			0	1	2	ditto
30	78	82	79		.90	.86	.92		30		10		10	0.1	NW	0	1	0	ditto
31	87	87	80		.92	.90	.95		30				10	0.1	NE	0	0	0	ditto
Mean	81	85½	82½		29.90	29 87	29.96	3	8	25	1	10	3	1.4	NW	½	1	½	Clear

A General State of the Weather for November, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude,	80	85	82	
	Leaſt do. -	67	74	71	75
	Mean do. -	73	78¾	75	
BAROMETER,	Greateſt do. in.	30.10	30.08	30.12	
	Leaſt do. -	29.90	29.82	29.80	29.98
	Mean do. -	29.99	29.98	30.80	
	Greateſt variation,	.20	.26	.32	
HYDROMETER,		15 d.	25 d.	20 d.	.705
	Mean denſity,	.709	.700	.706	

Clear	-	26 days.
Cloudy	-	4 do.
Rain	-	4 times.
Quantity	do.	0·5 inches.

MEAN heat of the ſun at mid-day 100°.

Calcutta,

Calcutta, November, 178

Day	Thermometer M	Thermometer N	Thermometer E	Moon's age	Barometer M	Barometer N	Barometer E	Hygrometer M	Hygrometer N	Hygrometer E	Rain	Wind Point	Wind M	Wind N	Wind E	Weather
1	79	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		10	10		NW	[illegible]	[illegible]	0	Clear
[illegible]	80	[illegible]	82	N M	95	94	30 0		10	10		NE	0	2	0	ditto
3	[illegible]	84	[illegible]	0 h	[illegible]	9[illegible]	29 9[illegible]		20 20		R	NE	0	2	[illegible]	ditto
4	[illegible]	[illegible]	[illegible]		.04	.8	[illegible]		20	10			1	1		ditto
5		8[illegible]	[illegible]		90	.8	9[illegible]		20	20	R		2	[illegible]	1	ditto
6	[illegible]		[illegible]		99	8[illegible]	[illegible]		30	10			0	2	0	ditto
[illegible]	[illegible]	81			[illegible]	[illegible]	97		[illegible]	30	0 4		[illegible]	1	1	Cloudy
[illegible]			[illegible]	1 Q	[illegible]	[illegible]	[illegible]		[illegible]	30 30			1	[illegible]	3	ditto
9	[illegible]	0	[illegible]	706	90	92	97		10	10 30		NW	1	1	0	Clear
10		[illegible]	7		94	91	[illegible]		30 2[illegible]	10			[illegible]	1	0	ditto
11	[illegible]	80	77		30 04	30 00	[illegible]		30	[illegible]			0	1	0	ditto
1[illegible]	75	80	7[illegible]		10	[illegible]	0[illegible]		0	2[illegible]			0	1	0	ditto
13	[illegible]	79	7[illegible]		06	.04	.1	[illegible]	40	30			0	[illegible]	1	ditto
14		7	75		05	[illegible]	99	0	40	30			0	1	0	ditto
15	[illegible]	7	[illegible]	F M	[illegible]	29 96	29 95	0	[illegible]0	30			0	1	0	ditto
1[illegible]	7		[illegible]5	7[illegible]	29 90	93	9[illegible]	[illegible]	0	30			[illegible]	1	0	ditto
1[illegible]	73	[illegible]	6		96	96	30 0[illegible]	40	[illegible]0	40			[illegible]	1	0	ditto
18	4	[illegible]	6		30 0[illegible]	30 0	.0[illegible]	[illegible]	4	[illegible]			0	1	0	ditto
1[illegible]	3	75	74		06	04	07	[illegible]	40	30			2	0	1	ditto
20	[illegible]	7	7[illegible]		10	04	.11	[illegible]0	[illegible]	30			1	1	1	ditto
21	[illegible]	7			07	[illegible]	[illegible]			[illegible]	0 1		1	2	1	Cloudy
2[illegible]	[illegible]	[illegible]	4		.0[illegible]	0[illegible]	04	[illegible]	[illegible]	10			[illegible]	2	0	Clear
23	[illegible]		[illegible]	L Q	01	29 9[illegible]	99	[illegible]	20	10			0	1	1	ditto
24	[illegible]	[illegible]	4	7[illegible]	29 95	93	94	[illegible]	40	30			1	1	1	ditto
[illegible]	[illegible]	7	[illegible]		9[illegible]	90	[illegible]	40	[illegible]0	40			2	1	1	ditto
[illegible]	[illegible]	77	[illegible]		94	92	[illegible]	40	[illegible]0	40			1	1	1	ditto
[illegible]		[illegible]	[illegible]		30 02	30 0[illegible]	30 06	4[illegible]	[illegible]0	40			1	1	1	ditto
28	68	4	[illegible]		05	0[illegible]	0[illegible]	[illegible]	[illegible]0	4[illegible]			1	1	1	ditto
[illegible]	7	74	[illegible]		0[illegible]	29 9[illegible]	02	40	50	4[illegible]			0	[illegible]	1	ditto
3[illegible]		[illegible]	[illegible]		0[illegible]	94	[illegible]	[illegible]	[illegible]0	40			0	1	1	ditto
	[illegible]	[illegible]	[illegible]		99[illegible]	29 93	30 00	[illegible]	[illegible]25	[illegible]0 3	[illegible]	WW	[illegible]	[illegible]		Clear

A General State of the Weather for December, 1785.

		M.	N.	E.	
THERMOMETER,	Greateſt altitude	70	0	73	69
	Leaſt do. -	63	71	66	
	Mean do. -	65¼	73½	69	
BAROMETER,	Greateſt do. in.	30.09	30.06	30.10	30.01
	Leaſt do. -	29.97	29.90	29.99	
	Mean do. -	30.02	29.98	30.03	
	Greateſt variation	.12	.16	.11	
HYGROMETER,		30d	50d	40d	.716
	Mean denſity	.721	.709	.719	

Clear - 31 days

THE weather throughout the month remarkably clear and pleaſant, and much milder than it is uſually at this ſeaſon of the year.

MEAN heat of the ſun at mid-day, about 96°.

