

ASIATICK RESEARCHES:

OR,

TRANSACTIONS

OF THE

S O C I E T Y

INSTITUTED IN BENGAL,

FOR ENQUIRING INTO THE

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

OF

ASIA.

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A S I A.

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1801.

I.

A DISCOURSE

DELIVERED AT A MEETING

OF THE

ASIATICK SOCIETY,

ON THE 18TH OF JANUARY, 1798.

BY SIR ROBERT CHAMBERS, KNIGHT,
PRESIDENT.

GENTLEMEN,

IF I commence with diffidence and timidity the duties of an office to which your suffrages have advanced me, it is not merely because I consider the objects of our researches, as by their extent difficult to be comprehended, or by their variety difficult to be methodized; for obstacles like these will only be encountered by me in common with you, and if they are encountered with vigour, they may be surmounted by diligence.

My fears proceed from discouragements peculiar to myself. He who sits in this chair is exposed to censure not only by his own defects, but by the virtues of his predecessors. I am to superintend the inquiries and preside at the meetings of this learned Society, in the place successively vacated by two Presidents, not

only equally eminent for extent of learning and elegance of diction, for strength of comprehension and clearness of explanation, but also equally devoted from their early youth to Oriental studies.

WITH SIR WILLIAM JONES, who may not improperly be called the father, as well as first President of this Society, I deem myself happy to have become acquainted when he entered the university, a boy just come from school. I had then many opportunities to observe the wonderful progress which he had already made in the ancient Languages of *Europe*; of which let one instance suffice. He had composed, and brought with him to *Oxford* a comedy written in *Greek* verse, of the *poetical powers* whereof I will not now venture to speak: he himself appears not to have thought very highly of it in that respect. He considered with HORACE, that

“ *Membranis intus positis, delere licebit*

“ *Quod non edideris,*”

and in fact he never did publish it. But the versification afforded a wonderful example of diligence and accuracy, of exuberance of style, and power of expression in *Greek*. It comprised all the different kinds of metre which are to be found in the dramattick writings of *Greece*; and DOCTOR THOMAS SOMNER of *Harrow*, the best judge of the subject perhaps then in *England*, declared after reading it, that it did not contain one metrical error.

WITHIN a very few years after this, and while the most laborious student I ever knew was still in his minority, both legal and academical, an undergraduate in the University, and considerably under the age which the law calls the age of discretion, the casual sight of a folio volume filled with extracts from *Arabick* manuscripts afforded me an opportunity of learning that he had filled (in all) four such volumes with similar extracts, made with his own hand in the *Bodleian* library,

library, where, though an undergraduate, he was by special favour permitted to study. Many of these extracts were probably made from manuscripts of which no other copies are known to be extant; and it is certain that all of them were transcribed from books, which, according to the laws of that library, could not be carried out of it. Had they been less rare and more accessible, they would hardly have been transcribed by Sir WILLIAM JONES at the expence of so much time as they required, for I have reason to believe that, in his own opinion, their intrinsic merit was not very great. I have mentioned these facts because they are not generally known; but as I do not mean to pronounce an eulogy on Sir WILLIAM JONES, nor to attempt even the slightest sketch of his life and writings, I shall not dwell on the extraordinary diligence with which he laboured in the mines of jurisprudence, at the same time that he pursued the study of Oriental learning; neither shall I enter upon a critical examination of the voluminous and convincing proofs he gave the publick of his pre-eminence in both. I shall content myself with observing that if ever the *English* settlements in *India* shall add, to the splendor of their prosperity in commerce and war, the honour and pride of having, beyond all former example, communicated to *Europe* the wisdom and learning of *Asia*, for that well-earned honour, that just principle of honest pride, they must own themselves indebted to Sir WILLIAM JONES.

FOR my first acquaintance with Sir JOHN SHORE, considerably more than twenty years ago, I was obliged to my late brother WILLIAM CHAMBERS, afterwards a very worthy and respectable member of this Society, and I believe much beloved by all who knew him. Mr. SHORE and he were then very young servants of the *East India* Company, of congenial minds, and attached to each other by similarity of studies and pursuits, having both in making their choice of life pitched upon the study of *Asiatick* languages, as the mode in

they could serve the Company with most honour and advantage to their employers and themselves. I may, I believe, venture confidently to add, that the *East India* Company had not at that time any two servants so young and so well acquainted (at the same time) with the languages and learning of *Asia*, and particularly with the *Persian* tongue and the authors who have written in it. Pardon, Gentlemen, this mention of a much loved and much lamented brother, to which I have been tempted by the pleasure of uniting his name with that of our late much honoured President.

Soon after the time of which I have spoken, my brother, led by motives of private convenience, betook himself to an humble course of life, in which he passed his days with more utility than lustre, but without ever deserting his favourite studies, till it pleased the Almighty that he should rest from his labours. Mr. SHORE with that consciousness which every great mind has of its own powers, was not content merely to persevere with assiduity in his attention to *Persian* literature, but applied himself at the same time to every science and every part of knowledge which might qualify him for the most important and splendid offices in the *British* dominions in *Asia*. He became eminent for his minute acquaintance with the revenues of *Bengal*, as well as for his general skill in finance; for his knowledge of the politicks of *India* in particular, as well as of the science of Government in general; and no one was surpris'd when after visiting his native country, he returned to *Bengal* as Sir JOHN SHORE, the destined successor of Lord CORNWALLIS.

To speak of his conduct since he became Governor General, would be unbecoming, because presumptuous, and is totally unnecessary, because almost every member of this Society is as well acquainted with his merits as I can be. I mention him as Governor General only because while in that station he accepted the office

of our President, and proved to us by his own example, that neither the cares of Government, nor the multifarious duties of a Governor General, are inconsistent with a very considerable and useful degree of attention to *Asiatick* researches.

SUCH have been the two former Presidents of the *Asiatick* Society. That by the choice of this learned assembly I am called into the place which *they* have vacated, as it depresses my hopes, so it must excite my diligence. Abilities no man has the power of conferring on himself, but fidelity and industry are always attainable.

WHEN some respectable members of this Society first mentioned to me their own wish and that of others that I should succeed Sir JOHN SHORE in this chair, I told them, with great frankness and sincerity, that I did not think I had either health, or leisure, or ability to perform as I could wish the duties of the office; and particularly, that I thought myself deficient in one attainment which might be expected in a President, in as much as I have but a slight and superficial knowledge of any *Asiatick* language. Some qualifications for the presidency the partiality of friendship may perhaps discover in me, and these, whatever they may be, shall be devoted, as far as health and freedom from business will permit, to the purposes of the Society. If it is now too late, at the age of sixty, greatly to increase my own stock of Oriental literature, I will at least endeavour to promote the increase of it in others.

*“ Et fungar vice cotis ; acutum
“ Reddere quæ ferrum valet, exors ipse secandi.”*

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II.

NARRATIVE of a JOURNEY from AGRA to OUJEIN.

By WILLIAM HUNTER, Esq.

BEFORE entering on the following narrative, it will be proper to detail some of the principal circumstances, which led to the journey. That is the subject of it. About the month of *September* 1790, SINDIAH, who was engaged in a war with the Rajahs of *Jayanagar* and *Joudhpoor*, but had, for about two years, remained quiet at *Matra*, and confided the operations of the campaign to his generals, thought it expedient (although his arms had lately been crowned with signal success, at *Meertah*, where the whole force of *Joudhpoor* was, with great slaughter, overthrown) to take the field in person.

WHEN his intention was certainly known, Major PALMER, the *English* resident at his court, who was then at *Agra*, offered to accompany him on the expedition. He replied, that as he expected to return soon, he was unwilling to put the resident to an unnecessary inconvenience. SINDIAH directed his course towards *Jayanagar*, which being destitute of the means of defence, and governed by a prince, young, unexperienced, devoted to pleasure, incapable of serious attention, and irresolute in his councils, was thrown into the greatest consternation. The Rajah and his ally of *Joudhpoor* gladly submitted to any conditions of peace that SINDIAH thought proper to dictate. They agreed to pay a heavy fine, and a considerable annual tribute; and they ceded the fortress and district of *Ajimere*, which had been surrendered to them, in a treacherous, or cowardly manner, during the war, by the officer to whom SINDIAH intrusted their defence.

HAVING brought this affair to a happy conclusion, SINDIAH marched to *Ajimere*, where he was joined by his army from *Joudhpoor*. Here he had not remained long, before he was invited, by the Rana of *Oudipoor*, to assist him in recovering his authority, and in reducing to obedience BHEEM SING, the governor of the fortress of *Cheitore*, who had thrown off his allegiance, and was in arms against his sovereign. The Rajah of *Oudipoor*, is looked on as the head of all the *Rajpoot* tribes, and has the title of *Rana* by way of pre-eminence. His family is also regarded with high respect by the *Musulmans* themselves, in consequence of a curious tradition, relating to his genealogy. He is said to be descended, in the female line, from the celebrated ANUSHIRWAN, who was king of *Persia* at the birth of MOHAMMED; and thus to have, in that line, a common origin with the *Seids* descended from HUSSEIN, the son of ALI. The circumstance is remarkable, and is certainly worthy of a careful investigation. For, if admitted, it proves so close an intercourse to have existed, at that time, between the natives of *India*, and the neighbouring *Pagan* nations, as, compared with the ancient prohibition of the intermixture of different casts, to establish the existing traces of a common origin.

BUT the Rana, though the first in dignity, is inferior in power, to the Rajahs of *Jayanagar* and *Joudhpoor*: and the strength of the fortress of *Cheitore*, which is situated on a high and rugged mountain, encouraged BHEEM SING, one of his most powerful vassals, to throw off the yoke of subjection.

SINDIAH readily accepted the invitation, and proceeded to *Cheitore*, where he was met by the Rana. He invested the fort; and although his progress, against a place of such strength, was necessarily slow, he at length reduced BHEEM SING to such straits, that he surrendered the fort, and submitted himself to
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the *Rana*. SINDIAH at first put a garrison into the fort, but soon after, delivered it over to the *Rana*, in pursuance of their previous agreement.

AFTER remaining here some time, SINDIAH determined, instead of returning to *Matra*, to proceed farther southward. A variety of motives has been assigned for this journey, which terminated in his death, and probably contributed to accelerate that event. The measure was liable to strong objections; and no dissuaves were spared, on the part of RANA KHAN, one of SINDIAH's oldest counsellors, and most faithful servants; perhaps the only one who followed his fortunes from pure personal attachment; conscious of which, the prince always honoured him with the appellation of brother. The recent conquests, in *Hindustan* were still in a very unsettled state; the stipulated tribute from the Rajahs of *Jayanagar* and *Jondhpoor* was yet unpaid, and those chiefs would gladly have seized any opportunity of evading the performance of their compact; in which attempt, they might expect to be well supported by their warlike *Rajpoots*, who burned with impatience to shake off the galling yoke of the *Mahrattas*. The northern and western frontiers lay exposed to the annual incursions of the *Sikhs*, who might be encouraged, by the absence of the chief, to acts of greater audacity. Lastly, the jealousy entertained, by the *Poona* government, of the great accession of power, which had accrued to SINDIAH, from the conquest of *Hindustan*, was no secret; and the auxiliaries, that under the command of HOLCAR and ALI BAHADUR, were sent him, by that court, when he was pressed by a combination of the *Rajpoot*, *Mogul*, and *Afghan* forces, were now become, at least suspicious friends, if not secret and domestic foes, envious of his exaltation, and willing to embrace any occasion of aggrandizing themselves, at his expence.

ON the other hand, he probably conceived, that while the tranquillity of his possessions in *Hindustan* would

would be sufficiently secured, by committing them to the protection of the same armies, by which they had been acquired, under the command of the leaders who had hitherto conducted those armies to victory; some important advantages were to be obtained by his presence at *Poona*. He hoped, by establishing an influence in that court, to obtain an order for the recall of *HOLCAR* and *ALI BAHADUR*, and thus to be left in sole possession of the new conquests. As the expence of making and maintaining those conquests, in the name as he pretended, and on behalf of the *PESHWA*, had greatly exceeded the revenues derived from them, he hoped to receive, from the treasury of *Poona*, the balance, which, on a comparison of accounts, was allowed to be eight crores of rupees. Lastly, as his paternal estate in the *Decan* was destitute of strong places, he was desirous of obtaining a grant of some fortress adjoining to it, for the security of his family and possessions. These were the principal heads insisted on, in his negociations with the court of *Poona*; and his hopes of establishing an influence there (besides what he might expect from the gratitude of the *PESHWA* and of *NANA PHARNAVEES*, one of whom owed the sovereignty, and the other his office of prime minister, in a great degree, to *SINDEAH*'s exertions, were founded on the respectable force by which he was attended; sufficient to awe the government, and make it afraid to disoblige him. For the rest, he trusted to his own address, in flattering the vanity, and amusing the juvenile levity of the *PESHWA*, so as to create, in his mind, a personal attachment, towards himself.

BESIDES these grand objects, he had others in view, of a subordinate nature. He had been fourteen years absent from *Oujein*, the capital of his jageer; and, many complaints having reached him, of mal-administration, on the part of those entrusted with authority there, his presence became necessary, for the rectification of abuses.

To these political motives, were added the calls of *superstition*, to which this chief, though in other respects possessing a vigorous mind, and an enlightened understanding, seems to have ever lent a willing ear. Though born and educated in the *Hindu* religion, and scrupulously observant of all the usages which it enjoins; he shewed a great complaisance towards the institutions of MAHOMMED. And here, by the way, we may observe, that these two religions have existed together in *Hindustan*, for so long a time, the professors of both have acquired a habit of looking on each other with an eye of indulgence, unusual in other countries, between those who maintain such opposite tenets. Thus, the *Hindu* is often seen to vie with the disciple of ALI, in his demonstrations of grief for the fate of the two martyred sons of that apostle; and in the splendor of the pageant annually exhibited in their commemoration. He pays a respect to the holidays prescribed by the *Koran*, or set apart for the remembrance of remarkable events in the life of the prophet or his apostles. This degree of complaisance is perhaps not surprizing in the disciple of BRAHMA, whose maxim is, that the various modes of worship, practised by the different nations of the earth, spring alike from the deity, and are equally acceptable to him. But, even they who follow the intolerant doctrines of the *Koran*, are no longer those furious and sanguinary zealots, who, in the name of God and his prophet, marked their course with desolation and slaughter, demolishing the *Hindu* temples, and erecting mosques on their ruins. They found the patient constancy of the *Hindu* superior to their violence; that the fear of torments and of death was unable to make him desert the tenets which his ancestors had handed down to him, from an unfathomable antiquity; but, that if left in the quiet possession of these, he was a peaceable, industrious, and valuable subject. Accordingly, we observe among the *Muslimans* of *Hindustan*, a great deference for the prejudices of their neighbours or dependants, of the *Hindu* persuasion. Particularly, in
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the *hooly* or saturnalia of *India*, when liberty of speech and action towards superiors, are allowed to as great an extent, as among the ancient *Romans*; the *Musulmans* are seen to enter into the diversion, with as much alacrity as the *Hindus* themselves.

Thus, the *Mahratta* prince was not altogether singular in the attempt to unite the observance of both religions; but his complaisance, in this respect, was certainly carried to an unusual length; which is accounted for in the following manner. SHAH MUNSOOR, a *Musulman* fakeer, who pretended to the gift of prophecy, being consulted by SINDIAH, foretold his future greatness; saying, "Go, I have given you the country, as far as *Dehly*." Such a prediction, addressed to a mind so ambitious, so persevering in the attainment of any object once proposed to itself, and so strongly tinged with superstition, may have been very instrumental in bringing about its own accomplishment. However this may be, it was fully verified; and SINDIAH naturally looked on the memory of the SHAH with great veneration. He kept his disciple and successor, HUBBEE SHAH, constantly about his person, assigned him a jageer and a numerous retinue, and daily performed the ceremony of prostration before him, and of kissing his feet. SHAH MUNSOOR was buried at *Beer*, a place in the NIZAM's dominions, and HUBBEE SHAH had frequently urged SINDIAH to visit the tomb of that saint. Several circumstances contributed at this time, to give weight to his advice. Besides the veneration SINDIAH had for the prophet of his greatness, and the efficacy he might ascribe to such a pilgrimage, in promoting the future success of his affairs; he was anxious for a son, to be the heir of his fortunes, and hoped to obtain this boon, by his devotion at the holy shrine. One of his favourite wives, also, was lingering under a fatal distemper, and she imagined that the influence of the holy man's ashes afforded the only prospect of relief.

FROM *Cheitore*, he accordingly marched to *Oujein*, and finding that city exposed to frequent robberies, and other disorders, from the neglect of justice; for the exercise of which, the persons intrusted with the administration pretended they had not a sufficient force; he gave the police and judiciary power in charge to one of his own confidential servants, whom he supported with a body of soldiers; leaving the management of the revenue in the hands of the former collectors. After staying twenty-three days, he continued his march.

THESE transactions occupied the space of a year and five months; at which time, in consequence of SINDIAH's application for that purpose, Major PALMER received orders to join him. He determined to proceed by the way of *Gualior*, though a circuitous road, because it lies through countries where SINDIAH's passes would be respected.

ON the 23d of *February* 1792, we marched from *Agra* to *Baad*, a small village, lying S 25 W distant in a straight line ten and a half *British* miles. The road lay through a fertile and well-cultivated country, interspersed with clumps of mango (*Magnifera Indica*), *Neem* (*Melica Azadiracht*), and wild date (*Elate Sylvestris*.)

Feb. 24.—MARCHED to *Mummiah*, S 13 W 16,8 miles. This is an inconsiderable village. On the march, we crossed two rivers, the *Utingen* and *Bán-Gunga*. On the banks of the latter stands *Jahjow*, where there is a handsome seray, built of stone. This village is rendered famous by two decisive actions, fought on nearly the same spot, close to it. The first, on the 7th of *Ramazan*, A. H. 1068, or *June* 8, 1658 N. W. wherein AURUNGZERE totally defeated his brother DARA SHEKOH; and the second, in the year 1119, between the two sons of AURUNGZERE, SHAH AALUM,

AALUM, and AZEM SHAH, in which the latter was slain, and left to his brother undisputed possession of the *Indian* empire*.

Feb. 25.—MARCHED S 12 W 6,2 miles, to *Dhol-poor*, a pretty large town, situated within a mile of the river *Chumbul*, on the banks of which is a fort, of the same name with the town. The hilly country begins at this place. One remarkable conical hill, near the town, has on the top of it, a tomb, surrounded with a stone wall. The lower part of the hill is composed of a reddish *Schistus*, and the upper of free-stone.

Feb. 26.—MARCHED to *Choola-Seray*. The distance in a straight line is only 5,8 miles, S 33 E; but the *Chumbul*, at the fort, is deep; and in order to ford it at *Keyteree*, near four miles higher up, the road makes a circuit, among hills and broken ground, so as to measure 12½ miles.

THE *Chumbul* is one of the most considerable rivers of *Hindustan*. Taking its rise near the ancient city of *Mundu*, in the heart of the province of *Malwa*,

* SUCH was the information received from the people on the spot; but the account given by ERADUT KHAN, who was present in the last of these battles, proves it to have been fought nearer to *Agra*.

ON the day before the action, AZIM SHAH was encamped "between *Jabjow* and *Agra*, on a barren plain, void of water, so that the army was much distressed." (Memoirs, p. 30.) This must have been between the *Ban-Gunga*, which runs past *Jabjow*, and the *Utingen*, which is distant from it eight miles and one half, on the road towards *Agra*.

ON the morning of the battle (*Sunday* the 18th of *Rubbee ul Awul* A. H. 1119, or *June* 19, 1707 N. S.) the Prince BEDAR BUCHT, who commanded the advanced guard of AZIM SHAH's army having reached a village, near which was a stream of clear water, was advised by ERADUT KHAN to halt. This could be no other than the *Utingen*, which is the only stream of water between *Jabjow* and *Agra*. The Prince consented to follow his advice, but afterwards, in the absence of ERADUT KHAN, advanced; giving up the advantage of the water; and as he appears to have marched at least an hour after this, before he met with the enemy, (Memoirs, p. 33.) we may suppose the engagement to have commenced, at the distance of three miles from the *Utingen*, on the side of *Agra*.

within

within fifteen miles of the *Nerbudda*, it pursues a north-easterly direction, and after washing the city of *Kotah*, and receiving the tribute of many subordinate streams, at length empties it self into the *Junna*, twenty miles below *Etawa*. The whole length of its course is about 440 miles. The breadth of its channel, at the ford of *Keyteree*, is three quarters of a mile. That village stands on the southern bank, which is bold and lofty. In the rainy season, when the channel is full, the prospect of such a body of running water, bounded by hills, which rise in a variety of fantastic shapes, forms a landscape peculiarly interesting to a traveller, whose eye has been fatigued with contemplating the uniformity of that vast plain, which is embraced between the *Ganges* and the *Junna*.

Choola-Seray is a small village, with a mud fort, in which resides a collector on the part of the *Mahrattas*.

Feb. 28.—MARCHED S 29 E 17, 2 miles, to *Noorabad*, a large village, on the south bank of *Sank* river, over which is a bridge of seven arches, very well built of stone. Adjoining to the village is a pretty large garden, enclosed by a stone wall; the work of *AURUNGZEBE*, as appears by the following inscription, over the gate:

کرد باغ بناشه عالم کبر
بهر تاریخ او چو کرد سوال
فیض بخش جهان چو مهر متیر
گفت یافت که دیده باغ جمال
۱۰۷۷ هجری

TRANSLATION.

“ This garden was planted by the the king AALUM-GEER,

“ Whose universal bounty rivals that of the Sun, in all his splendor :

“ When he demanded a sentence to denote its date

“ An invifible voice replied thou haft seen the garden of beauty.”

A. Hej. 1077.

THE

THE last words *باغ جبال* contain the date, agreeably to the *Persian* notation, thus

ب	-	2.
ا	-	1.
ع	-	1000.
ج	-	3.
م	-	40.
ا	-	1.
ل	-	30.
		<hr/>
		1077.
		<hr/>

answering to the year of our æra 1666.

WITHIN the garden is a monument, to the memory of GOONNA BEGUM, a princess celebrated for her personal accomplishments, as well as for the vivacity of her wit, and the fire of her poetical genius. Several of her lyric compositions, in the *Hindustanny* language, are still sung and admired*. She was the daughter of the Nawab ALLA KOOLI KHAN, surnamed CHINGA, or SHESH ANGOOSHTEE, from having six fingers on each hand; a Munsubdar of 5000 horse. His daughter after being betrothed to SHUJAH-UD DOWLAH, was married to GHAZEE-UD-DEEN KHAN and this rivalry is said to have in part laid the foundation of the mortal enmity which afterwards subsisted between that Vizier and the Nawab SUDDER JUNG, the father of SHUJAH-UD DOWLAH. The shrine bears this inscription *آه غم کتا بیکم ۱۱۸۹*
 "Alas! GOONNA BEGUM!" the letters in the original, taken as numerical characters, give the date 1189 of the Hejiree, or of our æra 1775.

* One of them is inserted by Sir WILLIAM JONES in the *Asiatic Researches*, vol. I. p. 55.

From this garden, the hill and fort of *Gualior* are seen, bearing S 32 E.

On this march, besides the *Sank*, we crossed two other rivers, the *Coháry* or *Quáree* and *Ahshin*; both fordable. The face of the country is bare, being destitute of trees, and almost without cultivation. Near the road are several small forts, some of mud, and others of stone, possessed by petty chiefs, who derive a precarious revenue from predatory attacks on the unwary and defenceless traveller.

Feb. 29.—MARCHED S $27\frac{1}{2}$ E, 13,2 miles, to *Gualior*, and encamped to the north-west of the fort. The hill on which stands this celebrated fortress, runs from N 13 E to S 13 W. It is in length one mile and six tenths. Its greatest breadth does not exceed 300 yards. The height at the north end, where it is greatest, is 342 feet. At this end is a palace, and about the middle of the fort are two remarkable pyramidal buildings of red stone. They are in the most ancient style of *Hindu* architecture, and are said to have been built for the residence of the mother-in-law and sister-in-law of a Rajah, who reigned in a very remote period, when this fortress was the capital of an extensive empire. A stone parapet runs all round, close to the brow of the hill, which is so steep, that it was judged perfectly secure from assault, till Major PORPHAM took it by escalade, on the 3d *August* 1780*: The only gate is towards the northern extremity of the east side, from which

* The particulars of this brilliant achievement, which reflects equal honour on that officer, who commanded in chief, and on Captain BRUCE, who proposed the measure, and led on the party which first gained a footing on the rock, are too well known, to stand in need of recapitulation in this place. The fort was, soon after delivered, agreeably to the terms of alliance, to the Rana of GORUD. But that prince having failed in the performance of his engagements to the *English* government, during the war, and afterwards deviated from the conditions of the treaty with the *Mahrattas*, wherein he had been included, was justly abandoned to their resentment. SINDIAN invested the fort, and, after a fruitless siege of many months, prevailed by corrupting a part of the garrison.

which, by several flights of steps, you ascend to the top of the rock. Within are several large natural cavities in the rock, which contain a perpetual supply of excellent water. On the outside, about half way up, are many cells, which contain the figures of men and animals, carved in the same manner as those excavations themselves, out of the solid rock. Along the east side, near the summit, runs a line of blue enamel, very fresh, and brilliant: a proof that this manufacture attained considerable perfection in *Hindustan*, at an early period.

THE town, which runs along the east side of the hill, is large, well inhabited, and contains many good houses of stone, which is furnished in abundance by the neighbouring hills. These form a kind of amphitheatre, surrounding the fort and town, at the distance of from one to four miles. They are principally composed of a reddish schistus, which seem to contain a large proportion of iron. Their surface is rugged, and they are destitute of vegetable productions. To the eastward of the town, runs the small river *Soonrica*, which, at this season, is nearly dry. At the distance of 700 yards from the northern extremity of the fort, is a conical hill, having on the top a remarkable stone building. It consists of two high pillars, joined by an arch. It seems to be of ancient workmanship, but I could not learn for what purpose it had been erected. Beyond the river *Soonrica* is a handsome stone building, with a cupola covered with blue enamel, the tomb of **MAHOMMED GHOUS**, a man celebrated for learning and sanctity, in the time of the Emperor **AKBER**. Within the enclosure which surrounds this monument, is a small tomb, to the memory of **TAN-SEIN**, a musician

son, who admitted his troops. The Rana was soon after compelled to deliver himself into the hands of **SINDIAH**, who shut him up in this fortress for the remainder of his life. That was not of long continuance, and his death has been usually ascribed to violent means. The prevailing report in the adjacent country, is that poison was administered, which not proving effectual, he was strangled.

of incomparable skill, who flourished at the court of the same monarch. The tomb is overshadowed by a tree concerning which a superstitious notion prevails, that the chewing of its leaves will give an extraordinary melody to the voice.

..

The district depending on this town, which includes the country of *Ghod*, yields twenty-two lacs of rupees, fifteen of which are paid into the treasury, the remaining seven going to the expences of collection. The administration of the province was at this time entrusted by SINDIAH to AMBAJEE INGLA, one of his principal generals; in whose absence, his brother KHUNDOOJEE was collector of the revenue, and governor of the fort.

A CONSIDERABLE trade is here carried on, in cloth from *Chandéri*, and in indigo. About seven cofs from hence, on the road to *Nirwir*, at the village of *Beereih* is a mine of iron, which is worked to considerable advantage. The fort itself, from its great security, is made use of by SINDIAH as the place of confinement for his state prisoners; and the grand repository of his artillery, ammunition, and military stores.

FROM *Gualior*, the straight road to *Oujein* passes by *Nirwir* and *Seronge*. But as the Rajah who then possessed *Nirwir* was a man of treacherous character, stained with barbarous massacres, and maintained a troop of banditti, to plunder every traveller that came within their power, it was recommended to us to go by the route of *J,hanfi*.

THE progress of the *Mahrattas* in *Hindustan*, being marked, like that of a pestilential blast, with destruction, is an object of no pleasing contemplation. Yet, it may not be ungrateful to the benevolent reader to

hear, that the cruel Rajah of *Nirwir*, expelled from his fort, and reduced to depend for a scanty pittance on the bounty of the invaders, has no longer the power of doing mischief.

ON the 6th of *March* we proceeded to *Antery*, S 16 E 12,9 miles. The road lies between ranges of hills. It is sufficiently wide; but in many parts so encumbered with large round stones, as to be with difficulty passable by wheel carriages. The first hills, towards *Gualior*, are of the same texture with those which environ the fort; but those towards *Antery* are of a quartzose stone. *Antery* is a pretty large walled town, with a fort adjoining; situated at the foot of the hills on the banks of the small river *Déaloo*.

March 7.—MARCHED to *Dibborah*, S 28 E, 15 miles. The road is good, over a champaign country, pretty well cultivated. The crop of barley at this time was ripe. *Dibborah* is a small village, belonging to a Rajah PIRTIPUT of *Pachour*. That is a fort situated on an oblong hill, which, as well as two other forts belonging to the same Rajah, was in fight, on this day's march. The Rajah is by extraction a *Jât*. He is said to have made an obstinate resistance against the *Mahrattas*, on their entrance into this country; but he has been compelled to pay them a tribute.

March 8.—MARCHED S 26½ E, 13,8 miles, to a spot, about three miles to the north-west of *Ditteah*. The tents had been sent on, to be pitched beyond the town. But the Rajah, who is tributary to the *Mahrattas*, having fallen greatly in arrears, the approach of our people raised an apprehension, that a detachment of troops was coming from *Gualior*, to exact payment by force. Under this misconception, the Rajah's people refused to permit our tents to approach nearer the town. But, no sooner were they better informed, than the uncle of the Rajah came with a numerous retinue, to pay his respects

to the resident; and with great eagerness of hospitality, invited us to pitch, the next day, on a spot close to the palace.

CLOSE to the encampment of this day, is a pretty high and rugged hill of quartz, some pieces of which are beautifully chrySTALLIZED. On its side grows the *Trophis Aspera* of KÆNIG, called *Sahoora*. On this poor rocky soil, it is low and bushy; but in the plain it is a tree of considerable magnitude. From an idea of its astringent, or antiseptic virtue, the natives use little pieces of the wood, split at one end into a kind of brush, for cleaning their teeth; the use of these they recommend as a preservative against tooth-ach; or a remedy for that disease.

ON the same rocky hill grows a beautiful species of *Evolvulus*, of a blue colour, called by the natives *Sehewa*. It is the *E. alsinoides* of LINNÆUS. It was also found in plenty, on the argillaceous hills of *Dhol-poor* and *Gualior*. Within the fort, at the latter place, it abounded so much, that in many spots, a carpet of the finest azure seemed to be spread on the ground.

March 9.—MARCHED through the town of *Ditteah*, which is in length above a mile and a half, and nearly as much in breadth; populous and well built; the houses being of stone, and covered with tiles. It is surrounded by a stone wall, and furnished with gates. At the north-west extremity is a large building, with one large and six smaller cupolas: which was the ancient habitation of the Rajahs, and is now inhabited by some relations of the family: but the present Rajah has built a palace for himself, without the town, on the south-east side. It stands on an eminence, and commands a view of the country, as far as *Pachour* on one side, *Nirwir* on another, and *J,hanfi* on a third. Close to this hill, is a pretty extensive lake, on the bank of which we encamped. Bearing and distance from the last encampment S $43\frac{1}{2}$ E, five miles two furlongs.

THIS town is in the province of *Bundelcund*: the inhabitants are a robust and handsome race of men, and wear the appearance of opulence and content. Like the other *Bundelahs*, they have the reputation of a warlike people; and about two years after our visit, they gave a signal proof, how well they merit that character. GOPAL ROW BHOW, SCINDIAH's commander in chief in *Hindustan*, having marched with all his army against *Ditteah*, to compel payment of the tribute, and exact a fine, was opposed by the Rajah's forces. An engagement ensued, in which the troops of *Ditteah* charged, sword in hand, the veteran battalions of DE BOIGNE, which were commanded by Major FRIMONT, an officer of ability and experience. The *Bundelahs* shewed no fear of the musket and bayonet, and there were several instances of grenadiers cut down while their bayonets were buried in the breast of the assailant's horse. The brigade lost 300 men, in this attack, and Major FRIMONT himself assured me, that nothing but a continual discharge of grape-shot, from the guns, preserved it from utter destruction.

THE district yields a revenue of nine or ten lacks of rupees annually, subject to the payment of a tribute to the *Mahrattas*; the amount of which varies with their power to exact it.

THIS evening, the resident received a visit from the Rajah, whose name is SUTTERJET, a man about forty years of age, above six feet high, of an athletic form, and graceful deportment; with a countenance not unpleasing, except that the extensive use of opium has given him an air of stupidity. Notwithstanding his habits of intoxication, and inordinate indulgence in sensual pleasures, he is fond of athletic amusements, particularly the chace. His activity and courage, in the attack of the boar, the *neel-gaw* (antelope *picta* of PALLAS, or white footed antelope of PENNANT) here called *roz*, and of the tyger, with all of which the neighbouring forest abound, are greatly extolled.

THE

THE following day we halted to return the Rajah's visit, and on the 11th *March*, marched to *Jhansi*, and encamped to the S W of the fort. Course S $36\frac{1}{2}$ E, distance $15\frac{1}{2}$ miles. This is a considerable town, though smaller than *Ditteah*. It is commanded by a stone fort on a high hill; to the south-east of which, at the distance of five or six hundred yards, is another hill, nearly on a level with the fort. The district dependent on this town, which yields about four lacs of rupees per annum, belongs to the PESHWA, and having been, for fifty years, uninterruptedly in his possession, it is quieter and better cultivated than most of the neighbouring territories, which have undergone frequent changes. On this account, it is frequented by the caravans from the *Decan*, which go to *Furrukhabad*, and the other cities of the *Dooab*. Hence an afflux of wealth, which is augmented by a considerable trade in the cloths of *Chandéri*, and by the manufactures of carpets, and of bows, arrows, and spears, the principal weapons of the *Bundélah* tribes.

THE Soubahdar of *Jhansi*, ROGONAT'H HARRY, commonly resided at *Burwa-Sagur*, and left the care of *Jhansi* to his younger brother SHEURAM BHOW. This gentleman paid the resident a visit, on the evening of his arrival. He is a tall, handsome man, and of genteel demeanour. At his request we halted next day, and returned his visit in the evening. He received us at his house in town, where we saw his brother LITCHMUN ROW, elder than SHEURAM BHOW, but younger than the Soubahdar. He was merely in a private capacity. Formerly he was in SINDIAH's service, and about two years before this period, was sent into *Bundélcund*, with a considerable force and twenty-two guns. But he was defeated by NOONI ERJUN SING, a *Bundélah* chief, with the loss of all his guns and baggage.

March 13.—MARCHED S $56\frac{1}{2}$ E, twelve miles five furlongs, to *Burwa Sagur*, so called from a rivulet, named the *Berwa*, which runs past it and by embankment, is

made to form a very large pond (in *Hindui*, *Sagur*) at the back of the fort or castle. The village is small, but contains several good houses, and the fields about it are very well cultivated. The castle, in which the the Soubahdar resided, resembles an old Gothic building. It was built by an ancient Rajah of *Ouncha*, and is said to be one of fifty-two forts, for the building of which he gave orders on one day. This ancient city of *Ouncha*, lay on our right, on this day's march; it is situated on the banks of the *Betwa*, about nine miles S E by S from *J,hanfi*. The Rajah of *Ouncha* was formerly the head of the *Bundelah* tribes, from whom the other Rajahs received the *teeka*, or token of investiture. But his revenue has, by various defalcations, been reduced to one lac of rupees, and his consequence has proportionably declined. The name of the present Rajah is BICKERMAJEET.

On this day's march, we passed the *Betwa*, for the first time. This river, from its source, south of *Bopal*, to its confluence with the *Jumna*, below *Calpee*, describes a course of 340 miles, in a north-easterly direction. Its bed, where we crossed, was three furlongs in breadth; sandy, and full of round stones. The water, at this season, is only knee-deep; but in the rains, it swells to such a height as to be impassable. Two miles from *Burwa-Sagur*, we passed the *Bhood Nullah*, on a bridge of eight arches, built by the present Soubahdar.

On our arrival, we were agreeably surprized to receive from the Soubahdar, a present of cabbages, lettuce, celery, and other productions of an *European* garden. In the evening, the Soubahdar paid us a visit; he appeared to be about sixty years of age, rather below the middle stature; his countenance bespoke intelligence, and his manners were pleasing. Having had occasion, on account of some bodily infirmity, to repair to the *English* station of *Kankhpoor*, for medical assistance, he had contracted a relish for *European* manners

manners and customs. He had discernment enough to perceive our superiority in arts and science over his countrymen; and possessing a spirit of liberal enquiry, and an exemption from national prejudices, which is very uncommon among the natives of *Hindustan*, he was very desirous of gaining a knowledge of our improvements. Next morning, when we returned his visit, he received us in an upper room of the castle, which, instead of the *Hindustany muslum*, was furnished with chairs and tables, in the *European* manner. He showed us several *English* books, among which was the second edition of the *Encyclopædia Britannica*. Of this he had got all the plates neatly copied by artists of his own. To get at the stores of science which these volumes contain, he had, even at that advanced period of life, formed the project of studying the *English* language. He expressed great anxiety to procure a teacher, or any book that could facilitate his pursuit; and was highly gratified by Lieutenant M'PHERSON's presenting him a copy of GILCHRIST'S, Dictionary. He entertained us with several tunes on a hand-organ, which he had got at *Kanhpoor*; and exhibited an electrical machine, constructed by a man in his own service. The cylinder was a common table shade; with this he charged a vial, and gave pretty smart shocks, to the no small astonishment of those who were the subjects of his experiments, and of the spectators. As the weather was very dry, the operation succeeded remarkably well. He even proposed sensible queries, on the nature of the electric fluid, and the parts of the phial in which the accumulation took place; as, whether in the glass, or the coating, &c. which showed that he did not look on the experiments with an eye of mere childish curiosity, which is amused with novelty; but had a desire to investigate the cause of the phenomena. I am sorry to add, that this man, being, about two years ago, seized with some complaint, which he considered as incurable, repaired to *Benares*, and there drowned himself in the *Ganges*.

March

March 15.—MARCHED S 9 E, 11,3 miles, to *Pirtipoor*, a small village, belonging to the Rajah of *Ouncha*. The road is stony, and much encumbered with thorns.

March 16.—MARCHED S 17 E, 13 miles, to *Bumouree*. The road more open, especially towards the end. We encamped on a plain, very prettily shaded with clumps of trees. The village stands upon a rising ground, the houses are of stone, covered with tiles; the streets wide and clean.

March 17.—MARCHED S 25 E, 11,3 miles, to *Belgaung*. The road lies through a wood, in the beginning much encumbered, afterwards more open. In the woods, we met with the *Bombax Gossypium* of LINNÆUS, a beautiful tree, of middling size, which grows straight, and has but few branches, all at the top. It bears large yellow flowers, in clusters, at the ends of the branches. At the time when I saw it, it had no leaves.

March 18.—MARCHED S 2 W, 10,05 miles, to *Tearee*. The road, in the beginning, encumbered with brush-wood, but afterwards clear, and the country cultivated. The crop of wheat and barley was nearly ripe. This is a large village, with a fort, on an adjoining height. It is in the district of the *Ouncha* Rajah. *Chandéri* is reckoned sixteen cofs from hence, and *Chatterpoor* twenty-five.

March 19.—MARCHED S $23\frac{1}{2}$ W, 11,97 miles, to *Marounee*, a pretty large village, with a fort, belonging to RAM-CHUND, the Rajah of *Chandéri*, which is distant fourteen cofs, towards the N. W. The Rajah lives in a kind of retirement at *Oudh*, and has left the administration in the hands of his son, who pays a tribute to the *Mahrattas*. The road was good, except at passing the small river *Junnâr*, the banks of which are steep, and its bed full of large round stones.

Also,

Also, towards the end of the march, the ground is broken into holes. The country open, and pretty well cultivated.

March 20.—MARCHED S 56 W, 8,07 miles to *Sindwāha*, through a country the most completely cultivated that I have ever beheld in *Hindustan*. The plain, as far as the eye can reach, was covered with a luxuriant crop of wheat and barley. It is in the district of *Chandēri*, but belongs to a *Rajpoot* chief, who is in some measure independent of the Rajah, only paying *chout* to the *Mahrattas*. Near the village is a pretty large tank, banked in with stone. To-day we crossed the small river *Jānni*, and a nullah. On the banks of this nullah, I found the *D. hærwy* (*Asi. Res.* IV. 42.) which I learn from Doctor ROXBURGH is the *Lythrum fruticosum* of LINNÆUS*.

March 21.—MARCHED S $21\frac{1}{4}$ W, 9,32 miles to *Narat*. Road intersected with several nullahs, and broken ground: the country cultivated, but not so well as yesterday. This village is situated at the foot of the hills which separate *Bundelcund* from *Mâlava*. It belongs to the *Bundēla* Rajah of *Gur-cootah*, but pays one-fourth of the revenue to the *Mahrattas*, who have a Pandit here, on the part of the Soubahdar of *Great Sagur*, for the collection of it.