Calcutta,

Calcutta, D[illegible], 178[illegible]

Days	Therm[illegible] M	N	T	M[illegible]	Bar[illegible] M	N	T	H[illegible] M	N	T			W[illegible] M	[illegible]		
1	66	76	78		30 00	29 97	[illegible]	[illegible]	50	40	NW	WW	1	1	[illegible]	Clear
2	70	75	72	N M	29 99	95	[illegible]	3	50	30			[illegible]	1	[illegible]	ditto
3	70	75	72	7 4	00	[illegible]	[illegible]	[illegible]	[illegible]	40			0	[illegible]	0	ditto
4	[illegible]	75	72		04	[illegible]	0	[illegible]	[illegible]	40			0	0	0	ditto
5	68	75	71		01	[illegible]	00	[illegible]	50	30			1	1	1	ditto
6	67	75	72		29 [illegible]	[illegible]	29 9[illegible]	[illegible]	[illegible]	[illegible]			0	1	0	ditto
7	67	74	[illegible]		[illegible]	[illegible]	99	[illegible]	45	35			1	1	1	ditto
8	[illegible]	74	69	I Q	[illegible]	99	30 04		45	[illegible]			0	1	1	ditto
9	[illegible]	[illegible]	[illegible]	7 20	30 01	99	05		40	35			0	1	1	ditto
10	6[illegible]	74	[illegible]		03	9[illegible]	04	35	45	40			0	1	0	ditto
11	67	75	70		05	94	.10	30	[illegible]	[illegible]			1	1	0	ditto
12	[illegible]	75	[illegible]		08	99	[illegible]	40	55	4[illegible]				1	1	ditto
13	[illegible]	[illegible]	70		09	30 05	05	30	55	40			[illegible]		1	ditto
14	[illegible]	74	68	I. M	06	04	.09	30	55	45			[illegible]	1	[illegible]	ditto
15	[illegible]	[illegible]	66	25	07	.03	.09	30	60	45			1	1	1	ditto
16	6[illegible]	[illegible]	67		.05	0	[illegible]	[illegible]	55	[illegible]			1	1	0	ditto
17	6[illegible]	[illegible]	[illegible]		04	0	04	[illegible]	35	[illegible]				1	1	ditto
18	[illegible]	[illegible]	[illegible]		.03	0[illegible]	[illegible]		[illegible]	[illegible]			0	1	1	ditto
19	[illegible]		[illegible]		.00	[illegible]	[illegible]	[illegible]	40				1	1	0	ditto
20	6[illegible]	[illegible]	[illegible]		29 97	29 [illegible]			40	4[illegible]			1	1	1	ditto
21	[illegible]	[illegible]	[illegible]		30 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4[illegible]				1	1	ditto
[illegible]	[illegible]	[illegible]	[illegible]	I Q	[illegible]	[illegible]	03	3[illegible]		[illegible]				1	0	ditto
[illegible]	6[illegible]	[illegible]	[illegible]			[illegible]	[illegible]						[illegible]	1	0	ditto
[illegible]	7	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]			0	1	1	ditto
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		45	[illegible]			0	1	1	[illegible]
[illegible]	4	[illegible]	[illegible]			[illegible]	0			[illegible]			1	1	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	68			[illegible]			[illegible]	[illegible]			[illegible]	1	1	[illegible]
[illegible]	[illegible]	[illegible]	6[illegible]			[illegible]	[illegible]		[illegible]				1	1	1	[illegible]
[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	04	3	[illegible]					1		[illegible]
[illegible]	[illegible]		[illegible]	N [illegible]	[illegible]		[illegible]	3						1		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]				[illegible]									[illegible]

[illegible]

FROM the foregoing DIARY of the Weather, it may be remarked in regard to the variation of the Barometer, that during the cold ſeaſon, from November to March, the mercury is at its greateſt height, and at the loweſt during the rainy months, May, June, July, Auguſt, and September. The variation of the Thermometer, or the difference between the temperature of mid-day and that of the morning and evening is very trifling, ſeldom exceeding 3 or 4° during the rains, whereas, during the cold ſeaſon, the difference is 8 or 10°

II.

A SYNOPSIS

OF THE

DIFFERENT CASES THAT MAY HAPPEN IN DEDUCING THE LONGITUDE OF ONE PLACE FROM ANOTHER, BY MEANS OF ARNOLD'S CHRONOMETERS, AND OF FINDING THE RATES WHEN THE DIFFERENCE OF LONGITUDE IS GIVEN.

BY MR. REUBEN BURROW.

IT was formerly the cuſtom to give rules for calculation, without any inveſtigation of their principles; but the contrary method has ſo much taken place of late, that thoſe who are not acquainted with the theory of a ſubject, are ſeldom in a capacity of calculating at all; and thoſe who are acquainted with it, muſt either loſe time by recurring thereto continually, or run the hazard of often making miſtakes. Indeed the uſe of practical rules is ſo obvious, that NEWTON has often given them when he has omitted their demonſtrations; and the want of them has been noted by BACON among the deficiencies of learning. The Hindoos were ſo particularly attentive in that reſpect, that they uſually gave two rules for the ſame operation; one couched in the ſhorteſt terms poſſible, and often in verſe, for the eaſe of the memory; and the other more at length, as an explanation. It therefore is much to be wiſhed that authors would revert to the ancient cuſtom ſo far, as to pay ſome attention to the reduction of their knowledge to practice, that people may not be under the neceſſity of inveſtigating rules at the time that they want to uſe them.

THE

The following is one rule, out of a great number, that I drew up for my own use in determining the situations of places in *India*, and I insert it here on account of its utility and easiness of application

Let L = Error of the Watch from mean time at the first place,

ℓ = Error from mean time at the second place,

T = Time by the Watch at the second place, when the error was ℓ,

D = Difference of Longitude between the places,

N = Interval of mean time between the observations at the two places (found by taking the interval by the Watch, and correcting it according to the diurnal rate, &c.)

Rate of the Watch, or what it gains or loses in a day of mean time.

Then,

ft fo
both
e wa

If the Watch be too			Is the mean time at the first place when the Watch was set at the second, or when the mean time at the second place was		Then, if the second place be from the first to the			Is the difference of Longitude.
ure and	Gaining	T—E—n	T—e	E	(D—E+e	n	[illegible]—e+nr
					W	e—E—D	n	[illegible]—E—nr
	Losing	T—E+n	T—e	E	E—D—e	n	E—e—nr
					W	D+E—e	n	e—E+nr
ime and	Gaining	T+E—n	T+e	E	D+E—e	n	e—E+nr
					W	E—D—e	n	E—e—nr
	Losing	T—E+n	T+e	E	(e—E—D	n	e—E—nr
					W	D—E+e	n	E—e+nr
me fast and	Gaining	T+E—n	T—e	E	(D+E+e	n	nr—e—E
					W	E—D+e	n	E+e—nr
	Losing	T+E—n	T—e	E	Impossible.		
					W	D—E—e	n	E+e+nr
ime and r and	Gaining	T—E—n	T+e	E	(D—E—e	n	E+e+nr
					W	Impossible		
	Losing	T—E+n	T+e	E	E—D+	n	E+e—nr
					W	D+E+	n	nr—E—e

III.

MEMORANDUMS CONCERNING AN OLD BUILDING, IN THE HADJIPORE DISTRICT,

NEAR THE GUNDUCK RIVER, &c.

BY MR REUBEN BURROW.

THE pyramids of *Egypt*, as well as those lately discovered in *Java* (and probably too the *Topes* of BALEE) seem to have been intended for nothing more than images of MAHADEO.

Two of the *Salsana* pyramids, described by NORDEN, are like many of the small ones, usually built of mud, in the villages of *Bengal*: one of the pyramids of *Dessun*, drawn by POCOCK, is nearly similar to that I am going to mention, except in the ornament of the angles: most of the *Pagodas* of the *Carnatic* are either complete or truncated pyramids, and an old Stone Building, without any cavity, which I saw in *Jumbah*, near the *Catabida River*, on the *Arracan Coast*, differed so little from a pyramid, that I did not suspect it was meant for the image of SIVA, till I was told it by the natives.

THE largest building of the kind which I have yet seen in *India*, is about two days journey up the *Gunduck River*, near a place called *Kesperah*: it goes by the name of "BHEEM SAIN'S DEWRY," but seems evidently intended for the well known image of MAHADEO, having originally been

a cylinder placed upon the fruſtum of a cone, for the purpoſe of being ſeen at a diſtance. It is at preſent very much decayed; and it is not eaſy to tell whether the upper part of the cylinder has been globular or conical; a conſiderable quantity of the outſide is fallen down, but it ſtill may be ſeen a good diſtance up and down the river.

THE day I went from the river to view it was ſo uncommonly hot, that the walk and a fever together obliged me to truſt to the meaſurements of a ſervant. For want of a better inſtrument, he took the circumference of the cylindrical part in lengths of a ſpear, and from that as a ſcale, and a ſketch of the building taken at a diſtance, I deduced the following dimenſions. What dependence there may be on his meaſures I cannot determine; but probably they are not very erroneous.

Diameter of the Cylindrical part, - - - - -	64 feet
Height of the Cylinder, - - - - - - -	65
Height of the Conic Fruſtum on which the Cylinder is placed,	93
Diameter of the Cone at the baſe, - - - -	363

BOTH the Cone and the Cylinder were of bricks; thoſe of the laſt were of different ſizes, many of them two ſpans long and one broad; others were of the common ſize, but thinner, and they were well burnt, though bedded in mortar little better than mud. There did not appear any ſigns of the Cylinder's being hollow: the conical part was overgrown with jungle, but I broke through it in ſeveral places, and found it everywhere brick.

I DO not recollect whether it be viſible from the ſite of the ancient city where the famous Pillar of *Singeah* ſtands, or not; but have a faint idea

that

that it is. What the intention of these extraordinary columns may have been originally, is perhaps not so easy to tell: at first sight it would seem that they were for holding inscriptions, because those of *Bettiah*, *Delhi*, and *Illanabad*, have inscriptions (though in a character that has not been yet decyphered); but the pillar of *Sungah* seems to have none whatever, for some *Bramins* told me they attended at the time it was dug to the foundation, near twenty feet under ground, by a gentleman of *Patna*, who had hopes to have found some treasures; and that there was not the least vestige of any inscription upon it. Probably those pillars, CLEOPATRA's Needle, and the *Devil's* Bolts at *Boroughbridge*, may all have the same religious origin.

PERHAPS the connexion of time and place may apologize for the diversity of the subject, in mentioning that, while I lay under the shade of a large tree near the pyramid, on account of the sultry heat, some of the people of the adjacent village came and played there with *Cowries* on a diagram that was formed, by placing five points in a circular order, and joining every pair of alternate points by a line, which formed a kind of pentagon. This brought to my recollection a circumstance told me by a gentleman in *England*; that an old piece of silver plate had been dug out of the earth with such a figure upon it; the use of it was totally unknown, as well as the age; and I was desired to find what geometrical properties the figure possessed: one I remember was, that if any number of points whatever were placed in a circular order, and each two alternate points joined, then the sum of all the salient angles of the figure would be equal to two right angles when the number of points was odd; but equal to four right angles when the number was even. EUCLID's properties of the angles of the triangle and trapezium, are particular cases of these; but I had no suspicion

of the real intention of the figure till I ſaw the uſe here made of it. It ſeems however an argument in favour of the identity of the *Druids* and *Brommins* as well as another well known diagram, uſually called *the Walls of Troy*, which was uſed originally in the *Hindoo* aſtrology. Theſe figures however appear to have flowed from a much higher ſource, and to have relation to what LEIBNITZ had a diſtant idea of, in his Analyſis of Situation, EULER in his Poniſms, and GIRARD perhaps in his Reſtitution of them. In fact, as the modern Algebraiſts have the advantage of transferring a great part of their labour from the head to the hands, ſo there is reaſon to believe that the *Hindoos* had *mechanical methods of reaſoning geometrically*, much more extenſive than the elementary methods made uſe of at preſent; and that even their games were deduced from and intended perhaps to be examples of them; but this deſerves to be treated more at length elſewhere.