March 22.—MARCHED S $23\frac{1}{2}$ W, 8,35 miles, to *Maltown*. The road lies through a pass in the hills, the first part narrow, steep, much encumbered with stones and thick jungle. Above the ghaut there is a good road, with a gentle declivity all the way to *Maltown*, and a mile beyond it, where we encamped.

* The Editors of Dr. ROXBURGH's work refer it to the genus *Grislea*, with the trivial name of *tomentosa*, which seems to have been applied from some misconception, as the leaves, though whitish beneath, are smooth.

This is a large village, with a stone fort. It belongs to the same Rajah as *Narát*, and pays *chout* in a similar manner.

March 23.—MARCHED S 64 W, 11,92 miles, to *Khemlasa*, a large walled town, and adjoining to it a fort, built on a hill. It belongs to the district of *Sagur*, which is distant about seventeen coss to the south-eastward. The Soubahdar of *Sagur* is son to BALAJEE of *Calpee*. The districts under BALAJEE, his brother GUNGADHER, and his son, yield a revenue of about thirty lacks of rupees, of which nine are remitted to *Poona*.

March 24.—MARCHED S $63\frac{1}{2}$ W, 10,25 miles, to *Rampoor*, through a country level and well cultivated. The soil is a black vegetable mould, and by the road side, is cracked, forming holes. Many villages are seen at a distance, on both sides of the road. The grain was in great part got in.

March 25.—MARCHED N 85 W, 10,62, miles, to *Koorwey* and *Borásó*, two towns, almost united, on the banks of the *Bétwa*. They are of considerable size, and at the former is a large stone fort. They are inhabited by *Patans*, who settled here about a hundred years ago, in the time of AURUNGZEBE. Their chief and the head of the present *Bopál* family, were brothers, and obtained their respective establishments at the same time. The present *Nawáb* is HOORMUT KHAN. His revenue is said to be between one and two lacs of rupees, but it is sequestered, for the payment of a debt to the *Mahrattas*; so that he has nothing more, for his expences, than they choose to allow him. The road was good, the country well cultivated.

March 26.—MARCHED S $23\frac{1}{2}$ W, 11,3 miles, to *Kirwah*. Crossed the *Bétwah* close to yesterday's encampment. The banks are steep, and the bed stony. The soil adjoining is a black mould; but, two miles and

and a half farther on we entered on a clay, the surface of which was covered with reddish stones, that seemed to contain iron. This extended for a little way on each side of the road, where the ground was high, and appeared to be little capable of cultivation; but, at some distance, the fields which lay lower were covered with grain. This kind of soil continued for two miles, and terminated at a small nullah, near the banks of which is a plantation of date trees (*Elate Sylvestris*). For the remaining part of the way, the soil is the same black mould that we had seen in the last marches. The grain was in great part cut down, and carrying into the villages. The road good, country well cultivated. *Kirwah* is a middle-sized village, in the district of *Koorwey*. At the distance of three coss to the south-eastward is seen a remarkable conical hill, at the foot of which is a large town, named *Odipoor*, which belongs to *SINDIAH*. There was formerly a fort on the hill, but that has fallen to ruin, or been destroyed.

March 27.—MARCHED S $5\frac{1}{2}$ W, 8,12 miles, to *Bafouda*, a large town, belonging to the district of *Bhiljah*. The road was, in general, good. The soil alternately black mould, and a reddish clay, with stones of a ferruginous appearance. Where the black mould is, the country is well cultivated: the other seems unsuitable to vegetation, and consequently remains waste.

March 28.—MARCHED S $13\frac{3}{4}$ W, 14,3 miles, to the small river *Gulcutta*, or cut-throat, so named from murders committed on its banks: the road good; soil, a black mould: country well cultivated; grain almost all cut down.

March 29.—MARCHED S 28 W, 10,53 miles, to *Bhiljah*. Road good, soil as before. The wheat harvest, which is the principal grain of the *Rubbe*, was got in. They cultivate very little barley. In the *Khereef* they

they have a good deal of rice, also *Jooár* (*Holcus Sorg-hum* LINN.) and *Moong* (*Phaseolus Mungo*) but no *Bajerah* (*Holcus spicatus*). Celebrated as this place is for tobacco, we could get none of a good quality. The crop of the former year had been all exported, and the new one was too fresh to be fit for use. The town, or as it is called, fort of *Bhilsah*, is enclosed with a stone wall, furnished with square towers, and a ditch. The suburbs without the wall are not very extensive, but the streets are spacious, and they contain some good houses. The town is situated nearly on the south-west extremity of the district, where it is contiguous to that of *Bopál*. To the eastward of the town, at the distance of six furlongs from the wall, is a high rock, very steep, on the top of which is a *Durgah*, consecrated to the memory of a saint, named SEID-JELAL-UD-DEEN BOKHARI. On the top of this rock I found a pretty large tree of the *Sterculia Urens* (ROXBURGH'S *Indian Plants*, Vol. I. No. 24.) here called *Curhêree*.

April 1.—MARCHED S 64 W, 7,82 miles, to *Goolgaung*, a small village, in the territory of *Bopál*. The road lies across the *Bétwah*, the bed of which is rocky, very uneven and slippery. The remainder was a good carriage road. The last part lies between hills, which abound with a great variety of vegetable productions. Among these, we found *Téendu* (*Diospyros Ebenum*) *Acór* (*Alangium*. Hort. mal. iv. 17,26.) and a shrub for which I could get no name at this place. In the *Dosab* it is called *Binna* or *Ponga*. It is the *Ulmus integrifolia* ROXBURGH'S *Indian Plants*, Vol. I. No. 78.

April 2.—MARCHED S 64 W, 7,82 miles, to *Amáry*, a village in the *Bopál* district, situated between two pretty high hills, and partly built on the face of the most southerly of the two. In the way lies the small river *Ghóra-Puchar*, so named from the great number of large, round, slippery stones, with which its bed is filled,

filled, rendering the passage dangerous for horses. The road to that river is through a jungle, and in several parts uneven; the remainder good, though a cultivated country.

April 3.—MARCHED S $51\frac{1}{4}$ W, 16,41 miles to *Bopál*. About four miles from *Amáry* is a steep pass, uphill, for the space of about twenty paces. The remainder of the road is good. The first part of it is through a thick jungle, the last through a cultivated country. The town of *Bopál* is extensive, and surrounded with a stone wall. On the outside is a large gunge, with streets wide and straight. On a rising ground, to the south-west of the town, is a fort, called *Futteh guruh*, newly erected, and not yet quite finished. It has a stone wall, with square towers, but no ditch. The spot on which it is built is one solid rock. To the south-west, under the walls of this fort, is a very extensive tank or pond, formed by an embankment, at the confluence of five streams, issuing from the neighbouring hills; which form a kind of amphitheatre round the lake. Its length is about six miles, and from it the town has the addition of *Tál* to its name. These hills, and others in the neighbourhood, contain a soft free stone, and a reddish granite, the latter of which seems well calculated for buildings that will resist water, and the injuries of the weather: it is accordingly used in the new embankment which is now building at the east end of the lake. From this part issues the small river *Patara*, and it is said that the *Betwah* takes its rise from another part of the same.

THE town and territory of *Bopál* are occupied by a colony of *Patans*, to whom they were assigned by AURUNGZERE. The present Nawab MOHAMMED HYAT, a man about sixty years of age, had from indolence, love of pleasure, want of capacity or devotion (for I have heard each of these reasons assigned) resigned the whole administration into the hands of his Dewan (since

(since dead), who was born a *Brahmen*, but purchased, when a child, by the Nawab, and educated in the *Mussulman* faith.

THE revenue of *Bopál* is estimated at ten or twelve lacs of rupees. It does not pay any regular tribute to the *Mahrattas*, but from time to time a handsome present is given, to conciliate their friendship. The people seem to be happy under the present government, and the Dewan, by his hospitality, and the protection afforded to strangers, had induced the caravans, and travellers in general, to take this road between the *Decan* and *Hindustan*.

April 7.—MARCHED S 71 W, 14 miles, to *Pundah*, a pretty large village, in the *Bopál* territory, and situated on the frontier. The first two miles past the town, to the edge of the great lake, were very stony; afterwards the road was good, the soil rich, and the country well cultivated. The crop now entirely got in.

April 8.—MARCHED S 78 W, 9,47 miles, to *Sehore*, a considerable town, belonging to the *Mahratta* chief EETUL-ROW. His deputy, GOPAL ROW, who resided here, had the collection of four pergunnahs, *Sehore*, *Ashtah*, and two others, amounting, in all, to about three lacs of rupees.

Sehore is situated on the banks of the little river *Rootah-Seein*, and is surrounded with a large grove of mango and other trees. Here is a considerable manufacture of striped and chequered muslins. The road was good, soil a black mould, but the cultivation partial.

April 9.—MARCHED N 77 W, 11,19 miles, to *Furher*, a town belonging to the heirs of the *Mahratta* chief NAROO-SHUNKER. It is in the pergunnah of *Shujawulpoor*, which is divided from that of *Sehore* by the river

river *Párbutty*. The road good, and soil a fine black mould; but there is a good deal of waste land near the road side.

April 10—MARCHED N 50 W, 16,55 miles, to *Shujáwulpoor*. Road good: soil the same black mould as before. For the first ten miles, very little cultivation, afterwards a good deal.

Shujáwulpoor is a large town, situated on the north-east bank of the river *Jamneary*. It contains a fort, or walled town, and without the wall, a good bazar, in which are many large, well-built houses. The country is liable to the depredations of a set of robbers, called *Graffiah*, which in some measure accounts for the inferior state of cultivation. This is the head town of a pergunnah of eight lacs of rupees, held in jageer, from the PESHWA, by the heirs of NA'ROO-SHUNKER. They were in camp with SINDIAH, and rented the district to aumils, who were changed every two or three years. Those men collected what they could, oppressed the ryots and brought depopulation on the country. About twelve years ago this district was under the management of APPAH-K'HANDEY RAW, and then it was well peopled and cultivated.

THIS is a considerable market for striped muslins, doputtahs, &c. Opium is cultivated to some extent, and is said to be of a good quality.

April 11—MARCHED N $75\frac{1}{2}$ W, 11,87 miles, to *Beinsround*, a small village in the district of *Shujáwulpoor*. Road good; soil as before, country more cultivated than yesterday.

IN this country are many *Matwah* trees (*Bassia latifolia* ROXB. *Ind. plants* Vol. I. No. 19, *Madhuca*, *Asiat.* VOL. VI. C . *Ref.*

Ref. vol. I.) They were now in flower, and as the number of seeds in the ripe fruit is very uncertain, which has caused some confusion, I this day examined the germina of twenty-one flowers. Thirteen had the rudiments of eight seeds, six of nine, and two of seven. The stamina were 24, 25, and 26, but I have formerly seen flowers with only 16.

April 12.—MARCHED west 17,89 miles, to *Shah-jeh npoor*. The road was good, the soil as before, but the country appeared to have remained long uncultivated. It is all overgrown with brushwood, among which the *Plafs* (*Butea frondosa*) and wild date (*Elate sylvestris*) hold the principal place.

Shahjehanpoor is a considerable town, and head of a pergunnah, belonging to SINDIAH. It lies on the banks of the river *Sagurmuttee*. About half a mile to the westward of the town is a conical hill, which is conspicuous at a great distance.

April 13.—MARCHED S $59\frac{1}{2}$ W, 16,66 miles, to *Turána*, a town and head of a pergunnah, belonging to AHELIAH BAI. The first thirteen miles we met with very bad road, among rocks and broken ground, incapable of cultivation. The remainder of the road was good, through a cultivated country. In the neighbourhood of *Turána*, we found an avenue of young trees of considerable extent, which we were informed was planted by AHELIAH BAI. A taste for improvements of this nature is uncommon among *Mahrattas*; and this gave me a favourable impression of that prince's government, which was confirmed by farther enquiry.

April 14.—MARCHED S $48\frac{1}{2}$ W, 12 miles, to *Tajpoor*, a village belonging to SINDIAH. The road stoney, and the ground full of holes. Little cultivation.

April

April 15.—MARCHED S $75\frac{1}{2}$ W, 10,37 miles, to *Oujein*. The road good. This city called in *Sanscrit*, *Ujjaini*, and *Awintj*, or *Avanti*, boasts a high antiquity. A chapter in the *Poorans* is employed on the description of it. It is considered as the first meridian by the *Hindu* geographers and astronomers, so that its longitude from our *European* observatories is an object of some curiosity. By a medium of eleven observations of Jupiter's first and second satellites (taking the times in the ephemeris as accurate) I make its longitude from *Greenwich* $75^{\circ} 51' E$. Its latitude, by a medium of eight observations $23^{\circ} 11' 13'' N$.

BUT the city which now bears the name is situated a mile to the southward of the ancient town, which, about the time of the celebrated *VICRAMADITYA* was overwhelmed, by one of those violent convulsions of nature which, from time to time, alter the surface of our globe. The following narrative of this event, involved in a cloud of fable, is handed down by the *Brahmens*. A certain deity, named *GUNDRUFSEIN*, was condemned, for an offence committed against the god *INDER*, to appear on earth, in the form of an ass, but on his entreaty, he was allowed, as a mitigation of the punishment, to lay aside that body in the night, and take that of a man. His incarnation took place at *Oujein*, during the reign of a Rajah, named *SUNDERSEIN*, and the ass, when arrived at maturity, accosting the Rajah in a human voice, proclaimed his own divine origin, and demanded his daughter in marriage. Having, by certain prodigies, overcome the scruples of the Rajah, he obtained the object of his wishes. All day, in the form of an ass, he lived in the stable, on corn and hay; but when night came on; laying aside the ass's skin, and assuming the form of a handsome and accomplished young prince, he went into the palace, and enjoyed, till morning, the conversation of his beauteous bride. In process of time, the daughter of the Rajah appeared to be pregnant, and as her husband, the ass, was deemed incapable of producing

such a state in one of the human species, her chastity became suspected. Her father questioned her upon the subject, and to him she explained the mystery. At night the Rajah, by her directions, hid himself in a convenient situation, and beheld the wonderful metamorphosis. He lamented that his son-in-law should ever resume the uncouth disguise, and to prevent it, set the ass's skin on fire. GUNDRUFSEIN perceived it, and though rejoiced at the termination of his exile, denounced the impending resentment of *INDER*, for his disappointed vengeance. He warned his wife to flee; for, said he, my earthly tenement is now consuming, I return to heaven, and this city will be overwhelmed with a shower of earth. The princess fled to a village at some distance, where she brought forth a son, named *VICRAMADITYA*, and a shower of earth falling from heaven, buried the city and its inhabitants. It is said to have been cold earth, and to have fallen in small quantity upon the fields all around, to the distance of several coss, but to a great depth on the towns.

On the spot where the ancient city is said to have stood, by digging to the depth of from fifteen to eighteen feet, they find brick walls entire, pillars of stone, and pieces of wood, of an extraordinary hardness. The bricks, thus dug up, are used for building, and some of them are of a much larger size than any made in the present, or late ages. Utensils of various kinds are sometimes dug up in the same places, and ancient coins are found, either by digging, or in the channels cut by the periodical rains; having been washed away, or their earthly covering removed by the torrents. During our stay at *Oujein*, a large quantity of wheat was found by a man in digging for bricks. It was, as might have been expected, almost entirely consumed, and in a state resembling charcoal. The earth of which this mound is composed, being soft, is cut into ravines, by the rains; and in one of these, from which several stone pillars had been dug, I saw a space, from twelve to fifteen feet long, and seven or

eight high, composed of earthen vessels, broken, and closely compacted together. It was conjectured, with great appearance of probability, to be a porter's kiln. Between this place and the new town, is a hollow, in which tradition says, the river *Sipparah* formerly ran. It changed its course, at the time the city was buried, and now runs to the westward.

ADJOINING to these subterraneous ruins, on the present bank of the *Sipparah* is the cave, or subterraneous abode of the Rajah BHIRTARY. Before the gate of the court are two rows of stone pillars, one running from east to west, the other from south to north. You enter the court from the south-ward; within it are the entrances of two caves, or divisions of the palace. The outermost enters from the south; and is sunk about three feet under ground. From this entrance (which is on the side) it runs straight east, being a long gallery, supported on stone pillars, which are curiously carved, with figures of men in alto relievo. These figures, however, are now much effaced.

THE inner apartment also enters from the south. This is a pretty wide chamber, nearly on the level of the ground, the roof supported on stone pillars, over which are laid long stones, in the manner of beams. On the north side, opposite to the entrance, is a small window, which throws a faint light into the apartment. It looks down upon the low ground, beneath the bank, on which the building is situated. On the left hand, or west side of the apartment, is a small triangular opening in the stone pavement. Through this you descend, about the height of a man, into an apartment truly subterraneous, and perfectly dark. This is also supported on stone pillars, in the same manner as the upper one. It first runs eastward, and then turns south. On the left hand side are two chambers, about seven

feet by eight. At the southern extremity is a door, which probably led into some farther apartment, but it is shut up with earth and rubbish. The fakerees who reside here say a tradition exists, that one subterraneous passage went from hence to *Benares*, and to *Hurdwar*: and they tell us, that this door was shut up, about twelve or fourteen years ago, by the government, because people sometimes lost themselves in the labyrinth.

THIS is said to be the place in which the Rajah BHIRTARY, the brother of VICRAMADITYA, shut himself up, after having relinquished the world. But there are various and discordant accounts of its construction and date. By some, it is said to have been constructed, in its present form by BHIRTARY himself. By others, these inner apartments are said to have been the *mahl*, or private chambers of GUNDRUFSEIN, and the colonnade before the gate to have been his public hall of audience, or *Dewan-Aum*. That this escaped the general wreck of old *Oujein*, and either was not affected, or sunk gently down, so as to retain its form, though thrown down under the level of the ground.

SUCH are the present appearances of this ancient city, which above 1800 years ago, was the seat of empire, of arts, and of learning; and it is a task worthy of the present lovers of science to discover the means by which this great revolution has been effected. There are not, as far as my inspection goes, any traces of volcanic scorice among the ruins, nor are there in the neighbourhood any of those conical hills, which we might suppose to have formerly discharged fire large enough to produce this effect. As tradition relates, that the river, on that occasion changed its course, an inundation from it might be considered as the cause. And in fact this river, while we were at *Oujein*, did swell to such a height, that great part of the present town, though situated on a high

bank, was overflowed, many houses within it, and whole villages in the neighbourhood, were swept away by the torrent. But yet the size of the stream, and the length of its course, the source being only at the distance of fourteen cois, seem unlike to furnish water enough, to produce so complete a revolution. Therefore, we must consider the change of its course, in conformity to the tradition, rather as the effect than the cause of that event. An earthquake appears one of the most probable causes; and the only objection to it is the entire state in which the walls are found. They are said to be found entire, but I am not able from inspection to determine whether or not they are so entire as to render the supposition of an earthquake improbable. The only remaining cause which I can think of, is loose earth or sand blown up by a violent wind. We have instances in *Europe* of whole parishes being buried by such an accident. The soil of the province of *Mâlâva*, being a black vegetable mould, is unfavourable to this supposition; but even this, when dry is very light, friable earth: and it may have been greatly meliorated in so long a period of ages. If we might be allowed to call into our aid a tradition, which, though disguised in fable and absurdity, has probably a foundation in fact, it would be favourable to this hypothesis. For none of the other causes would so much resemble a shower of earth as this; and sand driven by the wind would naturally be accumulated to the greatest height, on the towns, where the buildings would resist its farther progress in the horizontal direction.

THE present city of *Oujein* is of an oblong form, and about six miles in circumference, surrounded by a stone wall, with round towers. Within this space, there is some waste ground, but the inhabited part occupies by far the greatest portion: it is much crowded with buildings, and very populous. The houses are built partly of brick, partly of wood. But even of the brick houses, the frame is first constructed of wood,

and the interstices filled up with brick. They are covered, either with lime terrace, or with tiles. The principal bazar is a spacious and regular street paved with stone. The houses on each side are of two stories. The lower, to which you mount from the street by five or six steps of stone, are mostly built of stone, and are taken up with shops. The upper, of brick or wood, serve for the habitations of the owners.

THE most remarkable buildings are four mosques, erected by private individuals, and a great number of *Hindu* temples. of these the most considerable is a little way on the outside of the town, at *Unk-pât*, a place held in great veneration, as being that where KREESHEN and his brother BULBUDDER, or BILDEO, received the rudiments of their education. Here is a stone tank, with steps leading down to the water's edge : and this is said to be of great antiquity. But it has been enclosed with a stone wall, and two temples erected within the enclosure about twenty-five years ago, by RUNG RAW APPAH, of the tribe *Pawâr*. These temples are square, with pyramidal roofs. That on the right, as you enter the gate, contains the images of RAM, LITCHMUN, and SITA, in white marble; and that on the left, those of KREESHEN and RADHA, the first in black, and the second in white marble. All these figures are well executed.

SINDIAH's palace in the city, which is yet unfinished, is an extensive and sufficiently commodious house, but without any claim to magnificence. And it is so much surrounded with other buildings, as to make very little appearance on the outside. Near it is a gate, which being all that remains of a fort said to be built soon after the time of VICRAMADITYA, may be considered as a good specimen of the ancient *Hindu* architecture.

WITHIN the city, and near the eastern wall, is a hill of a considerable height, on the top of which is a *Hindu* temple of MAHADEO, and adjoining to it the tomb of a *Musulman* saint, named GOGA SHEHBED. This hill is conspicuous from a distance, and a spectator on the top of it commands an extensive prospect on every side. To the northward he sees, at the distance of four miles, the rude and massy structure of CALYDEH, an ancient palace, built on an island in the *Sipparah*, by a king of the family of GOUR*. There are two square buildings, each covered with a hemispherical cupola, and divided below into eight apartments, besides the space in the centre. The communication with the land is made by a stone bridge over one of the branches into which the *Sipparah* is here divided. Below the bridge are several apartments constructed on a level with the water; and the rocky bed of the river is cut into channels of various regular forms, such as spirals, squares, circles, &c. to which, in the dry season the current is confined. Turning to the westward, he traces the winding course of the *Sipparah*, through a fertile valley, where fields of corn and clumps of fruit trees intersecting, diversify the prospect, till his attention is arrested by the fort of *Beiroun-gurh*, situated close on the top of the opposite bank. It is about a quarter of a mile in length, surrounded by a rampart of earth, and contains an ancient temple dedicated to the tutelary divinity of the place, whose name it bears. Still farther up the stream, and nearly opposite to the middle of the town, are the gardens of ABHA-CHITNAVEES and RANA KHAN. On the latter no decoration of art has been spared; the former wantons in all the luxuriance of nature. Exactly over these, at the distance of half a mile from the

* A description of this extraordinary fabric is inserted in the *Oriental Repertory*, V. I. p. 266, from a letter of Sir W. MALET, dated at *Oujein*, 13th April, 1785. The author gives an extract from a history of *Malava*, which proves the building to be the work of SULTAUN NASIR-UD-DEEN-GILGEE, son of GHEAS-UD-DEEN, who ascended the throne of *Malava* in the year of the *Hijra* 905, and reigned eleven years and four months.

river, is a grove of trees, on a rising ground. It contains the tomb of another saint, named SHAH DA'WUL, but is more remarkable for having been the scene of a bloody action, about thirty years ago, between SINDIAH and one of his Sirdars, named RAGOO, who, from having the command of certain troops of horse, was called PAGIH. This officer had been detached by SINDIAH, with a considerable force, to levy contributions in *Oudipore*, and having received the money, refused to account for it. His master confined his family, who had remained in *Oujein*, in consequence of which, RAGOO marched at the head of 30,000 men, to attack SINDIAH, who was in *Oujein*, with only five or six thousand. With this inequality the fight began, on the plain adjacent to SHAH DA'WUL's Durgah; but SINDIAH was joined by 6000 *Goofains*; and a chance shot having killed RAGOO, his adherents were routed.

THE prospect on this side is bounded by a ridge of hills, at the distance of about three miles. It runs from N N E, to S S W, and is seven miles in length; these hills are chiefly composed of granite, and from them the stone employed in building is supplied. But they are covered with vegetable mould to a sufficient depth to admit of cultivation.

To the south-west is a wide avenue of trees, which terminates a course of two miles, at a temple of GANESA, surnamed CHINTAMUN. It is visited by numerous processions at certain stated periods.

THE south wall of the town is washed by the *Sipparah*, which makes a sudden turning at this place. This extremity of the city, called *Jeyasingpoorah*, contains an observatory, built by the Rajah JEYSING of *Ambheer*, since named from him *Jeynagur*. He built observatories at five principal cities, viz. *Dehly*, *Matra*, *Jeynagur*, *Benares*, and *Oujein*, as he informs us in the preface to the astronomical tables, published by him,

him, which, in compliment to the reigning Emperor, he entitled *Zeej Mahommedshahy*.

TURNING to the east, we are presented with a different prospect. As far as the eye can reach is a level plain,, which is only interrupted by a conical hillock at the distance of three miles, beyond which is an extensive lake, that lies close on the left of the road that leads to *Bopâul*. On the right of the road at the same place, is a *Rumnah* belonging to SINDIAH, well stocked with deer.

THE Rajah JEYSING held the city and territory of *Oujein* of the Emperor, in quality of Soubahdar; but it soon after fell into the hands of the *Mahrattas*, and has belonged to SINDIAH's family for two generations. The district immediately dependent on the city, yields a revenue of five lacs per annum, and comprehends 175 villages. The ancient landholders, who were deprived of their possessions by the *Mahrattas*, still retain some forts, dispersed over the province; and partly by treaty with the conquerors, partly by force, receive a proportion of the rents from the adjacent villages. One of these people, who are called *Grassiah*, is HURRY SING, a *Rajpoot*: he possesses the mud fort of *Doolétia* about ten miles from *Oujein*. He commands a body of two hundred *Grassiahs*; and a neighbouring village, *K helana*, the rent of which is 2000 rupees a year, pays him 150, or $7\frac{1}{2}$ per cent. on the revenue. But these free-booters, not contented with the regular contribution, exercise the most lawless rapine, so that travelling is unsafe; and they watch the occasion which any casual confusion or distress of the government, or the withdrawing of troops for foreign service, occasionally affords them, to extend their ravages to the gates of the city, or even within the walls.

THE officers of government are almost the only *Mahratta* inhabitants of *Oujein*. The bulk of the people,

people, both *Hindus* and *Musulmans*, speak a dialect very little different from that of *Agra* and *Dehly*. The *Musulmans* form a very considerable portion of the inhabitants, and of their number a great part is composed of particular class, here known by the name of *Bohrah*. They distinguish their own sect by the title of *Ismaeeliah*, deriving their origin from one of the followers of the prophet, named ISMAEEL, who flourished in the age immediately succeeding that of MAHOMMED. This singular class of people forms a very large society, spread over all the countries of the *Decan*, particularly the large towns. *Surat* contains 6000 families, and the number in *Oujein* amounts to 1500. But the head-quarters of the tribe is at *Burhánpoor*, where their *moullah* or high-priest resides. The society carries on a very extensive and multifarious commerce, in all those countries over which its members are dispersed, and a certain proportion of all their gains is appropriated to the maintenance of the *moullah*, whose revenue is consequently ample. He is paramount in all ecclesiastical matters, and holds the keys of paradise; it being an established article of faith that no man can enter the regions of bliss without a passport from the high priest, who receives a handsome gratuity for every one he signs. But he also exercises a temporal jurisdiction over his tribe, wherever dispersed, and this authority is admitted by the various governments under whose dominion they reside, as an encouragement to these people who form the most industrious and useful class of the inhabitants. A younger brother of the *moullah* resides at *Oujein*, and with that same title exercises over the *Bohrahs* resident there the authority, spiritual and temporal, annexed to the office. Five *mohillahs* of the city are inhabited by them, and subject to his jurisdiction.

On our arrival at *Oujein*, we had plenty of excellent grapes from *Burhánpoor*. By the time this supply was exhausted, the grapes produced at *Oujein* came into season.

season. These are inferior in size and flavour to the former; but a singularity in this climate is that the vine produces a second crop in the rainy season. This however is acidulous, and much inferior to the first. The other fruits are the mango, guava, plantain, melon, and water melon, two species of *Annona*, *squamosa*, and *reticulata* (*Shereefah* and *Atah*), several varieties of the orange and lime trees; the *Falsah* (*Grewia asiatica*) from which the natives make a most refreshing, slightly acidulous sherbet; and as a rarity in a few gardens, the *Carica Papaya*.

THE soil in the vicinity of *Oujein*, and indeed over the greatest part of the province of *Malava*, is a black vegetable mould; which, in the rainy season, becomes so soft, that travelling is hardly practicable; on drying, it cracks in all directions, and the fissures are so wide and deep in many parts, by the road side, that it is dangerous for a traveller to go off the beaten track, as a horse getting his foot into one of these fissures, endangers his own limbs and the life of his rider. The quantity of rain that falls in ordinary seasons is so considerable, and the ground so retentive of moisture, that wells are hardly used for watering the fields. Thus a great part of the labour, incident to cultivation in *Hindustan*, is saved. But this very circumstance makes the suffering more severe, upon a failure of the periodical rains; for the husbandman, accustomed to depend on the spontaneous bounty of heaven, and unprovided with wells in his fields, is with difficulty brought to undertake the unusual labour of watering, especially as it must be preceded by that of digging the source.

THE harvest, as in *Hindustan*, is divided into two periods, the *Khereef* and *Rubbee*; the former being cut in *September* and *October*, and the latter in *March* and *April*. The kinds of grain cultivated here, taken in the order of their ripening, are as follow:

KHEREEF.

4. *Mukka*, in *Hindustan Bhoottah*; *Zea Mays*. It was in flower the 20th of *July*, and is gathered in *August* or *September*.

2. *Congnee Panicum Italicum* was in flower *July* 28th.

3. *Oord* or *Mash*; *Phaseolus Max*; flowers in *July* and *August*, ripe about the end of *September*.

4. *Moong Phullee*, *Arachis Hypogaea*; (ground-nut, or pig-nut of the *West Indies*) was in flower in *September*.

5. *Mand* or *Mal*, *Cynosurus Coracanus*, LIN. *Eleusine Coracana* Gaertner: in *Hindustan* the name is *Murhua*, in the *Carnatic Natcheny*, and in *Mysore Rágy*.

6. * *Bájera*, is a small round grain, esteemed very nutritious, but heating, and somewhat hard of digestion. Being very cheap, it is principally used by the poorer class of inhabitants, and by the *Mahrattas*, who make of it flat cakes, of which a horseman can carry under his saddle a sufficient provision for many days. It was in flower the 13th *September*, and is reaped in *October*.

7. *Jooar*. *Holcus Sorghum*, LIN.

Andropogon Sorghum, ROXB.

The culm is very strong, and grows to the height of seven or eight feet. The spike egg-shaped, nodding

* The *Holcus Spicatus* of LINNÆUS. A description and figure of it are given in the 1st volume of the transactions of the *PADOUA* (p. 124.) by Sign. P. ARDUIN. He obtained the seeds from *Tunis*, where it is called *Drob*. The internal structure of the fructification, and the form of the spike, agree so well with the *Bajera*, that I have no hesitation in referring them to the same species. But the specimen represented by Sign. ARDUIN is much more ramified, with the culm and principal spike larger, than I have ever seen. This is probably a variety, produced by diversity of soil and cultivation.

or hanging (sometimes erect), six or seven inches in length, and about nine in circumference. Its times of flowering and reaping are the same with the last.

THE *Holcus cernuus*, which is the third species described by Sign. ARDUIN (*Sagg. di Padou* :) does not appear to differ from this, except as a variety: the erect or recurved position of the panicle, depending on its size and weight, compared with the strength of the stalk.

BUT it is subject to another variety, still more remarkable. The hermaphrodite calyx is sometimes biflorous, and ripens two seeds; sometimes uniflorous, producing only one. I have found, mixed in the same field, plants with erect, lax panicles, and others more compact and nodding. The former had, most frequently, one-flowered calyces, and the latter two-flowered. But, in some instances, the one-flowered and two-flowered were found on the same head, and even in the same branch of the panicle. The seeds in the first case are round, in the second hemispherical, one side of each being flattened by their mutual contact.

To ascertain the matter more accurately, I sent seeds of both kinds to Doctor ROXBURGH, who sowed them in the botanical garden, at a distance from one another. The plants came up with one and two-flowered calyces indiscriminately, and flowers of both kinds were even mixed in the same panicle.

8. *Moong*; *Phaseolus Mungo*. The specific difference between this and the *Oord* (*P. Max*) is very difficult to establish, yet its constancy forbids us to consider them as mere varieties.

1. The stalks of the *Oord* are hispid in a lesser degree than those of the *Moong*.

2. The

2. The stipules of the former are more acute than those of the latter.
3. The leaves are rather more acute.
4. The legumes shorter.
5. The seeds of the *Oord* larger, more compressed and black; those of the *Moong* smaller, rounder and green.

This was ripe about the end of *October*, being about a month later than the *Oord*.

9. *Birttee*; a species of *Panicum*, used in food, was in seed *October* the 6th.

R U B B E E.

1. Wheat; *Triticum*.

The species cultivated here has the following marks; Calyces four-flowered, ventricose, smooth, imbricated; the two outward florets with long beards, the third with hardly any; the fourth and innermost, neuter. From this character I am doubtful whether it should be referred to the species *aestivum* or *spelta*, or whether it may not be a new species. It was in the ear at *Onjein*, the 30th of *January*, and on the 19th of *March*, at the distance of six days journey, we found it ripe.

2. *Channah*, *Cicer arietinum*.

3. *Masoor* a small legume, which I have not sufficiently examined. (*Ervum Lens*?)

4. *Toor* or *Arher*; *Cytisus Cajan*.

It is sown soon after the setting in of the rains, the seed being mixed with those of *Jooar*, *Bajera*, and other grain of the *Khereef*. When they are removed, the *Cytisus* remains, and its harvest is about the same time with the wheat.

5. PEASE; here called *Buttlee*: ripe in the cold season.

RICE is cultivated only on a few detached spots, which lie conveniently for water, but the quantity is so small that it can hardly be reckoned among the crops. In a list I received of the cultivated grains, I find the name of *Cablee Channah*, but not having seen it, can give no account of it.

BARLEY is not cultivated; the soil is unfavourable to this grain, and besides, the farmers say, it would require artificial watering.

THE principal articles of export trade are cotton, which is sent in large quantities to *Guzerat*; coarse stained and printed cloaths; *Aal*, or the root of the *Morinda Citrifolia*, and opium. As the manner of preparing this drug differs, in some respects, from that which is practised in other parts of *India*, I shall give an account of it, which I received from some experienced cultivators. The poppy is sown in *December*. The ground is well manured with cow-dung and ashes. It is ploughed seven times, then divided into little squares, of two or two and a half cubits. In these the seeds are sown, in the proportion of one seer and a half, or two seers*, to a begah†. After eight or nine days, the ground is watered; that is, it is compleatly overflowed to the depth of a few fingers' breadth, and this operation is repeated, at the distance of ten or twelve days, for seven times. After each time of watering, when the ground is a little dried, but still soft, it is stirred, with an iron instrument, so as to loosen it effectually, and the weeds are carefully removed. Also, if the plants come up very close, they are thinned, so that the remainder may be at the distance of four or five fingers' breadth from one another. The plants thus pulled out, when very young, are used as a pot-herb; but

* The seer is eighty rupees weight. † One hundred cubits square.

when grown a little larger, as a foot and a half in height, are unfit for this use, from their intoxicating quality.

THE poppy flowers in *February*, and the opium is extracted in *March* or *April*; sooner or later, according to the time of sowing. The white kind yields a larger quantity of opium than the red; the quality is the same from both. When the flowers are fallen off, and the capsules assume a whitish colour, it is the time to wound them. This is done, by drawing an instrument with three teeth, at the distance of about half a line from one another, along from top to bottom of the capsule, so as to penetrate the skin. These wounds are made in the afternoon and evening, and the opium gathered the next morning. They begin at day break, and continue till one *p,har* of the day is passed. The wounds on each capsule are repeated for three successive days; the whole capsules in a field are wounded, and the opium gathered, in fifteen days. In a plentiful season and good ground, they obtain from six to nine seer of opium from a begah of ground: a small crop is from two to four seers.

IN this district, all the opium, even at the time of gathering, is mixed with oil; and this they do not consider as a fraudulent adulteration. The practice is avowed, and the reason assigned is to prevent the drug from drying. The people employed in gathering it have each a small vessel containing a little oil of tsesamum, or of linseed. The opium which has flowed from the wounded capsules is scraped off with a little iron instrument, previously dipped in oil. A little oil is taken in the palm of the hand, and the opium gathered with the iron instrument is wiped in the hand, and kneaded with the oil; when a sufficient quantity is collected in the hand, it is thrown into the vessel with oil. The whole quantity gathered is, when brought home, kneaded into a mass, and thrown into a vessel with more oil, in which the whole crop of the
season

season is collected. Thus, it is evident, that the proportion of oil in any given quantity of opium, is not determined with much accuracy; but they compute that the oil amounts to half the quantity of the pure drug, or one-third of the mixed mass.

THE adulterations practised secretly, and considered as fraudulent, are mixing the powder of the dried leaves of the poppy; and sometimes even ashes.

WHEN cheap, it sells for fifteen rupees; and when dear, or of a superiour quality, for twenty-five or thirty rupees per *d'hiree*, a weight of $5\frac{1}{4}$ seers, each seer being the weight of eighty rupees.

IT is exported to *Guzeret*, *Marwar*, &c. The merchants from different parts of the country, advance money to the cultivator, while the crop is on the ground: when the drug is ready, they receive it, and settle the price according to the quality and the season. The plant is sown repeatedly on the same ground without limitation, as they find it does not exhaust the soil.

THE mixture of oil renders this opium of a very inferior quality to that of the eastern provinces, and particularly renders it unfit for making a transparent tincture.

FINE white cloths are imported from *Chanderi* and *Sehor*, and from *Burhánpoor* they receive turbans, and *jarries*, and other stained goods. From *Surat*, are imported various kinds of *Europe* and *China* goods, many of which we purchase here at a cheaper rate than we could in the *English* Settlements. Also pearls, which are partly consumed here, and partly exported with advantage to *Hindustan*. *Aja-fætida*, which is produced in *Sind*, and the provinces beyond it, comes here

through *Marwar*, and is exported to the eastward to *Mirzapoor*, &c. On the other hand, diamonds from *Bundelcoud*, go by this place to *Surat*.

BUT the carrying trade between the provinces to the west and the eastward is carried on to a much greater extent, and to more advantage at *Indoor* than here; because the duties there are lower. At that place only four or five annas are exacted on a bullock load, which may be worth three or four hundred rupees; whereas at *Oujein*, they amount to ten per cent. on the value of the goods, exported or imported; so that on such articles as only pass through the place, the duties consume twenty per cent of the profit. The reason is obvious. *Indoor* had the good fortune to be under the prudent and peaceable administration of *AHELIAH BAI*, a princess, who, free from ambitious views, had only the internal prosperity of her country, and the happiness of its inhabitants, at heart; whereas *SINDIAH*, led away by the dazzling prospect of extending his conquests and acquiring great political influence, maintained expensive armaments, exhausted his treasury, and was forced to abandon his subjects to the rapacity of those who supplied the means of carrying his schemes into execution.

WE remained at *Oujein* from the middle of *April* to the middle of *March*, and so had an opportunity of observing nearly the whole vicissitude of seasons. In the month of *April* and *May*, the winds in the day time were strong and hot, the thermometer exposed to to them being from 93 to 109, at four in the afternoon. These winds, with little deviation, came from the westward. The heat at nine in the evening varied from 80 to 90. But the mornings, during all this time were temperate, in only one instance rising so high as 81, and sometimes being as low as 69. From the 18th to the 25 of *May*, we had frequent squalls from N W and W N W; once from N E, attended with thunder, lightning,

ning, and rain. The quantity that fell during these eight days, amounted to about ten inches. This weather, the inhabitants informed us, was unusual at that season. It produced a temporary coolness; but the sky having cleared up before the end of the month, the air returned to its former temperature, or rather exceeded it, for the morning heat now sometimes mounted as high as 85.

On the 11th of *June* the rains set in, and the quantity that fell during the season was as follows :

<i>May</i> , as above, about	10 inches	5 days.
<i>June</i> , - - -	3,521	9
<i>July</i> , - - -	12,071	22
<i>August</i> , - - -	21,088	22
<i>September</i> , - - -	5,651	9
	<hr/> 52,331	<hr/> 67

The rain terminated on the 14th of *September*. From the middle of *June* to the middle of *July*, the afternoon heat varied from 107 to 86, gradually diminishing as the season advanced, and sometimes from the continuance of the rain was as low as 80. The morning was more uniform, its extremes lying between 87 and 77. The evening, between 90 and 75. The weather, during this period, was constantly cloudy, sometimes hazy. The wind uniformly from the westward, varying from N W to S W.