THE ſame apology may perhaps excuſe my mentioning here, that the idea of the *Nile*'s deriving its floods from the melted ſnows, as well as the *Ganges*, appears to be rather imaginary: they ſeem to be cauſed principally by the rains; for the high hills beyond the *Herdwar* apparently retain their ſnow all the year, and therefore the quantity melted could never produce the enormous ſwell of the *Ganges*, not to mention that the effect of a thaw ſeems different from what would ariſe from the mere difference of heat, and therefore might partly take place in winter and the dry ſeaſon. That the rains are ſufficient for the purpoſe, without recurring to the hypotheſis of melted ſnows, appears from the following fact:—A little before I obſerved the aforeſaid pyramid, I had been a conſiderable diſtance up the *Gouduck*; the river was low for the time of the year, and the hills that ſkirt the borders of *Nepaul* were clear, and apparently not above fifteen

coſs

coſs diſtant; ſoon after, a heavy ſhower fell upon them for ſome hours, and the river ſoon after was filled to the very banks, and continued ſo for many days; and large trees were torn up by the roots, and came driving down with ſuch force by the torrent, that my boat was often endangered. *Now on theſe hills there was actually no ſnow whatever; and as the riſe was obviouſly cauſed by the rains, it may reaſonably be concluded that the ſame effect has the ſame cauſe in other places.

OBSER-

IV.

OBSERVATIONS OF SOME OF THE ECLIPSES OF JUPITER'S SATELLITES.

BY MR RUBEN BURROW

The following in the Ganges and Burampooter Rivers.

Apparent time 1787				Satellite	Weather	Im or Em	Place of Observation
	d	h	′				
Sept	23	11	41	2	Moderate,	Imm	Bankipore Ghaut
	24	15	11	22	3	Ditto,	Imm	Ditto
Oct	11	12	45	11	1	Ditto,	Imm	Colgong, Cleveland's Bungalo
	23	10	26	20	3	Ditto,	Emer	Mouth of Jellingy
	24	11	47	39	2	Ditto,	Imm	Shore of Ganges South of Pubna
	25	16	42	40	1	Ditto,	Imm	Ditto
	27	11	13	59	1	Ditto,	Imm	Coffundah Nullah
	30	11	35	16	3	Ditto,	Emer	Dacca Nabob house
Nov	19	8	56	32	2	Ditto,	Imm	Tedcopee, Burrumpooter
	26	11	25	45	2	Ditto,	Imm	Bikkumn Chon
	26	13	13	57	1	Ditto,	Imm	Ditto
	28	7	42	22	1	Ditto,	Imm	Cazecottee
Dec.	3	14	10	51	2	Hazy,	Imm	Goolparah
	3	15	8	1	1	Moderate,	Imm	Ditto
	5	7	51	59	3	Ditto,	Imm	Ditto
	5	9	35	26	1	Ditto,	Imm	Ditto
	10	16	41	54	2	Very Hazy,	Emm	Budjpore
	10	16	56	17	1	Moderate,	Imm	Ditto.
	12	11	26	9	1	Hazy,	Imm	Tingachot
	12	11	48	40	3	Ditto,	Imm	Ditto
	19	15	28	59	1	Ditto,	Emer	Luckipore

The following on the Arracan Coast.

Apparent time 1788				Satellite	Weather	Im or Em	Place of Observation
	d	h	′				
Feb.	5	10	18	12	1	Moderate,	Emer	Chedubu, Flag Staff Point
	12	12	13	54	1	A little haze	Emer	Ditto, Maykawondy Fort
	21	6	39	20	1	Moderate,	Emer	Yambeah Fort
	23	10	57	53	2	Ditto,	Emer	Ditto, Kawtomeno
	28	10	35	13	1	Ditto,	Emer	Chedubu, Cedar Point.

The

The following were observed at Colonel Watson's Docks at Kidderpore, near the Mouth of the Nullah.

Apparent time 1788.					Satellite.	Weather.	Im. or Em.	Place of Observation.
	d	h	′	″				
Mar.	15	8	36	36	1	Moderate,	Emer.	
	19	7	51	2	2	Ditto,	Emer.	
	22	10	41	41	1	Ditto,	Emer.	
	31	7	1	21	1	Ditto,	Emer.	

The following in the Ganges and Rohilcund, &c.

Apparent time 1788.					Satellite.	Weather.	Im. or Em.	Place of Observation.
	d	h	′	″				
Oct.	8	14	35	30	3	Moderate,	Emer.	Bankipore.
	20	14	3	4	1	Ditto,	Imm.	Benares Observatory.
Nov.	1	15	12	56	2	Ditto,	Imm.	Chunar Camp.
	12	17	11	23	1	Hazy,	Imm.	Illahabad Fort.
	14	12	11	29	1	Ditto,	Imm.	Correahcotta.
	20	10	18	28	3	Moderate,	Imm.	In the Ganges 3m below Nudjiff Ghur.
	20	11	9	32	3	Ditto,	Emer.	
	21	13	58	32	1	Ditto,	Imm.	Jaujemow.
	27	13	11	20	3	Ditto,	Imm.	Cawnpore; Magazine Gaut.
	28	11	19	22	1	Ditto,	Imm.	Ditto.
	30	10	17	2	1	Ditto,	Imm.	Ditto.
Dec.	3	15	2	24	2	Ditto,	Imm.	Joognagpore Gaut.
	7	12	6	1	1	Ditto,	Imm.	Fift of Canouge, 0° 2′ 29″.
	11	15	51	57	1	Ditto,	Imm.	Futtyghur Magazine.
	1	9	20	54	2	Ditto,	Imm.	Ditto, Dr. Cook's Gaut.
	21	15	14	51	1	Ditto,	Imm.	Ditto.
	1	10	12	54	1	Ditto,	Imm.	Ditto.
	28	17	56	21	1	Hazy,	Imm.	Cutterah.
	30	12	2	18	1	Moderate,	Imm.	Fercedpore.
		1789.						
Jan.	1	11	36	28	2	Ditto,	Imm.	Nabobgunge.
	6	13	53	11	1	Ditto,	Imm.	Pillibeat; Eed Gah.
	8	8	20	16	1	Ditto,	Imm.	Shargurr.
	9	11	10	39	3	Ditto,	Imm.	Bowerkah.
	22	11	1	50	1	Ditto,	Emer.	Bhyrah.
	24	8	11	1	1	Ditto,	Emer.	Takoordwar.
	29	11	1	39	2	Ditto,	Emer.	Nidjibabad.
	29	16	7	11	1	Hazy,	Emer.	Ditto.
Feb.	11	13	29	49	3	Moderate,	Emer.	Amrooah.
	11	13	21	10	1	Ditto,	Emer.	Ditto.
	16	8	18	8	2	Ditto,	Emer.	Hulfenpore
	16	8	31	53	1	Hazy,	Emer.	Ditto.
	17	6	53	11	4	Ditto,	Imm.	Seerfah.
	17	11	6	14	1	Ditto,	Emer.	Ditto.
	23	10	30	1	1	Ditto,	Emer.	Chandowsy.
Mar.	2	12	18	13	1	Moderate,	Emer.	Futtyghur, Dr. Cook's Gaut.
	2	14	11	10	2	Ditto,	Emer.	Ditto.

Apparent

Apparent time 1789.					Satellite.	Weather.	Im. or Em.	Place of Obſervation.
	d	h	′	″				
March	11	9	22	21	1	Moderate,	Emerſion,	Mobarickpore Gaut.
	18	11	23	56	1	Ditto,	Emer.	Chunar Fort.
	20	9	4	40	2	Ditto,	Emer.	Benares Obſervatory.
	27	7	59	16	1	Ditto,	Emer.	Bankypore Granary.
	27	11	53	1	2	Ditto,	Emer.	Ditto.
	29	10	31	10	3	Ditto,	Imm.	Ditto.
April	3	9	56	45	1	Ditto,	Emer.	Patna; Chehelſuttoon.
	10	11	59	48	1	Very hazy,	Emer.	Mongeer; Rocky Point.
	19	8	30	56	1	Hazy	Emer.	Rajmahal.
	26	10	31	22	1	Moderate,	Emer.	Teacally Dumdumma.

The following were obſerved at Ruſſahpugly, near Calcutta.

Apparent time 1789.					Satellite.	Weather.	Im. or Em.	Place of Obſervation.
	d	h	′	″				
May	12	8	48	50	1	Moderate,	Emer.	
Dec.	19	11	59	15	1	Hazy	Imm.	
	19	14	5	33	3	Ditto,	Imm.	
	22	11	23	4	2	Moderate,	Imm.	
	26	13	49	38	1	Ditto	Imm.	
	1790.							
Jan.	2	15	39	32	1	Ditto,	Imm.	
	18	13	49	51	1	Miſt & wind,	Imm.	
	23	10	44	48	2	Ditto,	Imm.	
	24	9	40	57	3	Hazy,	Imm.	
	27	10	8	19	1	Moderate,	Imm.	
	31	13	36	35	3	Very hazy,	Imm.	
Feb.	1	17	32	48	1	Hazy,	Imm.	
	3	12	1	30	1	Moder.	Imm.	
	17	10	38	18	2	Ditto,	Emer.	
	19	12	33	56	1	Ditto,	Emer.	
	26	14	28	38	1	Hazy,	Emer.	
	28	8	57	22	1	Moder.	Emer.	
Mar.	1	9	0	52	3	Ditto,	Emer.	
	5	16	24	13	1	Hazy,	Emer.	
	16	7	18	14	1	Moder.	Emer.	
	23	9	14	25	1	Ditto,	Emer.	
	26	7	56	11	4	Ditto,	Imm.	

The two following were at Jowgatta, near Kriſhnagur.

Apparent time 1790.					Satellite.	Weather.	Im. or Em.	Places of Obſervation.
	d	h	′	″				
Apr.	22	10	27	30	2	Moderate,	Emer.	
	22	11	31	10	1	Ditto.	Emer.	

THOSE to the 31ſt of March 1788, were obſerved with a glaſs made by WATKINS, that magnified about 110 times; thoſe from thence to the 12th of May 1790, were obſerved with one of RAMSDEN's teleſcopes, of the ſort lately made for the navy; and the remainder with a glaſs made by DOLLAND, that magnifies about eighty times.

I SHALL conclude theſe obſervations with a remark that highly concerns both the buyers and makers of teleſcopes; namely, that the parts which compoſe the object-glaſs of an Achromatic, are generally put together in ſuch a manner that they cannot be taken aſunder; and the braſs part that they are bedded in, ſhoots a number of chymical ramifications between the glaſſes, that in the courſe of a year renders a teleſcope of little or no ſervice. This defect the maker may eaſily remove, by making the compound object-glaſs capable of being taken to pieces, or the parts in ſome other ſubſtance not liable to this defect.

V.

A PROOF THAT THE HINDOOS HAD THE BINOMIAL THEOREM.

BY MR. REUBEN BURROW.

THE *iſlands* in the *Bay of Bengal*, are many of them covered with ſhell and marine productions to a great height; and there are beds of large ſmooth pebbles near the *Herdwar*, ſome hundreds of feet above the preſent level of the *Ganges*; the ſea has therefore gradually been retiring, and conſequently the poſition of the Equator was formerly farther north than it is at preſent in this part of the earth: and if a few ſimilar obſervations were made in other countries, it is evident that the ancient ſituation of the pole upon the ſurface of the earth might be determined ſufficiently near for explaining many difficulties and paradoxes in Geographical Antiquities: for this purpoſe alſo it would be adviſeable to have permanent meridian lines drawn in high northern latitudes, to be compared in ſucceeding ages; and alſo to have marks cut upon rocks in the ſea, to ſhew the proper level of the water.

IN the aforeſaid poſition of the Equator, the ſands of *Tartary* were inhabitable, and the Siberian climates temperate; the deſerts of the *Leſſer Bukharia* were then part of the ſeat of the *Paradiſe of Moſes*; and the four ſacred rivers of *Eden* went through *India*, *China*, *Siberia*, and into the *Caſpian Sea*, reſpectively. This appears from a *Bramin* map of the world,

in the *Sanſcrit* language, which I met with about two years ago in the higher parts of *India*, together with a valuable Treatiſe of Geography upon the ſyſtem of *Boodh*; both of which I communicated, with my idea on the ſubject, to Mr. WILFORD, of the *Bengal* Engineers: and from him the world may expect ſhortly to be favoured with the firſt true repreſentation of Scriptural and *Hindoo* Geography.