FROM the end of this period, to the termination of the rains, the afternoon heat was from 89 to 74. The limit between the two periods was strongly marked, *July* the 15th, at P. M. being 91; 16th, at the same hour, 78. The morning, from 80 to 72. During this period, the clouds were so heavy and so uniformly spread over the whole face of the heavens, that the sun

could seldom dart a ray through the gloom. The rain was frequent and long continued, but seldom heavy. The only instance in which the rain of one day amounted to so much as three inches, was in the space between the 15th of *August*, at 7 P. M. and the 16th, at 9 $\frac{1}{2}$. The rain, during this period, of 26 $\frac{1}{2}$ hours, was incessant, and the quantity amounted to 10,128 inches. It then abated, but did not entirely cease till the 17th, at 4 $\frac{1}{2}$ P. M. The quantity in that interval was 0,629. This it was which caused the inundation formerly mentioned. The waters continued to rise till the 16th at midnight, and then gradually subsided; but it was several days before the river was fordable by men or horses.

THE winds, during this period, were most frequently west, sometimes N W or S W, twice S S W, four times south, and thrice easterly, commonly light breezes.

AFTER the rains were over, and the sky cleared up the mid-day and afternoon heat encreased. By the 23d of *September*, it was 92; *October* 1st, 101, and till the middle of *November*, was seldom under 90. The morning heat during that period gradually decreased from 73 to 46. The evening from 79 to 57. The dew towards the end of this period was very heavy.

THE winds for the first two days continued at west; afterwards calm and light airs at NE to the end of *September*. To the middle of *October*, those of the NW quarter prevailed, of moderate force, but with frequent calms. To the end of the month the NE prevailed, and the mornings were hazy. In *November*, till the 6th, the westerly was the reigning wind, after which, to the 15th, the NE recovered its prevalence: the weather was less hazy than towards the end of the preceding month. On the other hand, during *October*,
 2 there

there was not a cloudy day. To the 8th of *November* they were frequent; and on the 4th, a little rain fell; after that to the 15th the sky was clear, and the only two hazy mornings were in this period.

At this time (15th *November*) I was seized with a fever, which interrupted the meteorological observations till the 1st of *February*. All that I know of the weather during that interval is, that about the middle of *December* we had it stormy, with thunder and a pretty heavy fall of rain.

From the 1st of *February* to the 14th of *March*, when we left *Oujein*, the afternoon heat varied between the extremes of seventy-three to 103. The first, on *Feb.* 9th, with wind at NNW: the second, *March* 12th, wind west: sky at both times clear. Morning heat from forty-six to sixty-seven, evening from fifty-five to seventy-six.

The westerly were the prevailing winds during this period, varying between NNW and SSW. In *February*, the easterly wind was observed twice in the morning, four times at mid-day, and twice in the evening. It did not occur once during our stay in *March*. The sky was clear, excepting the 4th of *February*, which was cloudy with a shower of small rain.

THE foregoing abstract gives a pretty distinct idea of the weather we met with during our residence at this place; but we cannot from thence form an estimate of the climate. The quantity of rain, in particular, was allowed by the oldest inhabitants to be greater than they ever remembered to have seen. The country had suffered three years of drought, previous to our arrival, in consequence of which wheat-flour sold at ten seers for a rupee. The coarser grains were proportionably dear, which placed the means of subsistence so far beyond the reach of the poorer inhabitants,

tants, that hundreds were reduced to the humiliating necessity of selling their children, to procure a scanty meal for themselves. But the deficiency of rain, though severely felt, was not the only cause of all this distress. The scarcity was artificially increased, by the rapacity of CABLEE MULL, the person entrusted by SINDIAH with collecting the revenues of the district. His wealth and influence enabled him to hoard up large magazines of grain, and thereby keep the price far beyond its natural standard. And when SUDASHEU NAICK, an eminent banker, whose disinterested benevolence deserves to be recorded by a much more eloquent pen, attempted to throw open his own stores, and sell the grain at a moderate price, no means of obstruction and intimidation, that the union of artifice with power could afford, were left unemployed, to make him desist from his purpose; so that he was obliged to confine the exertions of his humanity to feeding the poor at his own house; and in this manner thousands owed the preservation of their lives to his bounty.

THE patient forbearance of the *Hindu*, under this dreadful calamity, has been noticed by several writers. In this instance, the indignation of the inhabitants at the unfeeling avarice of their rulers, could not be concealed. But, instead of breaking open their granaries, demolishing their houses, mal-treating their persons, or contumeliously burning them in effigy, the usual proceedings of an enraged *Europeau* mob, they contented themselves with making a representation of funeral rites, and proclaiming that the *Hakem* was dead, and SUDASHEU NAICK appointed to fill his place.

THE abundant rain which fell this season triumphed over all opposition. Before we marched, wheaten flour had fallen to twenty seers per rupee. The greedy monopolists saw those hoards which the anguish of the famished poor could not unlock, consigned to putrefaction,

faction, or selling at considerable loss, while the smile of plenty and content brightened the face of the peasant, in every part of the province.

FEVERS, chiefly intermittent, prevailed very generally, towards the end of the rains, and encreased in frequency till the middle of *November*. A variety of causes contributed to their production. The debility, induced by deficient nourishment, predisposed the bodies of the poorer class to be acted on by every exciting cause. The unusual quantity of rain, and very moist state of the atmosphere, contributed to encrease the universal relaxation; the water, collected in standing pools, some of which of great extent, were close to the city wall, in drying up, left a putrid fumes; and, lastly, the great afternoon-heat in *October* and *November*, followed by the cold and damp of the evening, gave irresistible activity to the preceding causes, in constitutions which had hitherto resisted their influence. This it was which occasioned the universal prevalence of the disease among our sepoys and servants, after the 1st of *October*, when we left our habitations in town, and went into tents. Before the rains, we had encamped in a grove adjoining to the garden of RANA KHAN; but when we marched out, this ground was covered with a crop of corn not yet ripe; and besides, it was low, and having been overflowed to a considerable depth, in the inundation, threatened to be mischievous by its dampness. The place we fixed on for an encampment, was near half a mile farther to the W N W. It was an elevated spot, to which the inundation had not reached, covered on the S W, by the small grove of SHAH DA'WUL, but perfectly open on every other side. The nearest part of the hilly ridge was at the distance of $2\frac{1}{2}$ miles, the extremities of the ridge lying from N 10 W to S 60 W, or comprehending 110 degrees of the horizon. To the south and south-east, the *Jeerah nullah* was within a furlong and a half of our tents. As it had swelled to a considerable height during the rains, and was now gradually drying up, it was natural
to

to look for the source of miasma in purifying vegetable matter left on its banks. But its bottom and banks were a stiff clay, affording little matter of this kind; and the prevailing winds from the beginning of *October* to the middle of *November*, were the N W, W N W, and N E, none of which could convey exhalations from the nullah. Therefore we are obliged to look for some other cause of the prevailing epidemic, and one amply sufficient, I apprehend, will be found in the want of cover, to protect the men against the scorching heat of the day, and the chilly damps of night. They themselves at length became sensible of the unhealthiness of the spot, although they entertained superstitious notions of its cause, ascribing it to the indignant manes of those who were slaughtered in the battle formerly described. At their request, some time in *December*, the camp was removed into the grove near RANAKHAN's garden, from which the crop had, by this time, been carried off. I was then incapable of observing the effects of this change, but have been informed that the disease rapidly declined and soon disappeared. This fact pleads strongly in favour of an opinion advanced by *Dr. JACKSON, that clear elevated situations, notwithstanding the free circulation of air, are, from unavoidable exposure to the morbid causes above enumerated, less favourable to health than has been supposed; and that "instead of danger, there is safety, in the shelter of wood." The question is of the highest importance, the Doctor supports his argument with ability, and the whole passage deserves the most serious consideration of those who are entrusted with the choice of ground for the encampment of troops.

THE only complaint which I observed to be endemic, was the *Dracunculus* or *Guinea* worm, the history of which is too well known to require any

* Treatise on the Fevers of *Jamaica*, Chap. IV. p. 83—88.
description

description in this place*. It is called by the *Spaniards*, *Cullebrilla* or little serpent, and seems to be the same that is described by M. DE LA CONDAMINE, and known to the *French* at *Cayenne* by the name of *Ver-macaque*. The only difference between the descriptions of the insect in these different countries, is in their length; those of *Cayenne*, being only said to be *several inches*; whereas those of *Africa* and the *East Indies* are known to amount to *some ells*. And this diversity in the description by different authors, is probably rather owing to the accidental circumstance of the specimens that fell under the observation of each, than to any real variety, or specific difference, between the animals of the two continents. The name by which they are known at *Oujein*, and I believe, in other parts of *Hindustan* is *Neruah*.

THE cause of their production is still involved in obscurity. I have have met with three hypotheses to account for it. 1st, That it is caused by the malignity of the humours deposited and fixed in some part of the cellular texture. This I was surprized to see assigned as the most probable, by the authors of the *French Encyclopedia*; after the doctrine of equivocal generation had been so compleatly refuted, and universally abandoned. 2dly, In Dr. REES's edition of CHAMBERS's Dictionary, I find it ascribed to the *drinking* of stagnant and corrupt water, in which it is probable the ova of these animals lie. 3dly, It has been alledged that certain insects, which inhabit the air, or the water, in those coun-

* *Filaria medinenfis* LIN. S. N. cur GMELIN.

Gordius medinenfis SYST. NAT. ed. xii.

Vena medinenfis WELSCH. SLOAN.

Dracunculæ persarum KÖMPFER.

The last author gives a very interesting history and description of the animal, which he says he was twice able to extract at one operation, entire and alive. Thrown into warm water it became flaccid and motionless: being taken out, it was more rigid and moved obscurely: but when immersed in cold water, it bent and moved itself violently, and as if impatient of the cold liquid, frequently raised its head above the surface. *Annæ. exot.* p. 524 et seq.

tries,

tries, pierce the skin, and deposit thier ova, which produce the worms in question.

WITHOUT pretending to decide between the two suppositions; or adverting to the difficulty of conceiving how the ova could preserve their vivifying principle, through the processes of digestion, chylification, and circulation, till they are finally deposited, by the capillary arteries, in the cellular texture; the observation that these insects are only found in the extremities, and most frequently in the lower, which are most exposed to immersion in stagnant water, pleads strongly in favour of the third hypothesis. The following fact renders it probable, that the generation and the growth of the worm, after the ova have been deposited, is very slow. Although the complaint was very frequent among the inhabitants of *Oujein*, our people remained exempt from it, during our residence there, for eleven months; but in the month of *August* following (five months after we left the place) the disease broke out in many. In all the cases which fell under my observation, the worm was lodged in the lower extremity, excepting one instance. This patient, who was a bhiishte, or water-man, had the complaint break out in his arm. The nature of his profession exposed his arms, more than those of other people, to the attacks of the parent insect: supposing her to reside in the water.*

* Dr. CHISHOLM ascribes the disease, which is very prevalent among the negroes in *Grenada*, to their drinking the water of certain wells, in which the naked eye distinguishes innumerable animalcules. On one estate, where no other water can be had, they are attacked regularly every year, about the month of *November*; in the month of *January*, the disease spreads through the greatest part of the gang; and in the month of *March*, it entirely disappears, till the following *November*. On other estates, the disease was equally frequent, till the obnoxious wells were filled up, cisterns built, or were dug in places not subject to the influence of the ebb and flow, of the tide; at the return of the usual period of the appearance of the *Guinea* worm, nothing of the kind happened. This is a strong proof that the insect which produces the worm resides in the water, but it is equally reconcilable to the supposition that the ova are deposited under the skin, when any part of the external surface is immersed in the water, as that of their propagating after being swallowed with the drink. As we know that most insects have

THE method of extraction, practised by the natives at *Oujein* differs in nothing from that described by authors; except that in the operation of gently pulling, and rolling it on a pin, when they feel a resistance, they have recourse to friction, and compressing the part in various directions. This is not confined to the tumour, but extended over the limb to some distance. It is said to loosen the worm from its adhesions to the subcutaneous parts, and thus facilitate its extraction, and thus facilitate its extraction. In the *American* process, the rubbing of the wound with a little oil, is taken notice of, but that seems to be adopted with a different view. The accident of breaking the worm, was in some instances followed, by violent inflammation and tedious suppurations, breaking out successively in different parts of the limb; but I did not hear of any instance of mortification from this cause.

March 1793.—THE resident having received instructions to return to *Hindustan*, on the 14th of *March 1793*, proceeded to *Gutteah*, a village under the management of APPAH KHANDEY RAW. It lies from our camp at *Oujein* N 27 E, 14,79 miles. The road was in general good, over an open well-cultivated country. Only, in crossing three ridges of rising ground, the number of stones gave some impediment; and we forded three nullahs, the banks of which being steep, rendered the passage of carriages difficult.

March 15.—MARCHED N $15\frac{1}{2}$ E, 16,5 miles, to *Tenauriah*, a village possessed by a *Grassiah* zemindar, who holds of SINDIAH, and pays between three and and four thousand rupees annually.

have certain stated seasons for procreation, we can easily account for the periodical recurrence of the disease; but I could not learn at *Oujein* that it observes any such regular alternation in that climate. Dr. C. observes, that the worm in *Grenada* is not confined to the extremities.

CHISHOLM on the malignant pestilential fever, p. 34.

March

March 16.—MARCHED N $12^{\frac{1}{2}}$ E, 10,53 miles to *Ager*, a large town, with a stone fort, belonging to RUNG ROW POWA'R. To the south-west of the town is a fine lake. The road in general good, soil reddish or iron coloured.

March 17.—MARCHED N $12^{\frac{3}{4}}$ E, 16,59 miles, to *Soosneer*, a pretty large town, belonging to SINDIAH, and under the management of APPAH K, HANDEY RAW, whose aumil resides here. The road lies across several low ridges of hills, and is in general full of little stones. The soil of a rusty iron colour, very little cultivation.

March 18.—MARCHED N $17^{\frac{1}{2}}$ W, 14,5 miles, to *Paráwá*, a town belonging to TUCKOJEE HOLCAR, whose aumil resides here. Road good. Soil black and spongy, like the most of *Malava*, but little cultivated. The district dependent on this town yields one lack of rupees annually.

March 19.—MARCHED N $20^{\frac{1}{2}}$ W, 15,91 miles to *Soonél*. The road and soil, on this day's march, much the same as yesterday. A good deal of *Jooár* stubble by the road side, and some wheat, now ripe.

Soonél is a town of considerable extent, of a square form, and enclosed with a stone wall. Two broad streets cross one another, at right angles, in the middle of the town, which is the *Chowk*. There are thirty-two villages in this pergunnah, which is held as a jageer by K, HANDEY RAW POWAR, the elder brother of RUNG RAW APPAH.

March 21.—MARCHED N $4^{\frac{1}{2}}$ E, 16,05 miles to *Julmee*. Road in general good. Passed the *How* river, and two nullahs. The ford of the first, being very stony, is difficult. Soil black. Much cultivation of wheat and poppy. *Julmee* is a pretty large village, which was assigned by the PESHWA, as a jageer, to NAROOJEE-

NAROOJEE-GONEISH, formerly dewan to the soubahdar HOLCAR. Since the death of NAROOJEE it has been held by HOLCAR himself. Several villages, between *Soonel* and this place, belong to the rajah of *Kotah*.

March 22.—MARCHED N $5\frac{1}{2}$ W, 15,56 miles, to *Muckundra*. Road in general good; only, near the villages of *Afcali* and *Telakhairree*, it lies over a stratum of slate, which is very slippery. A good deal of poppy is cultivated near those villages. A begah, they say, yields about five seers of opium. *Muckundra* is a small village, situated in a valley, nearly circular, about three quarters of a mile in diameter, surrounded by very steep hills, and only accessible by an opening to the south, and another to the north; each of which is defended by a stone wall and a gate. At these gates are posted chokeydars, belonging to the rajah of *Kotah*. This is the only pass, within many miles, through a ridge of mountains, which extends to the east and west, dividing the province of *Málava* from the district called *Haroutee*, or country of the tribe *Hára*. The water here is got from a large *bowley*, or well, faced with stone. It is said, by the natives, to be of a hurtful quality; and that such as drink it for the first time are liable to fevers. *Chundkhairree*, where at this season of the year is a large market for horses and other cattle, is distant from this place seven coss to the eastward.

March 23.—MARCHED N $36\frac{1}{2}$ W, 17 miles, to *Puchpahár*. The pass through the hills was narrow and stony; the road afterwards good. Near *Puchpahár* passed over a bed of *Schistus*, in strata inclined to the horizon. The country rather thinly cultivated; a good deal of grass by the road side.

March 24.—MARCHED N $18\frac{1}{4}$ W, 8,64 miles, to *Anandpoor*, a small village, near which is a large tank, with a stone wall, and buildings on the bank
of

of it. Road good, through a jungle of plafs* and other shrubs. Soil of a reddish colour: little cultivation. Close to *Anandpoor*, the road runs over a stratum of *Schistus*.

March 25.—MARCHED N $8\frac{1}{2}$ E, 5,17 miles, and encamped in a tope, among gardens, near the city of *Kotah*. Road in general good; in some parts a stratum of *Schistus*. This city is of considerable extent, of an irregular oblong form, enclosed with a stone wall and round bastions. It contains many good stone houses, besides several handsome public edifices. The palace of the rajah is an elegant structure. The streets are paved with stone. It has, on the west, the river *Chumbul*, and on the north-east, a lake, smooth and clear as crystal, which, on two sides is banked with stone, and has, in the middle, a building, called *Jug-mandul*, which is consecrated to religious purposes. Near the north-east angle of the city, and only separated from the lake by the breadth of the road, is the *Chetree* or mausoleum of one of the Rajahs. It is a handsome building; the area on which it stands is excavated, so as to be several feet lower than the level of the country; and paved with stone. In front of the building are placed several statues of horses and elephants hewn out of stone.

To the south of the city, about three furlongs beyond the wall, is a place, consecrated to the celebration of RAM's victory at *Lanka*, on the *Dusseerah*, or 10th of *Koonar Sukul-puchh*. There is a square terrace of earth, raised about two feet above the ground, and at a little distance to the south, an earthen wall, with a few round bastions. Behind this, in a recumbent posture, is an enormous statue of earth, which represents the dæmon *RAWOON*. On the day above named, all the principal people assemble at this terrace, on which some guns are drawn up. Their fire is directed against the earthen wall, and continues

* *Butea Frondosa*. ROXB. Ind. Pl. Vol. I, No. 21.

till that is breached, and the image of RAWOON defaced or demolished.

THE revenue of *Kotah* is thirty lacks of rupees; out of which is paid, though not regularly, a tribute of two lacks yearly to SINDIAH, and as much to HOLCAR. The present Rajah is named UMMEID SING. His uncle, who was his immediate predecessor, was assassinated about twenty or twenty-five years before, by his Dewan ZALIM SING, a *Rajpoot* of the tribe *Jhála*. He seized, and still retains the administration; having left nothing but the name and pomp of Rajah, to the present incumbent. The Rajah's family is of the tribe *Hára*.

WE halted here two days, which were employed in receiving and paying visits; and on the 28th marched N $21\frac{1}{2}$ E, 6,29 miles, to *Gowmuch*. The road good, but the bed of the *Chumbul*, which we forded at *Gowmuch*, was stoney, uneven and slippery. This is a small village, dependent on *Patan*, from which it is distant one coss. *Patan* contains some considerable buildings, erected by the Rajahs of *Boondee*, viz. a palace, and a temple dedicated to VEESHNOO. It is the head of a *pergunnah*, containing forty-two villages, and belongs half to SINDIAH and half to HOLCAR.

March 29.—MARCHED N 43 W, 9,6 miles, to *Teekeree*, a village belonging to SINDIAH, dependent on *Patan*. Road good. Soil greyish. A good deal of jungle by the road side.

March 30.—MARCHED N $56\frac{1}{4}$ W, 11,2 miles, to *Boondee*. Road in general good, but broken ground on both sides of it. In some places stoney. Little cultivation, much jungle.

THE town of *Boondee* is situated on the southerly declivity of a long range of hills, which runs, nearly from east to west. The palace of the Rajah, a large and massy building of stone, is about half way up; and a kind of stone fortification runs to the top of the hill. The pass, through the hill, lies to the eastward of the town, and is secured by a gate, at each end.

THE Rajah, named BISHUN SING, of the tribe *Hāra*, is aged nineteen or twenty. His family and that of *Kotah*, are nearly related. That of *Boondee* is the elder branch, and was formerly the chief, in point of power: but its possessions have been reduced, by the irruptions of the *Mahrattas*, and encroachments of the *Kotah* family, to the revenue of six lacks; of which even a fourth part, or chout, is paid to the *Mahrattas*; one half to SINDIAH, and the other half to HOLCAR.

March 31.—MARCHED north, 10,28 miles, to *Dublāna*, a pretty large village in the district of *Boondee*. Road in general good. Soil grey and light: very dusty: little cultivation. Much jungle, consisting chiefly of *Palūsa* (*Butea frondosa*), *Bobool* (*Mimosa nilotica*), *Careel* or *Teantee* (a species of *Capparis*), and *Jand* (*Adenanthera aculeata*, of Doctor ROXBURGH, described by him in the *Asiatick Researches*, Vol. IV, under the name of *Prosopis aculeata*).*

April 1.—MARCHED N 69 E, to *Doogaree*, a pretty large village belonging to *Boondee*. It is nearly surrounded with hills, and has, to the west-ward, an extensive lake. On the bank, where it joins to the village, is an old house of the Rajah, on a pretty high hill; and on the extremity of a promontory, that runs into the lake, is a temple consecrated to MA'HADDEO. Great part of the road on this day's march lay over *Schistus*, the strata, of which were nearly vertical:

* *Prosopis spicigera*. ROXB. Ind. Fl. Vol. I, No. 63.

and numerous little peices of quartz lay scattered on the ground.

IN the lake, with its leaves floating on the water, grows a species of *Menyanthes*, here called *Poorein* or *Teeptee*. The hills round the edge of the lake are composed of *Schistus*, disposed in the same vertical strata as that on the road. The promontory that runs out into the lake, has a vein of quartz running across it. On these hills, I found the *Hees* (*Capparis Sepiaria*), the *Hinguta* (a new genus of the order *Decandria Monogynia*, which has been described by Doctor ROXBURGH, under the *Hindu* name *Garu*), and the *Evolvulus* which I formerly observed to abound on the hills of *Dholpore*, *Gualior*, and *Ditteah*.

April 2.—MARCHED N $62\frac{1}{4}$ E, 12,42 miles, to *Bahmen-gaung*, a village enclosed by a mud wall, with bastions. It belongs to *AHELIAH BAI*. Road over the same vertical oblique strata of *Schistus* as yesterday; with similar little pieces of quartz, scattered on the surface. Little cultivation. Low forest, chiefly the *Butea-frondosa* by the road side.

April 3.—MARCHED N 25 E, 10,8 miles, to *Ooniara*. The road pretty good: little cultivation, and not much jungle; but a dry plain, in which the soil is grey, and very dusty.

THIS is a large town, surrounded by a wall, partly of mud, and partly of stone. Within the stone enclosure is a handsome house of the Rajah. Round both walls runs a ditch. The Raw or Rajah is of the tribe *Nirooka*, and a feudatory of the Rajah of *Jynagur*. The present one, named *BHEEM SING*, is only twelve or fourteen years of age. The tribute paid to *Jynagur* is 35,000 rupees to the Sircar, and 5,000 to the officers of government.

As we are now entered on the territories dependant on *Jayanagar* or *Ambhër*, some account may naturally be expected of the family, which for a long series of ages has held dominion over them. The following particulars rest on the authority of XAVIER DE SILVA the confidential servant of the present Rajah.

THE tribe of *Rajputs* to which this family belongs, is named *Cuchwáha*, and is of the *Suryabans*, or children of the Sun; being descended from RAMA, the celebrated Rajah of *Ayodhya*.

RAMA had two sons, one named LOH, the other CU'SH; the descendants of LOH are named BUD-GU-JER, and the descendants of CU'SH, *Cuchwáha*. From CU'SH, the *Jayanagar* chronologers reckon 210 Rajahs, in succession, to PRIT,HI-RAJ, who succeeded to the *musnud* of *Ambhër* in *Sumbut* 1559, or A. D. 1502; and died in *Sumbut* 1584, having reigned twenty-four years, eight months, and twenty days.

PRIT,HI-RAJ had eighteen sons.

1. B,HA'RAMUL, who succeeded him.
2. BHÍ'M, established the *Raj* or *Nirwir*.
3. SA'NCAJ'I who built *Sanganér*,
4. RAIMUL,
5. BHÍ'M-PA'L,
6. MUCTAJI,

} These four left no
descendants.

To the remaining twelve sons, PRIT,HI-RAJ, to avoid the contention which he foresaw was likely to happen after his death; assigned, in his lifetime, portions of territory, which descended to their offspring, and are called the twelve chambers, (*Cut,li*) of the house of *Cuchwáha*.

THE

THE names of these sons, of the families descended from them, of their districts and their present chiefs, together with the number of troops they can furnish, are as follow :

	Son's of PRITHI-RAJ.	Families descend- ed from them.	District or Cut,tri.	Force in horse & foot.	Present Chiefs.
7	GOPAL his Son NATHA,	Natbarwat,	Saraut,	10,000	RAWUL INDER-SING.
8	PURINMUL,	Purinnulout,	Anciently Bhusa- wah ; now Bunbera,	2,000	T,bakur BEIRI-SAI.
9	JUGMAL, his Son CUNGAR,	Cungarout,	Anciently Samiwar now Bujpoor,	7,000	T,bakur DILE-SING, & and PAHAR-SING.
10	BIJABUN,	Bijalout,	Anciently Nibalah, now Sambhera,	2,000	T,bakur CHAPAN-SING.
11	SULTAN,	Sultanout,	Canuta,	5,000	T,bakurs SUREJ MUL, & and KURIS-SING.
12	CHATERBOJ,	Chaterbojout,	Anciently Buniar, now Bera,	8,000	T,bakur BHAG-SING.
13	BULBHUDDER,	Bulbhuddarout,	Ajroul,	2,000	T,bakur CUSUL SING.
14	CALIAN,	Cananout,	Canwar,	5,000	T,bakur RUNJIT- & Sing of Chaab.
				41,000	
15	RUPSI-BEYRAOZE,	His descendants were settled in the zillah of Ajmer about Rupnagar whose descendants were FUTTEH- SING and others in Nirwar. District Babula Sabun, Cut bra			Of these four Sons no descendants are now remaining.
16	SHAMIN-DAS,				
17	PURTAB-SING,				
18	RAM-SING,				

but to complete the number of chambers, four other tribes have been adopted in their room.

Families.	Districts.	Force.	Present Chiefs.
Gopawat,	Mabar,	41,000	RAWUL BUKHTAWUR SING.
Bulbeerputa,	Wangob,	2,000	T,bakur GULAB-SING.
Subaramputa,	Beider,	2,000	RAWUL HURY-SING.
Cumbhani,	Bunskabua,	7,000	T,bakur PADAM-SING.
		5,000	
		57,000	

But the whole families descended from the Rajahs of Ambher, are in number fifty-three ; of which the principal (besides those already enumerated) are ;

Rajawut, of which family is the present Rajah. They are the descendants of the Rajah MAN-SING, and were at first distinguished by the name of

Man-singout, — —

Sekhawut, — —

15,000

30,000

The *T, bakur* of *Jinj-bua*, with others of less consequence.

Niruca, — — —

20,000

Raw Rajah BUKHTA-WAR-SING, of *Macheri*, and the Rajah of *Uniara*.

Hamirdeka Madhani, &c.

25,000

147,000

THE succession the Rajahs of *Ambher* from PRIT, HI-RAJ to the present time, is as follows:

PRIT, HI-RAJ — —

A. D. 1502

BHARAMUL

BHUGWUNT-DAS

MAN-SING

5 JUGUT-SING

MAHA-SING

JEY SING I

RAM SING

KISHEN SING

10 BISHEN SING

JEY SING II surnamed SEWAY; was seated on the *musnud* in *Sumbut* 1750, the 10th of *Phalgun* *Krishen Pucsh*; and died in *Sumbut* 1800.

ISHRI SING

MADU SING

PRIT, HI SING

15 PURTAB SING.

From PRIT, HI-RAJ to the present time, being a period of 295 years, we have fifteen reigns, giving 19 $\frac{1}{2}$ years to each reign. If we allow the same length to each

each of the reigns from CUSH the son of RAMA, to PRITHI-RAJ: we shall place CUSH about the year 2628 before CHRIST.

NEXT day, our tents were sent on, but stopped at a fort named *Rampoora*, distant six miles. This formerly belonged to the Rajah of *Jynagur*, and was by him assigned to the priest of *Mobunt Jograj*; but at the settlement made in 1791 with *TUCKOJEE HOLCAR*, this fort, with a territory of 60,000 rupees, was ceded to him. It still remained in his possession, and the command of it was entrusted to a *Sekh*, named *KIRPAL-SING*. This man, hearing that we were going to the camp of *GOPAL BHOW*, the general of *SINDIAH*, with whom *HOLCAR* was then in a state of actual hostility, arrested our tents. No arguments could prevail with him to release them, till a letter was sent to *HOLCAR*, who was encamped at no great distance. He expressed great displeasure at the conduct of *KIRPAL-SING*, and dispatched a *jafos*, or messenger, with orders to attend our camp, and give peremptory orders to all his *aumils*, that none should presume to give us molestation.

THE obstacle to our journey being thus removed, we marched on the eighth of *April*, N 47 E, 13,75 miles, to *Burwārah*, which belongs to a *T,hakur*, named *BICKERMAJEET*, of the family *Rajāwut*, a relation and tributary of the Rajah of *Jynagur*. This is a mud fort, with round bastions and a ditch.

April 9.—MARCHED N 39½ E, 9,3 miles, to *Bhaugwunt-gurh*, a village situated at the foot of a hill, and having a small fort, or watch-tower, on the top of the hill. It is held by a *Rajpoot T,hakur*, named *ABHEY-SING*, and is dependant on the district of *Rintimbour*, or the new city *Madhoo-poor*, which is five or six coss eastward. Road stony; in many

parts the same perpendicular and oblique strata of *Schistus* as in some of the former marches. Very little cultivation near the road side, but a good deal of low jungle. Here I found, in considerable quantity, the *Mimosa cinerea*, conspicuous by its pink and yellow flowers. It is the same species that was found by Mr. BRUCE, in *Abyssinia*, under the name of *Ergett y' Dimmo*, or bloody Ergett, in allusion to which he proposes to call it *Mimosa Sanguinea*. The wood is said to be very strong and durable.

April 10.—MARCHED N $32\frac{1}{4}$ E, 10,94 miles, to *Kheernee*, a pretty large village, surrounded with a stone wall, belonging to SOOREJ MUL, of the tribe *Rajawut*, whose chief place of residence is at *Sowâr*, distant nine coss towards the south-west. Road in general good, but very heavy sand for half a mile, in the bed of the river *Benâs*. No cultivation, except a few fields close to the village.

April 11.—MARCHED N $40\frac{1}{2}$ E, 6,84 miles, to *Malârna*, a mud fort, with a double wall, round bastions, and a ditch. It belongs to the *T, hakoore* BEIREESAL of *Jehelaia*, which is said to be about fifteen coss off. *Jynagur* is reckoned from hence twenty-eight or thirty coss, *Rintimbour* eight coss, and the new city three coss farther, in the same direction. Road good: the first part sandy; afterwards a blackish soil; now in stubble.

April 12.—MARCHED N 60 E, 18,39 miles, to *Amergurh*, a small village, with the remains of a fort, now in ruins. It was part of the jagheer of DOWLET RAM (since dead), the minister of *Jynagur*. Road sandy, near the end much broken ground.

For the direction of future travellers, it is necessary to remark, that by the misinformation of our guides, we were led to *Amergurh*, which is out of the straight road

road to *Khoosh-hál-gurh*. By stopping at *Batudoh*, *Meenapára*, or *Mutchipoor*, either of which villages was as large, and seemed as well able to supply our wants as *Amergurh*, we should have avoided the broken ground, shortened the whole distance, and divided it more equally.

April 13.—MARCHED N 71 E, 6 miles, to *Khoosh-hál-gurh*, a mud fort with double wall, round bastions, and a ditch; it belonged to DOWLET RAM, whose second son HIR-NARRAIN was then residing here; it was built by KHOOSH-HALEE-RAM, the elder brother of DOWLET RAM. Road sandy.

April 14.—MARCHED N 34 E, 11 miles, to *Peelaudoh*, a large village (said to contain 1000 houses) belonging to JOGRAJ MAHU'NT. A cheelah of his was living here in charge of it. Road to-day smooth: first part sandy, afterwards a firm clay. The corn all got in.

Jynagur is reckoned thirty cofs from hence, to the westward: *Carouly* eight cofs, about E S E; *Khoosh-hál-gurh* five cofs, and *Hindoun* seven cofs.

April 15.—MARCHED N 61 E, 17, 12 miles to *Hindoun*, which has been a large city, and still contains pretty extensive buildings; but, from the depredations of the *Mahrattas*, is now very thinly inhabited. It belonged to DOWLET RAM, the son of whose maternal uncle was residing here. Road in general good: about half way, passed the dry bed of a river, which was deep sand. Much forest, especially in the first half of the road. Little cultivation.

April 16.—MARCHED N 49 E, 9, 4 miles, to *Surout* a large village surrounded with a mud wall, and having within it a square mud fort, with double wall and ditch. It belongs to BIJEY SING or BIJEY NAUT, of the

the tribe *Sultánout*. Road good: much jungle: little cultivation: sandy soil.

April 17.—MARCHED N 49 E, 11,42 miles, to *Biána*, which has been a large city, and included *Agra* among its dependencies. The town is still considerable, and contains many large stone houses; it was formerly the residence of a powerful Rajah, named *BIJEY-PAL*, of the tribe *Jádoun*, from whom the present family of *Carouly* is descended. But his principal city and fort was on the top of the adjoining hill, and the present town was only a suburb. The whole ridge of the hill is covered with the remains of large buildings, among which the most remarkable is a fort, called *Bijey-munder*, containing a high pillar of stone, called *Bheem-lat*, or the *Tealee* or oilman's *lat* or staff. This pillar is conspicuous at a great distance. The town and district now belong to *RAMJEET SING*, the Rajah of *Bhirtpoor*. This prince is the son of the celebrated *SOOREJ-MUL*, head of the once powerful nation of the *Játs*. Having rendered essential service to *SINDIAH*, about the time of his entrance into *Hindustan*, he has been treated with more indulgence than most of the native princes, and his possessions are still considerable, including three large forts, viz. *Deeg*, *Bhirtpoor*, and *Combhère*.

April 18.—MARCHED N $68\frac{1}{2}$ E, 9,62 miles, to *Rudawul*, a village belonging to the same Rajah. Road good, and the country in a good state of cultivation.

April 19.—MARCHED N 62 E, 9,56 miles, to *Kánua*, a village also belonging to *Bhirtpoor*. Road good: country cultivated.

April 20.—MARCHED N $66\frac{1}{4}$ E, 9,59 miles, to *Futtehpoor-Sieri*. Road good: country well cultivated. A range of stony hills for a good part of the way, close on the left. When we approach near to *Futtehpoor*, many ruins of tombs on the left.

Futtehpoor

Futtehpoor is enclosed with a high stone wall, of great extent, built by the Emperor **AKBER**. The space within does not appear to have ever been nearly filled with buildings, and the part now inhabited is but an inconsiderable village. This space is divided by a hilly ridge, of considerable elevation, which runs nearly from S W by W to N E by E, and extends beyond the enclosure, four or five miles on each side. These hills are composed of a greyish stone, and have supplied the materials of which the city wall is built.

NEAR the center of the enclosure, on the most elevated part of the rock, is built the tomb of **SHAH SELIM CHEESTEE**; by the efficacy of whose devotion, the Empress of **AKBER**, after remaining for several years barren, became pregnant; and bore a son; who, in honour of the saint, was named **SELIM**; and, on mounting the throne of *Hindustan*, assumed the title of **JEHANGEEER**. The approach to this mausoleum irresistibly impresses the mind of a spectator with the sensations of sublimity. The gate a noble gothic arch, in a rectangular screen of majestic elevation, stands on the brow of the hill towards the south. To this you ascend, by a flight of steps, the uppermost of which, being equal in length to the breadth of the screen, every one, in descending, is encreased, by the breadth of a step. Thus the whole forms half the frustum of a pyramid, the magnitude and simplicity of which, compared with the rugged surface of the rock, improves the grandeur of the prospect. From the top of this gate, the view of the surrounding country is extensive, and highly diversified. The mausoleum at *Agra*, at the distance of twenty-three miles, is distinctly seen.

By this gate, you enter into a square court, of 440 feet, within the walls. All around is a wide verandah, containing ranges of cells, for the accommodation of *Durveishes*. In the center, is a square building, of white marble, the sides of which are beautifully cut into lattice-work. The side of this, measured within, is
forty.

forty-six feet. The verandah is about fifteen feet broad, on every side; and in the center is a small chamber, which contains the tomb; a neat sarcophagus, enclosed with a screen of latticed marble, inlaid with mother of pearl. The delicacy of the workmanship renders this an object of exquisite beauty.

IMMEDIATELY to the westward of this, on the same ridge, is an ancient palace of AKBER. It is a rude building, of red stone; and of so irregular a form, as not to be easily described. In one square court, the pavement is marked with squares, in the manner of the cloth used by the *Indians*, for playing the game called *Puchees*. Here it is said AKBER used to play at this game; the peices being represented by real persons. On one side of the court is a little square apartment, in the center of which stands a pillar; supporting a circular chair of stone, at the height of one story. The access to it is, by narrow ways of stone hollowed out, like troughs, which extend, from the four sides of the apartment, to the chair. Here the Emperor used to sit, and direct the moves of the people who represented the peices, in the game above mentioned. Near to this, on the plain below, is a little circular tower, planted thick on all sides, and from top to bottom, with elephant's teeth; and terminated above, with a cupola, under which, it is said, the king used to sit, to view the combats of elephants.

BEING now within a forced march of the conclusion of our journey, we marched a little after midnight (N 77 E, 22, 42 miles), and next morning, *April 21*, arrived at the mausolium of MUMTAZA ZEMANS at *Agra*; having been exactly fourteen months.

ADDENDUM TO THE NOTE, PAGE 8.

Such was the information obtained by the learned president; but Mr. GILCHRIST, whose diligent researches into *Hindustani* philology have infinite merit (preface the dictionary, p. xxxiii,) on the authority of GOOLZAAR IBRAHEEM ascribes this little poem to MEER QUMUR-ODD'-DEEN a native of *Dehli*, who was alive A. H. 1196 (A. D. 1781).



Inhabitants of the Pogy or Nafsu Islands.

III.

*An ACCOUNT of the INHABITANTS of the
POGGY ISLANDS, lying off SUMATRA.—
By JOHN CRISP, Esq.*

AT a period when so many important voyages of discovery have been recently effected, and such various new countries and new races of men made known, the account will, probably, appear too trivial, to excite attention of either the merchant, the politician, or the philosopher. There is however, one circumstance respecting the inhabitants of the *Nassau* or *Poggy* islands, which lie off the West coast of *Sumatra*, which may be considered as a curious fact in the history of man, and as such, not unworthy of notice. From the proximity of the islands to *Sumatra*, which, in respect to them, may be considered as a continent, we should naturally expect to find their inhabitants to be a set of people originally derived from the *Sumatra* stock, and look for some affinity in their language and manners; but, to our no small surprize, we find a race of men, whose language is totally different, and whose customs and habits of life indicate a very distinct origin, and bear a striking resemblance to those of the inhabitants of the late discovered islands in the great *Pacifick Ocean*. It was a confused idea of this circumstance which first excited my curiosity, and induced a desire to make a more minute inquiry into the history of these people than hath hitherto been effected; for, notwithstanding the vicinity of these islands to

an *English* settlement, we, as yet, had but a very imperfect knowledge of the inhabitants. An attempt had been made, between forty and fifty years past, to make a settlement among them, and to introduce the cultivation of pepper, but this design was frustrated, by the improper conduct of the person to whom the management of the business was entrusted. The imperfect account which was given of the people by the person appointed to go to the islands on behalf of the *India* Company, and another, not more satisfactory, by Captain FOREST, are inserted in Mr. DALRYMPLE'S *India* Directory; and, as far as I knew, these accounts constituted the whole of our knowledge of these islands.

THE *Nassau* or *Poggy* islands form part of a chain of islands which lie off the whole length of the West Coast of *Sumatra*, at the distance of twenty to thirty leagues; the northern extremity of the northern *Poggy* lies in latitude $2^{\circ} 18'$ S, and the southern extremity of the southern island in latitude $3^{\circ} 16'$ S. The two are separated from each other by a very narrow passage called the strait of *See Cockup*, in latitude $2^{\circ} 40'$ S. and longitude about $100^{\circ} 38'$ East from *Greenwich*.

I LEFT Fort *Marlborough* the 12th of *August*, 1792, in a small vessel, and made the southern *Poggy* on the morning of the 14th; coasting along which we reached the straits of *See Cockup*, where we came to an anchor at one o'clock the same day.