FROM the aforeſaid country the *Hindoo* religion probably ſpread over the whole earth: there are ſigns of it in every northern country, and in almoſt every ſyſtem of worſhip. In *England*, it is obvious, Stonehenge is evidently one of the temples of *Boodh*; and the arithmetic, the aſtronomy, aſtrology, the holidays, games, names of the ſtars, and figures of the conſtellations; the ancient monuments, laws, and even the languages of the different nations, have the ſtrongeſt marks of the ſame original. The worſhip of the ſun and fire, human and animal ſacrifices, &c. have apparently once been univerſal; the religious ceremonies of the papiſts ſeem in many parts to be a mere ſervile copy of thoſe of the *Goſeigns* and *Fakeers*; the Chriſtian Aſcetics were very little different from their filthy original the *Byraggys*, &c.: even the hell of the northern nations is not at all like the hell of the ſcripture, except in ſome few particulars; but it is ſo ſtriking a likeneſs of the hell of the *Hindoos*, that I ſhould not at all be ſurprized if the ſtory of the ſoldier that ſaw it in Saint PATRICK's Purgatory, deſcribed in MATTHEW PARIS's Hiſtory, ſhould hereafter turn out to be a tranſlation of the *Sanſcrit*, with the names changed. The different tenets of *Popery* and *Deiſm* have a great ſimilarity to the two doctrines of *Brahma* and *Boodh*; and as the *Bramins* were the authors of the Ptolemaic ſyſtem, ſo the *Boodhiſts* appear to have been the inventors of the ancient *Philolaic* or *Copernican*, as well as of the doctrine of attraction; and probably

bly too the eſtabliſhed religion of the *Greeks* and the *Eleuſinian* myſteries may only be varieties of the two different ſects. That the *Druids* of *Britain* were *Brahmins*, is beyond the leaſt ſhadow of a doubt; but that they were all murdered and their ſciences loſt, is out of the bounds of probability; it is much more likely that they turned ſchoolmaſters, and freemaſons, and fortune-tellers; and in this way part of their ſciences might eaſily deſcend to poſterity, as we find they have done. An old paper, ſaid to have been found by *Locke*, bears a conſiderable degree of internal evidence both of its own antiquity and of this idea; and on this hypotheſis it will be eaſy to account for many difficult matters that perhaps cannot ſo clearly be done on any other, and particularly of the great ſimilarity between the *Hindoo* ſciences and ours. A compariſon between our oldeſt ſcientific writers and thoſe of the *Hindoos* will ſet the matter beyond diſpute; and fortunately the works of *Bede* carry us twelve hundred years back, which is near enough to the times of the *Druids*, to give hopes of finding there ſome of their remains. I ſhould have made the compariſon myſelf, but *Bede* is not an author to be met with in this country; however, I compared an Aſtrolabe in the *Nagry* character (brought by Dr. MACKINNON from *Junagur*) with CHAUCER's deſcription, and found them to agree moſt minutely; even the center pin which CHAUCER calls "the horſe," has a horſe's head upon it in the inſtrument; therefore if CHAUCER's deſcription ſhould happen to be a tranſlation from *Bede*, it will be a ſtrong argument in favour of the hypotheſis; for we then could have nothing from the *Arabians*. What *Bungey* and *Swiſſet* may contain, will alſo deſerve enquiry; and that the compariſon may be the readier made where the books are procurable, I mean very ſhortly to publiſh tranſlations of the *Leelavotty* and *Beej Ganeta*, or the Arithmetic and Algebra of the *Hindoos*.

It is much to be feared, however, that many of the beſt treatiſes of the *Hindoos* are loſt, and that many of thoſe that remain are imperfect. By the help of a *Pundit* I tranſlated part of the *Beej Ganeta* near ſix years ago, when no *European* but myſelf, I believe, even ſuſpected that the *Hindoos* had any Algebra; but finding that my copy was imperfect, I deferred completing the tranſlation, in hopes of procuring the remainder. I have ſince found a ſmall part more, and have ſeen many copies; but from the plan of the work (which in my opinion is the beſt way of judging) they ſtill ſeem all to be imperfect, though the copier generally takes care to put at the end of them, that they are complete. I have the ſame opinion of the *Leelavatty*, and for the ſame reaſon. Indeed, it is obvious that there muſt have been treatiſes exiſting where Algebra was carried much farther; becauſe many of their rules in aſtronomy are approximations deduced from infinite ſeries, or at leaſt have every appearance of it; ſuch, for inſtance, as finding the ſine from the arc, and the contrary; and finding the angles of a right angled triangle from the hypothenuſe and ſides, independent of tables of ſines; and ſeveral others of a ſimilar nature, much more complicated. I have been informed by one of their *Pundits*, that ſome time ago there were other treatiſes of Algebra, beſides that juſt mentioned, and much more difficult, though he had not ſeen them; and therefore, as it is poſſible they may ſtill be exiſting, and yet be in danger of periſhing very ſoon, it is much to be wiſhed that people would collect as many of the books of ſcience as poſſible (their poetry is in no danger) and particularly thoſe of the doctrine of BOODH, which perhaps may be met with towards *Thibet*. That many of their beſt books are depraved and loſt, is evident, becauſe there is not now a ſingle book of geometrical elements to be met with; and yet that they had elements not long ago, and apparently more extenſive than thoſe of EUCLID, is obvious from ſome

of

of their works of no great antiquity. The ſame remarks are applicable to their Coſmographical Remains, in ſome of which there are indications of an aſtronomy ſuperior to that of the SOORYA SIDDHANT, and ſuch popular treatiſes.

TILL we can therefore find ſome of their more ſuperior works, it muſt be rather from the form and conſtruction of their aſtronomical tables and rules, and the properties implied in their accidental ſolutions of queſtions, &c. that we can judge what they formerly knew, than otherwiſe. That they were acquainted with a differential method ſimilar to NEWTON's, I ſhall give many reaſons for believing, in a treatiſe on the Principles of the *Hindoo* Aſtronomy, which I began more than three years ago, but was prevented from finiſhing, by a troubleſome and laborious employment that for two years gave me no leiſure whatever; and which (though the ſmall time I had to ſpare ſince has been employed in writing a comment on the works of NEWTON, and explaining them to a very ingenious native, who is tranſlating them into *Arabic*) I hope ere long to have an opportunity of completing. At preſent I ſhall only give an extract of a paper explaining the conſtruction of ſome tables, which firſt led me to the idea of their having a differential method; it is part of one out of a number of papers that were written in the latter part of the year 1783 and the beginning of 1784, and of which ſeveral copies were taken by different people, and ſome of them ſent to *England*. This particular extract was to inveſtigate the rules at pages 253, 254, and 255 of Monſ. GENTIL's Voyage, of which the Author ſays, " Je n'ai pu ſavoir ſur quels principes cette table " eſt fondée," &c. and is as follows:

" Now, by proceeding in the manner explained in the aforeſaid paper, " to calculate the right aſcenſion and aſcenſional difference for *Tiruvalour*,

" and

" and afterwards taking the differences algebraically, and reducing them to " puls of a *Gurry*, as in the following table, the principles of the method " will be evident.