THESE straits are about two miles in length, and a quarter of a mile over: they make very safe riding for ships of any size, which lie perfectly secure from every wind, the water being literally as smooth as in a pond. The chief defect, as an harbour, is the great depth of water, there being twenty-five fathom close in shore, and forty-five fathom in the mid channel.

channel. While lying at anchor, we could plainly discern the high land of *Sumatra*. In the straits are scattered several small islands, each of which consists of one immense rock, and which probably was originally connected with the main islands. The face of the country is rough and irregular, consisting of high hills or mountains, of sudden and steep ascent; and the whole appearance of such islands, in common with *Sumatra*, bears strong marks of some powerful convulsion of nature. The mountains are covered with trees to their summits, among which are found species of excellent timber; the tree called by the *Malays Bintangoor*, and which on the other *India* is called *Pohoon* abounds here. Of this tree are made masts, and some are found of sufficient dimensions for the lower mast of a first rate ship of war. During my stay here which was about a month, I did not discover a single plant which we have not on *Sumatra*. The sago tree growing in plenty, and constitutes the chief article of food to the inhabitants, who do not cultivate rice; the cocoanut tree and the bamboo, two most useful plants, are found here in great plenty. They have a variety of fruits, common in these climates, such as mangoes, pine-apples, plantains, *Buah*, *Chupah*, &c. The woods in their present state are impervious to man; the species of wild animals which inhabit them are but few; the large red deer, some hogs, and several kinds of monkey are to be found here, but neither buffaloes, nor goats; nor are these forests infested, like those of *Sumatra*, with tigers or any other beast of prey. Of domestic poultry, there is only the common fowl, which probably has been originally brought from *Sumatra*: But pork and fish constitute the favourite animal food of the natives. Fish are found here in considerable plenty and very good. On the reefs of coral, which extend from the shore, and are frequently dry at low water, are found various kinds of shell fish, but I did not discover any which I had reason to suppose uncommon. The shell of a large species of *nautilus*, marked like *zebra*, is frequently

quently picked up on the shore of these islands, and having been informed that one of these shells with its fish in it would be acceptable at home, I offered the natives their own terms to procure me one, but they all assured me that it was absolutely out of their power to comply with my wishes; that the shell is frequently driven on the shore, but always empty; that it comes from the sea, and is not to be found on the rocks, and that no one on the island had ever seen one of the shells in the state I required:

I FOUND here species of cockle, the shell of which was enclosed in the most solid kind of coral rock; the aperture of the rock was sufficient to permit the shell of the cockle to open in some degree, but two small to permit removing it without breaking the rock. Having found them of different sizes, and it being a species of the *Keemoo* which grows to a very large size, it should seem that the cavity of the rock increases as the fish grows. If, according to Mr. HUNTER's theory, the animal has a power of absorbing part of its own shell, this power may perhaps extend to the rock which contains it, and whose substance is of a similar nature.

NEAR the entrance of the straits of *See Cockup* on the northern island, are a few houses inhabited by some *Malays* from *Fort Marlborough*, the place is called *Toongoo*: these people reside here for the purpose of building large boats, called *Chuneahs*, the timber and planks for which are found close at hand. Among these *Malays* I found one intelligent man, who had resided two years at this place, during which he had acquired a competent knowledge of the language of the natives. I had also brought an interpreter with me who spoke the language some time at *Padang*, a *Dutch* settlement on the West Coast of *Sumatra*, where he had acquired some knowledge of the *Malay* tongue; by means of these people I was at no loss for communication with the natives, and

and had an opportunity of having the accounts confirmed by making use of the different interpreters.

THE name of *Nassau* has probably been given to these islands by some *Dutch* navigator. By the inhabitants themselves they are called *Poggy*, and the natives are called by the people of *Sumatra*, *Orang Mantawee*; this latter is probably from their own language, *Mantao* signifying a man.

AFTER having been two days at an anchor, the natives began to come down from their villages in their canoes, bringing fruit of various kinds, and on invitation they readily came on board. The chief of *See Cockup*, a village in the straits, was among them, but not distinguished from the rest by dress, or dignity of demeanor. On coming on board the vessel they did not shew any signs of apprehension or embarrassment, but expressed a strong degree of curiosity, and a desire to examine every thing minutely. We presented them plates of boiled rice, which they would not touch till it had been previously tasted by one of our own people; after which they eat it to the last grain. This circumstance seemed to indicate the use of poison among them. They behaved while on board with much decorum, and did not shew the least disposition for pilfering, but freely asked for what they saw and wished to possess; not expressing however any ill will, when they met with a denial. We made them presents of beads, small looking glasses, *Birmingham* japanned snuff boxes, &c. all which were very acceptable, as was also tobacco, of which they appear to be very fond; they use it by smoking. They appeared to live in great friendship and harmony with each other, and voluntarily divided among their companions what was given to them.

AFTER having remained some hours on board, during
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ing which time they behaved with much quietness, they returned to their village; and after this we were daily visited by many of their canoes, bringing fruit, a few fowls, &c. Several canoes came alongside the vessel with only the women in them; they at first expressed some apprehension at coming on board; but their men far from shewing any disapprobation, rather encouraged them to come into the vessel, and several ventured up the side. When in their canoes, the women use a temporary dress to shield them from the heat of the sun; it is made of the leaves of the plantain tree, of which they form a sort of conical cap, and there is also a broad-piece of the leaf fastened round their body, over their breasts, and another piece round their waist. This leaf readily splits, and has the appearance of a coarse fringe. When in their villages, the women, like the men, wear only a small piece of cloth round their middle. Among them we observed some of a very pleasant countenance, with fine expressive eyes. Mr. BEST, a military gentleman of the establishment, with whose company I was favored on this trip, went up to one of their villages, attended only by the *Malay* interpreter and a *Malay* servant. He was received with great cordiality and civility, and staid two nights at their village. Many of the people had never before seen an *European*, and with much curiosity examined his dress, particularly his shoes.

DURING a stay of about a month among them I collected the following particulars, respecting their manners and customs, the truth of which I was careful to have confirmed, by making my enquires of different persons, and by the means of different interpreters.

THE inhabitants of *Poggy* islands are but few; they are divided into small tribes, each tribe occupying a small river, and living in one village. On the northern *Poggy* are seven villages, of which *Cockup* is the chief; on the southern *Poggy* are five. The whole number of people on the two islands amounts,

by

by the best accounts I could procure, only to 1400 ; the inland parts of the islands are uninhabited. *Porah* or *Fortune* island is inhabited by the same race of people, and is said to contain as many inhabitants as the two *Poggys*. When we consider the mildness of the climate, the ease with which the inhabitants procure wholesome nutritive food, and the little restraint laid on the communication between the sexes, this paucity of inhabitants seems to indicate that the period when their residence in these islands commenced, cannot be very remote. Their houses are built of bamboos and raised on posts ; the under part is occupied by poultry and hogs, and, as may be supposed, much filth is collected there. The whole of their clothing consists of a piece of coarse cloth, made of the bark of a tree, worn round the waist, and brought across between the thighs ; they wear beads and other ornaments about the neck, of which a small green bead is the most esteemed : though cocoa-nut trees are in such plenty, they have not the use of oil ; and their hair, which is black, and might grow long and graceful, is, for want of it, and the use of combs, in general matted and plentifully supplied with vermin, which they pick out and eat ; a filthy custom, but very common among savage people. They have a method of filing or grinding their teeth to a point, which is also in use on *Sumatra*.

THEIR stature seldom exceeds five feet and a half, and many among them fall short of this: some of them are extremely well made, with fine turned limbs and expressive countenances: their colour is like that of the *Malays*, a light brown or copper colour. The custom of *tattooing* or imprinting figures on the skin is general among them, of which I shall say more presently.

THE principal article of their food is sago, which is found in plenty on these islands. The tree, when ripe is cut down, and the pith which forms the sago, taken

taken out, and the mealy part separated from the fibrous, by maceration and treading it in a large trough continually supplied with fresh water: the meal subsides and is kept in bags made of a kind of rush; and in this state it may be preserved for a considerable time. When they take it from their store for immediate use, some farther preparation of washing is necessary; but they do not granulate it. One tree will sometimes yield two hundred pounds of sago: when they cook it, it is put into the hollow joints of a thin bamboo, and roasted over the fire.

BESIDES this article, they have a variety of nourishing plants, such as the yam, the sweet potatoe, the plaintain, &c. Their animal food consists of fowls, hogs and fish; shell fish they eat raw. The use of betel, so common in the East, is unknown to them, and I observed in many marks of the scurvy in their mouths.

THEIR arms consist of a bow and arrows. The bow is made of the *Neebong* tree, a species of palm, which, when of a proper age, is very strong and elastic; the strings are formed of the entrails of some animal; the arrow is made of a small bamboo or other light wood, headed with brass, or with another piece of wood fixed to the end of the shaft and cut to a point: these arrows, we were told, are sometimes poisoned. Though strangers to the use of feathers to steady the flight of the arrow, they nevertheless discharge it from the bow with much strength and skill. With a mongrel breed of dogs, probably procured originally from *Sumatra*, they rouse the deer in the woods, which they sometimes kill with their arrows; they also kill monkeys by the same means, and eat their flesh. We observed among them a few who were in possession of *creeses* or *Malay* daggers.

THEIR knowledge of metals is entirely derived from

from their communication with the inhabitants of *Sumatra*. They are still strangers to the use of coin of any kind, and a metal coat button would be of equal value in their esteem with a piece of gold or silver coin, either of which would immediately be hung about the neck as an ornament. A sort of iron hatchet or hand-bill, called *parang*, is in much esteem with them, and serves as a standard for the value of various commodities, such as cocoa nuts, coolit coys, poultry, &c.

WE were informed that the different tribes of *Orang Mantawee* who inhabit the *Poggy* islands never war with each other; to which account we could readily give credit from the mildness of their disposition. Indeed the friendly footing upon which they appeared to live one with another was a circumstance too striking to escape our notice; during our whole stay with them, and while distributing various presents among them, we never heard a single dispute, nor observed one angry gesture. They however informed us that a feud has long subsisted between the inhabitants of the *Poggy* islands, and those of some island to the northward, whom they called *Sybee*. Against these people they sometimes undertake expeditions in their war canoes; but it did not appear that they had engaged in any undertaking of this kind lately. Mr. BEST measured one of these war canoes, which was preserved with great care under a shed; the floor of it was twenty-five feet in length, the prow projected twenty-two feet, and the stern eighteen, making the whole length sixty-five feet; the greatest breadth was five feet, and the depth three feet eight inches. For navigating in their rivers and the straits of *See Cockup*, where the sea is as smooth as glass, they use a small canoe made from a single tree, constructed with great neatness, and the women and young children are extremely expert in the use of the paddle.

THE religion of this people, if it can be said that they

they have any, may truly be called the religion of nature. A belief of the existence of some powers more than human cannot fail to be excited among the most uncultivated of mankind, from the observations of various striking natural phenomena, such as the diurnal revolution of the sun and moon; thunder and lightning; earthquakes, &c. &c. nor will there ever be wanting among them some of superior talents and cunning who will acquire an influence over weak minds, by assuming to themselves an interest with, or a power of controuling those super-human agents; and such notions constitute the religion of the inhabitants of the *Poggys*. Sometimes a fowl and sometimes a hog is sacrificed to avert sickness; to appease the wrath of the offended power, or to render it propitious to some projected enterprize: and Mr. BEST was informed that omens of good or ill fortune were drawn from certain appearances in the entrails of the victim. But they have no form of religious worship, nor do they appear to have the most distant idea of a future state of rewards and punishments. They do not practise circumcision.

THE mode of disposing of their dead bears a resemblance to that of the *Otaheitans*. Very shortly after death the corpse is carried to a certain place appropriated for the purpose, where it is deposited on a sort of stage, called in their language *Rati Aki*; it is dressed with a few beads or such ornaments as the person was accustomed to wear in his life time, and after strewing a few leaves over it, the attendants leave the ground, and proceed to the plantation of the deceased, where they fell a few trees of his planting, and return to their homes. The corpse is left to rot, and the bones fall to the ground.

AMONG a people whose manners are so simple whose wants are so easily supplied, and whose possessions are so circumscribed, we are not to look for any complex system of jurisprudence: indeed their code of laws may be comprized in a few lines.

THEIR chiefs are but little distinguished from the community, either by authority or by property, their pre-eminence being chiefly displayed at public entertainments, of which they do the honours. They have no judicial powers; all disputes are settled, and crimes adjudged, by a meeting of the whole village.

INHERITANCE is by male descent; the house or plantation, the weapons and tools of the father, pass to his male children. Theft, when to a considerable amount, and the criminal is incapable of making restitution, is liable to be punished by death.

MURDER is punishable by retaliation; the murderer is delivered to the relations of the deceased, who may put him to death. I was however informed these crimes are very rare.

IN marriages, the matter is settled between the parents of the young persons, and when agreed upon, the young man goes to the house of the bride, and takes her home; on this occasion a hog is generally killed, and a feast made. Polygamy is not allowed.

IN cases of adultery, where the wife is the offender, the injured husband has a right to seize the effects of the paramour, and sometimes punishes his wife by cutting off her hair. When the husband offends, the wife has a right to quit him, and to return to her parent's house; but in this state of separation she is not allowed to marry another; however, in both these cases, the matter is generally made up, and the parties reconciled; and we were informed that instances of their occurrence were very unfrequent. Simple fornication between unmarried persons is neither a crime nor a disgrace: and a young woman is rather liked the better, and more desired in marriage, for

having borne a child; sometimes they have two or three, when, upon a marriage taking place, the children are left with the parents of their mother. The state of slavery is unknown to these people.

THE custom of tattooing is general throughout these islands. They call it in their language *tectec*. They begin to imprint these marks on boys of seven years of age, but they only trace at first a few outlines. As they advance in years, and go to war, they fill up the marks, the right to which depends on having killed an enemy. Such is the account they gave us, and it is probable enough that this custom may originally have been intended as a mark of military distinction; but such original intention cannot at present have place, as the marks are common to every individual, and wars scarce occur once in a generation. The figures imprinted are the same throughout, or the variation, if any, is very trifling, excepting that, in some of the young men, the outline only of the broad mark on the breast is traced, but this is filled up as they grow older. The women have a star imprinted on each shoulder, and generally some small marks on the back of the hands. These marks are imprinted with a pointed instrument, consisting of a brass wire fixed perpendicularly into a piece of stick about eight inches in length; this piece is stuck with another small long stick with repeated light strokes. The pigment used for this purpose is made of the smoke collected from a species of resin, which is mixed with water; the operator takes a stem of dried grass, or a fine piece of stick, and dipping the end in the pigment, traces on the skin the outline of the figure, with great steadiness and dexterity; then, dipping the brass point in the same composition, he with very quick and light strokes drives it into the skin, tracing the outline before drawn, which leaves an indelible mark. Mr. BEST submitted to the operation on his leg, and found it attended with some pain.

SUCH

SUCH are the customs and manners of the inhabitants of the *Poggy* islands which lie within sight of *Sumatra*. The many particulars in which they differ from any set of inhabitants of the latter island put it in my opinion beyond a doubt that they are of a different origin, but from whence they came it may not be easy, and probably will not be thought of importance, to trace. They have no clear tradition to assist in such an enquiry. When Mr. BEST was at their village, on asking from whence they originally came, they told him from the sun, which he understood as signifying from the eastward.

As the sounds which express ideas are arbitrary, and it not being probable that people who have never had communication should hit upon the same sounds to express the same ideas, affinity in language may be considered as one of the surest indications of sameness of origin; but even in judging from this criterion, a variety of circumstances may render us liable to error. I have however subjoined a pretty copious specimen of the language of the *Poggy* islands.

But another circumstance, which I think might assist in tracing the origin of these people, is the figures used in tattooing their bodies; for as all the men are marked according to the same pattern nearly, if any people should be discovered among whom this custom prevails, and whose bodies are tattooed, generally, with figures of the same kind, it would afford no slight presumption of a common origin. I have therefore accompanied this account with a sketch of a man and a woman of these islands, as also a drawing of the instruments used in making these marks; the execution greatly needs an apology; but I am no draughtsman, and can only answer for the exactness with which I copied these figures.

I HAD intended to have examined the whole chain of islands which lie off *Sumatra*, and which are inhabited by very different sets of people, but a number of cross and untoward accidents prevented the accomplishment of my original design.

SPECIMEN OF THE LANGUAGE OF THE POGGY ISLANDS.

One	Sarah	Teeth	Chone
Two	Dua	Tongue	Leelah
Three	Telloo	Chin	Batela
Four	Apat	Belly	Barah
Five	Leemah	Hand	Kavaye
Six	Anam	Foot	Daray
Seven	Peeloo (for Peetoo)	Blood	Lorow—Logow
Eight	Balloo	Day	Mancheep
Nine	Seewa	Night	Geb Geb—Choie Boh
Ten	Pooloo	Sleep	Mareb
Twenty	Duah Tarah	Dead	Mataye Maloffay
An hundred	Sama Wattoo	White	Maboolow
Mankind	Seree Manooah	Black	Mapouchoo
A man	Mantaow	Good	See Maroo
A woman	Senan Allip	Fire	Ovange—Bobengang
Father	Ookooee	Water	Jojar
Mother	Eenah	Earth	Polack
Head	Ootay	Stone-rock	Bookoo
Eyes	Matah	Hog	Babooee Sakoko
Nose	Affak	Fowls	Gago
Hair	Ali	Bird	Oomalc
Eye-brows	Cakaloo	Egg	Ajoloh
Eye-lashes	Rapit	Fish	Eebah
Ears	Talinga	Sun	Chooloo

Moon	Lago	Prong or Hatchet	Taagla
Stars	Panyean	Cocoa-nut	Toata
God	Saraloggie Saneetoo	To fight	Sagack
Naked	Tocomong	The Sea	Koat
To speak	Maneeboo	A large Boat	Kalaba
Here	Kai	A Canoe	Avauk
There	Kafau	Sour	Malaja
Come	Kai comong	Sweet	Makiki
Go	Kainang	Wood	Loven
Yes	Oho	The wind	Roofa
No	Tani	A bow	Logue
Hard	Makala	An arrow	Rerow
Soft	Mamama	Clouds	Boojoot
Rough	Mokara	Thunder	Salagoo
Smooth	Malooploop	Lightning	Bëela
Straight	Moipoiroo	Earthquake	Tataoo
Crooked	Tamaipoiroo	A Dog	Jojo

NAMES OF PERSONS.

NAMES OF MEN.

Rajah of *Cockup*,

—————
—————
—————

Mengriah

Goolooh Tarah

Mareeat

Jagula Kayoo

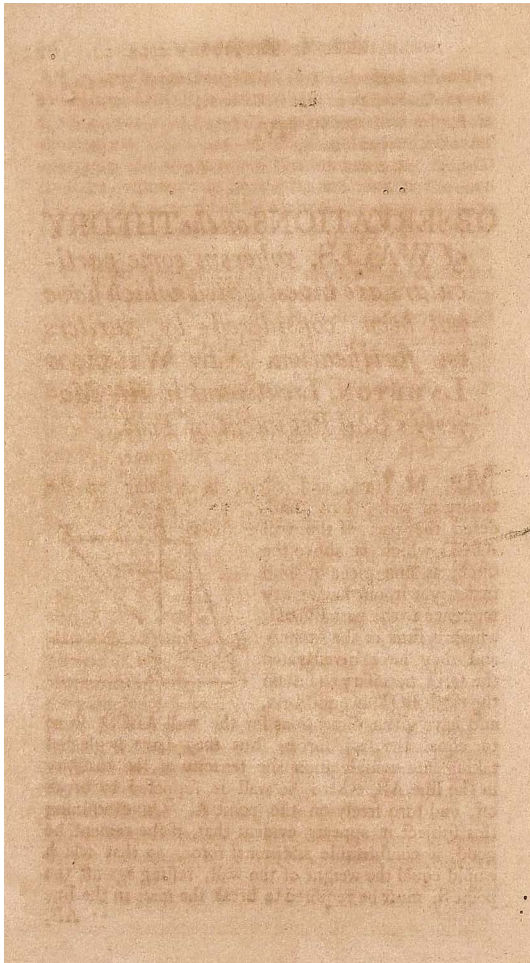
NAMES OF WOMEN.

Nanglannee

Tallee Sheeboe

Goryebooh

Tamancegal

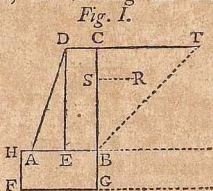


IV.

OBSERVATIONS *on the* THEORY
of WALLS, wherein some parti-
culars are investigated which have
not been considered by writers
on fortification. By WILLIAM
LAMBTON, Lieutenant in His Ma-
jesty's 33d Regiment of Foot.

MR. MULLER, and others, in treating on the
theory of walls, have considered the part of the wall

ABCD which is above the ditch, as one piece of solid masonry, without having any reference to the part FGBH, which is sunk in the ground, and they have investigated the force necessary to sustain the earth BCT, in equilibrio,



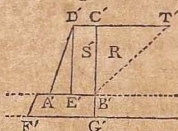
and have given dimensions for the wall ABCD, so as to equal the said force; but they have neglected taking into consideration the tenacity of the masonry in the line AB, where the wall is supposed to break off, and turn freely on the point A. On examining this subject it appears evident that, if the cement be good, a considerable additional force, to that which would equal the weight of the wall, resting against the point S, must be required to break the mass in the line AB,

AB, taking it for granted at the same time that the foundation HBGF is so fixed in the solid earth, as to require a force to move it, superior to that which is required to effect the breakage in the line AB: for otherwise the whole would turn on the point F, and must be considered as having no adhesion in the line FG; at the same time the force to separate it from the earth being estimated.

In order therefore to obtain the measure of such a force as is above stated, let $A'B'$ and $B'C'$, in the annexed figure, be of any given dimensions, and let a weight be applied to the point S' in the horizontal direction of the center of gravity R , of the triangle

$B'C'T'$ (which triangle represents the section of the earth resting freely against the wall) and determine by experiment, what weight will be necessary to break the wall, after deducting what would be sufficient to sustain the earth

Fig. 2.



in equilibrio, whose section is represented by $B'C'T'$ supposing there were no cohesion, and call that weight w —let w be compared with the above sustaining weight. Now since A is the point on which the wall is to turn, whatever force be required to separate one particle of the masonry in the line $A'B'$, the momentum of that particle will be expressed by multiplying the particle itself into its distance from the point A' . And, from a well known property in the center of gravity, the momentum of all the particles in the line $A'B'$ will be expressed by the line itself multiplied into the distance of its center of gravity from the point A' ; which will therefore be defined by $\frac{1}{2}A'B' \times A'B' = \frac{1}{2}A'B'^2$. Now, since the weight w is to be applied to the point S , the momentum of w will be expressed by $w \times B'S$; and

and this quantity, from the nature of the problem, must be as $\frac{1}{2}A'B'$: consequently, we have w as $\frac{\frac{1}{2}A'B'}{BS}$. Now, this being determined, the weight w

may also be determined which will break any other wall, under the like circumstances, whatever may be the dimensions of AB and BC (or BS) as in figure 1st. For seeing that it will be in the constant ratio of $\frac{1}{2}AB^2$ directly, and BS inversely, and if $\frac{\frac{1}{2}A'B'^2}{BS}$ be called b ,

we shall have $W : w :: \frac{\frac{1}{2}AB^2}{BS} : b$, and $W = \frac{\frac{1}{2}AB^2 \times w}{BS \times b}$, and

therefore $W \times BS = \frac{\frac{1}{2}AB^2 \times w}{b}$, the momentum of W ;—

which quantity must be added to the momentum of the wall given by Mr. MULLER.

Now, if $AE = an$, $EB = x$, $BC = a$, and therefore $BS = \frac{2}{3}a$, according to Mr. MULLER's first profile; then $\frac{\frac{1}{2}AB^2 \times w}{b} = \frac{\frac{1}{2}na + x^2}{b} w$; which added to

his equations for stone walls, we have $x^2 + 2nax + \frac{2}{3}n^2a^2$

$+ \frac{\frac{1}{2}na + x^2 \times w}{b} = \frac{8}{27} s^2 a^2$ and therefore $2b + w \times x^2$

$+ 2b + w \times 2nax = a^2 \times \frac{8}{27} s^2 b - \frac{4}{3}b + w \times n^2$ which, re-

duced, gives $x = a\sqrt{n^2 + \frac{\frac{8}{27} s^2 b - \frac{4}{3}b + w \times n^2}{2b + w}} - n$, a

general theorem for stone walls, whatever be the value of b and w .

SINCE the specific gravity of stone to that of brick is as 5 to 4, if the above momentum for the wall be reduced in that ratio, or its equal $(\frac{8}{27} s^2 a^2)$ increased;

there will arise $x^2 + 2nax + \frac{2}{3}n^2a^2 + \frac{\frac{1}{2}na + x^2}{b} = \frac{10}{27} s^2 a^2$,

which reduced gives $x = a\sqrt{n^2 + \frac{\frac{10}{27} s^2 b - \frac{4}{3}b + w \times n^2}{2b + w}}$

— an , a general theorem for brick walls.

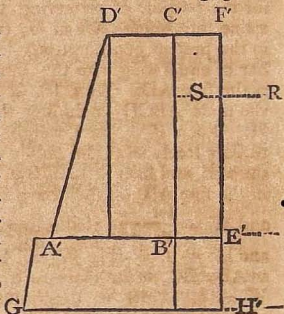
in the two foregoing equations. Hence $a\sqrt{n}$
 $+\frac{\frac{1}{2} \frac{6}{7} s^2 b - \frac{4}{3} b + aw}{2b+w} \times n^2 - n$ becomes for $= a\sqrt{\frac{3}{4}n^2 + \frac{2}{9}s^2} - n$,

for stone walls; and $a\sqrt{n^2 + \frac{\frac{1}{2} \frac{6}{7} s^2 b - \frac{4}{3} b}{2q+w} \times n^2} - n = a$

$\sqrt{\frac{3}{4}n^2 + \frac{5}{8}s^2} - n$ for brick walls.—If n be taken $= \frac{1}{3}$ or $.2$; and the angle $TBC = 45^\circ$, so that s^2 be $= .5$; then $x =$, $136 \times a$ for stone walls, and, $1211 \times a$, nearly, for brick walls, both considerably less than Mr. MULLER's computations, if w should be found what is here supposed.

Fig. 3.

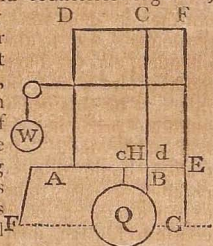
LET $A'B'C'D'$ be a wall of the same dimensions figure 3, with the addition of a counterfort $B'C'F'E$, which is continued to the bottom of the foundation GH . Then, since the breadth of a counterfort is $\frac{1}{4}$ of the distance between each other, the weight applied at any point S' , sufficient to break the counterfort in the line



$B'E'$, will be as $\frac{B'E \times A'B' + \frac{1}{2} B'E^2}{4BS}$, which being added to the former quantity for breaking the wall $A'B'C'D'$ in the line $A'B'$, gives w as $\frac{\frac{1}{2} A'B^2}{B'S} + \frac{B'E \times \frac{1}{2} A'B' + \frac{1}{2} B'E^2}{4BS} = b$. Hence the weight sufficient to break a wall of any other dimensions, will be $= \frac{2AB^2 + \frac{1}{2} BC \times AB + \frac{1}{2} BC^2}{4BC} \times \frac{w}{b}$ and the momentum $= \frac{2AB^2 + \frac{1}{2} BC \times AB + \frac{1}{2} BC^2}{4BC} \times \frac{w}{b}$, which if BE be $= \frac{1}{4} BC$, will be $= \frac{2n^2 a^2 w + 4 n a w a^2 + \frac{1}{4} n a^2 w + \frac{1}{2} a w x + \frac{1}{2} a w}{4b}$ which must therefore be added to the momentum of the

wall and counterfort given by Mr. MULLER in his 3d prob: from whence arises $\frac{4b+2w \times x^2 + 4b+2w \times 2n}{+ \frac{1}{2}b - \frac{1}{2}w \times x + \frac{5}{3}bn^2 + 2wn^2 \times a^2 + \frac{1}{2}b + \frac{1}{2}w \times na^2 + \frac{1}{16}b + \frac{1}{32}w \times a^2 = \frac{3}{27}ba^2s^2}$, which transposed and divided by $4b+2w$, gives $x^2 + 2na + \frac{1}{8}a \times x = a^2 \times \frac{\frac{3}{27}s^2b - \frac{5}{3}bn^2 - 2wn^2}{4b+2w}$
 $= \frac{1}{8}n - \frac{1}{16}$; and being reduced, gives $x = a \sqrt{n^2 + \frac{\frac{3}{27}s^2b - \frac{5}{3}bn^2 - 2wn^2}{4b+2w} - \frac{3}{27}s^2 - n + \frac{1}{16}}$ which is a general equation for stone walls; and by comparing the specific gravities, as in the former case, then $x = a \sqrt{n^2 \times \frac{\frac{3}{27}s^2b - \frac{5}{3}bn^2 - 2wn^2}{4b+2w} - \frac{3}{27}s^2 - n + \frac{1}{16}}$, a general equation for brick walls.

Now in order to obtain the value of w , let Q represent the mass of the wall and counterfort together, suspended to a line passing through their common center of gravity, and which will cut the line AE , we will suppose, in the point H . Then, from the principles of mechanics, if c and d be the points in the line AE , where lines passing through the respective centers of gravity of the two masses $ABCD$, and $BCFE$, will



intersect that line, we have $Q: \frac{1}{2}AB + \frac{1}{2}BE (=cd) :: BE + \frac{1}{2}BC$ (as the mass $BCFE$):
 $\frac{\frac{1}{2}AB + \frac{1}{2}BE \times BE \times \frac{1}{2}BC}{Q} = \frac{\frac{1}{2} + \frac{1}{2} \times \frac{1}{2}}{1 \times 3 + \frac{1}{2}} = \frac{2}{15} = cH$. Whence $AH = \frac{2}{15} + \frac{1}{2} = \frac{7}{15}$. Then again, by the laws of mechanics; as $\frac{4}{15} (=AB + \frac{1}{2}BE + BS): \frac{7}{15} (=AH) :: \frac{1}{2} (=Q): \frac{5}{15} (=W)$; —and consequently, $w = \frac{5}{7} + \frac{3}{4} = 2,34$ nearly. Now $b = \frac{\frac{2}{15}AB^2 + \frac{1}{2}BC \times AB + \frac{1}{2}BC^2}{4,15} = \frac{2}{55} = 379$, nearly, and if $n = \frac{9}{8}$, and the angle $CBF = 45^\circ$, so that $S^2 = ,5$; —and their different values substituted in the general expressions above, we shall get $x = ,0815 \times a$ nearly, for stone walls, and $x = 1155 \times a$ nearly, for brick walls.

SCHOLIUM.

IN estimating the value of w in these computations, I have supposed it to be $\frac{1}{2}$ the weight (W) which would sustain the wall by which the experiment is made, *in equilibrio*: this I suspect is below its value; particularly if the masonry be old. In ascertaining the value of w I would undoubtedly make various experiments with masses of masonry from one to four or five years standing, so as to compute for works whose walls may probably remain for so many years before they be closed up with earth. If the mortar be very good, the cohesion of a wall well built and seasoned, must become a very important object in the construction of large fortified places;—for by that the expence, as well as time and labour in the building, must be considerably reduced. To use no more materials than what are necessary should be a maxim in fortification, but then to determine the exact dimensions of any particular work, so that it may answer the purpose intended, and yet have no useless materials about it, must require a mathematical investigation before any rule can be obtained for proceeding upon solid and infallible principles. Engineers, to whom the direction of the most important works of a nation is intrusted, ought to be capable of determining what is precisely necessary to be done in all cases, that no useless expence may be incurred, but instead of having recourse to science, men in general, depend upon what they call experience; forgetting that in practice alone, there are no means for drawing general conclusions; but that we obtain, from *experiment*, the requisite *data*, to reason and generalise upon, and by such materials we are enabled to build a theory, to which practice must be ever subordinate and conformable. Should any circumstance occur in the course of practice that has not been considered in that theory, such circumstance should be then taken into consideration; but let no conclusions be drawn from thence, but what are correct and scientific. For to attempt to reason without principles; to substitute hypothesis for facts,

and fancy in place of philosophy, would be subjecting ourselves to innumerable errors. Hence it is, that in the construction of various compound machines, such frequent blunders are committed; for instance, where it is required to find the just proportion and dimension of the different parts of a machine, for raising water, &c. and the ratio of the weight to the power, so that the most work might be done in the least time possible, dimensions are generally taken from rules which apply only to a state of equilibrium, without having any recourse to velocity. And hence also, the mistaken practice of loading an arch, of whatever figure it may be, with the same mass of masonry, without knowing the principle of equilibration, whereby the extrado of any arch is so constructed, that every part of the arch shall sustain a pressure, just sufficient to retain it in its perfect form. But to enumerate the instances where theory is requisite, would be endless, because it would be difficult to mention one single case where it was not necessary. The great object to be attended to in founding a correct theory is, to include in the data every circumstance that *can* occur; and it is from this neglect, that in mixed mathematics, authors have sometimes differed in their results, though their mode of reasoning has been strictly mathematical. It is to be regretted that men of abilities have not paid more attention to experimental knowledge, where they have been in search of data for applying abstract reasoning to the rude operations of matter. Mr. VINCE, one of the first mathematicians of the present age, is now opening a new path to the most valuable discoveries, by the best conducted experiments that have yet been communicated to the world, respecting friction, and the resistance of fluids. By the former he has discovered very different laws to what have been followed hitherto, and which, when considered and applied to compound machines, whose effects after being put in motion are investigated, will tend greatly to compleat the science of mechanics. His experiments last mentioned

tioned lead to improve a subject the most abstruse and difficult in the whole science of physics. Many of our first mathematicians, since the immortal NEWTON shewed the way, have investigated, with the greatest perspicuity and elegance, a great variety of theorems concerning the resistance of bodies moving in fluids; but for want of knowing the law of resistance, their conclusions have differed very considerably from those experiments that were made to ascertain their truth. Doctor HUTTON after making many experiments at *Woolwich*, in the year 1786, in order to prove the results of several interesting problems which he has given in his select exercises, where he allows the law of resistance to be in the duplicate ratio of the velocity, observes, "upon the whole, we find that the resistance of the air, as determined by our experiments, differs very widely, both in respect to the quantity of it on all figures, and in respect to the proportions of it on oblique surfaces, from the same as determined by the preceding theory, which is the same as that of SIR ISAAC NEWTON, and most modern philosophers." And further, he says, "we conclude therefore, that all the theories of the resistance of the air hitherto given are very erroneous. And I have only laid down the preceding one, till further experiments on this important subject shall enable us to deduce from them another, that shall be more consonant to the true phenomena of nature."

WHETHER I have noticed every thing that ought to be taken into consideration, in describing how the experiment aforesaid ought to be made, will, perhaps with some, be a matter of doubt: but this I may venture to aver, that, if I have not, further discoveries on the subject will tend to a greater reduction in the dimensions of the wall; and as this enquiry has contributed to that end, I shall remain satisfied with the correctness of the theory here established, till more data can be obtained.

TO C. E. CARRINGTON, ESQ.

SECRETARY TO THE ASIATICK SOCIETY.

SIR,

THE nature and effects of the poison of serpents having lately attracted the attention of Mr. WILLIAM BOAG, one of the surgeons at this presidency, I have the pleasure to submit to the consideration of the Society, the remarks drawn up by that gentleman, on a subject, hitherto involved in much obscurity; and which the theory now offered, may perhaps tend to throw new and useful lights upon.

HAVING, since my leaving *Bengal*, been visited at this place by PURANA POORI, the *Sunyassy*, of whose former travels some account was given in my letter to Mr. Secretary MORRIS, of the 23d of *September* 1795; and having, in consequence, found him to vary in a few respects, from the tenor of his former narrative, so as to affect its accuracy, in as far as regards the exact situation of *Cailasa Kungri*; I think it incumbent on me (the more especially from observing in the newspapers that his former account makes part of the *Society's* last publication) to apprise them, that he now declares, he clearly understands the hill or pinnacle in question to be situated only about two miles to the southward of *Maunseerweer* lake; as well as that the Ganges flows visibly from what he now says he has heard to be its spring-head in that hill, to the distance of between seven and eight miles; and thence works itself a subterraneous passage, until it again emerges in the country of *Kedar Nauth*, at the place called *Gungowtry*.

WITHOUT attempting satisfactorily to account for this difference in BRAUN POORY's first and latter accounts, it may be deemed of sufficient importance to call for this acknowledgment of it, in view to the celebrity of the geographical position to which it relates.

I have the honour to remain, &c. &c.

Bombay, the 4th April, 1798.

JON. DUNCAN.

V.

ON THE POISON OF SERPENTS.

BY W. BOAG, ESQ.

SECTION I.

I PROPOSE, in this paper, to make some enquiry into the nature of the poison of the serpent, and to ascertain, as far as I am able, the most successful method of removing the disease it produces.

WHETHER the principles I shall endeavour to establish will be admitted as satisfactory, or sanctioned by future, and more extensive experience, I cannot pretend to determine; but the discussion cannot be altogether destitute of utility in this climate, where serpents are much more numerous, and much more dangerous than in *Europe*.

I SHALL begin by observing that, by far the greatest number of serpents are not venomous. In the 13th edition of the *Systema Naturæ*, published by Professor GMELIN, we find a list of two hundred and nineteen different kinds of snakes; and LINNÆUS informs us, that about one in ten only are poisonous; we also know it to be true, that many snakes which possess a poisonous quality, are not mortal to man, though they may be destructive to smaller animals.

It would be a desirable thing to be able to ascertain, from the appearance of a snake, whether it be venomous or not, but these animals so nearly resemble

one another, that it is impossible, without great experience, to distinguish them. The skin on the belly and tail of serpents, is composed of scales, which vary, in number and arrangement, in different serpents. Upon this circumstance, LINNÆUS has founded his division of the serpent tribe into six distinct genera. But this division, however useful it may be to the naturalist, is of little use to the physician, who is desirous of distinguishing the harmless from the venomous serpent: the colour, which is most commonly attended to, is a very fallacious mark, for it commonly changes with age: a serpent with a large head, is generally suspected to be venomous; but the mark which is chiefly to be depended on, is the large canine teeth, or fangs, fixed in the upper jaw, which are commonly two in number, but sometimes more. These teeth are covered with a membranous sheath, and are crooked, moveable, and hollow, to give passage to the venom, which they receive from a small reservoir, that runs along the palate of the mouth, and passes through the body of each fang. This reservoir contains but a very small quantity of venom, which is forced out of it when the animal attempts to bite, by a strong muscle fixed to the upper jaw, and that covers it nearly through the whole of its length. This is the means of defence given to serpents; it has been well observed by LINNÆUS, that if nature has thrown them naked on the ground, destitute of limbs, and exposed to every injury, she has in return, supplied them with a deadly poison, the most terrible of all weapons, and which has made them, from the earliest ages, to be regarded as objects of horror, or of religious veneration, by the human race.

SECTION II.

THE symptoms which arise from the bite of a serpent, are commonly pain, swelling and redness in the part bitten; great faintness, with sickness at stomach, and sometimes vomiting, succeed; the breathing becomes
short

short and laborious, the pulse low, quick, and interrupted : the wound, which was at first red, becomes livid, black and gangrenous ; the skin of the wounded limb, and sometimes of the whole body, takes a yellow hue ; cold sweats and convulsions come on, and the patient sinks, sometimes in a few hours, but commonly at the end of two, three, or four days.

THIS is the usual progress when the disease terminates fatally, but happily the patient will most commonly recover, a reflection which should moderate the fears of those who happen to be bitten by snakes, and which at any rate should, as much as possible, be resisted, as the depressing passion of fear will, in all cases, assist the operation of the poison.

WE read in authors that the bite of some snakes produces symptoms peculiar to themselves*. The asp is said to produce an universal torpor and lethargy without pain : for this reason we are told, CLEOPATRA, the celebrated queen of *Egypt*, preferred a death inflicted by the bite of this animal to any other. This is a fact concerning which historians may differ, but it appears certain, from some cases related by Captain GOWDIE, in Dr. RUSSEL's late splendid publication, and by other writers, that the bite of serpents will, in this manner, sometimes produce death. LUCAN, in his *pharsalia*, mentions a variety of serpents that infested the *Roman* army in its march over the *Lybian* desert, and he distinguishes them by the various symptoms they produced. But the dreadful catalogue given by LUCAN, should rather be considered as poetical embellishments, than historical facts ; and whatever truth may be in this variety of symptoms, it is infinitely of more importance to know, that the nature

* Heritinandel, malabarensium coluber, ictu corrumpit carnes totius corporis humani, ut putrescant, decidant, et post mille tormenta, moriatur vulneratus. Parata tamen huic malo medela est in Antidysma decocto aquoso, copiosius hausto,—Amenitat : Academ : Vol. 1, p. iii.
of

of the venom is the same in all of them, and consequently to be removed by the same means: this opinion appears to be just and natural, though it may not admit of any direct proof. It has uniformly been observed, that even the same serpent possesses very different degrees of power in its bite, according to the season of the year, and other circumstances: this is beautifully touched upon by VIRGIL, when speaking of a serpent that was, in his time, common in *Italy*.

Postquam exhausta palus, terræque ardore dehiscunt,
Exilit in siccum, et flammantia lumina torquens
Sævit agris, asperque siti, atque exterritus æstu.
Ne mihi tum molles sub dio carpere somnos,
Neu dorso nemoris libeat jacuisse per herbas:
Cum positis novus exuviis, nitidusque juvena
Volvitur, aut catulos tectis, aut ova relinquens
Arduus ad solem, et linguis micat ore trifurcis.

VIRG. GEORG. lib. 3d.

SECTION III.

WE are now to enquire in what manner the venom produces such fatal effects upon the human body. This it will be admitted is a very interesting question, and has given rise to a great variety of opinions, but after all, no subject seems to be less understood. Ancient writers have offered a variety of crude conjectures, which have deservedly been forgotten; they, however, made one important observation, "that the poison produced its effects in consequence of a wound, and through the medium of the blood." Upon this view of the disease, the whole of their practice was founded; it was the object of all their applications, as expressed by CELSUS, "quo plus vitiiati jam sanguinis extrahatur." This opinion, however, did not continue to be maintained: later physicians, supported by

by the respectable authority of Dr. MEAD, observing how quickly death sometimes follows the bites of serpents, concluded that the venom could act through the medium of the nerves only. This is one of those vague conjectures which has served, at one time or another, to obstruct the progress of every science, and which owes its reputation to a sort of readiness in explaining every thing, because it can explain nothing in an intelligible manner. The celebrated *Italian* naturalist, FONTANA, has freed us from this difficulty, by demonstrating, from a great variety of experiments on different animals, that the venom of the viper is perfectly innocent when applied to the nerves only; that it produces in them no sensible change, and that they are incapable of conveying the poison to the animal. On the other hand, he has shewn in a very distinct manner, that it acts immediately upon the blood, that through the medium of this fluid, it destroys the irritability of the muscular fibres, and produces death. Neither is it difficult, upon this view of the subject, to understand how the poison may sometimes produce very sudden death; for if this active matter happen to be thrown immediately into a large vein running along the surface of the body, it will more readily be carried to the vital parts, and may render the use of the most powerful remedies ineffectual.

THE ground being so far cleared, the question now occurs, what is the peculiar quality in the venom, which enables it to produce such direful effects? Till we can answer this question in a satisfactory manner, it is evident, that the practice in this disease must be guided by chance, and we can entertain no rational hope of correcting the poison. It is not many years since this subject seemed to be covered with an impenetrable veil, and FONTANA, among all his reasonings upon the poison of the viper, does not once attempt to remove it. It is therefore an agreeable reflection, that the rapid progress which chemistry has made of late years,

years, enables us to enter upon this part of the subject with some degree of confidence, and if it should be thought I have failed in determining this question with sufficient precision, the view here taken of the subject may not be altogether destitute of use. It is an opinion at least as old as PLINY *, that the blood is a living fluid, but it was reserved for the late celebrated physiologist, Mr. JOHN HUNTER, to place this opinion among the number of those truths that can no longer be disputed. How the life of this fluid begins, and in what the living principle itself consists, are matters concerning which we shall probably remain for ever ignorant; but it has been established beyond all controversy, that the life of the blood immediately depends upon the action of the atmospheric air, to which it is exposed in its passage through the lungs. The human heart, and in general the heart of all animals with warm blood, has two cavities or ventricles, and the blood, before it is returned to the right ventricle of the heart, has performed two circles, a lesser between the heart and the lungs, and a larger between the heart and the rest of the body. While the blood passes through the lungs, it undergoes a very remarkable change in its colour, and other properties: a certain portion of the atmospheric air is attracted and absorbed, while the remainder carries off by expiration, that matter in the blood, which is either useless or noxious to the body. The atmosphere we live in, it is now well known, is a compound fluid, one fourth part of which is called pure or oxygen air, and the remainder, and larger portion, noxious or azotic air; but it is the former part only, which is attracted by the blood as it passes through the lungs, and contributes to the support of animal life, from whence also, *the red colour of the blood, and the heat of animals is derived.* Independently of the direct proofs of these

* In treating on the blood, he observes—Magna et in eo vitalitatis portio. Emissus spiritum secum trahit, tamen tactum non sentit.

PLIN. Secund. Nat. Hist. lib. xi, cap. 38.

facts afforded by chemical experiments, they admit of further illustration from serpents themselves. The heart of serpents, and all other cold blooded animals, has but one cavity, and the blood performs but one circuit round the body, so that a small portion only passes through the lungs: hence little of their blood is exposed to the action of the atmosphere, it is therefore but little loaded with oxygen, it is not of so high a colour, and the heat of their bodies is less.

THESE fundamental truths have already given a new appearance to the theory and practice of medicine, and they now lead me to conjecture that the poison of serpents acts upon the blood, by attracting the oxygen, which it receives from the atmosphere in its passage through the lungs, and upon which its vitality depends.

In support of this opinion, I would adduce the following arguments:

1. MAN, and other warm blooded animals, exposed to an atmosphere deprived of oxygen, quickly expire. The poison of a serpent when introduced into the blood, also causes death, but carried into circulation by a wound, and in very small quantity, its operation is comparatively slow and gradual.

2. THE appearances on dissection in both cases, are very similar. The blood becomes of a darker hue, and coagulates about the heart and larger vessels; the irritability of the fibres are nearly to the same degree destroyed, and the body has a strong tendency, in both instances, to putrescency.

3. DOCTOR MEAD mixed the venom of the viper, and healthy blood together out of the body, and he did not perceive that it produced any change in its appearance: this arose from his mixing a small quantity of the

the venom with a large quantity of the blood: but if two or three drops of venom be mixed with forty, or fifty drops of blood, it immediately loses its vermilion colour, becomes black, and incapable of coagulation.

4. It is a very remarkable circumstance, that the poison of the serpent has most power over those animals, whose blood is the warmest, and the action of whose heart is the most lively: while on the contrary, it is not a poison to the serpent itself, nor in general to cold blooded animals. The reason appears to be this: cold blooded animals do not require a large quantity of oxygen to preserve them in health; this is evident from the conformation of their heart, and respiratory organs, as already mentioned. It does not however follow, that no quantity of the venom would destroy them, for it is also evident from their possessing respiratory organs of any kind, that a certain quantity of oxygen is absolutely necessary, and hence we know that some of them, such as frogs, may be killed by the venom, though it always produces its effects more slowly upon them, than upon animals with warm blood.

HAVING thus endeavoured to ascertain the method in which the poison operates, it may now be asked, what substance can it be, that so strongly attracts the oxygen of the blood? The venom is inodorous and insipid, contrary to the opinion of Doctor MEAD, it is neither sharp nor fiery, for it has scarcely any perceptible taste; it has the appearance, and sensible properties of an animal mucus, but this mucus is evidently a vehicle to some very active matter: on this subject it would not be difficult to conjecture, but as in the present state of our knowledge, no conjecture we could offer could be established upon any satisfactory grounds, we shall leave this part of the subject for future investigation.

SECTION IV.

WE now proceed to enquire into the most successful method of curing the disease which the poison produces; and this part of the subject will, we hope, afford an additional proof, that the view here taken of the operation of the poison, is most probably a just one.

It would be an endless and unprofitable task to enumerate all the remedies which have been imposed upon the credulity of mankind, as specifics against the poison of serpents; they have been obtained from all the kingdoms of nature, and there is no country, however rude and barbarous, where the inhabitants have not boasted of some specific peculiar to themselves. The ancient physicians highly extolled various preparations of the viper itself as a remedy in this disease: it would have been a fortunate circumstance, if the same animal that produced the poison, should also have afforded an antidote to destroy it. Human saliva, as we are informed by SENECA, and the elder PLINY, was believed to be a powerful remedy for the bite of a viper. The *Psylli* and *Marfi* in ancient times, pretended to possess some charm in their persons destructive to the poison of serpents; and we are told by Mr. BRUCE, that a set of men still exist in *Egypt*, who will suffer themselves to be bitten, and with impunity, by the most venomous serpents in that country, whose bite would be to others, certain and speedy death. A great variety of vegetables have been celebrated in different countries for the bite of the serpent, and none more highly than the root of the *Ophiorrhiza Mungos*, LIN: concerning which KÆMPFER relates very surprising effects. It is chiefly used for the bite of the *Cobra de Capello*, (*Coluber Naja*, LIN:) by the natives of this country, and it would appear that they place great confidence in it. * In *America* also, a variety of snake roots

* A particular description of this plant will be found in the second volume of the *Amenitat: Academica*. In the 4th volume of the *Asiatick Researches*, SIR WILLIAM JONES describes a plant under the name of *Cbandraca*, which, from the quality ascribed to it, by the *Bengal* peasants,

roots have been discovered, and other vegetable remedies, which seem in general to unite the two qualities of warmth and bitterness, and it is very probable that by rousing the vital functions, they may be of some use in assisting nature, to resist the deadening operation of the poison.

THE volatile alkali is the remedy most commonly employed by physicians, both in this country and in *Europe*; but the belief which formerly prevailed, that it possessed some specific power, which corrected the poison, seems to be now very generally relinquished*; and it is now acknowledged to have no other action than that ascribed to it by Mr. WILLIAMS, of stimulating the heart and vascular system to a more vigorous exertion.

THE calces, or as they are more properly called, the oxyds of some metals, as arsenic, mercury, and silver, have been made use of, the efficacy of which as remedies in this disease, merit a more attentive consideration.

ARSENIC has long been employed by the natives of this country, since it forms the principal ingredient in what is called the *Tanjore* pill. The little experience collected by *Europeans*, does not enable us to form any very exact judgment respecting it. The remedy itself produces very violent effects; and if used with any freedom, might occasion death. It is therefore difficult to distinguish the effects of the remedy from the symptoms

facts, of curing animals bitten by snakes, he conjectures, may be the same. There seems to be much obscurity among authors in their accounts of this plant, which sufficiently justifies the conjecture of Sir WILLIAM JONES. It is named by different writers, *Rametul*, *Nagbawalli*, *Eka-werya*, *Caju-ular*. I took some pains to enquire, among the natives, for this root. A specimen was brought me, by a snake doctor, which corresponded to the description, given of it by KEMPPER. He named it *Nagbawalli*: he said when a person was bit by the *Cobra de Capello*, the piece of it was rubbed upon the eyelids, lips, and tongue, that it produced sickness and vomiting, but had no effect upon those who were not bitten. I chewed some of it, it was bitter and aromatic.

* *Asiatick Researches*, Vol. II.

of the disease : it should probably be employed in desperate cases only, and where no other powerful remedy can be procured. For though it may be very well adapted to counteract the poison, yet I think it neither so safe, nor so efficacious, as other remedies which are now to be mentioned.

THE preparations of mercury, so far as I can judge from the limited opportunities I have of collecting information from books, seem also to have been but little used in this disease, although mercury is a remedy, from which I think much benefit might be expected. I find in the *Systema Naturæ* the following observation on the *Coluber Rhedi*: LIN. “*Mofu celerrime lethalis, nisi mercurii solutione gummofa, et gentianæ decocto succurritur ægro.*”—If mercury should ever come into use in this disease, it should certainly be employed in a more effectual manner than is commonly practised ; and if we are right in asserting that the nature of the poison is the same in all serpents, the observation of LINNÆUS respecting the *Coluber Rhedi*: will, with some limitation, apply to them all.

WE are indebted to FONTANA for any knowledge we possess on the use of the lunar caustic, which is a preparation of silver in the nitric acid ; and considering the length of time that has elapsed since his publication, and the advantages resulting from its use, it is wonderful it has not excited more general attention.

I SHALL comprize the result of FONTANA's experiments on this substance in a few words. He first mixed the venom with the lunar caustic, applied this mixture to a wound, and found that the venom was rendered entirely innocent, while the corroding power of the caustic was diminished. He next wounded a variety of animals, with venomous teeth, scarified the wounds, and washed them with a solution of lunar caustic in water : by this means, the life of the greatest

number of the animals was saved, though they were such as he knew to be most easily killed by the poison, and the death of others was retarded. He also tried a weak solution of the same remedy internally with remarkable success, and upon the whole he congratulates himself in seeing his labours at length rewarded by the discovery of a true specific remedy for the bite of the serpent.

FONTANA was led to the use of this remedy by no previous theory, for neither before, nor after his discovery, does he attempt to account for its effects, and the infinite variety of his experiments, as well as the fidelity and accuracy with which he relates them, entitle him to our confidence and praise.

I AM now to explain in what manner, the successful use of these substances supports the principles we have been endeavouring to establish: and here again I am under the necessity of assuming some facts, which are established and indisputable.

1. OXYGEN enters into the composition of all acids, and is the principle, as its name imports, upon which their acidity depends.

2. METALS are united with oxygen under various circumstances, but chiefly in two ways: the first is by burning them in an open fire, or to speak more correctly, by the contact of heat and air, when they are converted into metallic oxyds: the second, by the decomposition of acids, when they form compound salts.

3. OXYGEN is attracted by different metals with different degrees of force, those which attract it with the least force, are the perfect metals, as platina, gold, silver, hence they cannot be converted into an oxyd by exposure to heat and air, except at very high temperature,

ture. After them comes mercury, and after it, the imperfect and semi-metals: these last, of which arsenic is one, for the most part attract oxygen strongly, and are generally found united with it under various forms in the bowels of the earth.*

OXYGEN, we have already observed, is a principle which enters into the composition of the blood, and performs a very important part in the animal œconomy. It must also be evident that the blood may be more or less loaded with this principle, and that disease may be produced, either by too great, or by too small a quantity being present in the circulating mass. We have already said that the disease produced by the bite of a serpent, arises from the subtraction of oxygen from the blood; the indication of cure must therefore be, to supply this oxygen, which we suppose to be withdrawn. The most obvious method of accomplishing this will be to employ such substances as are known to contain oxygen in the greatest abundance, and to part with it with the greatest facility. This is precisely the character of the lunar caustic, which is made by dissolving silver in the nitric acid, and afterwards evaporating and crystallising the solution. The composition of the nitric acid is also accurately ascertained, it differs from the common nitrous acid of the shops, by containing a greater quantity of oxygen, and in a singularly loose form; so that if our reasoning upon the poison of the serpent be in any degree correct, no medicine would appear to be better calculated than this, to obviate its effects.

THE application of the foregoing principles, will explain the probable efficacy of the different metallic preparations we have just spoken of, which will be

* I am very sensible that the terms perfect, imperfect, and semi-metals, are improper: for all metals are equally perfect of their kind, but I have complied with the common terms, that I might the more readily be understood.

connected with the order of their attraction for oxygen, and the quantity they contain; it will also lead us further to improve and perfect the practice: for whenever a person is bitten by a serpent, and danger is apprehended, every means should be employed, which human ingenuity has discovered, of speedily oxygenating the system.

WHETHER the same method might not be applicable to the diseases arising from some other animal poisons, is a subject which remains for experience to determine. There is great reason to believe, that the venereal poison is removed by this method*, and it is not improbable, that the same practice might be successful in the *Rabies Canina*. This disease, however, very seldom makes its appearance in this part of *India*, although it is mentioned, by the natives, as not a very uncommon disease at *Poonah*. I lately attended in this place, with Mr. SCOTT, a man who had been bit by a dog, and who was supposed to have some symptoms of this disease: we suspected at first, and were soon convinced, that the whole was imaginary, for the man, without any assistance, quickly recovered: and this is the only instance I have had an opportunity of seeing in *India*.

I SHALL conclude this paper, by giving a connected view, of what appears to be the most adviseable method, of treating the bite of a serpent, which is apprehended to be venomous. This obviously divides itself into the external treatment of the wound, and the internal use of medicines, to counteract the action of the poison in the blood.

THE *Psylli*, as already mentioned, possessed a high reputation for curing the bites of serpents, but their whole method, when stripped of mystery and fable,

* I refer here to a paper published by Mr. SCOTT, on the nitric acid.
consisted

consisted in sucking the wound. This practice is recommended in strong terms by CELSUS, who observes, that it is not only harmless to the person who sucks the wound, but will save the life of the person wounded: "*ergo quisquis id vulnus exfuxerit, et ipse tutus erit, et tutum hominem præstabit.*" Though I would not be so sanguine in the success of this practice, yet as giving one chance to escape, it ought not to be omitted. A ligature should, as soon as possible, be tied above the part bitten, so as to impede, but not entirely to stop the circulation of the blood, for the bite of a serpent is for the most part superficial, and the poison is carried into circulation by the smaller vessels on the surface. The wound should next be scarified, and washed with a solution of the lunar caustic in water: I would prefer, for this purpose, a weak solution, because it may be used more freely, and frequently repeated. The same medicine should also be given internally, and repeated, at intervals, as circumstances might point out. The foregoing reasoning upon this medicine, induced me, some months ago, to make trial of it internally, in a different disease; this, therefore, is not the place to state the result of these trials; but it is proper to mention that I know, from repeated experience, it may be taken, two or three times in the day, in the quantity of half a grain dissolved in two ounces of pure water*, and its use persisted in, for several days, with great safety. The principal effects it produces, are a heat in the stomach and breast, and, after a time, a tenderness in the gums, and a disposition to bleed, but without that swelling and pain attending the use of the oxyds of mercury.

To these means might be added (especially if the symptoms, that may have come on, are not materially relieved) a warm bath acidulated with the nitric acid.

* THE water should be distilled, or at least it should be rain water, otherwise the lunar caustic will be in part decomposed, which will be evident, by a white cloud forming in the solution.

In this bath, which should be made sufficiently strong to produce a very sensible irritation on the skin, the wounded limb, and a great part of the body, might be placed for half an hour, and repeated as circumstances might direct. We are informed by FONTANA, that he found a bath of very warm water exceedingly useful; he says that it lessened the pain, abated the inflammation, and the part bitten did not become so livid and changed. I apprehend that the moderate addition of the nitric acid to this bath; would be a great improvement: it has been made use of successfully in this place, by Mr. SCOTT, in some cases of *Lues Venerea*, and I have used it in some bad sores, in this country, with great effect.

THERE are a variety of other methods of oxygenating the blood, but all of them may not be so well adapted to remove the disease, nor of such easy application and attainment. I should hope, if the foregoing plan be diligently pursued, it would, in almost every instance, be sufficient to effect a cure. The blood may be oxygenated through the medium of the lungs, either by exposing the patient to an atmosphere loaded with nitric vapours, in the manner recommended by Dr. CHARMICHAEL SMYTH in contagious diseases *, or a more highly oxygenated atmosphere might be breathed by means of a pneumatic apparatus, adapted for the purpose, as recommended by Dr. BEDDOES.

BUT as this paper has already extended to a greater length than I at first intended, I content myself with barely mentioning these methods, and must refer to the authors themselves for a particular account of the practice here alluded to.

* It may be proper to remark, that at the time Dr. C. SMYTH made the experiments above alluded to, he was not sufficiently acquainted with the materials he was using, to draw the proper conclusions from them; this, however, cannot affect the utility of the practice he recommends.

I HOPE I have said enough, to shew that the principles I have attempted to establish are at least supported by probability, that the method here proposed has already been sanctioned by a more certain experience than any other, and that it affords the most likely means of counteracting the deadly poison of the serpent tribe.

It is, however, to experience alone, we must trust, for the ultimate decision upon this subject; and, to whatever conclusion this may lead us, I shall most willingly follow; professing myself much more anxious for the discovery of truth, than for the support of any of the opinions stated in this paper. I shall think myself sufficiently happy, if this essay should in any way tend to elucidate a subject, as important as it is obscure.

SUPPLEMENT TO THE FOREGOING PAPER, ON THE POISON OF SERPENTS.

HAVING at length succeeded in procuring a snake with the venomous teeth and poison bag entire, but which are commonly extracted in those serpents which the natives carry about with them, I resolved to make some experiments with it. The snake I had procured was a large *Cobra de Capello* (*Coluber Naja*, LIN.) and which is generally represented to be the most venomous of all serpents.

EXPERIMENT I.

I WAS, in the first place, desirous of ascertaining the power of the venom: for this purpose, the snake was made to bite a young dog in the hind leg, and for which no medicine, either internal or external, was made use of. The dog, upon being bit, howled violently for a few minutes; the wounded limb soon became paralytic; in ten minutes the dog lay senseless and convulsed; in thirteen minutes he was dead.

EXPERIMENT II.

A DOG, of a smaller size, and younger, was now bitten in the hind leg, when he was instantly plunged into a warm nitric bath, previously prepared for the purpose: as soon as possible after he was in the bath, the wound was slightly scarified, and a weak solution of lunar caustic in water was poured down his throat: but the symptoms made the same progress as in the first experiment, and the dog died in the same time.

UPON opening these two dogs, about half an hour after death, the blood in the heart, and in the larger vessels,

vessels, was of a dark colour, in a fluid state, and did not coagulate on exposure to the atmosphere.

EXPERIMENT III.

AFTER the interval of one day, the same snake was again brought, and made to bite a young puppy in the hind leg, but above the part to be bitten, I had previously tied a ligature: immediately after he was bitten, the wound was scarified and washed with a solution of lunar caustic. The dog did not appear to feel any other injury than what might arise from the ligature round his leg: half an hour after he was bitten, the ligature and dressing, which consisted of lint dipped in the solution of lunar caustic, were removed. The dog soon began to sink, gradually lost the use of his limbs, breathed quick, was convulsed, and died in half an hour more. On opening this dog, the blood coagulated readily on being emptied from the vessels.

EXPERIMENT IV.

ANOTHER dog was now bitten in the hind leg, and immediately after a ligature was applied, as in the preceding experiment: the wound was scarified and washed as before, and for two hours the dog continued lively and well, when the ligature was removed.

EXPERIMENT V.

ANOTHER puppy having been bit in the same place, the wound was simply scarified, and washed with a solution of the lunar caustic, and for two hours the animal continued free from disease. In these two last experiments the dogs were very young, and fed by their mother's milk: at the expiration of the time mentioned, they were carried to her, but she avoided them, and they both died in the course of the day.

EXPERIMENT VI.

OBSERVING in the last experiments, that the venom was probably weakened by use, I waited for two days, and resolved to try its effects a second time where no medicine was made use of. A dog was accordingly bitten by the same snake in the hind leg in the usual manner, and in twenty minutes he was dead. It is however worthy of notice, that though the mortal progress of the poison was as certain as before, it did not now appear to produce any pain, the animal did not howl upon being bit, but gradually sunk and died. The blood of this dog continued also in a fluid state, and was of a dark colour.

EXPERIMENT VII.

A SECOND dog being now bit, the wound was scarified and washed with a solution of lunar caustic, and the same medicine given in small quantities internally, and repeated at intervals. The dog appeared to be but little affected for about half an hour, when he vomited violently for several times, gradually sunk, and died at the expiration of an hour. The blood in this dog coagulated after death.

EXPERIMENT VIII.

A THIRD dog being bit in the same manner, the wound was washed with a volatile alkaline spirit, and the same medicine given internally diluted with water, and repeated at intervals. This dog was in a short time convulsed; vomited several times, and then seemed to revive: but he soon relapsed, and in three hours he was dead. This dog was not opened.

EXPERIMENT IX.

AFTER the interval of two days the same snake was brought,

brought, and as the volatile alkali appeared to have been of some use in the last experiment, it was determined to try it first: and this experiment, as well as several of those already related, was conducted by my friend Dr. MOIR with attention and accuracy. A dog was accordingly bitten in the usual place, and the volatile alkali given as in the preceding experiment: the dog was dead in eighteen minutes.

EXPERIMENT X.

To a dog bitten in the same place, immediately after the former, that we might have the means of ascertaining the effects of the remedy, nothing was given, he died in eighteen minutes.

EXPERIMENT XI.

OBSERVING in the seventh volume of the medical facts published by Dr. SIMMONS, that *Cayenne* pepper was a powerful remedy for a vegetable poison obtained from the roots of the *Jatropha Manihot*, or bitter *Cassada*, I determined to make trial of it. To a dog bitten in the usual manner, five grain pills of the pepper were given, and the wounded limb was washed with an infusion of it in warm water. These pills had been repeated four times in the space of an hour, when the dog died.

EXPERIMENT XII.

A YOUNG puppy was now bitten in the ear, and exactly half a minute after the ear was cut off. The wound made by the knife bled freely. The dog continued lively for some time, but in half an hour, he began to droop, and in half an hour more, died. It is observed by FONTANA, and he sufficiently well accounts for it, that on biting the ears of animals, a drop of venom collects on the ear, at the hole made by the tooth: this was very remarkable in the experiment now related: a quantity of venom, like a large drop of yellow secum, collected on the ear, and trickled to the ground.

It may be proper in general to observe, that in all these experiments, the part bitten did not swell nor inflame, a livid mark could be distinguished where the tooth entered, but could be traced only for a very little way. When the wounds were scarified, they bled little or none at all; but before death they commonly bled freely, and the scarifications were exceedingly discoloured.

In all the dogs which were opened, the blood was found to be in a fluid state. Upon examining, after death, those animals which died by the poison of the viper, the *ABBE' FONTANA* commonly observes, that he found the blood coagulated about the heart and larger vessels. My experience has not confirmed this observation, which I attribute to the great difference in point of strength possessed by the venom of the snake made use of in the preceding experiments. In those cases where the poison acted rapidly, the blood when emptied from the vessels, shewed no disposition to coagulate, and seemed to be of a darker colour than natural: but in those cases where the animals died more slowly, the blood readily coagulated on exposure to the atmosphere. It is not foreign to the present subject to observe, that while the poison of serpents in mingling with the blood, has a strong tendency to prevent its coagulation, it on the contrary more readily coagulates in those animals, who have breathed pure oxygen air.*

THESE experiments will perhaps serve little other purpose than to prove the quick and destructive operation of the poison of this kind of serpent, and of the inefficacy of the most celebrated remedies which have been hitherto discovered. It is certain however that upon larger animals the progress would have been neither so rapid nor destructive, and upon the human body it is also probable that remedies might

* *BEDDOES* on factitious airs.

have been employed with greater success: for the delicacy of the human skin is very great, and the absorption of any remedy that might be applied to it, extensive and speedy. Dogs, we are told, do not perspire, and it is probable that there exists much correspondence between the powers of absorption and perspiration.

THE little success attending the use of the lunar caustic in these experiments, affords a sufficiently convincing proof, that the snakes made use of by the **ABBE' FONTANA**, and the one made use of by me, possess very different degrees of strength in their venom: there are one or two experiments where this remedy appeared to be used with some effect: but I imputed it to the weakened power of the venom by use: and I am fully convinced that the poison of this kind of serpent, when it is in full vigour, is so certainly and rapidly destructive, at least to small animals, that neither the lunar caustic, nor probably any other remedy, would arrest its progress. It appears that even the delay of half a minute in cutting off the ear that was bitten, was fatal to the animal; and it is scarcely possible that to a person bitten by a snake, any kind of remedy could be applied in a shorter time. No experiment could be better calculated than this last, to shew the power of the venom of this kind of serpent, for **FONTANA** observes, that it is very difficult to kill either dogs or rabbits when bitten in the ears, and out of all the experiments he makes upon the ears of these animals, and where no attempt was made to relieve them, none of them died.

I AM therefore still of opinion, that the method of cure mentioned in the foregoing paper is the most rational, and the most likely to succeed in preventing death, as well as the other bad consequences which sometimes follow the bite of a serpent that is not mortal. In the use of the nitric acid bath, I should have much confidence: and this confidence arises from

from a greater experience of its powerful influence upon the human body in different diseases: this experience will soon be communicated to the public by my friend Mr. Scott, whose labours in the application of a most powerful and useful agent in medicine, and especially useful as applied to the inhabitants of warm climates, merit the greatest praise.

VI.

An ACCOUNT of the PETROLEUM WELLS in the BURMHA Dominions, extracted from the Journal of a Voyage from Ranghong up the River Erai-Wuddey to Amarapoorah, the present Capital of the Burmha Empire.—By Captain HIRAM Cox, Resident at Ranghong.

SATURDAY, JANUARY 7, 1797.

WIND easterly, sharp and cold, thick fog on the river until after sun rise, when it evaporated as usual, but soon after collected again, and continued so dense till half past eight A. M. that we could barely see the length of the boat.

THERMOMETER at sun rise 52° , at noon 74° , in the evening 69° ; general course of the river north 20° west, main breadth from one to one and a half miles, current about two and a half miles per hour.

EAST bank, high, rugged, barren downs, with precipitous cliffs towards the river; of free stone intermixed with strata of quartz, martial ore and red ochre; beech moderately shelving, covered with fragments of quartz, flint, petrifications and red ochre, and with rocky points projecting from it into the river.

WESTERN bank, a range of low sandy islands, covered with a luxuriant growth of reeds. These at present narrow the stream to three quarters, and in some places to half a mile, but are overflowed in the rains; the main bank rather low and sandy, subject to be overflowed, its whole breadth about three miles to the foot of a range of low woody hills, which in

point of vegetation, form an agreeable contrast to the eastern shore; these hills are bounded to the westward at the distance of about twenty miles from the river, by an extensive range of high mountains, clothed with wood to their summits.

At half past ten A. M. came to the lower town of *Rainanghong*, a temple in it of the antique *Hindoo* style of building.

At noon came to the center town of *Rainanghong* (literally the town through which flows a river of earth oil), situated on the east bank of the river, in latitude $20^{\circ} 26'$ north, and longitude $94^{\circ} 45' 54''$ east of *Greenwich*. Halted to examine the wells of *Petroleum*.

THE town has but a mean appearance, and several of its temples, of which there are great numbers, falling to ruins: the inhabitants however are well dressed, many of them with gold spiral ear ornaments, and are undoubtedly rich, from the great profit they derive from their oil wells, as will be seen below.

At two P. M. I set off from my boat, accompanied by the *merethaghee* or zemindar of the district, and several of the merchant proprietors, to view the wells. Our road led to the E. N. E. through dry beds of loose sand in the water courses, and over rugged arid downs and hillocks of the same soil as described above; the growth on them, consisting of scattered plants of *Euphorbium*, the *Cassia* tree, which yields the *Terra Japonica*, commonly called *cutch* or *cut*, and used throughout *India* as a component part of a *beera* of *paun*, also a very durable timber for lining the oil wells, and lastly the hardy *biar* or wild plumb common in *Hindostan*.

THE sky was cloudless, so that the sun shone on us with undiminished force, and being also unwell, I
4 walked

walked slowly, and as we were an hour walking to the wells, I therefore conclude they are about three miles distant from the river; those we saw are scattered irregularly about the downs at no great distance from each other, some perhaps not more than thirty or forty yards. At this particular place, we were informed there are one hundred and eighty wells, four or five miles to the N. E. three hundred and forty more.

IN making a well, the hill is cut down so as to form a square table of fourteen or twenty feet for the crown of the well, and from this table a road is formed, by scraping away an inclined plain for the drawers to descend, in raising the excavated earth from the well, and subsequently the oil. The shaft is sunk of a square form, and lined as the miner proceeds, with squares of *Cassia* wood staves; these staves are about six feet long, six inches broad, and two thick; are rudely jointed and pinned at right angles to each other, forming a square frame, about four and a half feet in the clear for the uppermost ones, but more contracted below. When the miner has pierced six or more feet of the shaft, a series of these square frames are piled on each other, and regularly added to at top; the whole gradually sinking, as he deepens the shaft, and securing him against the falling in of the sides.

THE soil, or strata to be pierced, is nearly such as I have described the cliffs to be on the margin of the river, that is, first, a light sandy loam intermixed with fragments of quartz, flint, &c.; second, a friable sand stone, easily wrought, with thin horizontal strata of a concrete of martial ore, talc and indurated argill (the talc has this singularity, it is denticulated, its lamina being perpendicular to the horizontal lamina of the argill on which it is seated) at from ten or fifteen feet from the surface, and from each other, as there are several of these veins in the great body of free stone. Thirdly, at seventy cubits, more or less, from the surface, and immediately below the free stone, a pale blue

blue argillaceous earth (shistous) impregnated with the petroleum and smelling strongly of it. This they say is very difficult to work, and grows harder as they get deeper, ending in shist or slate, such as found covering veins of coal in *Europe*, &c. Below this shist at the depth of about 130 cubits is coal. I procured some, intermixed with sulphur and pyrites, which had been taken from a well, deepened a few days before my arrival, but deemed amongst them a rarity, the oil in general flowing at a smaller depth. They were piercing a new well when I was there, had got to the depth of eighty cubits, and expected oil at ten or twenty cubits more.

THE machinery used in drawing up the rubbish, and afterwards the oil from the well, is an axle crossing the center of the well, resting on two rude forked stanchions, with a revolving barrel on its center, like the nave of a wheel, in which is a score for receiving the draw rope; the bucket is of wicker work, covered with dammer, and the labour of the drawers, in general three men, is facilitated by the descent of the inclined plain, as water is drawn from deep wells in the interior of *Hindostan*.

To receive the oil, one man is stationed at the brink of the well, who empties the bucket into a channel made on the surface of the earth leading to a sunk jar, from whence it is laded into smaller ones, and immediately carried down to the river, either by coolies or on hackeries.

WHEN a well grows dry, they deepen it. They say none are abandoned for barrenness. Even the death of a miner, from mephitic air, does not deter others from persisting in deepening them when dry. Two days before my arrival, a man was suffocated in one of the wells, yet they afterwards renewed their attempts, without further accident. I recommended their trying the air with a candle, &c. but seemingly with little effect.

THE oil is drawn pure from the wells, in the liquid state as used, without variation, but in the cold season it congeals in the open air, and always loses something of its fluidity; the temperature of the wells preserving it in a liquid state fit to be drawn. A man who was lowered into a well of 110 cubits, in my presence, and immediately drawn up, perspired copiously at every pore: unfortunately I had no other means of trying the temperature. The oil is of a dingy green and odorous; it is used for lamps, and boiled with a little dammer (a resin of the country), for paying the timbers of houses, and the bottoms of boats, &c. which it preserves from decay and vermin; its medicinal properties known to the natives is as a lotion in cutaneous eruptions, and as an embrocation in bruises and rheumatic affections.

THE miners positively assured me no water ever percolates through the earth into the wells, as has been supposed, the rains in this part of the country are seldom heavy, and during the season a roof of thatch is thrown over the wells, the water that falls soon runs off to the river, and what penetrates into the earth is effectually prevented from descending to any great depth by the increasing hardness of the oleagenous argill and shist; this will readily be admitted when it is known that the coal mines at *Whitby* are worked below the harbour, and the roof of the galleries not more than fifty feet from the bed of the sea, the deficiency of rain in this tract may be owing to the high range of mountains to the westward, which range parallel to the river, and arrest the clouds in their passage, as is the case on the eastern side of the peninsula of *India*.

SOLICITOUS to obtain accurate information on a subject so interesting as this natural source of wealth; I had all the principal proprietors assembled on board my boat, and collected from them the following particulars, the foregoing I learned at the wells from the miners and others.

I ENDEAVOURED to guard against exaggeration, as well as to obviate the caution and reserve which mercantile men in all countries think it necessary to observe, when minutely questioned on subjects affecting their interests, and I have reason to hope my information is not very distant from the truth.

THE property of these wells is in the owners of the soil, natives of the country, and descends to the heirs general as a kind of entailed hereditament, with which it is said government never interferes, and which no distress will induce them to alienate. One family perhaps will possess four or five wells, I heard of none who had more, the generality have less, they are sunk by, and wrought for the proprietors; the cost of sinking a new well is 2000 tecals flowered silver of the country, or 2500 sicca rupees; and the annual average net profit 1000 tecals, or 1250 sicca rupees.

THE contract price with the miners for sinking a well is as follows: for the first forty cubits they have forty tecals, for the next forty cubits three hundred tecals, and beyond these eighty cubits to the oil they have from thirty to fifty tecals per cubit, according to the depth (the *Burmha* cubit is nineteen inches *English*); taking the mean rate of forty tecals per cubit, and one hundred cubits as the general depth at which they come to oil, the remaining twenty cubits will cost 800 tecals, or the whole of the miner's wages for sinking the shaft 1140 tecals; a well of a 100 cubits will require 950 cassia staves, which at five tecals per hundred will cost $47\frac{1}{2}$ tecals. Portage and workmanship, in fitting them, may amount to 100 tecals more; the levelling the hill for the crown of the well, and making the draw road, &c. according to the common rate of labour in the country, will cost about 200 tecals; ropes, &c. and provisions for the workmen, which are supplied by the proprietor when making a new well; expences of propitiatory sacrifices, and perhaps a signiorage fine to government for permission to sink a new well, consume the remaining $512\frac{1}{2}$ tecals; in deepening

ing an old well they make the best bargain in their power with the miners, who rate their demand per cubit according to its depth and danger from the heats or mephitic air.

THE amount, produce, and wages of the labourers who draw the oil, as stated to me, I suspect was exaggerated or erroneous from misinterpretation on both sides.

THE average produce of each well, per diem, they said was 500 visis, or 1825lbs. avoirdupois, and that the labourers earned upwards of eight tecals each per month; but I apprehend this was not meant as the average produce, or wages for every day or month throughout the year, as must appear from a further examination of the subject, where facts are dubious we must endeavour to obtain truth from internal evidence. Each well is worked by four men, and their wages is regulated by the average produce of six days labour, of which they have one sixth, or its value at the rate of one and a quarter tecals per hundred visis, the price of the oil at the wells; the proprietor has an option of paying their sixth in oil, but I understand he pays the value in money, and if so, I think this is as fair a mode of regulating the wages of labour as any where practised; for in proportion as the labourer works he benefits, and gains only as he benefits his employer. He can only do injury by over-working himself, which is not likely to happen to an *Indian*; no provisions are allowed the oil drawers, but the proprietor supplies the ropes, &c. and lastly the king's duty is a tenth of the produce.

Now supposing a well to yield 500 visis per diem throughout the year, deducting one sixth for the labourers, and one tenth for the king, there will remain for the proprietor, rejecting fractions, 136,876 visis, which at $1\frac{1}{4}$ tecals, the value at the wells, is equal to 1710 tecals per annum. From this sum there is to be

deducted only a trifle for draw ropes, &c. for I could not learn that there was any further duties or expence to be charged on the produce, but the merchants say they gain only a neat 1000 tecals per annum for each well, and as we advance we shall have reason to think they have given the maximum rather than the minimum of their profits, hence therefore we may infer that the gross amount produce per annum is not 182,500 vifs.

FURTHER, the four labourers share or one sixth deducting the king's tythe, will be 2250 vifs per month of thirty days, or in money at the above price twenty-eight tecals fifty avas, or seven tecals twelve avas each man per month, but the wages of a common labourer in this part of the country, as the same persons informed me, is only five tecals per month when hired from day to day; they also admitted that the labour of the oil drawers was not harder than that of common labourers, and the employment no ways obnoxious to health. To me the smell of the oil was fragrant and grateful, and on being more indirectly questioned (for on this part of the subject perhaps owing to the minuteness of my enquiries I observed most reserve), they allowed that their gain was not much greater than the common labourers of the country, nor is it reasonable to expect it should, for as there is no mystery in drawing of oil, no particular hardships endured, or risk of health, no compulsion or prevention pretended, and as it is the interest of the proprietors to get their work done at the cheapest rate, of course the numbers that would flock to so regular and profitable an employment, would soon lower the rate of hire nearly at least to the common wages of the country; besides I observed no appearance of affluence amongst the labourers, they were meanly lodged and clad, and fed coarsely, not on rice, which in the upper provinces is an article of luxury, but on dry grains and indigenous roots of the nature of *Cassada*, collected in the wastes by their women and children; further it is not reasonable to suppose that these labourers worked constantly, nature always requires

requires a respite, and will be obeyed, however much the desire of gain may stimulate, and this cause must more particularly operate in warm climates to produce what we often improperly call indolence. Even the rigid Cato emphatically says, that the man who has not time to be idle is a slave. A due consideration of this physical and moral necessity ought perhaps to vindicate religious legislators from the reproaches too liberally bestowed on them for sanctioning relaxation; be that as it may, I think it is sufficiently apparent that the article of wages is also exaggerated, and that 500 viss must only be considered as the amount produce of working days, and not an average for every day in the year. The labour of the miners, as I have observed above, is altogether distinct from the oil drawers, and their pay proportioned to the hardships and risks they endure.

Assuming therefore as data, the acknowledged profit of 1000 tecals per annum for each well, which we can hardly suppose exaggerated, as it would expose the proprietors to an additional tax, and the common wages of precarious employment in the country, that is one month with another, including holy days the year round, four and a quarter tecals per month as the pay of the oil drawers, which includes the two extremes of the question, it will make the average produce of each well per diem, 300 viss or 109,500 viss per annum, equal to 399,675 lbs. avoirdupois, or tons 178,955 lbs. or in liquid measure 793 hogshheads of sixty-three gallons each; and as there are 520 wells registered by government, the gross amount produce of the whole per annum will be 56,940,000 viss or 92,781 tons 1560 lbs. or 412,360 hogshheads, worth at the wells, at one and a quarter tecals per hundred viss, 711,750 tecals or 889,737 sicca rupees.

From the wells, the oil is carried, in small jars, by cooleys, or on carts, to the river; where it is delivered to the merchant exporter at two tecals per hundred

vifs, the value being enhanced three-eighths by the expence and risk of portage, therefore the grofs value or profit to the country of the whole, deducting five per cent for wafage, may be ftated at 1,081,860 tecals, or 1,362,325 ficca rupees per annum, yielding a direct revenue to the king of 136,232 ficca rupees per annum, and perhaps thrice as much more before it reaches the confumer; befides the benefit the whole country muft derive from the productive induftry called into action by the constant employment of fo large a capital on fo gruff an article. There were between feventy and eighty boats, average burthen fixty tons each, loading oil at the feveral wharfs, and others constantly coming and going while I was there. A number of boats and men alfo find constant employment in providing the pots, &c. for the oil, and the extent of this fingle branch of internal commerce (for almoft the whole is confumed in the country) will ferve to give fome infight into the internal commerce and refources of the country.