S	Obl. Aſcens. R. A.	Aſc. diff.	Firſt diff. of Obl. Aſcenſion.	Ditto reduced to Puls of a Gurry.	Do. farther reduced.
	° ′	° ′	° ′ ° ′		
0	0	0—0 0			
1	27	54—2 19	27 54—2 19	279—23	256
2	57	49—4 13	29 55—1 54	299—19	280
3	90	0—4 59	32 11—0 46	322— 8	314
4	122	11—4 13	32 11+0 46	322+ 8	330
5	152	6—2 19	29 55+1 54	299+19	318
6	180	0+0 0	27 54+2 19	279+23	302
7	200	54+2 19	27 54+2 19	279+23	302
8	237	49+4 13	29 57+1 54	299+19	318
9	270	0+4 59	32 11+0 46	322+ 8	330
10	302	11+4 13	32 11—0 46	322— 8	314
11	332	6+2 19	29 55—1 54	299—19	280
12	360	0+0 0	27 54—2 19	279—23	256

" The fifth and ſixth columns ſufficiently explain the tables in page " 253 and 254 of Monſ. Gentil; but there remains a part more diffi- " cult, namely, why in calculating the *Bauja*," or the doubles of the firſt " differences of the aſcenſional difference, " $\frac{60}{60}$ of the length of the ſhadow " is taken for the firſt; $\frac{1}{2}$ of the firſt term for the ſecond, and $\frac{1}{3}$ of the " firſt term for the third." " The primary reaſon of taking differences " here, ſeems to be that the chords may be nearly equal to the arcs, and " that,

" that, by adding of the differences, the arcs themſelves may be found " nearly; the reaſon will appear from the following inveſtigation: — Let " N be the equatorial ſhadow of the *Bramins* in *Bingles*; then 720 the " length of the *Gnomon*, or twelve *Ongles*, will be to N the ſame as " radius to the tangent of the latitude; and radius to the tangent of the " latitude as the tangent of the declination to the ſine of the aſcenſional " difference; conſequently, 720 is to N as the tangent of declination to " the ſine of the aſcenſional difference. Now if the declinations for one, " two, and three ſigns be ſubſtituted in the laſt proportion, we get the ſines " of the three aſcenſional differences in terms of N and known quantities; " and if theſe values be ſubſtituted in the Newtonian form for finding the " arc from the ſine, we get the arcs in parts of the radius; and if each " of theſe be multiplied by 3600, and divided by 6,28318, the values come " out in puls of a *Gurry* if N be in *Bingles*, but in parts of a *Gurry* if N " be in *Ongles*; and by taking the doubles we get the values nearly as " follows:—

Values.	Difference.	
0,00000 N		
0,33056 N	0,33056 N = $\frac{1}{3}$ N nearly,	
0,59928 N	0,26872 N = $\frac{4}{5}$ of $\frac{1}{3}$ of N nearly,	the values uſed by the *Bramins*.
0,70860 N	0,10932 N = $\frac{1}{9}$ of $\frac{1}{3}$ N nearly,	

" Now becauſe the values in the firſt column are doubles of the aſ-" cenſional differences for one, two, and three ſines, their halves are the " aſcenſional differences in parts of a *Gurry*, ſuppoſing N to be in *Ongles*; " and if each of theſe halves be multiplied by ſixty, the products, namely " 9,9168 N, 17,9784 N, and 21,2580 N, will be the ſame in puls of a " *Gurry*; and if to get each of theſe nearly, in round numbers, the " whole be multiplied by three, and afterwards divided by three, the

" three products will be 29,75 N, 53,94 N, and 63,77 N, which are " nearly equal to thirty N; fifty-four N, and ſixty-four N reſpectively; " and hence the foundation of the *Bramin* rule is evident, which directs " to multiply the equatorial ſhadow by thirty, fifty-four, and ſixty-four, " reſpectively; and to divide the products by three for the *Chorardo* in " puls: and theſe parts anſwer to one, two, and three ſigns of longitude " from the true equinox, and therefore the *Ayanongſh*, or *Bramin* preceſſion " of the equinox, muſt be added to find the intermediate *Chorardo* by pro- " portion."

THOUGH the agreement of this inveſtigation with the *Bramin* reſults, is no proof that the *Hindoos* had either the differential method, or Algebra, it gave me at the time a ſtrong ſuſpicion of both; and yet for want of knowing the name that Algebra went by in *Sanſcrit*, I was near two years before I found a treatiſe on it; and even then I ſhould not have known what to enquire for, if it had not come into my mind to aſk how they inveſtigated their rules. Of the differential method I have yet met with no regular treatiſe, but have no doubt whatever that there were ſuch, for the reaſons I before hinted at; and I hope others will be more fortunate in their enquiries after it than myſelf.

WITH reſpect to the *Binomial Theorem*, the application of it to fractional indices will perhaps remain for ever the excluſive property of NEWTON; but the following queſtion and its ſolution evidently ſhew that the *Hindoos* underſtood it in whole numbers to the full as well as BRIGGS, and much better than PASCAL. Dr. HUTTON, in a valuable edition of SHERWIN's Tables, has lately done juſtice to BRIGGS; but Mr. WHITCHELL, who ſome years before pointed out BRIGGS as the undoubted inven-

tor

tor of the differential method, ſaid he had found ſome indications of the *Binomial Theorem* in much older authors. The method, however, by which this great man inveſtigated the powers, independent of each other, is exactly the ſame as that in the following tranſlation from the *Sanſcrit*.

" A RAJA's palace had eight doors: now theſe doors may either be " opened by one at a time, or by two at a time, or by three at a time, and " ſo on through the whole, till at laſt all are opened together. It is re- " quired to tell the numbers of times that this can be done.