At the wells the price of the oil is feven annas feven pies per 112lbs. avoirdupois; at the port of *Ranghong* it is fold at the average rate of three ficca rupees three annas and fix pies per cwt. or per hogf-heads of fixty-three gallons, weighing 504 lbs. fourteen rupees feven annas nine pies, exclusive of the cask, or per *Bengal* buzar maund two rupees five annas eight pies, whereas the muftard feed, and other vegetable oils, fell at *Ranghong* at eleven rupees per buzar maund.

To conclude, this oil is a genuine petroleum, poffeffing all the properties of coal tar, being in fact the felf fame thing, the only difference is, that nature elaborates in the bowels of the earth that for the *Burmhas*, for which *European* nations are obliged to the ingenuity of Lord DUNDONALD.

VII.

ON THE MAXIMUM OF MECHANIC POWERS, AND THE EFFECTS OF MACHINES WHEN IN MOTION.

BY LIEUTENANT WILLIAM LAMBTON,

Of His Majesty's 33^d Regiment of Foot.

MOST mathematicians, in treating on the science of mechanics, have drawn their conclusions from considering the weight and power in a state of equilibrium, and have deduced their proportions from their respective distances of each from the center of motion; or from what the velocities would be, supposing them to be put in a moving state. But in the actual application of any machine, whether simple or compound, we shall find that when it is put in motion by the superior force of the power, there will be a certain ratio between the weight and power, so that in any given time the effect may be the greatest possible. The various and most useful cases which relate to this subject are comprised in the following problems, and as it is my intention to determine the precise effects of such powers as are of the most general use in the construction of machines, such as the lever, the wheel, and axle, &c. and where the power applied to raise the weight, acts by the force of gravity; it will be necessary to take into consideration the effects of their own masses, and therefore some general propositions must be premised relative to the centers of percussion and gyration of the respective moving powers; and to compare the mass collected into the center of percussion or gyration of a beam or solid wheel, to that power, which acting at the extremity would give the same angular velocity.

It has already been demonstrated by mathematicians that if s be the center of suspension, or rotation; o the center of percussion, and g the center of gyration;—and if p be a particle and d its distance from s , then $so = \frac{\text{all the } pd^2}{\text{Force of the body}}$, and $sg = \sqrt{\frac{\text{all the } pd^2}{\text{the body}}}$, which expressions are universal, let the form of the body be what it will. Now as the lever and wheel are powers whose operations are materially influenced by their own weight, I shall consider every case in which they can possibly be effected. And notwithstanding that the part of mechanics relating to percussion and gyration, has been so copiously treated on by others, yet as it becomes so essential a part in the present theory, I shall include such propositions as immediately apply, and put them in the most convenient forms. Some of them, I believe are new, and particularly suited to the present subject.

PROB. I. LET AB be a bar or beam perfectly streight and of uniform thickness, having its point of suspension S , at any variable distance from the extremity A : it is required to determine the distance of the center of percussion from S .

PUT $AB = v$, $AS = x$, and therefore $SB = v - x$; and let the said distance of the center of percussion from s be y , then v being an indefinitely small plane at right angles to the axis of the beam, $v - x|^2 \times v$ will express one pd^2 or the fluxion of all the pd^2 in AB ; and by the same reasoning, $v - x \times v$ is the fluxion of the force of AB .—

Hence $y = \frac{\text{flu: } v - x|^2 \times v}{\text{flu: } v - x \times v} = \frac{2v^2 - 6vx \times 6x^2}{3v - 6x}$; where x and

v may be taken in any ratio to each other. If $x = 0$ or the center of suspension be at A , then $y = \frac{2}{3}v$ as has been proved by others. If $x = \frac{1}{2}v$, then $y = \frac{1}{2}v$ also, in which case the center of percussion will be at the other extremity B , and when $x = \frac{1}{3}v$, then $y = 0$, and the center of percussion coinciding with the center of gravity,

gravity, the power of oscillation will cease, and the motion, if there be any, will be rotatory.

COR. 1. If it be required to determine the distance of the center of suspension when the vibrations are the quickest possible, then y , or its equal $\frac{2v^2 - 6vx + 6x^2}{3v - 6x}$ becomes a maximum, and therefore its fluxion, by making x variable, is $= 0$. Hence $12xx - 6vx \times 3v - 6x - 3v \times 2v^2 - 6vx + 6x^2 = 0$, and $x = \frac{v}{2} \pm \frac{v}{2} \sqrt{\frac{1}{3}}$ or $\frac{v}{2} - \frac{v}{2} \sqrt{\frac{1}{3}}$ when S is taken towards A , or on that side of the center of gravity.

COR. 2. OTHER forms may be obtained if $AS = x$ and $SB = z$, both variable quantities:—for then $\dot{x} + \dot{z}$ will express the fluxion of both ends, and $x^2\dot{x} + z^2\dot{z}$ the fluxion of all the pd^2 in AB . And since the force of any oscillating body may be expressed by multiplying the distance of the center of gravity from the center of suspension, into the body itself, the force of AB is therefore defined by $\frac{x^2 - z^2}{2}$. Hence $y = \frac{\text{flu: } x^2\dot{x} + \text{flu: } z^2\dot{z}}{x^2 - z^2} = \frac{x^3 \times x^3}{x^2 - z^2} \times \frac{2}{3}$.

Then when $x = 0$, y becomes equal $\frac{2}{3}z$; and if $x = \frac{1}{2}z$, $y = z$;—and when x and z are equal, y vanishes.

PROB. 2. The notation remaining, as in the last problem: let the center of gyration be required, while the beam AB is made to revolve round a center S at any variable distance from A : and let w express the distance of the center of gyration from S . Then we shall have

$$w = \sqrt{\frac{\text{flu: } v - x^2 \times \dot{v}}{v}} = \sqrt{\frac{v^2 - 3vx + 3x^2}{3}}. \quad \text{Hence if } x = 0,$$

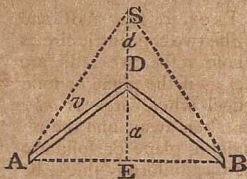
$w = v\sqrt{\frac{1}{3}}$, and when $x = \frac{v}{2}$, so that S may be in the center of gravity of AB , then $w = \frac{2}{3}v$. When $x = \frac{1}{2}v$, w becomes equal $\frac{1}{2}v$ also, and in this case the center of gyration will be at the same distance from B , that the center of rotation is from A .

COR.

COR. IT appears from Cor. 1 of the last problem, that when the vibrations of a beam are the quickest possible, w is equal to $\frac{v}{2} - \frac{v}{2}\sqrt{\frac{1}{3}}$, when the point of suspension is taken on that side the center of gravity towards A. Now since $\frac{v}{2}$ is the distance of the center of gravity of the beam from A or B, it follows that $\frac{v}{2}\sqrt{\frac{2}{3}}$ expresses the distance of the center of percussion from the center of gravity when the vibrations are the quickest possible. But it appears from this problem, that $\frac{v}{2}\sqrt{\frac{2}{3}}$ expresses the distance of the center of gyration from the center of gravity, when the beam is made to revolve on that center. Therefore if the beam be suspended, by what in this case is the center of gyration, the vibrations will be the quickest possible.

COR. 2. IF the parts AS, SB be denoted by x and z as in Cor. 2, of the last prob. then $w = \sqrt{\frac{\text{flu. } z^2x + \text{flu. } x^2z}{z+x}} = \sqrt{\frac{z^3+x^3}{3z+3x}}$. Then if $x=0$, and z become equal A B, $w=z\sqrt{\frac{1}{3}} = v\sqrt{\frac{1}{3}}$; and when x and z are equal, $w=x\sqrt{\frac{1}{3}}$ or $z\sqrt{\frac{1}{3}} = \frac{v}{2}\sqrt{\frac{1}{3}}$, and lastly, if $x=\frac{1}{2}z$, then $w=\frac{1}{2}z$; all which are precisely the same as in the last problem.

PROB. 3. LET ABD be a solid beam of uniform thickness, having an angle at D, and let AD=DB, and AE=EB= x , and if the line ED be continued to the center of rotation S, then SE will be perpendicular to AB, and therefore AS=BS, and the beam will be in the same plane with the triangle ASB, and being made to revolve round the center S, retaining its position with respect to the line SE: it is required to determine the distance of the center of gyration from S.



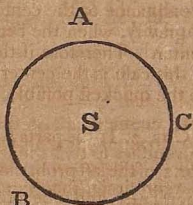
PUT $DS=d$, and $AD=BD=v$, and also $ED=a$. Then
AS

$AS^2 = v^2 + d^2 + 2ad$; and therefore $2v^2\dot{v} + 2d^2\dot{d} + 2ad\dot{v}$ will be the fluxion of all the pd^2 in the whole beam ABD.

Hence $w = \sqrt{\frac{\text{flu. } 2v^2\dot{v} + 2d^2\dot{d} + 2ad\dot{v}}{2v}} = \sqrt{\frac{v^2 + 3d^2 + 6ad}{3}}$

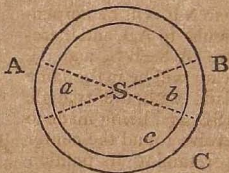
which, when a vanishes, and the beam coincides with the line AB, becomes equal $\sqrt{\frac{v^2 + 3d^2}{3}}$:—and if d vanish $w = v\sqrt{\frac{1}{3}}$, for then D will coincide with S and ADB will become two beams revolving on their extremities.

PROB. 4. LET ABC represent a circular superficies, or solid wheel of uniform thickness, so that its weight may be as its area; and let it revolve round its center S; it is required to determine the distance w of its center of gyration from S.



PUT $A =$ the area of the circle whose diameter is unity, and $r =$ radius of ABC. Then $4Ar^2$ is the area of ABC, whose fluxion is $8Ar^2\dot{r}$; and therefore $8Ar^2\dot{r}$ is the fluxion of all the pd^2 in ABC. Hence $w = \sqrt{\frac{\text{flu. } 8Ar^2\dot{r}}{\text{flu. } 8Ar^2\dot{r}}} = r\sqrt{\frac{1}{2}}$ which expression applies to every solid wheel of uniform thickness whose radius is r .

PROB. 5. LET ABC and abc be two concentric circles whose respective radii are R, r ;—if the plane or solid wheel whose area is abc be taken away, and the remaining plane or solid $AaBbCc$, uniformly thick, be conceived to revolve round the center S; it is required to determine the distance of its center of gyration from S.



PUT $A =$ the area of the circle whose radius is unity, then $4AR^2$ will be the area of the greater circle, and then

$4 A r^2$ the area of the less one; and therefore $4 A R^2 - 4 A r^2 =$ the area of the annulus. Now $8 A R \dot{R}$ is the fluxion of that area, and $8 A R^3 \dot{R}$ the fluxion of all the $p d^2$. Hence $w = \sqrt{\frac{8 A R^3 \dot{R}}{4 A R^2 - 4 A r^2}} = \sqrt{\frac{R^4}{2 R^2 - 2 r^2}}$, which when r vanishes, or the whole becomes solid, is equal $R \sqrt{\frac{1}{2}}$ as in the last problem.

COR. THE sectors $S a$ and $S A$, being to each other as the areas of their respective circles, and therefore as the squares of the diameter of these circles; and if A in this case represent a similar sector of the circle whose radius is unity, the same result will be had with respect to the parts $A a$, and $B b$, as in the former case, for the distance of the center of gyration from the center S , will in this case be $\sqrt{\frac{R^4}{2 R^2 - 2 r^2}}$. And when r vanishes so that the sectors are complete sectors of the larger circle, than $w = \sqrt{\frac{R^2}{2}} = R \sqrt{\frac{1}{2}}$.

PROB. 6. LET $A B$ be a beam uniformly thick, having its point of suspension at any variable distance from A , as at S ; and let the beam be made to vibrate with any given angular velocity: it is required to determine that power, which acting at the extremity B , would have the same angular force as the whole mass collected into, and acting at, the center of percussion.

LET the length $A B$ be v , $A S = x$, and $S B = v - x$; and the distance of the center of percussion from S equal y : then by the general expression $y = \frac{\text{all the } p d^2}{\text{force of the body}}$. Now if instead of taking all the $p d^2$ in the whole beam, or supposing all the particles collected into the center of percussion, we conceive a power p' acting at the extremity B such as multiplied by the square of its distance $S B$, $(v - x)$, its force shall be equal to all the $p d^2$ in the whole beam: then will

$$y =$$



$y = \frac{p' \times v - x^2}{\text{force of the beam}}$, and $p' = \frac{v}{v-x} \times \text{force of the beam}$;

that is $p' = \frac{y}{v-x} \times \text{flu. } v-x. \dot{v} = \frac{y \times v-2x}{2v^2-4vx \times 2x^2} \times \text{by}$
the mass. And by substituting the value of y , we have

$p' = \frac{v^2-3vx+3x^2}{3v^2-6+vx3x^2} \times \text{by the mass}$, a general expression for the value of p' for any beam of equal thickness, and whose weight is as the length.

COR. 1. Now when x vanishes, $p' = \frac{1}{3}$ the mass; so that when the beam is suspended at the extremity A, then the weight which applied at the distance AB to an inflexible line vibrating with any given velocity, so as to have the same force as the mass of the beam collected into its center of percussion, and moving with the same angular velocity, shall be equal one-third the weight of the beam.

COR. 2. If x be taken to v in the ratio of 1 to n ; then by substituting the value of x in the above expression, $p' = \frac{n^2-3n+3}{3n^2-6n+3} \times \text{by the weight}$, when that weight is defined by v , its length; and the weight of the shorter end, unity. Or suppose the whole weight to be W , then $p' = \frac{n^2-3n+3}{3n^2-6n+3} \times W$: and in this case the weight of the shorter end will be defined by $\frac{W}{n}$, and that of the longer by $\frac{n-1.W}{n}$, let W be what it will.

COR. 3. When $n=2$ then $p' = \frac{1}{3}W$: but it must be remembered that p' is the power of the *whole* beam, since it is compared with the whole mass collected into the center of percussion; and is therefore the p' of both ends reduced to B, and hence in cases where the two ends are equal, as in the present one, the p' of each end is $\frac{1}{3}$ of half the beam, which together are equal to $\frac{1}{3}W$, the p' of the whole beam.

PROB. 7. LET S be the center of rotation, and let the beam be made to revolve horizontally with any given angular velocity: it is required to determine the p' of the whole beam acting at B .

THE notation being the same as in the last problem and w being the distance of the center of gyration from S , then $w^2 = \frac{\text{all the } p'd^2}{\text{the body}} = \frac{p'd^2}{\text{the beam}}$; therefore we have $p' = \frac{w^2}{d^2} \times \text{the beam} = \frac{w^2 - 3vx + 3x^2}{3u^2 - 6ux + 3x^2} \times \text{the weight of the beam the same as in the last problem.}$ Hence in this case, if x be to v as 1 to u , then $p' = \frac{u^2 - 3u + 3}{3u^2 - 6u + 3} \times W$, and when the two ends become equal, so that the center of rotation coincides with the center of gravity, then the beam may revolve either vertically or horizontally, and the p' of both ends together will be $\frac{1}{3}$ the weight.

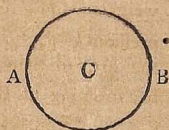
COR. 1. OTHER forms may be derived for the value of p' , if the two arms be called d and b , and their weights c and d respectively. For by the general expressions $y = \frac{p'd^2}{\text{force of the beam}}$, and $w^2 = \frac{p'd^2}{\text{the beam}}$. Now by the first of these, if p' be the power of the whole beam acting at B , we have $p' = \frac{y}{d^2} \times \text{the force of the beam} = \frac{b^3 + a^3}{3b^3 + 3ab^2} \times \overline{c+d}$; and by the second, $p' = \frac{w^2}{d^2} \times \text{the beam} = \frac{b^3 + a^3}{3b^3 + 3ab^2} \times \overline{c+d}$: in both cases $= \frac{b^3 + a^3}{3b^3 + 3ab^2} \times \text{the weight of the beam.}$ Now when $a = b$, $p' = \frac{c+d}{3}$ or $\frac{1}{3}$ the weight; and if $a = 0$, $p' = \frac{1}{3}$ the weight also.

COR. 2. It further appears, that in all cases of an oscillating motion of the beam, the p' is defined by multiplying the distance of the center of percussion from the center of suspension, by the mass or weight, and dividing by the square of the distance at which p' is to act: and that in all cases of a gyrating motion of the beam, the p' is defined by multiplying the square of the distance of the center of gyration from the center of rotation, by the mass or weight, and dividing by the square of the distance at which p' is to

act. Hence it follows in both cases, that if the p' of the *same beam* or body, be reduced to different distances, its value will be *inversely as the squares of these distances*.

PROB. 8. LET A be the area of the circle whose diameter is unity, and $r =$ the radius of the circular plane ABC : and let p represent the periphery of a circle, or a ring into which we will conceive as many particles collected, as, with any angular velocity, shall have the same force, as the mass of the circular plane, (or solid wheel of the same diameter, and uniformly thick,) collected into a circle, whose radius is the distance of the center of gyration from the center C , moving with the same angular velocity: the value of p' is required.

Now it is evident from the nature of the problem, that $p'r^2$ will be equal to all the pd^2 in ABC . And since $4Ar^2$ is the area of ABC , we have $w^2 = \frac{p'r^2}{4Ar^2}$ and $p = w^2 \times 4A = 2Ar^2$ by substituting the value of w^2 which value is equal half the mass of ABC , whether it be a circular plane or solid wheel.



Now this power p' may be either a ring, as is here conceived, or a weight equal to that of the ring, divided into two equal parts, each acting at the extremity of a lever, revolving on its center, and whose length is equal to the diameter of the ring; and in the same manner we may conceive the p' in problem 7 to be resolved into a ring of equal weight whose diameter is equal AB .

PROB. 9. LET it be required to determine the p' of the whole beam AB in Prob. 3, acting at A, while the beam revolves horizontally on the center S.

THEN $p = \frac{w^2}{d^2} \times \text{the weight} = \frac{v^2 + 3d^2 + 6ad}{3v^2 + 3d^2 + 6ad} \times W$. Now in this case, when a vanishes, then p' becomes $= \frac{v^2 + 3d^2}{3v^2 + 3d^2} \times W$; when d vanishes, and D coincides with S, in which case v becomes equal AS, and AD and DB become two beams revolving on one end each; then the p' of both the beams together is equal $\frac{1}{3} W$, where W is the weight of both the beams; and therefore the p' of each, acting at the extremity A or B, is $\frac{1}{3}$ its own weight, the same as in Prob. 6, Cor. 1.

PROB. 9. LET the annulus in Prob. 5 be proposed, to determine the p' of the whole, acting at the distance SA, any where in the circumference.

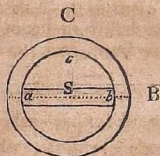
THEN since w^2 is equal $\frac{R^4}{2R^2 - 2r^2}$, where $R = SA$, and $r = sa$ we shall have $p' = \left(\frac{w^2}{d^2} \times \text{the body} \right) \frac{R^4}{2R^2 - 2r^2} \times \frac{4 \times R^2 A - r^2 A}{R^2} = \frac{R^2}{R^2 - r^2} \times \frac{1}{2}$ the weight of the annulus: and when $r = 0$, so that the interior circle may vanish, and ABC become an entire circle or solid wheel, then $p' = \frac{1}{2}$ the mass, the same as in Prob. 8.

COR. IF A represent the area of a sector of a circle whose diameter is unity, similar to the sectors AS or as in Cor. of Prob. 8; then the p' of both the parts Aa and BC together, will be equal $\frac{R^2}{R^2 - r^2} \times 2 \overline{AR^2 - 2Ar^2} = \frac{R^2}{R^2 - r^2} \times \frac{1}{2}$ the mass of the two parts together.

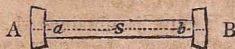
PROB. 10. LET Aa, bB, cC, be a solid ring, having a solid beam whose center is the center of the annulus, as in the next figure; it is required to determine the p' of the whole acting at B.

LET

LET W' express the weight or mass of the annulus; and w that of the cross beam ab , which beam is of equal thickness. Then the p' of the beam A at b is $\frac{1}{3}w$ by Prob. 6, Cor. 3; which reduced to B , is $\frac{r^2 w}{3r}$, by Cor. to Prob. 7, and the p' of the ring is $\frac{R^2}{R^2 - r^2} \times \frac{1}{2} W'$, by the last Prob. Hence p' of the whole is $\frac{R^2}{R^2 - r^2} \times \frac{W'}{2} + \frac{r^2 w}{3R}$.



COR. If W' express the weight of the two ends Aa , Bb , being parts of the annulus, whose center is S , and if the weight of the beam ab , whose center is also S , be expressed by w , as before; then the p' of the whole beam, and both ends together, will be $\frac{R^2}{R^2 - r^2} \times \frac{W'}{2} + \frac{r^2 w}{3R}$.



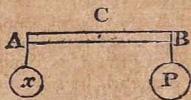
PROB. 11. WHEN the two circular ends are braced to the beam ab by the braces cd , cd , on both sides of the beam: it is required to determine the p' of the whole, acting at B , when moving on the center S .

LET W' and w represent the weight of the two circular ends, and the beam ab , respectively, as in the last Prob.; and let the length cd , be v , and the weight of the two braces at one end, be w' . Now if s be supposed the center of rotation, then the case in Prob. 9 would apply. And because sc varies so little from se or Sa , in a beam of considerable length, that any deviation from the truth which might arise from considering sc as r , would be so trifling as to render any further investigation

investigation unnecessary. Supposing then $sc = Sa$; and call $de = a$, then $sd = r - a$ very nearly. Then by Prob. 9, the p' of the braces at one end is $\frac{v^2 + 3 \cdot \overline{r-a}^2 + 6 \cdot ar - a^2}{3v^2 + 3 \cdot \overline{r-a}^2 + 6 \cdot ar - a^2} \times w'$, or equal kw' , by substituting k for $\frac{v^2 + 3 \cdot \overline{r-a}^2 + 6 \cdot ar - a^2}{3v^2 + 3 \cdot \overline{r-a}^2 + 6 \cdot ar - a^2}$. And therefore $2 kw'$ will be the p' of all the braces at the distance Sb , then by Cor. 2 of Prob. 7. As $R^2 : r^2 :: 2 kw' : \frac{2kw'r^2}{R^2}$, the p' of all the braces reduced to the distance SB . Hence $\frac{R^2}{R^2 - r^2} \times \frac{w'}{2} + \frac{r^2 w}{3R^2} + \frac{2kw'r^2}{R^2}$ expresses the p' of the beam, circular ends and braces together, very nearly.

HENCE is obtained the value of p' in the most useful cases that occur; and this p' being the power, which acting at the extremity of the different figures here enumerated, will give the same angular velocity, as their respective masses acting at the center of percussion or gyration: it is therefore the masses themselves reduced to the distance from the center of motion, at which, if a weight be applied, to act as a power for overcoming a resistance, this p' will be so much in addition to the mass to be moved by that weight, and must therefore be considered in computing the effects of all machines after they acquire a velocity. The use of these results will appear in the following problems:

PROB. 12. LET AB be a beam of equal thickness, whose weight call W , and whose center of motion C , is in the center of the beam. Then if P be a given weight, acting as a power to move the weight x ; the value of x is required when its momentum is the greatest possible.



SINCE W expresses the weight of the beam, $\frac{1}{3}W$ will express the p of the whole beam acting at B . And since both ends are of equal length, $P - x$, will be the moving power, and $P + \frac{1}{3}W + x$ is the mass to be moved, with respect to angular velocity. Hence $\frac{P - x}{P + \frac{1}{3}W + x}$ is the accelerative, and is as the velocity with which P will move after having overcome the resistance. But since $AC = CB$, this quantity is also the accelerative force of x , and therefore the momentum of x is $\frac{Px - x^2}{P + \frac{1}{3}W + x}$, which being a maximum, its fluxion is equal nothing: hence $P\dot{x} - 2x\dot{x} \times P + \frac{1}{3}W + x - x \times \frac{Px - x^2}{P + \frac{1}{3}W + x} = 0$, from which, when reduced, we have $x = \frac{\sqrt{W^2 + 9PW + 18P^2 - W - 3P}}{3}$.

PROB. 13. LET the arms of the beam AB be of unequal lengths, and let the whole beam be to the shorter end, both in length and weight, as n to unity. And let W express the weight of the whole beam. Then if P as a power be suspended at B , it is required to determine the weight x ; so that it may ascend, when overcome by P , with the greatest momentum possible.

THEN by Problem 6, Cor. 2, $A \text{---} C \text{---} B$ the p of the whole beam is equal $\frac{n^2 - 3n + 3}{3n^2 - 6n + 3} \times W = gW$, by putting (x) (P) $g = \frac{n^2 - 3n + 3}{3n^2 - 6n + 3}$ and the weight of the shorter end will be $\frac{W}{n}$, that of the longer $\frac{n-1}{n} \cdot \frac{W}{n}$, by the same Cor. Now the weight of the longer arm being $\frac{n-1}{n} \cdot \frac{W}{n}$, its weight when reduced to B will be $\frac{n-1}{2n} \cdot \frac{W}{n}$, and by the same reasoning the weight of the shorter end AC , reduced to A , will be $\frac{W}{2n}$: and as $n-1 (BC) : 1 (AC) :: \frac{W}{2n} : \frac{W}{2n \cdot n - 1} =$ the weight of AC reduced to B . Again; as $n-1 : 1 :: x : \frac{x}{n-1} =$ the weight of x reduced to B . Hence $\frac{W}{2n \cdot n - 1} + \frac{x}{n-1}$ is that weight, which if applied at B , would precisely balance the end AC , together with the weight x .

Hence $P + \frac{n-1. w}{2n} - \frac{w}{2n.n-1} - \frac{x}{n-1}$ will be the motive force or moving power. Then again, when the bodies are in motion, gW is the p of the whole beam acting at B : and $\frac{x}{n-1}$, the value of x when reduced to B , it follows that $P + gw + \frac{x}{n-1}$ is the whole mass compared at B with respect to angular velocity.

Hence $P + \frac{n-1. w}{2n} - \frac{w}{2n.n-1} - \frac{x}{n-1}$ is the accelerative force
 $P + gw + \frac{x}{n-1}$

at B ;—or the accelerative force of P ;—or of x reduced to B . Then as $n-1 : 1 :: P + \frac{n-1. w}{2n} - \frac{w}{2n.n-1} - \frac{x}{n-1}$
 $P + gw + \frac{x}{n-1}$

$\frac{x}{n-1} P + \frac{n-1. w}{2n} - \frac{w}{2n.n-1} - \frac{x}{n-1}$ the accelerative force of
 $n-1. P + n-1. gw + x$

x suspended at A : which, by putting q for $\frac{n-1. w}{2n} - \frac{w}{2n.n-1}$, and t for $n-1. P + n-1. gW$, will be expressed by $\frac{n-1. q - x}{n-1. t + n-1. x}$: and therefore the mo-

tive force, or momentum of x will be $\frac{n-1. qx - x^2}{n-1. t + n-1. x}$, whose fluxion being equal to nothing, we have

$n-1. q \dot{x} - 2x \dot{x} \times n-1. t + n-1. x - n-1. x \times n-1.$

$q - x^2 = 0$, and $x = \sqrt{t^2 + n-1. q - t}$, a general expression, when the shorter end is unity, and the whole length of the beam, any whole number.

When n is 2, so that the arms are equal, then $x = \frac{\sqrt{w^2 + 9vw + 18v^2 - w - 3p}}{3}$ as in the last.

PROB. 14. If the two arms be of any given length whatever, the shorter being expounded by a , and the longer by b ; and their weights by c and d respectively: then if P as in the former case be applied to act as a power at B ; it is required to determine the value of x in terms of a and b , in case of a maximum.

Now

Now by Problem 7, Cor. $\frac{a^3+b^3}{3ab^2+3b^3} \times \overline{c+d}$ will express the p' of the whole beam reduced to B. Hence $P + \frac{a^3+b^3}{3ab^2+3b^3} \times \overline{c+d} + \frac{ax}{b}$, will express the mass when reduced to B, as to angular velocity. Then since $\frac{c}{2}$ is the weight of the shorter end reduced to A; $\frac{ac}{2b}$ is the weight which applied at B, would balance the shorter end. Therefore $\frac{ac}{2b} + \frac{ax}{b}$ applied at B, would sustain the shorter end, together with the weight x , *in equilibrio*. Hence $P + \frac{d}{2} - \frac{ac}{2b} - \frac{ax}{b}$ is the moving

power. And therefore $\frac{P + \frac{d}{2} - \frac{ac}{2b} - \frac{ax}{b}}{P + \frac{a^3+b^3}{3ab^2+3b^3} \times \overline{c+d} + \frac{ax}{b}}$ is the accelerative force of P, or of x reduced to B, and

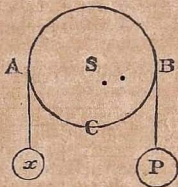
$\frac{aP + \frac{ad}{2} - \frac{a^2c}{2b} - \frac{a^2x}{b}}{bP + \frac{a^3+b^3}{3ab+3b^2} \overline{c+d} + ax}$ is the accelerative force of x sus-

pended at A: which, by substituting q for a $P + \frac{ad}{2} - \frac{a^2c}{2b}$, and t for b $P + \frac{a^3+b^3}{3ab+3b^2} \times \overline{c+d}$, becomes $\frac{qb - a^2x}{tb + abx}$:

Hence $\frac{qb\dot{x} - a^2\dot{x}^2}{tb + abx}$ is the motive force, whose fluxion being equal to 0, we have $qb\dot{x} - 2ax\dot{x} \times tb + abx - abx \times qb\dot{x} - a^2\dot{x}^2 = 0$, and $x = \frac{1}{a} \sqrt{\frac{a^2t^2 + bq^2}{a}} - \frac{t}{a}$. Now if a be unity, then $x = \sqrt{t^2 + bq^2} - t$, the same as in the last Problem, when $n-1$ will be equal b .

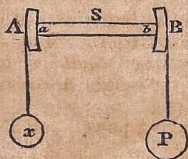
Note. If in the accelerative force of P, q be substituted for $P + \frac{d}{2} - \frac{ac}{2b}$, and t for $P + \frac{a^3+b^3}{3ab^2+3b^3} \times \overline{c+d}$ then the accelerative force of x is $\frac{abq - a^2x}{b^2t + abx}$: and its momentum $\frac{abq\dot{x} - a^2\dot{x}^2}{b^2t + abx}$, from whence $x = \frac{1}{a} \sqrt{t^2 + tq} - \frac{b}{a} t$, and in the preceding problem, if q be put for $P + \frac{n-1.w}{2n} - \frac{w}{2n.n-1}$, and t for $P + gW$, in the accelerative force of P, and proceeding to find the accelerative force of x , &c. then $x = n-1. \sqrt{t^2 + tq} - n-1.t$.

PROB. 15. LET ABC be a solid wheel of uniform thickness and density, revolving on its center S : and let its weight be W , and if P be a weight applied as a power, suspended to a line passing freely over the wheel, and to which line is fixed the weight x at the opposite end. The value of x is required, in case of a maximum.



SINCE the weight and power are equally distant from the center of motion, $P-x$ will be the moving power: and by Problem 8, $\frac{1}{2}W$ is the p' of the wheel. Hence $P+\frac{1}{2}W+x$ is the mass to be moved, as to angular velocity. Then will $\frac{P-x}{P+\frac{1}{2}W+x}$ be the accelerative force and $\frac{Px-x^2}{P+\frac{1}{2}W+x}$ the motive force of x , whose fluxion being equal to nothing, we have $P^2x+\frac{1}{2}PW\dot{x}-2PW\dot{x}-Wx\dot{x}-x^2\dot{x}=0$ and $x=\frac{\sqrt{W^2+6PW+8P^2}}{2P-W}$.

PROB. 16. LET Aa , Bb , be two circular ends, fixed to the beam ab , these ends being of equal thickness as well as the beam. Let the weight of both the former together be W , and that of the latter w : and let the beam move on its center S .—Then if P be a given weight, acting as a power at B , it is required to determine the weight x suspended at the other end under the circumstances of a maximum.



Now if $SB=R$ and $sb=r$, then by Problem 10, the p' of the beam and heads, reduced to B , will be $\frac{bw'}{2} + \frac{r^2 w}{3R^2}$, where $h = \frac{R^2}{R^2-r^2}$. And since the beam

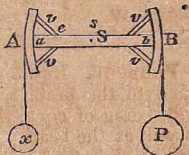
and

and heads are suspended in the common center of gravity, $P-x$ will be the moving power, and $P + \frac{bw'}{2} + \frac{r^2w}{3R^2} + x$ the sum of all the mass after being

in motion. Hence $P + \frac{bw'}{2} + \frac{r^2w}{3R^2} + x$ is the acceleration, and $P + \frac{bw'}{2} + \frac{r^2w}{3R^2} + x'$ the motive force of x , equal $\frac{Px-x^2}{t+x}$, by putting $t = P + \frac{bw'}{2} + \frac{r^2w}{3R^2}$, and by taking its fluxion equal nothing, $x = \sqrt{t^2 + tP} + t$.

PROB. 17. To determine x under the circumstances of a maximum, when the two circular ends are braced to the main beam ab , by the braces v , whose weight altogether is $2w'$.

THEN, by Problem 11, the p' of two of the v s at one end, reduced to B, is $\frac{v^2 + 3r-a|^2 + 6ar-a^2}{3v^2 + 3r-a|^2 + 6ar-a^2} + \frac{r^2w'}{R^2} = \frac{kr^2w'}{R^2}$ by putting $k = \frac{v^2 + 3r-a|^2 + 6ar-a^2}{3v^2 + 3r-a|^2 + 6ar-a^2}$: and where $se = a$. Hence the p' for all the braces reduced to B, will be $\frac{2kr^2w'}{R^2}$, and by the same problem $\frac{bw'}{2} + \frac{r^2w}{3R^2} + \frac{2kr^2w'}{R^2}$ will be the p' of the whole beam, heads and braces, reduced to B. Now since the ends are in equilibrium, exclusive of the weight, $P-x$ will be the

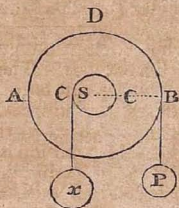


moving power, and $P + \frac{bw'}{2} + \frac{r^2w}{3R^2} + \frac{2kr^2w'}{R^2}$ is the motive force of x , which by putting $P + \frac{bw'}{2} + \frac{r^2w}{3R^2} + \frac{2kr^2w'}{R^2} = t$, becomes $\frac{Px-x^2}{t+x}$, and by making its fluxion equal to nothing, we shall have $x = \sqrt{t^2 + tP} + t$, as in the former case. And this form will always obtain for all beams moving on their centers, after determining the value of p' , and substituting t for the known terms in the denomination.

PROB. 18. LET ABD be a solid wheel, whose weight is W , and CC be an axle, but whose weight is so small, compared with that of the wheel, as not to be regarded. Then if P , as a power, be suspended to a line passing round the circumference of the wheel, whose radius call b ; and x a weight to be raised suspended to a line passing round the axle, whose radius let be a : it is required to determine x , so that its effect may be a maximum.

SINCE W is the weight of the wheel, $\frac{1}{2} W$ is the p' of the whole, acting at B , when in motion by Problem 8; and $\frac{ax}{b}$ is the value of x reduced to B . Therefore $P + \frac{1}{2} W + \frac{ax}{b}$ is the mass to be moved, after x is overcome by P : and $P - \frac{ax}{b}$ will be the moving power.

Hence $\frac{P - \frac{ax}{b}}{v + \frac{1}{2}w + \frac{ax}{b}}$ is the ac-



celerative force of $P = \frac{pb - ax}{tb + ax}$, by putting $t = P + \frac{1}{2} W$. Then as $b : a :: \frac{pb - ax}{tb + ax} : \frac{abP - a^2x}{tb^2 + bax}$ = the accelerative force of x , and therefore $\frac{abP - a^2x}{tb^2 + bax}$ its motive force when suspended at C , which by making its fluxion equal to nothing, we shall obtain $x = \frac{b}{a} \sqrt{t^2 + tP} - \frac{b}{a} t = \frac{b}{a} \frac{\sqrt{w^2 + 6Pw + 8P^2} - 2P - w}{2} = \sqrt{\frac{w^2 + 6Pw + 8P^2 - 2P - w}{2}}$, when a and b become equal the same as in Problem 15.

PROB. 19. LET the wheel and axle be as in the last, with this difference, that the weight (w) of the axle projecting on each side the wheel, be considered.

THEN

THEN $\frac{1}{2} W$ is the p' of the wheel at B, to the center S, (for we shall suppose the part of the axle which passes through the wheel to be of the same density with the wheel;) and $\frac{1}{2} w$ the p' of the axle at C, and which, reduced to B, will be $\frac{a^2 w}{2b^2}$. Hence $\frac{b^2 w + a^2 w}{2b^2}$ is the p' of the wheel and axle together, at B. Then will $P + \frac{b^2 w + a^2 w}{2b^2} + \frac{ax}{b}$ express the mass after being in motion: and $P - \frac{ax}{b}$ as in the former case, being the moving power, by putting $t = P + \frac{b^2 w + a^2 w}{2b^2}$, and proceeding as in the former case, we shall have $x = \frac{b}{a} \sqrt{t^2 + tP - \frac{b}{a} \cdot t}$; or by restoring the value of t , $x = \frac{b}{a} \sqrt{\frac{2b^2 P + b^2 w + a^2 w}{2ab} + \frac{2b^2 P + b^2 w + a^2 w + 2b^2 P}{2ab} - \frac{2b^2 P + b^2 w + a^2 w}{2ab}}$.

SCHOLIUM. These problems comprehend all the cases that can be of general use in combining the lever with the wheel and axle; or in their separate application, when the power is acted on by gravity, and whose motion is uniformly accelerated, the same as that of bodies falling freely through any given space. And since, in the preceding Problems, gravity, or the space which a body falls freely through in the first second of time, is considered as unity, it follows that the accelerative force of x in all these cases being multiplied by $16\frac{1}{2}$ feet, (or what may be the measure in any particular latitude,) will give the space in feet that x would pass through in the first second of time, and from which the space which would be passed over in any other time may be computed, since those spaces are as the squares of the times in which they would be passed over from the beginning. It is also easy to compute the velocity of x after passing through a given space in any given time, for that velocity will be in the subduplicate ratio of the accelerative force: and hence another maximum may be determined, viz. the greatest possible effect of x , after passing through a given space. For if the square root of the accelerative force be multiplied by x , the product will be as the momentum of x for any space passed over.

over. Or if the velocity of x , after having passed through any space in any given time, T be multiplied by x , then that product will evidently be the momentum of x , after having passed through that space: and therefore, by the well known method of fluxions, the value of x may be obtained under the circumstances of a maximum: and this will apply to all the foregoing cases. But to select one of the most useful, let it be that in Prob. 17, where the lever moves on its center of gravity, which it is generally made to do when a power is applied at one end to raise a weight at the other to a certain height, and then return to repeat its stroke, and so continue by the alternate acting and ceasing of the power. Now, in the case alluded to, the accelerative force of x is as $\frac{p-x}{t+x}$, therefore $x\sqrt{\frac{p-x}{t+x}}$ will be as the momentum of x after being urged by the force by which it would be carried through a space, that should be to the space a body would be carried through by gravity in the sametime, as $\frac{p-x}{t+x}$ to unity.

Hence, by making the fluxion of $x\sqrt{\frac{p-x}{t+x}}$ equal to nothing, we shall have $2Px - 3x^2x \times t - x - x \times Px^2 - x^3 = 0$, and therefore $x = \sqrt{\frac{p^2 + 2pft + g^2t^2 + p - 3t}{4}}$. Or if the velocity of x , after having passed through any space in any given time, T be multiplied by x , the momentum is obtained at the end of that time, let the space passed over be what it will. Now in the above case $\frac{p-x}{t+x} \times 16\frac{1}{12}$ feet, is the space which x would pass through in the first second of time: hence as $1''^2 : T^2 :: \frac{p-x}{t+x} \times 16\frac{1}{12} : \frac{p-x.T^2}{t+x} \times 16\frac{1}{12}$ feet, equal to the space that x would pass over in the time T ; therefore $\sqrt{\frac{p-x.T^2}{t+x}} \times 16\frac{1}{12}$ is the velocity at the end of that time, and $x\sqrt{\frac{p-x.T^2}{t+x}} \times 16\frac{1}{12} = T\sqrt{16\frac{1}{12}} \times \sqrt{\frac{p.x^2-x^3}{t+x}}$ is the momentum, which, by making the fluxion equal to nothing, will give x as before.

It will be unnecessary to give examples of all the foregoing

foregoing cases, as it is easy to assign numbers for the given terms, and from thence compute the value of x . But as the 17th Prob. is the most complicated with respect to the p' so often mentioned, and because the lever there represented is nearly the form of those generally used in machines that act with a reciprocating motion, I will subjoin an example for determining the value of x , both after a *given time*, and after passing through a *given space*; and then proceed to compute the greatest possible effects of the steam engine, agreeable to the principles laid down in this theory.

EXAMPLE:—LET then the weight (w) of the great beam ab (see the figure in Problem 17) be ten cwt. its length ($2r$) equal twenty feet. The weight of the two circular ends (W') = two cwt. The weight of *all* the braces ($2w'$) = one cwt. their length (v) = five feet. Then let SB (R) be twelve feet; sd (a) = six feet, and therefore $r - a$ = four feet: and make P = ten cwt. Now $\frac{w^2 + r - a}{3v^2 + r - a} \times 3 + 6 \times \frac{ra - a^2}{r^2 - a^2} = \frac{217}{267} = 8127 = k$, and $\frac{2kr^2w'}{R^2} = 1,128$ the p' of all the braces reduced to B . Then again $\frac{R^2}{R^2 - r^2} = 3,273 = h$, $\frac{bw'}{2} = 3,273$, $\frac{r^2w}{3R^2} = 2,546$. Therefore we have $P + \frac{2kr^2w'}{R^2} + \frac{bw'}{2} + \frac{r^2w}{3R^2} + 1694,7\text{lb.} = t$; and by substituting the value of t thus found, in the equation $\sqrt{t^2 + tP} - t$, will give $x = 442\text{lb.}$ very nearly, when its effect is greatest after a *given time*, and if the values of t and P be put in the equation $\frac{\sqrt{P^2 + 105P + 9t^2 + P - 3t}}{4}$, we have $x = 631,5\text{lb.}$ when its effect is greatest after passing through a *given space*. Had the weight of the lever not been considered, x in the first case would have been 414,2, and in the second 618,04 nearly.

Now to compute the greatest effects of the steam engine on the principles here laid down, without entering into a minute description of that machine, let c be the diameter of the cylinder into which the steam is conveyed, and p the diameter of the pump. Then if a denote the weight of the atmosphere on

a circular inch, ac^2 will express the weight of the atmosphere on the piston of the cylinder, which is therefore the power of the engine, and answers to P in the former case. And by an easy computation, if f represent the depth of the pit in fathoms, it will be found that $2p^2f$ will nearly express the weight of the water in pounds, which is to be raised through a given space, by the power of the cylinder, and which therefore answers to x . Now in the usual theorems that have been deduced for ascertaining the different values of c , f , and p , ac^2 and $2p^2f$ have been made equal to each other, so that the weight and power must have been supposed in *equilibrio*, which is never the case. But let us allow the weight of water in the pump to be overcome by the superior weight of the atmosphere in the cylinder the moment the steam is condensed, and then the case becomes precisely the same as when the weight P is suspended at one end of the lever; and like that weight the atmosphere will descend with an accelerated motion, and raise the column of water at the opposite end.

Now since the value of P is here given in terms of c the diameter of the cylinder, it will be necessary to substitute another quantity for t in the general equations. Let then $\frac{2kr^2w'}{R^2} + \frac{bw'}{2} + \frac{r^2\pi v}{3R^2}$ be equal d : then $P+d(ac^2+d)=t$; and therefore the equations $\sqrt{t^2+tP-t}$, and $\frac{\sqrt{P^2+10tP+gt^2+P-3t}}{4}$, become $\sqrt{2P^2+3Pd+d^2-P-d}$ and $\frac{\sqrt{20P^2+28Pd+gd^2-3d-2P}}{4}$, respectively; and by putting $2p^2f$ for x , and ac^2 for P , we shall then have $2p^2f=\sqrt{2a^2c^4+3adc^2+d^2-ac^2-d}$ for a general equation when the effect is greatest after a given time, and $2p^2f=\frac{\sqrt{20a^2c^4+28adc^2+gd^2-2ac^2-3d}}{4}$ when the effect is greatest after passing through a given space; and from which equations may be deduced the following values of c , p , and f , viz.

When

When the effect is a maximum in a given time. $\left\{ \begin{array}{l} 1, c = \sqrt{\frac{32p^4f^2 + 8p^2fd + d^2}{2a} \left| \frac{1}{2} + 4fp^2 - d \right|} \\ 2, p = \sqrt{\frac{2a^2c^2 + 3adc^2 + d^2}{2f} \left| \frac{1}{2} - ac^2 - d \right|} \\ 3, f = \sqrt{\frac{2a^2c^2 + 3adc^2 + d^2 - ac^2 - d}{2p^2}} \end{array} \right.$

When the effect is a maximum after passing over a given space. $\left\{ \begin{array}{l} 4, c = \sqrt{\frac{20f^2p^4 + 8fdp^2 + d^2}{2a} \left| \frac{1}{2} + fp^2 - d \right|} \\ 5, p = \sqrt{\frac{20a^2c^2 + 28adc^2 + qd^2}{8f} \left| \frac{1}{2} - 2ac^2 - 3d \right|} \\ 6, f = \sqrt{\frac{20a^2c^2 + 28adc^2 + qd^2 - 2ac^2 - 3d}{8p^2}} \end{array} \right.$

Now in the application of the above equations let the diameter of the cylinder (c) be equal 30 inches, and the depth (f) of the well be 27 fathoms; and $a=6$, and also d ($t-P=695$ very nearly, as before. Then if these values be put in the 2d equation, p will be equal 6,49 inches nearly, which by the common method must have been 10 inches. Then if ac^2 and $2p^2f$ be substituted for P and x in the expression for the accelerative force, we have $\frac{ac^2 - 2p^2f}{ac^2 + d + 2p^2f} \times 16\frac{1}{2} = 6$ feet very nearly for the space through which the water would ascend in the first second of time. And if 6 feet be allowed for the length of one stroke of the pump, then the ascent of that stroke is performed in 1" of time. Now the contents of a cylinder whose length is 6 feet, and diameter 6,49 inches is 8,43 gallons nearly, which is the greatest quantity possible that can be raised in 1" of time by the pressure of the atmosphere on a circle of 30 inches in diameter. Then if the piston be made to return in the same time, 2" will be the time of one entire stroke, which is at the rate of 30 in the minute, which multiplied by 8,43 gallons gives 253 gallons per minute, or 241 hogsheads in the hour.

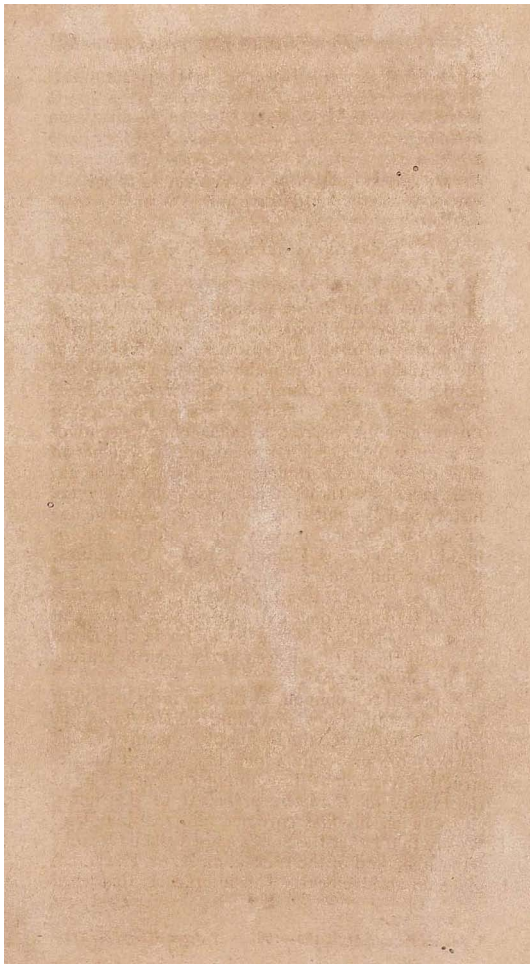
If the above values of a , c , f and d be put in the 5th equation, we shall have $p=7,8$ inches nearly and $\frac{ac^2 - 2p^2f}{ac^2 + d + 2p^2f} \times 16\frac{1}{2} = 3,55$ feet for the space which the water would ascend through in the first second of time, then as $3,55 : 1''^2 :: 6 : 1'',7 =$ the square of the time

time in passing through 6 feet, hence $\sqrt{1''},7 = 1',34$ nearly is the time, which if the piston return in the same time, will give $2'',68$ for the time of one entire stroke, being at the rate of 22,4 nearly in the minute. Now a cylinder whose height is 6 feet, and diameter 7,8 inches contains 12,23 gallons, and this is the greatest possible quantity that can be raised through a space of 6 feet in $1''34$ of time, by a cylindrical column of the atmosphere, whose diameter is 30 inches. Then $22,4 \times 12,23$ gives 274 gallons nearly in the minute, or 261 hogsheads in the hour, which is more by thirty-three hogsheads than what is computed by the common method, where the diameter of the pump would be ten inches. But by that method no accelerative force is allowed, except what must arise from some additional weight given to the steam piston: and it may not be improper to observe here, that if ten be put for p in the expression $\frac{ac^2 - 2p^2f}{ac^2 + d + 2p^2f}$, it will vanish, for then the power of the cylinder and the weight of the water are *in equilibrio*, and the accelerative force is equal to nothing.

If these two cases be compared with each other, in order to know which would be the most proper for obtaining the dimensions of the cylinder and pump, we must observe that in the first, where the effect is required to be a maximum in a *given time*, the velocity is much greater than in the other, and the time in passing over six feet consequently much less; and therefore, by giving the greater number of strokes in the hour, the effect is so much more interrupted by the returning of the pump piston, and of course the whole effect within that hour is diminished, and in fact is less than in the second case, as appears from the foregoing computations. But were the pump in the first case allowed to ascend till $1'',34$ was elapsed (which is the time in the second) it would pass through the space of ten feet nearly, and in the course of the hour would raise 311 hogsheads, which is more by fifty hogsheads than in the maximum

in unit for space, when *that space* is six feet. But the great velocity with which the machine must move, is a sufficient objection against the maximum in time; because however well proportioned the parts might be, the perpetual reciprocation, where the motion is very great, must tend to injure the whole apparatus; and on this account, the latter case is much to be preferred.

I HAVE said nothing of friction, because in the cases I have considered, it must be but trifling, except in the pistons; and I have not mentioned the chain and pump rods as separate quantities from ac^2 and $2p^2f$, though, to be minutely correct, this ought to have been done; but as this part of the apparatus will act at both ends of the lever, and whose weight compared to those of the water, and the atmosphere, will be but small, no great error will arise from this neglect. And as my object has been to establish a general theory, upon principles that admit of further prosecution to any degree of accuracy, I feel less anxious as to these particulars.



VIII.

On the RELIGION and LITERATURE of the
BURMAS.

BY FRANCIS BUCHANAN, M. D.

IN the celebrated island of *Ceylon*, in the extensive empire of the *Burma* monarchs, and in the kingdoms of *Siam* and *Cambodia*, the prevailing religion is that of BOUDDHA, or GODAMA; and followers of the same doctrine are probably dispersed all over the populous and wide dominions of *China*, *Cochinchina*, *Japan*, and *Tonkin*. However absurd the tenets of this religion may be, yet, as influencing the conduct of so large a proportion of mankind, it becomes an object of great importance in the history of the human race. To those in particular who study the history and antiquities of *Hindustan*, a knowledge of the doctrine of GODAMA will, I doubt not, be highly curious; as I think that Mr. CHAMBERS, the most judicious of our *Indian* antiquaries, has given very good reason for believing, that the worship of BOUDDHA once extended all over *India*, and was not rooted out by the *Brahmens* in the *Decan* so late as the ninth, or even as the twelfth century of the *Christian* æra*.

NOR will this opinion, of the late introduction of the superstition now prevailing in *Hindustan*, be contradicted by the almost singular remain of *Hindu* history; the only one which has escaped the destructive research of the cunning *Brahmen*: I mean the history of *Cashmere* presented to the Sultan ACKBER on his first entrance into that kingdom. We are told † that the Sultan caused the book to be translated, and of the translation ABUL FAZIL has given an abridgement. This informs us, that when

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*Cashmere** *Asiatick Researches*, I, 160—166.† *Ayeeen Akbery*, II, 178.

Cashmere was freed from an inundation, by which it had been covered, a certain *Kushup* brought the *Brahmens* to inhabit the new land; that after a long time a general assembly of the inhabitants was called, who elected a man celebrated for his virtue to be their king; and that from thenceforward monarchy was established in that delightful region. The name of the first successor to this king, that is mentioned, is OWNGUND, who was contemporary with KISHEN. From OWNGUND to KOTADEVY, the last native ruler, this history reckons 159 princes; and KOTADEVY was succeeded by a *Mahomedan* prince SHUMSHEDDEEN in the year of the *Hegira* 742, or of our vulgar æra 1342. The history makes these 159 princes to have reigned an astonishing length of time: but we have no number of years assigned for the reign of any of the first fifty-three princes, nay, eighteen only of them are at all named: of the next fifty-three princes, we find one reigning 300 years, and the others on the whole an incredible length of time. In such a case the safest rule is to take the last three dynasties as a guide, and these give us fifty-two princes in 504 years and some months, which is not quite ten years to a reign, and that is as much as ought to be admitted among eastern dynasties, where oppression always paves the way for revolt, where the line of succession is not clearly defined, and where an old uncle in most cases supplants the infant nephew. On this supposition of ten years for a reign, OWNGUND and KISHEN will be placed in the year before MAHOMMED 870, or before CHRIST 248. Now the *Brahmens* taken to *Cashmere* by KUSHUP could not be the *Brahmen* sect of priests, as they cultivated the earth, and were the only inhabitants of the country: but they must have been one of the *Brachman* nations, several of whom, according to PLINY, were dispersed over *India**; and these again, I conjecture, are the same with the *Biamma* of the *Rāhāns*, supposed

* Page 252 of this volume.

posed by them to have been the first inhabitants of the earth*. That this must be the meaning of the history of *Cashmere*, seems plain: as we are told, Rajah JENNEH the forty-fifth prince, and who, according to my theory, must have lived about the year of CHRIST 202, “established in his reign the *Brahmeny* rites.” His successor JELOWK, the most powerful of the princes of *Cashmere*, “tolerated the doctrine of BOWDH:” and in that delightful valley it was not till the reign of NERKH, the fifty-ninth prince, A. D. 342, “that the *Brahmens* got the better of the followers of BOWDH, and burned down their temples.”

To such as have an opportunity, I would beg to recommend an enquiry into the religion of *Nepal*. In the account given of that country by father GIUSEPPE†, it is stated, that there are in it two religions. The most ancient, professed by a sect who call themselves *Baryesu*, and who, from several circumstances mentioned by the father, seem to be worshippers of BOUDDHA. The other religion, now the more common, is that of the *Brahmens* of *Hindustan*.

“IN *Narhoara*, the residence of the king of kings, “or of *Guzerat*, even after the *Mahommedan* invasion in the eleventh century of our æra, we find it “mentioned in EDRISI, that the people continued “to worship BODDA‡.”

IF the conjectures of Sir WILLIAM JONES, relative to the inscriptions found at *Mongheer*, and on the pillar at *Buddal*||, be well founded, then the governing power on the banks of the *Ganges*, as late as about the time of the birth of CHRIST, was of the sect of BOUDDHA. The *Brahmens* indeed had then introduced themselves into *Hindustan*, and had obtained lands, and even the rank of prime minister to the great Rajah: but they had not persuaded him to change his religion; a change which when accom-

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plished,

* Page 248 of this volume.

† *Asiatick Researches*, II, 309.

‡ RENNELL's Memoir, p. 229.

|| *Asiatick Researches*, I, 142.

plished, proved equally destructive to the prince, and to the people. However idle and ridiculous the legends and notions of the worshippers of *BOUDDHA* may be, they have been in a great measure adopted by the *Brahmens*, but with all their defects monstrously aggravated: rajahs and heroes are converted into gods, and impossibilities are heaped on improbabilities. No useful science have the *Brahmens* diffused among their followers; history they have totally abolished; morality they have depressed to the utmost; and the dignity and power of the altar they have erected on the ruins of the state, and the rights of the subject. Even the laws attributed to *MENU*, which, under the form in use among the *Burmas*, are not ill suited for the purpose of an absolute monarchy, under the hands of the *Brahmens* have become the most abominable, and degrading system of oppression, ever invented by the craft of designing men.

DURING my short stay in the *Burma* empire, aware of the interesting nature of the enquiry, I neglected no opportunity of making myself acquainted with the religious tenets of the *Rāhans*: but from a want of knowledge in the language I should have obtained a very superficial view, had not Captain SYMES given me the use of three treatises, which he procured from VINCENTIUS SANGERMANO, an *Italian* priest residing at *Rangoun*. The first was a *Cosmography* extracted by SANGERMANO from various *Burma* writings. The second was a translation of a small treatise, written by a late *ZARADO* or king's confessor, with an intention of converting the *Christians*. The third was a translation of the book of ordination. These three I have united into one connected account, translating them from the original *Latin*, and intermixing them throughout with such observations as my personal acquaintance with the subject, and my reading, have enabled me to collect. I regret exceedingly, that in my present situation I am not enabled to make the last more numerous, as I have
hardly

hardly any access to books: and I have to solicit the indulgence of the learned for errors, which may have happened in several of my quotations, as I have been sometimes obliged to rely on my memory.

I BEGIN with a translation of the

COSMOGRAPHIA BARMANA.

“ OF the measures of magnitude, and time, commonly used in the writings of the *Burmas*.

“ I. THE *Burmas* conceive, that there are five species of atoms. The first is a fluid invisible to men; but visible to those superior beings called *Nat*: a fluid which pervades and penetrates all bodies. The second species of atoms are those very minute particles, which are seen floating in the air, when through any opening the sunbeams enter a chamber. The third species is that very subtile dust, which during the dry season, especially in the months of *February* and *March*, is raised aloft by the feet of man or of cattle, or by the wheels of waggons. The fourth species consists of the grosser particles of the same dust, which on account of their weight do not fly through the air, but remain near the earth. The last and fifth species of atoms are those particles which fall to the ground, when letters are written with an iron style on palmira leaves: the manner of writing in use among these people. Now thirty-six of the first species of atoms make one of the second, thirty-six of the second one of the third, and so forth. Seven of the fifth or last species are equal in size to a louse of the human head, seven lice are equal to one grain of rice, seven grains of rice are equal to one inch, twelve inches to one palm, two palms to one cubit, seven cubits to one *ta*, twenty *ta* to one *usaba*, eight *usaba* to one *gaunt*, four *gaunt* to one *juzana*. The *juzana* contains six *Burma* leagues, and four *ratoen*. The

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“ four

“four *ratoen* are equal to 400 *ta*, or 2,800 cubits*.
 “Again, the *Burma* writings reckon twelve hairs
 “equal to one grain of rice, four grains of rice equal
 “to one finger, twelve fingers equal to one foot,
 “and the common stature of a man is seven feet or
 “four cubits.”

THESE measures, it is to be observed, are not in use among the *Burmas*: but have been introduced from *India* along with their books.

“II. The time in which the forefinger, when
 “drawn back from the thumb, will recover its proper position, is called *charasi*, which may be
 “translated a second: ten *charasi* make one *pian*,
 “six *pian* one *bizana*, or minute, sixty *bizana* one
 “hour, sixty hours one day, thirty days one month,
 “twelve months one year.”

SUCH is the account of the *Burma* measurement of time given by the missionary: but it is by no means complete. More accurate divisions have taken place, in a great measure, I apprehend, owing to the introduction of the *Brahmens*. The *Rākāns* or priests of *GODAMA* being entirely prohibited from the study of astrology, and the people being much addicted to divination of all kinds, the *Brahmens* have taken advantage of their credulity, and all over *India* beyond the *Ganges* have established themselves in considerable numbers. We are not however to conceive, that they have any concern in the religion of these countries: they are merely employed about the courts, and in the houses of the great, as the *Chaldeans* were about the kings of *Persia*, as soothsayers and wise men. These *Brahmens* yearly compose

* THE *Burma* league is 7,000 cubits: accordingly the *juzana* contains 44,800 cubits, or is nearly twelve miles. The *yojana* of *Hindustan*, according to Sir WILLIAM JONES (*Asiatick Researches*, IV, 157) is four and a half G. miles. According to Mr. CHAMBERS (*Asiatick Researches*, I, 155) it is from nine to twelve miles.

pose almanacs, of which I brought several from *Amarapura*. Before an audience is given on solemn occasions, they perform incantations under the throne of the king, or of great men: they are consulted on all matters of importance, to determine the fortunate hour or season in which these ought to be undertaken: they bestow on their protectors, amulets, charms, and the like. By such means the *Brahmens* have rendered themselves of great importance in the *Burma* empire, and have procured many privileges, confirmed even by the written law of the kingdom. Their being mentioned in the *Damathat*, or code of laws commonly attributed to *MENU*, by no means however appears to me a clear proof that the *Brahmens* were introduced into the *Burma* kingdom as early as that code: for we are told in the preface, that although all the laws are commonly attributed to *MENU*, yet that many alterations and additions have been made by different princes according to the exigencies of the times. For this and other reasons I am inclined to think that the introduction of the *Brahmens* into the *Burma* kingdom is a very recent event. I spoke with none of them who had not himself come from *Cussay* or *Arakan*, or who was not the first in descent from such as had come from those countries: and they all either were, or affected to be, very ignorant of the country. Besides, these laws of *MENU* were introduced from *Ceylon*, a country of which the indigenous inhabitants never have adopted the religion of the *Brahmens*.

THE *Burmas*, in whatever manner they may have obtained it, have the knowledge of a solar year, consisting of 365 days, and commencing on the 18th of *April*. Like most nations they also use a week of seven days, named after the planets. Sunday *Ta-nayn-ga-nue*, Monday *Ta-nayn-la*, Tuesday *Ayn-ga*, Wednesday *Boud-dha-hu*, Thursday *Kia-sa-ba-da*, Friday *Thouk-kia*, Saturday *Tha-na*.

THE common year, however, of the *Burmas* is lunar; and by this year are regulated their holidays and festivals. It is composed of twelve months, which alternately consist of thirty and twenty-nine days, as follows;

Of 30 days. 1 *Ta-goo*, 3 *Na-miaung*, 5 *Wag-goun*, 7 *Sa-deen-giut*, 9 *Na-to*, 11 *Ta-bu-dua*.
Of 29 days. 2 *Kaisoun*, 4 *Wa-goo*, 6 *Ta-da-lay*, 8 *Ta-zaung-mo*, 10 *Pya-zo*, 12 *Ta-houn*.

THIS being eleven days shorter than their solar year, in order to make the beginning of *Ta-goo* coincide with our 18th of *April*, the first day of their solar year, the *Burmas* every third year add an intercallary moon. This seems to have been the extent of chronological science in *Hindustan*, during the prevalence of the doctrine of BOUDDHA, as the *Rahans* will go no farther. But it was soon discovered by the *Brahmens*, that this contrivance would not make the commencements of the lunar and solar years coincide. They therefore wish from time to time to introduce other intercallary moons, in order to make the festivals occur at the proper season. The present king, who is said to be a studious and intelligent prince, was convinced of the propriety of the *Brahmens* advice, and persuaded the *Rahans* of the capital to add an intercallary moon during the year we were there. He had not however the same success in the more distant provinces; for although very strong measures were taken at *Rangoun*, such as ordering the people for some days not to supply the *Rahans* with provisions, yet in the end the obstinacy of the clergy prevailed, and they celebrated a great festival a month earlier at *Rangoun*, than was done at *Amarapura*. To this obstinacy the *Rahans* were probably in a great measure instigated by a jealousy, which they not without reason entertain against such dangerous intruders as the *Brahmens*; and they were encouraged to persist by the ignorance of those about the king. Of this ignorance his majesty was very sensible, and was extremely desirous of procuring from *Bengal* some learned *Brahmens* and proper books. None of those

I saw in the empire could read *Sanscrit*, and all their books were in the common dialect of *Bengal*.

THE 1st of *October* 1795, was at *Amarapura Kiasabada* the 19th of *Sadeengiut*, in the year of the *Burma* æra 1157; so that the reckoning, at that place at least, agreed very well with the solar year: but I observed that the *Burmas* in general, if not always, antedated by one day the four phases of the moon, which are their common holidays. I did not however learn, whether this proceeded from their being unable to ascertain the true time of the change of the moon, or if it was only an occasional circumstance, arising from some farther contrivance used to bring the solar and lunar years to coincide. In the common reckoning of time the *Burmas* divide the moon into two parts, the light and the dark moon: the first containing the days during which the moon is on the increase, and the second, those in which she is in the wane. Thus for instance, the 14th of *Sadeengiut* is called the 14th of the light moon *Sadeengiut*: but the 16th is called the 1st of the dark moon *Sadeengiut*.

WHENCE the *Burmas* date their æra I could not from them learn. JOANNES MOSES, *Akunwun* or collector of the land tax for the province of *Pegu*, the most intelligent man with whom we conversed, did not seem to know. He said that whenever the king thought the years of the æra too many, he changed it. The fact however, I believe, is, that this æra commencing in our year 638 is that used by the astronomers of *Siam*, and from them, as a more polished nation, it has passed to the *Burmas*, whose pride hindered them from acknowledging the truth*.

HAVING mentioned the fondness of these people for divination, I think no place will suit better than this, to introduce what I observed among them on that
that

* Loubère du Royaume de Siam II. 102.

that subject ; for they consider it as the most useful and noble of sciences. We are not however to believe, that it is always used from ignorance. I am persuaded, that, like the augurs among the *Romans*, the *Brahmens* are often called upon for political purposes. When pressed to dispatch business, which the government wish to defer, the easiest way of procuring delay is for the *Brahmen* to mention a distant day as the favourable time : or when insulted by a nation of whom they are afraid, the minds of the people can easily be quieted, by a distant time being found propitious for revenge. Although I am convinced that political advantage is thus taken of the art, yet there can be no doubt, but that the greater part, even of the best informed among the people, are firmly persuaded of its existence.

No person will commence the building of a house, a journey, or the most trifling undertaking, without consulting some man of skill to find a fortunate day or hour. *Friday* is a most unlucky day, on which no business must be commenced. I saw several men of some rank, who had got from the king small boxes of *theriac*, or of something like it, and which they pretended would render them invulnerable. I was often asked for medicines, that would render the body impenetrable to a sword or musket ball, and on answering that I knew of none such, my medical skill was held in very low estimation. Indeed every *Burma* doctor has at the end of his book some charms, and what are called magical squares of figures, which he copies, and gives to be worn by his patients. And although these squares are all of uneven numbers, and consequently of the easiest construction, yet the ignorant multitude repose great confidence in their virtue. Some men whom we saw, had small bits of gold or jewels introduced under the skin of their arms, in order to render themselves invulnerable : and the tatooing on the legs and thighs of the *Burma* men they not only think ornamental, but a preservative against the bite of snakes. Almost every man of
any

any education pretends to a skill in cheiromancy, or the foretelling of a person's fortune by looking at the palms of his hands. Prophecies and dreams are also in great credit among the *Burmas*, as among all rude and ignorant nations. We were informed that a prophecy having lately been current, foretelling that *Pegu* would again be the seat of government, the king was thrown into considerable anxiety, and thinking to elude the prophecy, had sent orders to the *Myoowun* (or governor of the province) of *Haynthawade*, to remove the seat of his government from *Rangoun* to *Pegu* then in ruins. The late *Myoowun* was so attached to *Rangoun*, that he always found some excuse for delaying the execution of the order: but while we were in the *Burma* empire, his successor was busily employed in rebuilding *Pegu*, and having made considerable progress, had taken up his residence in that city. Nor did he appear to be more exempt from such credulity than his master. We were told, when at *Pegu*, that he was often employed in search of a hidden treasure, in consequence of some directions he had received in a dream: and that he often went into the woods to look for a temple, which, it was alleged, had the power of rendering itself visible or invisible. All good people are in consternation on account of certain robbers, who by a power in magic are supposed able to change themselves into tigers, or other wild beasts, and thus without a danger of detection can commit their nocturnal spoils. The grand art of astrology, however, seems to be chiefly practised, and understood by the *Brahmens*. Yet, while at *Arammattana* or *Pougan*, I procured a treatise on this subject written in the *Burma* language: which, with all the other manuscripts I brought from the country, are now in the possession of Sir JOHN MURRAY, at whose request I made the collection. However great the proficiency of the *Brahmens* in astrology may be, I was informed by my friend the Missionary, that they were very ignorant in astronomy. Although they sometimes attempt to calculate

eclipses, yet they pretend not to ascertain either the hour of their commencement, or the extent of the obscuration. That his account was just, I make no doubt; as an eclipse of the moon happened during our stay at *Amarapura*, which had eluded their science, and which they attempted to discredit. It would indeed appear from a treatise of Mr. SAMUEL DAVIS*, that the time of the full moon, and the duration of the eclipse, found by the rules given in the *Surya Siddhanta*, differ considerably from the truth; and that although the rules given in the *Siddhanta Rahasya*, and other more modern books, make a nearer approach, yet that they are far from being correct; so that even the *Brahmens* of *Hindustan* are not much farther advanced than those of *Amarapura*, notwithstanding the improvements they have introduced from time to time, perhaps as they were able gradually to procure a little better information from their conquerors, *Mohammedans* and *Christians*†.

AFTER this long digression I shall return to the *Cosmographia*

“ OF THE UNIVERSE.”

“ THE Universe is called by the *Burmas*, *Logha*,
 “ which signifies successive destruction and repro-
 “ duction: because it is conceived, as we shall af-
 “ terwards mention, that the Universe, after it has
 “ been destroyed either by fire, water, or wind, is
 “ again of itself restored to its ancient form. Our
 “ earth the *Burmas* do not, like us, conceive to be
 “ spherical: but they suppose it to be a circular
 “ plane elevated somewhat in the center: so that
 “ the e is every where from the center to the cir-
 “ cumference

* *Asiatick Res.* II. 285.

† I have heard it reported, that the Royal Oak has now found its way into some of the oldest *Brahmenical* treatises on the constellations. The greater part of *Bengal* manuscripts, owing to the badness of the paper, require to be copied at least once in ten years, as they will, in that climate, preserve no longer; and every copyist, it is to be suspected, adds to old books whatever discoveries he makes, relinquishing his immediate reputation for learning, in order to promote the grand and profitable employment of his sect, the delusion of the multitude.

“ circumference some declivity. This earth is en-
 “ tirely surrounded by a chain of very lofty moun-
 “ tains called *Zetchiawala*.* From the surface of
 “ the sea these hills extend each way, up and down,
 “ 82,000 *juzana*. The diameter of this earth is
 “ 1,203,400 *juzana*; its circumference is three times
 “ its diameter; and its thickness 240,000 *juzana*.
 “ The half of this depth is dust. The remaining and
 “ lower half consists of a compact rock, which is
 “ named *Sila Pathavy*. This immense body of dust
 “ and rock is supported by a double thickness of
 “ water, and that again by twice its thickness of
 “ air; below which the *Burmas* suppose to be a va-
 “ cuum. Besides this earth of ours, it is imagined
 “ that there are of the same form 10,100,000 others,
 “ which mutually touch in three points, forming
 “ between them a similar number of equilateral
 “ spaces, which on account of the sun’s rays not
 “ reaching them, are filled with water intensely cold.
 “ The depth of these 10,100,000 triangular spaces
 “ is 84,000 *juzana*, and each of their sides is 3,000
 “ *juzana* in length†.

“ II. IN the middle of the most elevated part of
 “ our earth, the *Burma* writings place *Mienmo*, the
 “ largest of all mountains‡. It is elevated above
 “ the

* THE *Brahmens*, in place of the mountain *Zetchiawala*, suppose the world to be surrounded by an immense serpent, which they name *Ananda* or *Vaughli*. Paulini a. s. BARTHOLOMEO Murei Borgiani *Codices mss: illustrati Romæ* 1793. page 211.

† THIS shews the very crude notions of geometry which must have prevailed in *Hindustan*, when this doctrine was invented.

‡ *Mienmo* is, I believe, a *Burma* word, signifying the mountain of vision. It seems to be the same with the *Meru Paravada* of the *Brahmens*, which are perhaps *Sanscrit* or *Pali* words of the same meaning. The ingenious etymologist PAULINUS (*Mus. Borg.* pag: 281 *et seq. et passim ubique*), in his description of a figure of the *Thibet* cosmography, has made wonderful confusion by supposing that the imaginary *Meru* or *Mienmo* is the same with the snowy *Hemavanta* or *Himalah*, which actually exists. In fact, the cosmographical table of *Thibet* will be found a rude attempt to delineate the general cosmography here delivered, except that it represents *Mienmo*, with the seven surrounding chains of hills, and the intervening *Sila*, as square; whereas they are by the *Rabans* described as being circular.

“ the surface of the sea 84,000 *juzana*, and descends
 “ as much below. If we take a large cask, and im-
 “ merse one half of it under water, with one of the
 “ ends uppermost, we shall have an exact repre-
 “ sentation of the figure, situation, and position of
 “ *Mienmo*. The diameter of the superior plane sur-
 “ face of this mountain is 48,000 *juzana*. This im-
 “ mense bulk is supported on three feet, which are
 “ three carbuncles, each 3,000 *juzana* high, and
 “ which are connected to *Sila Pathavy*. The
 “ eastern face of *Mienmo* is silver, the western glass,
 “ the northern gold, and the southern face is pale-
 “ coloured carbuncle. Seven chains of hills, like
 “ so many belts, every where surround the king of
 “ mountains *Mienmo*: and in the intervals between
 “ these chains are seven rivers called *Sida**, because
 “ their white waters are limpid like crystal, and un-
 “ able from their lightness to support even the
 “ smallest feather. The height of these hills, and
 “ the width and depth of these rivers, decrease, as
 “ they are more distant from *Mienmo*, and that in a
 “ duplicate proportion: thus the first range of hills
 “ which is called *Jugando*, is in height 84,000 *ju-*
 “ *sana*; and the first great *Sida* or river, which
 “ runs between *Mienmo* and *Jugando*, is of the same
 “ width and depth: the second chain of hills is
 “ 42,000 *juzana* high; and the second *Sida* of equal
 “ width and depth: and thus the others diminish
 “ in a similar proportion.”

“ III. OPPOSITE to the four cardinal parts of
 “ *Mienmo*, are placed in the middle of the ocean,
 “ four great islands, the habitations of men, and of
 “ other animals. The eastern island named *Piop-*
 “ *pavideha*, is shaped like the moon in her quarters,
 “ and is in circumference 21,000 *juzana*. The
 “ western island, which is like the full moon, is
 “ named *Amaragoga*, and has a similar circum-
 “ ference.

* *Sida* in the dialect of *Arakan* is applied to the sea, which the
Burmas name *Pan-lay*: but I imagine that sea would be a more pro-
 per interpretation of *Sida*, than the word river used by the missionary.

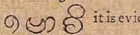
ference. *Unchegru*, the northern island, is square, and its circumference is 24,000 *juzana*. Finally, the southern island, which we inhabit, and which is called *Zabudiba*, is shaped like a trapezium, and is 30,000 *juzana* in circumference. These names are taken from certain great trees, which are the sacred insignia of each particular island: thus, because the sacred tree of the southern island is *Zabu*, the island is named *Zabudiba*, or the island of the tree *Zabu*; *diba*, in the *Pali* language, signifying island*.

IV. BESIDES these four large islands, the *Burma* writings allow 2000 of a smaller size, 500 belonging to each of the larger ones. All these small islands are of the same shape with that on which they depend. Except these, the *Burmas* admit of nothing but a vast and impassable ocean. They also say, that the four different faces of *Mienmo* communicate their respective colours, not only to the seas lying opposite to them, but also to the islands and their inhabitants. Thus, because the eastern face of *Mienmo* is silver, the eastern island and its inhabitants, its trees and rivers, with all the eastern sea as far as mount *Zetchiavala*, are white like milk. In a similar manner, the glass face on the west side of *Mienmo* communicates a green colour to the great western island, and to the 500 small islands by which it is surrounded, and also to all that part of the ocean which lies to the west of *Mienmo*. They speak in a similar manner of the two other parts; the northern and the southern:

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* This tree *zabu* is entirely the creature of fancy, there being no species of plant so called: but I observed that a kind of respect was paid by the *Burmas* to the *Bô-ahé bayn* or *Ficus religiosa*. From the characters with which this name is written  it is evidently a *Pali* or *Sanscrit* word, and the reverence paid to it has been introduced from *Hindustan*. It is said that *GODAMA* rested himself by leaning on it, at a time when he had been much fatigued. The attention paid to the tree seems therefore chiefly given, from its being considered as a relic of the God; but does not appear to be esteemed of much importance in the religious code, as it is not mentioned in the summary of religious duties, which we shall afterwards detail.

“ and on this account the great ocean is divided
 “ into four seas; the white, the green, the yellow,
 “ and the brown.

“ V. THE *Burmas* do not suppose the ocean to be
 “ every where of the same depth. The sea, lying
 “ between each of the large islands and its depend-
 “ ing small ones, has little depth, and is so smooth
 “ as to be passable with convenience in ships: but
 “ the seas interposed between the great islands, and
 “ also those which lie on one hand between *Mienmo*
 “ and the great islands, and on the other between
 “ them and *Zetchiavala*, have the enormous depth of
 “ 84,000 *juzana*. In these seas the waves rise to the
 “ height of sixty or seventy *juzana*; in them there
 “ are frequent and dreadful whirlpools, capable of
 “ swallowing up the largest ships; and monstrous
 “ and enormous fishes, 500 nay even a 1000 *ju-*
 “ *zana* in length. When these fishes simply move,
 “ they cause the water as it were to boil: but when
 “ they leap up with their whole bodies, they raise
 “ tempests extending from 500 to 800 *juzana*. These
 “ seas are therefore inaccessible to ships*. It is
 “ related in the *Burma* writings, that a *Kuta* (*Eu-*
 “ *ropean*) ship, having ventured to penetrate into
 “ them, had been swallowed up: and hence it is
 “ concluded, that there can be no communication
 “ between the four great islands. The *Burmas* there-
 “ fore suppose, that the ships which arrive from
 “ *Europe*, in their kingdom, come from some of
 “ the small islands belonging to the great isle *Za-*
 “ *budiba*: and thence the *Europeans* are commonly
 “ called the inhabitants of the small islands.” Al-
 though religion and ignorance induced the *Burmas*,
 on their first acquaintance with *Europeans*, to form
 such mean opinions of them; yet better information
 has corrected their error, and I always at *Amarapura*
 heard *Britain* mentioned by the name of *Pyee-gye*,
 or the great kingdom.

OF

* In the *Cosmogonia Indico-Tibetana*, given us by PAULINUS, we have a rude imitation of a ship passing between *Zabudiba* and one of its dependent small islands, in order, I suppose, to shew the intervening part of the sea to be navigable. I wonder that the vigilance of the good father did not discover it to be NOAH's ark.

OF BEINGS LIVING IN THE UNIVERSE, OF
THEIR HAPPINESS AND MISERY, AND
OF THE DURATION OF THEIR LIVES.

“ VI. THE *Burma* writings divide all living
“ beings into three kinds: 1st, *Chama*, or generat-
“ ing beings; 2d, *Rupa*, or beings which are mate-
“ rial, but do not generate; and 3d, *Arupa*, or
“ immaterial beings or spirits. These three kinds
“ are again subdivided into thirty-one species, each
“ of which has its proper *bon* or habitation. The
“ first kind, or the *Chama*, contains eleven species,
“ *bon*, or states of existence: seven of which are
“ states of happiness, and four of misery, which
“ last are called *Apé*. The first state of happy ex-
“ istence contains men: the other six happy states
“ are composed of *Nat*, or superior beings. The
“ four *Apé* are infernal states, in which beings are
“ punished for former crimes. The second kind of
“ beings, the *Rupa*, have sixteen *bon* or habitations:
“ and four belong to the *Arupa*, or beings desti-
“ tute of body.”

“ VII. BEFORE I proceed to give a topographi-
“ cal description of these habitations, with an ac-
“ count of the beings which they contain, it will
“ be necessary to explain some collateral circum-
“ stances.

“ 1st, It is well known that the *Burma* writings
“ admit of transmigration; but the notions con-
“ tained in them on this subject differ from those
“ commonly received; for it is the usual opinion,
“ that the souls, which animate bodies, after the
“ death of these bodies pass into others: On the
“ contrary, the *Burma* writings alledge, that in
“ death, whether of man, beast, or of any living
“ being, (for they believe all living beings to pos-
“ sess souls,) the soul perishes with the body, and
“ they alledge, that after this dissolution, out of
“ the same materials another being arises, which,
“ according to the good or bad actions of the former
“ life, becomes either a man or an animal, or a *Nat*,

“ or a *Rupa*, &c. And they further alledge, that
 “ beings are continually revolving in these changes,
 “ for the duration of one or more worlds, until
 “ they have performed such actions as entitle them
 “ to *Nieban*, the most perfect of all states, con-
 “ sisting in a kind of annihilation, in which beings
 “ are free from change, misery, death, sickness,
 “ or old age.”