" Set down the number of the doors, and proceed in order gradually, " decreaſing by one to unity, and then in a contrary order as follows:

8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8

" DIVIDE the firſt number eight by the unit beneath it, and the quo- " tient eight ſhews the number of times that the doors can be opened " by one at a time: multiply this laſt eight by the next term ſeven, and " divide the product by the two beneath it, and the reſult twenty-eight " is the number of times that two different doors may be opened: mu'tiply " the laſt found twenty-eight by the next figure ſix, and divide the pro- " duct by the three beneath it, and the quotient fifty-ſix ſhews the " number of times that three different doors may be opened. Again, this " fifty-ſix multiplied by the next five, and divided by the four beneath it, " is ſeventy, the number of times that four different doors may be opened: " in the ſame manner fifty-ſix is the number of fives that can be opened; " twenty-eight the number of times that ſix can be opened; eight the " number of times that ſeven can be opened: and laſtly, one is the number

" of times the whole may be opened together; and the ſum of all the differ-
" ent times is 255."

THE demonſtration is evident to mathematicians; for as the ſecond term's coefficient in a general equation ſhews the ſum of the roots, therefore in the n power of $1+1$, where every root is unity, the coefficient ſhews the different *Ones* that can be taken in n things: alſo, becauſe the third term's coefficient is the ſum of the products of all the different twos of the roots, therefore when each root is unity, the product of each two roots will be unity, and therefore the number of units, or the coefficient itſelf, ſhews the number of different *twos* that can be taken in n things. Again, becauſe the fourth term is the ſum of the products of the different threes that can be taken among the roots; therefore, when each root is unity, the product of each three will be unity, and therefore every unit in the fourth will ſhew a product of three different roots, and conſequently the coefficient itſelf ſhews all the different *threes* that can be taken in n things; and ſo for the reſt. I ſhould not have added this, but that I do not know well where to refer to it.

P. S. THERE is an obſervation perhaps worth remarking with reſpect to the change of the POLES; namely, that the ſmall rock-oyſters are generally all dead within about a foot above high water mark. Now poſſibly naturaliſts may be able to tell the age of ſuch ſhells nearly by their appearance; and if ſo, a pretty good eſtimate may be formed of the rate of alteration of the level of the ſea in ſuch places where they are; for I made ſome aſtronomical obſervations on a rock in the ſea, near an iſland about ſeven miles to the ſouth of the iſland of *Cheduba*, on the *Aracan Coaſt*, whoſe top was eighteen feet above high water mark, and the whole rock covered with

with thoſe ſhells faſt grown to it, but all of them dead, except thoſe which were a foot above the high water mark of that day, which was *February* 2, 1788. The ſhells were evidently altered a little in proportion to their height above the water; but by no means ſo much as to induce one to believe that the rock had been many years out of it. All the adjacent iſlands and the coaſt ſhewed ſimilar appearances; and therefore it was evidently no partial elevation by ſubterranean fires, or any thing of that ſort. This is alſo apparent from the iſland of *Chedubu* itſelf, in which there is a regular ſucceſſion of ſea-beaches and ſhells more and more decayed to a great height. By a kind of vague eſtimation from the trees and the coaſts and ſhells, &c. (on which however there is not the leaſt dependence) I ſuppoſed that the ſea might be ſubſiding at the rate of about three inches in a year.

THE END OF THE SECOND VOLUME.

CONTENTS OF THE SECOND VOLUME.

		Page.
I.	DISCOURSE the Fourth, on the *Arabs* -	1
II.	Difcourfe the Fifth, on the *Tartars* - -	19
III.	Difcourfe the Sixth, on the *Perfians* - -	43
IV.	On the Defcent of the *Afghans* from the *Jews* -	67
V.	On the *Ifland of Hinzuan* - - -	77
VI.	On the *Indian* Grofs-beak - - -	109
VII.	On the Chronology of the *Hindus* - -	111
VIII.	On the Cure of the *Elephantiafis* - -	149
IX.	On the *Indian* Game of *Chefs* - -	159
X.	Infcription from the *Vindhya* Mountains -	167
XI.	A Defcription of *Afam* - - -	171
XII.	On the Mountaineers of *Tipra* - -	187
XIII.	On the Book of *Chinefe* Odes - -	195
XIV.	On the Introduction of *Arabic* into *Perfian* -	205
XV.	On the Aftronomy of the *Hindus* - -	225
XVI.	On the *Indian* Zodiac - - -	289
XVII.	An Account of *Nepal* - - -	307
XVIII.	On the Cure of Perfons bitten by Snakes -	323
XIX.	On fome *Roman* Coins found at *Nellore* -	331
XX.	On two *Indian* Feftivals, and the *Sphinx* -	333
XXI.	On the Ifle of *Carnicobar* - - -	337
XXII.	On the Medicinal Plants of *India* - -	345
XXIII.	On the Diffection of the *Pangolin* - -	353
XXIV.	On the *Lac* Infect - - -	361
XXV.	Difcourfe the Seventh, on the *Chinefe* - -	365
XXVI.	An Infcription found near *Iflamabad* -	383
XXVII.	A Supplement to No. VII. - -	389
XXVIII.	On the Spikenard of the Antients - -	405
APPENDIX: I.	A Meteorological Diary -	419
II.	On the Cafes in deducing the Longitude, &c.	473
III.	On an Ancient Building in *Hajipur* -	477
IV.	On fome Eclipfes of *Jupiter*'s Satellites -	485
V.	On the *Hindu* Binomial Theorem -	487

*** THERE was not room in this volume for the Differtations on the Mufic of the *Hindus* and the Laws of *Siam*; but they will appear in the Third Volume, for which ample materials have been collected.

ADDITION.

PAGE 154. Note. The *gunjà*, I find, is the *Abrus* of our botaniſts, and I venture to deſcribe it from the wild plant, compared with a beautiful drawing of the flower magnified, with which I was favoured by Dr. ANDERSON.

CLASS XVII. *Order* IV.

CAL. *Perianth* funnel-ſhaped, indented above.

COR. Cymbiform. *Awning* roundiſh, pointed, nerved.

Wings lanced, ſhorter than the awning.

Keel rather longer than the wings.

STAM. *Filaments* nine, ſome ſhorter; united in two ſets at the top of a divided, bent, awl-ſhaped body.

PIST. *Germ* inſerted in the calyx. *Style* very minute at the bottom of the divided body. *Stigma*, to the naked eye, obtuſe; in the microſcope feathered.

PER. A legume. *Seeds* ſpheroidal; black, or white, or ſcarlet with black tips.

LEAVES pinnated; ſome with, ſome without, an odd leaflet.

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