FOR a further account of *Nieban* the reader may consult the treatise of the *Zarado* afterwards translated. Annihilation used in the text by my friend, and in general by the missionaries, when treating on this subject, is a very inaccurate term. *Nieban* implies the being exempted from all the miseries incident to humanity, but by no means annihilation. Neither does *Nieban* imply absorption into the divine essence; a doctrine common I believe to *PLATO* and the *Brahmens*, and probably borrowed from the *Magi*. The sect of *GODAMA* esteem the opinion of a divine being, who created the universe, to be highly impious. It might be supposed, that this doctrine of transmigration would, among the worshippers of *GODAMA*, prevent the belief in ghosts or apparitions of the dead, but I found this not to be the case. The death of some persons belonging to the *Chinese* embassy, who were lodged near us during our stay at *Amarapura*, produced great consternation among all the women and children in the neighbourhood; their ghosts being supposed more likely to be restless than those of the natives.

“ 2dly, THE *Burma* writings do not conceive one
 “ world, but an infinite number, one constantly
 “ succeeding another; so that when one is de-
 “ stroyed, another of the same form and structure
 “ arises, according to a certain general law, which
 “ they call *dammada*, and which may be interpreted
 “ fate. Which was the first world, and which will
 “ be the last, they do not pretend to know: nay
 “ they say, that even *GODAMA* did not obtain this
 “ knowledge.

“knowledge. Hence however several of the *Burma* doctors conclude, that these worlds never had a beginning, and never will have an end: that is to say, that the successive destructions and productions of the world, resemble a great wheel, in which we can point out neither beginning nor end.”

“VIII. BEFORE we treat of the duration of life attributed to the above-mentioned beings, it will be necessary to give some idea of the wonderful duration which the *Burma* writings assign to one world. They say that the age of the men inhabiting this southern island has not always been the same with what it is at present, and that it will not continue to be the same: but that it is lengthened or shortened according to the general merit or demerit of mens’ actions. The life of the first man, or of the first inhabitants of *Zabudiba*, extended to one *Assenchii*. Now the *Assenchii* is an infinite number of years, of which to give an idea, the *Burma* doctors say, that if for three years it should rain incessantly over the whole surface of this earth, which is 1,203,400 *juzana* in diameter, the number of drops of rain falling in such a space and time, although far exceeding human conception, would only equal the number of years contained in one *Assenchii*. After these first inhabitants, their children and grandchildren had gradually and successively shorter lives, in proportion as they became less virtuous: and this gradual decrease continued till men came to live ten years only, the duration of the life of men in their greatest state of wickedness. The children of these, considering the cause of their parents’ short life, and dedicating themselves more to the practice of virtue, became worthy of living twenty years. Afterwards their children and grandchildren, increasing gradually in the performance of good works, had their lives protracted to 30, 40, 80, 100, 1,000, 10,000 years, and finally came to live one *Assenchii*. Now this successive

“decrement in the duration of the life of man from
 “one *Assenchii* to ten years, followed by an in-
 “crease from ten years to one *Assenchii*, must take
 “place sixty-four times after the reproduction of a
 “world, before that world will be again destroyed.
 “In the present world eleven of these changes have
 “taken place, nor will it be destroyed till it has
 “passed through fifty-three more changes. The
 “time in which one of these successive decrements
 “and augmentations of ages take place, is called
 “*Andrakat*; sixty-four *Andrakat* make one *Assen-*
 “*chiekat*; four *Assenchiekat* make one *Mahakat*.”

“IX. LET us now consider the happiness and
 “misery of the different living beings; and the *bon*
 “or habitations which they possess. We shall
 “begin with the happy beings, and first of all with
 “man, the first happy species of these beings called
 “*Chama**.

“THE diameter of this southern island is 10,000
 “*juzana*. If we substract 3,000 *juzana* of woods
 “and desarts, and 4,000 of water, which occupy
 “the surface of this island, there will remain 3,000
 “*juzana*, the diameter of the *bon* or habitation of
 “men. The duration of the life, which men at
 “present enjoy, is reckoned somewhat long, when
 “it extends to eighty years. Amongst us some are
 “rich, others poor; some learned and of a quick
 “understanding, others ignorant and stupid; some
 “are oppressed with grief and cares, others free from
 “anxiety and fear pass their lives in tranquillity and
 “happiness; some are low and held in reproach,
 “others are honoured and raised to the rank of
 “princes, or of officers; some are deformed, others
 “are beautiful; and finally, some die soon, while
 “others enjoy long life. These different conditions
 “and states among men are bestowed on them by
 “GODAMA, according to the merit or demerit of
 “the actions performed by them in a former life:
 “but of this we shall afterwards have occasion to
 “treat more at length.”

“X. LET

“X. LET us now consider the opinions of the Burmas concerning the inhabitants, or men of the other three great islands. The life of the inhabitants of *Pioppavideha*, and *Amaragoga*, is not diable, like ours, to increase and diminution; but always lasts for 500 years. The form of their countenances resembles, respectively, that of the islands they inhabit; that of the eastern islanders being like the moon in her quarter, and that of the western round like a full moon. These islanders also differ from us in their stature; those of *Pioppavideha* being nine cubits high, and those of *Amaragoga* being six. In their manners, agriculture, commerce, and arts, these islanders resemble us of *Zabudiba*. Each of the four great islands has its peculiar sacred tree, which being produced at the beginning of the world of its own accord, and by the power of fate, will continue as long as the world itself. The height of these trees is said to be 100 *juzana*, and the branches extend in a circle on every side to the distance of fifty *juzana*; so that the whole circuit of each tree is 300 *juzana*, and the trunk is eighteen *juzana* in circumference.”

“XI. THE inhabitants of the northern island differ totally from those of the others: for they neither practise agriculture, commerce, nor any other profession. There grows in their island a tree called *Padeza-bayn*, on which, in place of fruit, hang precious garments of every kind: so that from these trees the inhabitants are supplied with all manner of cloathing. Neither have the inhabitants of *Unchegru* any need to cultivate the ground; as the same *Padeza-bayn* produces a certain excellent kind of rice, which has no husk. Some of this rice, when the natives are hungry, they put on a certain kind of stone called *Zotrassa*, which immediately of itself emits fire, and dresses the rice: and as soon as this is done, the fire dies away. Whilst these people are eating their rice, various meats of the most exquisite flavour, according

“ cording to the particular taste of each person, ap-
“ pear on the leaves and branches of the *Padeza-*
“ *bayn*. This food is of such a nature, substance,
“ and nourishment, that what is prepared for one
“ person, would abundantly serve many: and after
“ being eat, it takes away all sensation of hunger for
“ seven days. When the repast is finished, the re-
“ mains of their own accord disappear. From such
“ a diet the natives of *Unchegru* never suffer any
“ sickness; nor have they any inconvenience from
“ old age, but live for a thousand years happy and
“ tranquil in continual vigour, always in their per-
“ sons resembling youths of eighteen years.

“ THE manner in which these islanders contract
“ marriage, is remarkable. Women there are not
“ subject to the common sexual infirmities, and bear
“ their children without any pain. When their time
“ comes, they bring forth their children in the streets,
“ and there leave them. The children, though thus
“ forsaken by their parents, do not die: for the
“ passengers put the extremities of their fingers into
“ the mouths of the infants, who from thence suck
“ a most exquisite nectareous liquor, by which they
“ are refreshed and nourished for seven days, in
“ which time they become full grown. No one
“ then knows his own relations; not only for the
“ above-mentioned reason; but also because all the
“ inhabitants of the northern island are of the same
“ form and colour. Whenever therefore a man and
“ woman struck with mutual love wish to contract
“ marriage, they retire under the shade of a certain
“ most agreeable kind of a tree. If they be not
“ nearly related, this tree bends down its branches
“ and leaves, covering them with a delightful bower,
“ where they consummate their marriage: but if
“ they be very nearly related, the tree neither bends
“ down its branches nor leaves: and they then
“ knowing their consanguinity immediately abstain
“ from any farther connection. These islanders
“ are not amorous: for they never perform the con-
“ jugal rites more than ten times: many abstain
“ from

“ from them during their whole lives; and many,
 “ after having performed them six or seven times,
 “ become, as if it were, perfect men and holy, who
 “ have overcome all their passions, and all the de-
 “ sires of their minds. For these reasons in this
 “ island no one weeps, no one grieves at the death
 “ of another: but as soon as a person dies, the body
 “ is deposited in a certain place, where very large
 “ birds, destined by fate for that purpose, carry it
 “ away to another part of the island, and there de-
 “ vour it. Although these islanders are thirteen
 “ cubits high, they are very handsome, especially the
 “ women, who excel in softness, suppleness, and
 “ elegance of limbs. They are of a golden colour,
 “ of which, as we have said, the whole island parti-
 “ cipates, from its being opposite to the golden side
 “ of *Mienmo*.

“ THIS northern island, besides, is of all others
 “ the most agreeable. In it there is neither hot,
 “ nor cold, nor rainy season, nor is there any in-
 “ temperance in the air. It contains no ferocious
 “ beasts, no serpents, nor poisonous insects, that
 “ infest the life of man. Its happy inhabitants re-
 “ quire no houses, but live their whole lives safe
 “ and tranquil in the open air. Every where it
 “ abounds with the most beautiful trees, of a golden
 “ colour, from whence hang, in profusion and va-
 “ riety, the most delicious fruits, and the sweetest
 “ scented flowers. The same trees pour forth most
 “ shining gums, which serve the natives for per-
 “ fumed ointments. The whole island flows with
 “ streams of sandal-wood water, in which the na-
 “ tives sport and swim. But although these northern
 “ islanders thus excel the others in happiness; they
 “ are inferior to those of the south in courtesy, pru-
 “ dence, and cunning.” Cunning among all the
 worshippers of *BOUDDHA* is esteemed a great virtue;
 and I much suspect, from the practise, that the doc-
 trine of the simple Pandits, as Sir W. JONES is
 pleased to call them, has not in this point tended to
 improve the morals of their *Hindu* converts.

“ XII. THE northern, eastern, and western-
 “ islanders, after death, do not pass into the supe-
 “ rior habitations of the *Nat*, nor into the inferior
 “ of the *Apé* or damned, as do the inhabitants of
 “ our southern island *Zabudiba*; but are constantly
 “ born anew, inhabitants of the same island to which
 “ they formerly belonged. And although this in
 “ some respects be desirable, especially to the inha-
 “ bitants of the northern island; yet, whoever is en-
 “ dowed with reason and judgment, say the *Burma*
 “ doctors, would not wish to become an inhabitant
 “ of the northern, in preference to the southern
 “ island: for it is in this last only that a person, by
 “ the merit of his good actions, can raise himself to
 “ the superior habitations of the *Nat*, or to that
 “ most perfect of all states called *Nieban*. Hence
 “ it is that, in the *Burma* scriptures, this southern
 “ island is called the *Ford of Nieban*.”

“ XIII. AFTER mankind, come the six ranks of
 “ *Nat* or genii, and their habitations, which are
 “ called:—1. *Zadumaharit*, 2. *Tavateinza*, 3. *Jama*,
 “ 4. *Dussida*, 5. *Neinmanarati*, 6. *Paraneimmata-*
 “ *vassanti**; besides these there are the *Rupa* and
 “ *Arupa*. The *bon* or habitations of the *Nat* are
 “ thus disposed; in the plane commencing at the
 “ summit of *Jugando*, and thus extending from the
 “ middle of *Mienmo* to the mountains *Zetchiavala*
 “ which surround this earth, is the habitation of the
 “ first rank of *Nat*, called *Zadumaharit*. To this
 “ rank belong the sun, moon, planets, and stars,
 “ which, according to the *Burma* writings, are the
 “ palaces of certain *Nat* called *Zadumaharit*. Be-
 “ ginning at the summit of *Mienmo*, and extending
 “ from thence in a plane to *Zetchiavala*, is the ha-
 “ bitation of the second rank of *Nat* called *Tava-*
 “ *teinza*. Forty-two thousand *juzana* above the
 “ *Tavateinza*, is the habitation of the *Jama*: and above
 “ that, always at the same distance of 42,000 *juzana*
 “ from each other, are the habitations of the other
 “ three

* THE *Brahmens*, into these six abodes of the *Nat*, have introduced
 their Gods with their families. See PAULINI *Mus. Borg.* page 233.

“ three ranks of *Nat*. All these habitations are
 “ parallel planes extending to the perpendicular of
 “ *Zetchiavala*. Above the *bons* of the *Nat* are those
 “ of the sixteen *Rupa*, which are thus disposed:—
 “ Five hundred and fifty-eight thousand *juzana*
 “ above the highest habitation of the *Nat*, are three
 “ habitations of *Rupa*, lying in the same plane, in
 “ the form of an equilateral triangle; each habita-
 “ tion being distant from the others 558,000 *juzana*:
 “ the *Rupa*, that dwell here, are called the first
 “ *Zian*. At the same perpendicular distance of
 “ 558,000 *juzana*, are three other habitations of
 “ *Rupa*, in the same form and disposition; and the
 “ *Rupa* which occupy them, are called the second
 “ *Zian*. In a like manner, 558,000 *juzana* above
 “ these, lie three other habitations, whose inhabi-
 “ tants are called the third *Zian*. Above these also
 “ 558,000 *juzana*, lie, in the same plane, the two *bon*
 “ of the fourth *Zian*. The other five *bon* of the *Rupa*,
 “ are placed one above another, at the mutual
 “ distance of 558,000 *juzana*. And also, one above
 “ the other, and at the same distance, are disposed
 “ the four habitations of *Arupa*, or incorporeal be-
 “ ings. Such is the distance from the highest
 “ dwellings of these *Arupa* to this our earth, say the
 “ *Burma* doctors, that a rock thrown from it would
 “ take four years to reach the ground: but I doubt,
 “ says the missionary, if this be conformable to our
 “ observations on accelerated motion.”

“ XIV. LET us next relate the happiness, and
 “ length of life, of the first kind of *Nat* called *Za-*
 “ *dumaharit*. The government of this habitation is
 “ divided among four kings, or princes of the genii.
 “ The capital city of the first is situated to the east
 “ of *Mienmo*, on the summit of *Jugando*. It extends,
 “ in length and breadth, 1,000 *juzana*. When we
 “ speak of the capital of the *Nat Tavateinza*, we
 “ shall have an opportunity of describing the gates,
 “ ways, and other things belonging to this superb
 “ city; as they are the same in both. The palace of
 “ this king extends twenty-five *juzana* in every di-
 rection,

" rection, and all its pillars, walls, and beams, are
 " of silver. The capital of the second king of these
 " *Nat* is to the north of *Mienmo*; that of the third
 " to the west; and that of the fourth to the south.
 " All these cities have the same shape and size with
 " the first. In the whole of this habitation grows
 " the *Padeza-bayn**, on which, in place of fruit,
 " hang precious garments, the most exquisite viands,
 " and whatever can afford delight to the *Nat*, either
 " in ornament or in feasting. Every where in it
 " are to be seen running streams, lakes, and the most
 " pleasant gardens. On the whole, this habitation
 " is filled with delights. These *Nat* live 500 of
 " their years, which are equal to 9,000,000 of ours;
 " their stature is half a *juzana*. In this habitation,
 " as well as in those of the superior *Nat*, are males
 " and females, who perform matrimonial duties in
 " the same manner as mankind†; and here it is to
 " be observed, that the beings of the superior habi-
 " tations are not nourished at the breasts of their
 " mothers, as happens on earth, but are born per-
 " fect, as if they were fifteen years old. The *Nat* of
 " this habitation have subject to them certain genii
 " of an inferior rank, but also called *Nat*. These
 " are giants, great birds, evil genii, dragons, and
 " the like, which inhabit on the descent of mount
 " *Jugando*. In this habitation also grows a great sa-
 " cred tree, which, like those on the four great
 " islands of the earth, will last as long as the world."

" XV. WE have said, that to the habitation
 " *Zadumaharit* belong the sun, moon, and stars,
 " which are the palaces of those *Nat* destined by
 " fate to give light to men, to divide the day from
 " night, to distinguish years, seasons, and months,
 " and to presage good or ill fortune to mankind.
 " This therefore is the proper place to speak of
 " *Burma* astronomy. The *Burma* writings mention
 " eight planets, namely, the Sun, the Moon, Mer-
 " cury, Venus, Mars, Jupiter, Saturn, and another
 " one

* Page 183 of this volume.

† *Sed in coitu non semen, sed solum aëra vel ventum emittunt.*

“ one named *Rahu*, which is invisible *. The Sun,
 “ or palace of the *Nat* so called, is fifty *juzana* in
 “ diameter. This palace is within gold, and with-
 “ out crystal; and because gold and crystal are by
 “ nature hot, the rays of the sun always occasion
 “ heat. The Moon is the palace of the *Nat* so called,
 “ and is forty-nine *juzana* in diameter. Without,
 “ it is silver, and within carbuncle; and because
 “ silver and carbuncle are by nature cold, therefore
 “ the rays of the Moon are cold. Mars has a
 “ diameter of twelve *juzana*, Mercury of fifteen,
 “ Jupiter of seventeen, Venus of nineteen, and Sa-
 “ turn of thirteen; and their circumferences are
 “ triple their respective diameter†. The *Burmas*
 “ do not assign any measure to the fixed stars.
 “ They do not suppose, that the sun, moon, and
 “ stars, revolve round the earth; but that they re-
 “ volve round the great mountain *Mienmo* in a cir-
 “ cle, the plane of which is parallel to the earth.
 “ The stars they suppose are constant in their mo-
 “ tion, neither declining to the north, or south:
 “ but the sun, moon, and other planets, they con-
 “ ceive, as we do, to have a declination; and say
 “ that the sun goes from the north to the south,
 “ and on the contrary from the south to the north,
 “ always touching the twelve constellations, which
 “ we call the twelve signs of the Zodiac: and they
 “ allow, that, in the space of one year, the sun re-
 “ turns to the same place in the heavens from
 “ whence he had set out. This same revolution, which
 “ by the sun is performed in one year, is by the
 “ moon performed in one month. The *Burmas* di-
 “ vide

* AN admirer of oriental literature would here discover the *Georgium sidus*, and strip the industrious *HERSCHEL* of his recent honours.

+ FROM this we might infer that the *Burmas*, or ancient *Hindus*, had made such a progress in geometry, as to know that the circumference of a circle is to its diameter as three to one. But if we examine more accurately, we shall find their notions in this science quite absurd, (p. 175). Thus the diameter of the island *Zabudiba* is made 10,000 *juzana*: but they suppose, that three spaces, whose diameters are 4,000, 3,000, and 3,000; should be equal to the whole extent of the island, (p. 182). And they even suppose the circumference of *Unchegru*, which is a square, to be only three times its diameter.

“vide the year into three seasons, the hot, the
 “rainy, and the cold: and in order to distinguish
 “these seasons, although they believe the sun and
 “moon decline by a daily motion, yet they suppose
 “three roads in heaven; a road within, a road in the
 “middle, and a road without. The inner road is
 “nearest *Mienmo*; and when the sun enters it, the
 “rainy season commences; when he enters the
 “middle road, the hot season commences; and when
 “he enters the outer road, the cold begins. By
 “these three roads, which are distant from each
 “other 39,093 *juzana*, that immense space, which
 “lies between *Mienmo* and *Zetchiavala*, is divided
 “into four great zones. The inner road corresponds
 “to our summer solstice, the middle to our equi-
 “nox, and the outer to our winter solstice; or, to
 “speak more accurately, the middle road is the
 “Equator, the inner the tropic of Cancer, and the
 “outer the tropic of Capricorn. Besides these three
 “roads of the sun, the *Burma* writings maintain,
 “that there are three paths, one above the other;
 “by which means they admit, as well as we do,
 “although in a different manner, that the sun at
 “some times is more near the earth, and at others
 “more remote. The highest of these paths, and
 “the most remote from us, is the path of the ele-
 “phant; the middle is the path of the ox: the
 “lowest is the path of the goat, because that animal
 “delights in dry and warm places: when therefore
 “the sun is in the goat’s path, it produces great
 “heat and dryness in the earth. Thus also, when
 “the sun is in the higher path, we experience heavy
 “rain, and great cold; this path is therefore named
 “after the elephant, an animal that frequents cool
 “and moist places. It is not supposed that the sun
 “revolves through these paths according to any
 “general law: but his motion in them depends on
 “the will of mankind. When man acts with recti-
 “tude, and observes the laws, the sun moves in the
 “middle path, which is highly salutary: but when
 “he violates the laws, the sun moves either in the
 “upper

“ upper or lower path, with much injury both to the
 “ produce of the earth, and the health of the peo-
 “ ple. The sun’s motion is quicker than that of the
 “ moon; for when he moves in the road next *Mienmo*,
 “ he advances daily 1,000,000 *juzana*; when in the
 “ middle road, 2,000,000; and when in the outer,
 “ 3,000,000 *juzana*. On account of this diurnal
 “ revolution of the sun, when in the southern island
 “ *Zabudiba* it is mid-day, then in the northern it is
 “ mid-night, in the eastern island the sun sets, and
 “ in the western it rises.

“ ALTHOUGH the sun, moon, and stars, appear to
 “ our eyes round, yet, say the *Burmas*, we are by
 “ no means to believe them spheres: for they are
 “ tapering, and appear round to us, in the same
 “ manner as does the light of a candle when viewed
 “ from a distance; and this the *Burma* doctors
 “ think confirmed by an example related in their
 “ books:—Formerly a prince of the *Nat* desired to
 “ see and converse with a certain great king of this
 “ island *Zabudiba*, who by his many virtues had be-
 “ come highly celebrated. For this purpose the
 “ prince sent his chariot, with many *Nat* attendants,
 “ to conduct the king to his presence. The chariot
 “ appeared to mankind in the beginning of the
 “ evening along with the moon then rising in the
 “ horizon, and was supposed by every one to be
 “ another moon, till it came near to the palace of
 “ the king.”

“ XVI. BEFORE we finish our account of the
 “ *Burma* astronomy, some other circumstances, re-
 “ lating to this science, and to meteorology, may
 “ be mentioned.

“ It has been already stated, that the *Burma*
 “ writings admit of an eighth planet, named *Rahu*,
 “ which gives no light, and on this account is not
 “ visible to mankind. The form of *Rahu* is thus
 “ described. His stature is 48,000 *juzana*: the
 “ breadth of his breast 12,000, of his head 900, of
 “ his forehead, his nostrils and mouth 300, the
 “ thickness of his fingers 50 *juzana*; of his feet and
 “ hands

“hands 200. When this monstrous and foul planet, who like the others is a *Nat*, is inflamed with envy at the brightness of the sun or moon, he descends into their path, and devours, or rather takes them into his mouth: but he is soon obliged to spit them out, for if he retained them long, they would burst his head by the constant tendency which they have to pursue their course. At other times he covers them with his chin, or licks them with his immense tongue. In this manner the *Burma* writings explain eclipses of the sun and moon, both total and partial, making the duration of the eclipse depend on the time that *Rahu* retains the planet in his mouth, or under his chin. The *Rāhāns* say, that every three years *Rahu* attacks the sun, and every half year the moon. These eclipses however are not always visible to the inhabitants of this southern island; but although they may be invisible here, they are not so to the inhabitants of the other islands, according as the sun and moon may be opposite to them at the time of the eclipse.

“THE physical cause of the phases of the moon, assigned in the *Burma* writings, is this: When the moon is in conjunction, she can give no light, because the sun is perpendicularly over her: in the same manner as a house at noon gives no shadow*: but as the moon recedes daily from the sun 100,000 *juzana*, that part of it which is freed from the disk of the sun, gives light; and this light increases daily, as the two luminaries get at a greater distance; in the same manner as a house produces a larger and larger shadow, in proportion as the sun advances to the west.

“RELATIVE to the heat and cold which we experience at different seasons of the year, the *Burmas* say, that from the vernal equinox to autumn, the sun is always tending to the north, whilst at the same time the moon

“is

* THE *Burma* doctors say so, as living within the tropic.

" inclines to the south. The season is then hot, because of the prevalence of the sun's rays, which are by nature hot. On the contrary, from the autumnal equinox to the vernal, the sun inclining to the south, and the moon to the north, we experience cold, from the predominancy of the moon's rays, which are by nature cold.

" For the production of rain, seven causes are chiefly assigned; part of which are physical, and part moral. 1st, The power *Naga*, or of serpents, a kind of *Nat**. 2d, The power *Galoun*, or of certain large birds, which also are a kind of *Nat*†. 3d, The power *Siffa*, or fidelity in contracts and promises. 4th, The power *Sila*, or obedience to the law. 5th, The power of religious men‡. 6th, The condensation of the clouds. 7th, A certain kind of *Nat*, who preside over showers, and who occasion rain, whenever they go out from their houses to sport in the air. In some of the *Burma* writings it is said, that when the sun is in the path of the goat, these *Nat* do not chuse to leave their houses on account of the great heat, whence there is then no rain. For this reason, the inhabitants of the *Burma* empire, in times of drought, are wont to assemble in great numbers, with drums and a long cable. Dividing themselves into two parties, with a vast shouting and noise, they drag the cable contrary ways, the one party endeavouring to get the better of the other: and they think, by this

VOL. VI. O means,

* Page 188 of this Volume. † Ibid. ‡ A certain *Burma* king, who resided at *Arammattana* or *Pougan*, is said to have been so virtuous, that he could cause rain whenever he pleased: and that in such quantities, as to enable him to transport his fleet wherever his occasions required. This story was gravely told us at that city, and was said to be authenticated in the best histories of the *Arammattana* race of princes. This same king was such a favourite with *GODAMA*, that twice during his reign gold fell from the heavens, and covered all the sterile plain of *Pougan*. From the immense number of temples and religious buildings on that plain, there is no doubt, but that some king of *Arammattana* must have been very superstitious: and we may suppose, that the history of his reign was written by the clergy, who seldom fail to give a good report of their benefactors.

“ means, to invite the *Nat* to come out from their
 “ houses, and to sport in the air. The thunder and
 “ lightning, which frequently precede rain, are the
 “ clashing and shining of the arms of these *Nat*, who
 “ sometimes sport in mock-battles. As the *Burma*
 “ writings acknowledge *Nat* presiding over rain, so
 “ they also (like the ancient heathen) believe in others
 “ governing the winds and the clouds.”

So far the missionary, on the astronomical and physical ideas of the *Burma* doctors; ideas which, I doubt not, were brought from *Hindustan*, along with their religion and laws. Such therefore, probably, was the astronomical doctrine, taught in that country, before the introduction of *Brahmenical* science, which by all accounts, however deeply involved in fable, is much more perfect. I do not conceive it to have been the invention of GODAMA, or of those who in his name propagated a new religion, but to have been the common doctrine prevailing in *Hindustan* at the time: for the *Rāhāns* seem to confine their studies almost entirely to theological, historical, moral, and political subjects. From the use of the same signs of the zodiac, there can be little doubt of their having derived at least that part of their astronomical knowledge from the *Chaldeans*; whose science may have in some degree reached *India*, nearly about the time of GODAMA, through the conquest of the *Persians* under DARIUS. But I do not think it likely, that all the knowledge which the *Hindus* possessed in the time of BOUDDHA, was derived from *Babylon*.* It is true, that the *Persians* shortly previous to this, as we learn from our best guide HERODOTUS, were an extremely rude and ignorant nation:† and we have very probable grounds given us by Sir WILLIAM JONES for believing that the *Persians* proper were of the same nation with the *Hindus*. It might therefore be concluded,

* See page of this volume. † I speak of the *Persians* properly so called, the inhabitants of *Parthia*, who under CYRUS founded the first great *Persian* monarchy.

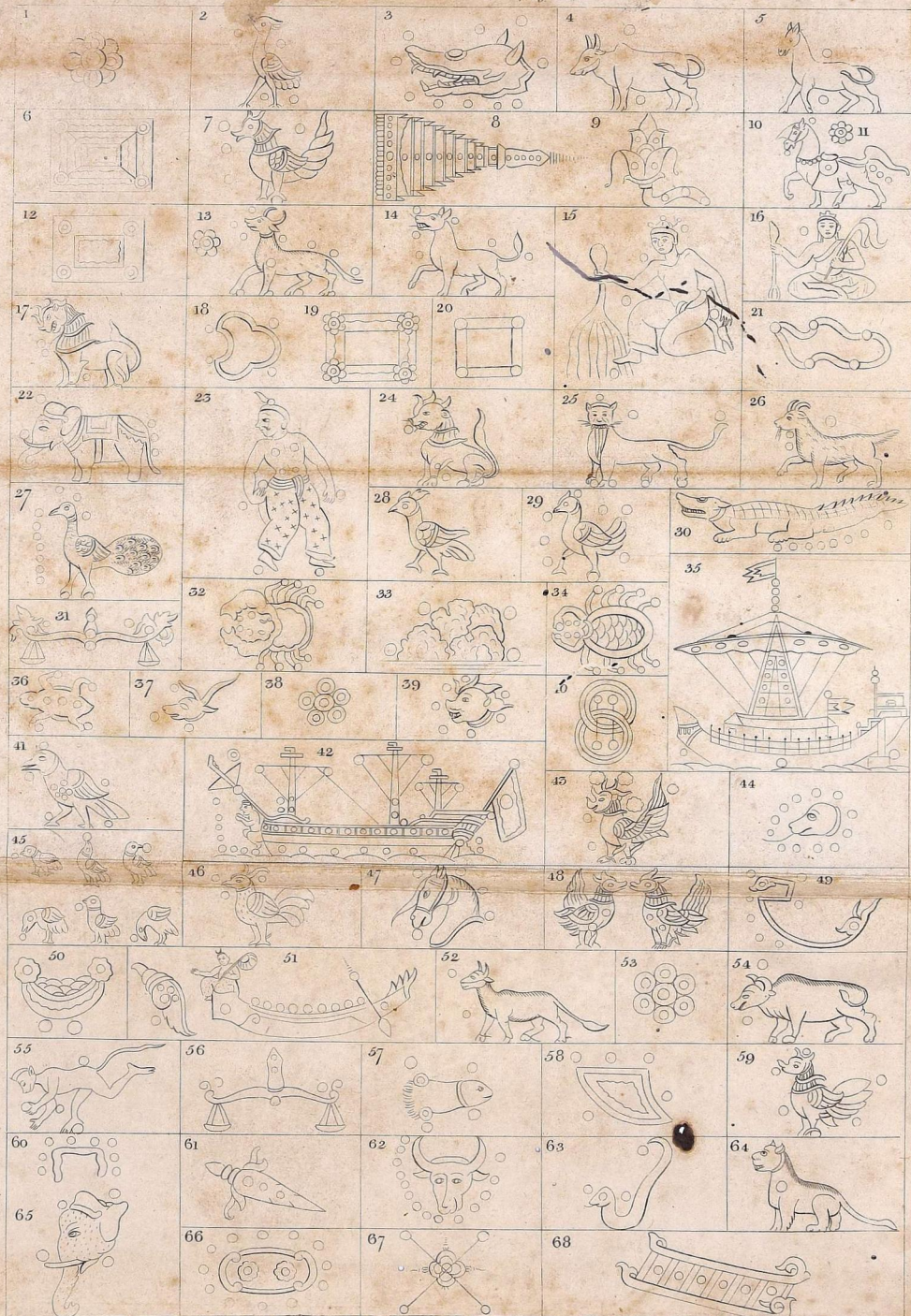
cluded, that in the sixth century before the birth of CHRIST, the whole *Hindu* race were equally ignorant with their *Persian* brethren. Such reasoning would, however, I conceive, be inconclusive. Why might not the *Hindus* of *Matura* or *Cashmere* be as much superior to their countrymen of *Persia*, as the *Arabs* of *Nineveh* or of *Babylon* were to the wanderers of the desert? But even allowing the *Hindus* to have been incapable of inventing science, might they not have received instruction from the east, as well as from the west? Their eastern neighbours, at this time, had made very considerable progress; such, indeed, as enabled them, about this period, to produce a CONFUCIUS. But that the *Hindus* were themselves capable of observation, so as to make advances in science, their undoubted invention of cyphers, in arithmetic, is a clear proof.

DURING our stay at *Amarapura*, besides the almanacs, which were probably constructed by *Brahmens*, I also saw several treatises, said to be on astronomical subjects. JOHANNES MOSES, *Akunwun* of *Haynthawade*, gave Captain SYMES a delineation of the sixty-eight *Burma* constellations, with a short explanation in the *Burma* language. I have here given a copy of the delineations, and a translation of the written part, which, for the benefit of those who wish to know the structure of the language, I have made verbal, following exactly the arrangement of the words in the original. In explaining these constellations, it is to be observed, that to each a fanciful figure is annexed, in the same manner as our constellations are delineated on globes or maps. This figure is called the *Thadan*, or picture of the constellation; and the name of the object represented by the picture, is often the same with that of the constellation: but, more commonly, the names are quite distinct, and that applied to the constellation is either arbitrary, or a *Pali* word, with which language my interpreter was not acquainted. In the written account, there is, in some cases, a difference

rence from the drawings, both in the figure, and in the number of stars: but I have, in both cases, followed the originals, not knowing which is right. Some of the figures, resembling a rose, seem to represent planets, and are said to preside over some day of the week, or some time of the day. To the other figures are in general annexed certain cities, or countries: and the *Burmas* suppose, that, when a constellation appears bright, its dependant country is fruitful and happy: and that the contrary is indicated by the constellation appearing dim. Of many of these countries I have never heard, nor could I obtain any information concerning their situation: but several of them are in the *Burma* empire, or in its vicinity. Unfortunately, the copy of the *Asiatick Researches*, which I consulted, had not the figures of the *Brahmenical* constellations, to which Sir WILLIAM JONES refers, so that I can make no comparison but by the name.

TRANSLATION OF THE WRITTEN ACCOUNT OF THE BURMA CONSTELLATIONS.

1. "Of *Sunday* the Star."
2. "The *Pyain* constellation five circles has, of "*Thoukkada* country the constellation." *Pyain* is the small species of white heron, common in *India*, and called, by the *English* there, paddbird. The circles means stars, as they are so represented in the delineations, a custom evidently introduced from *China*. *Thoukkada* is a government and city in *Siam*, named by M. LOUBERE *Socotai*.
3. "*Rewade* an alligator's figure has, *Kutheinnaroun* "country, and nine circles it has." This is evidently the same name with the *Révati* of Sir WILLIAM JONES, which has thirty-two stars. *Rewade* signifies large water. From the letters with which *Kutheinnaroun* are written, it is evidently a *Pali* or *Sanscrit* word, and is probably some place in *Bengal*.
4. "*Uttara*



4. "*Uttara-parabaik* a cow's figure has, and two circles, and the *Kappelawut* country." Several constellations in the list of Sir WILLIAM JONES begin with *Uttara*.
5. "*Pyouppa-parabaik* of a cow the picture has, and two circles, *Patanago* country it governs." *Patagano* is a city and government in the *Burma* kingdom, on the east side of the *Eyrawade*, in latitude $19^{\circ} 55''$.
6. "A couch is *Sagata* constellation, four circles it has, and the *Kathee* country." *Kathee* has been corrupted by us into *Cuffay*. It is an independent kingdom between *Ava* and *Bengal*. Its king resides at *Munnypura*.
7. "The *Pyathat*, of twenty-four circles, is of *Kieen* country the constellation." *Pyathat* is a kind of spire, permitted only to be used in buildings or boats dedicated to the personal use of GOD, of the king, and of the *Zarado*.
8. "The duck constellation five circles has, *Shan* is its country." From *Shan* our word *Siam* is corrupted; but the inhabitants of the kingdom of *Siam* make a small part only of those to whom the *Burmas* give the appellation of *Siammese*.
9. "The *Kyabuayn aroo* leaf is the *Talain* country constellation, it has seven circles." *Talain* is the *Burma* name for the original inhabitants of what we call the kingdom of *Pegu*.
10. "The horse constellation has eleven circles, *Europe* is its country."
11. "The morning constellation one circle has, of *Dunwun* plant the fruit." I do not know what plant is meant: perhaps it is the *Trapa*?
12. "The table constellation four circles has, of the *Kiayn* country the constellation." The *Kiayn* are a simple innocent people inhabiting the mountains between *Ava* and *Arakan*.
13. "*Zain* constellation eleven circles has."
14. *Thattapefcia* with a leopard's picture four circles has.
15. "Of

15. "Of *Danatheidha* the fisherman's picture four circles has.
16. " *Tharatun* constellation a hermit's picture three circles has."
17. "Of *Uttara* the lion's picture two circles has, " *Moranun* country governing."
18. "The *Pangiyayn* mountain constellation four circles has, of *Rakain* country the constellation." *Rakain* is the proper name of *Arakan*.
19. " *Tareindane* constellation four circles has, of " *Yoodaya* country the constellation." *Yoodaya* is the *Burma* pronunciation of the ancient capital of the kingdom of *Siam*; and they in general call the *Siammese Yoodaya*, in order to distinguish them from the other tribes of the great *Shan* race.
20. "A couch is *Pagan* constellation with four circles, of *Shethæk* country the constellation." We had another couch No. 6.
21. "The cloud constellation has five circles, of " *Thulabe* the constellation."
22. "The *Shan* country the elephant constellation "with six circles has." The *Shan* have another constellation, see No. 8.
23. "The *Brahmen* constellation of eight circles, " *Kaleingareet* country governs." *Kaleingareet* is the proper *Burma* appellation for *Hindustan*."
24. "Of *Pyouppathan* the lion's picture two circles "has, *Mouttamma* country it governs." We had another lion No. 17. *Mouttamma* is the *Burma* name for *Mariaban*.
25. "Of *Mula* the cat's picture five circles has, *Peenzalareet* is its country."
26. "Of *Seitia* the goat's picture five circles has, " *Zedouttara* is its country."
27. "Of *Anurada* the peacock's picture has fifteen "circles, and the *Zedouttara* country." *Anuradha*, in the account of Sir WILLIAM JONES, is the scorpion.
28. "The fowl male of *Peenza* constellation circles "fifty has, of *Sawa* country the constellation.

29. "The

29. "The fowl female of *Utta* constellation eight circles has, of *Uzaung* country the constellation."
30. "Of an alligator the ——— is the picture of *Ut-tara* constellation with eight circles, and the *Lahu* country." Of the word *a me-kah-han*, which follows alligator, I do not know the meaning.
31. "The balance constellation."
32. "The crab constellation of ten circles has, *Rasa-gyol* country."
33. "The mountain constellation four circles has."
34. "*Buchia* the crab constellation ten circles has." *Pushya* is the crab of Sir WILLIAM JONES. Here we have two crabs, No. 32—34.
35. "The *Brahmen's Buchia* has a boat's picture, and the *Dagoun* country." *Dagoun* is the great temple near *Rangoun*.
36. "Of *Adara Daway* is the country." The picture is meant to represent a turtle. *Daway* is the country we call *Tavay*.
37. "*Mecatthe* has of an antelope's head the picture, three circles, and the *Haynthawade* country." *Haynthawade* is the polite *Burma* name for the city and province of *Pegu*.
38. "Of *Friday* the Star."
39. "*Buchia* constellation has eight circles, and *Yun* country." The *Yun* are the inhabitants of *Saymay* or *Chiamay*.
40. "*Zaduka* constellation four circles has, in a pair of fetters, of *Giun* country the constellation." I have never learned what country is meant by *Giun*. It is always in the king's titles mentioned along with the *Yun*, it is therefore probably contiguous, and may be the northern *Laos*.
41. "The crow constellation eleven circles has, and the *Thayndua* country." *Thayndua* is the most southerly government in the present division of the *Arakan* kingdom.
42. "The *Kyay* ship of twenty-eight circles."

43. "*Haynthia*, a constellation of seven circles, belongs to *Radanapura*." *Radanapura* is the polite name for old *Ava*. The *Haynthia* is that beautiful species of *Anas* called by the *English* in *Bengal* the *Brahmney* goose.
44. "Of *Rohane* the snake's-head figure has ten circles." *Rohani* of Sir WILLIAM JONES.
45. "*Kiatteka* has a fowl's picture, and six circles." *Critica* of Sir WILLIAM JONES is the bull. The names appear to be the same.
46. "*Pagan* country is governed by the old cock's figure." There are two cities called *Pagan*. The great *Pagan* on the west side of the junction of the *Kiayn-duayn* and *Ayrawade*; the lesser *Pagan* lower down on the east side of the *Ayrawade*.
47. "Of *Athawane* the horse's head picture has six circles, and the *Rakain* country." *Afwini*, which seems to be the same name, is, according to Sir WILLIAM JONES, the ram. *Arakan* has another constellation No. 18.
48. "*Pozoke* a constellation of eight circles belongs to the *Talain* country, like the *Haynthia* male and female." The two rival nations of *Pegu* and *Ava* have chosen a similar emblem, see No. 43. The *Talain* have also another constellation, No. 9.
49. "*Putthata* constellation seven circles has, of the *Raneezzee* tree the fruit."
50. "*Aykatheitta* a constellation of four circles, of *Kale* country the constellation, is like a basket." *Kale* is a *Shan* city near the *Kiaynduayn*, about 300 miles N. E. from *Ava*.
51. "*Tarouttara* constellation two circles has, and the *Taroup* country." This is the *Burma* name for *China*.
52. "Of *Uttarabaragounne* the bullock's picture two circles has."
53. "Of *Wednesday* the Star."
54. "Of *Pyouppabaragounne* the cow's picture three circles has."
55. "*Matha*

55. " *Matha* has of a monkey the figure, four circles,
" and the *Baranathe* country."
56. " The balance constellation four circles has."
We had another balance No. 31.
57. " Of *Athaletha* the horse's-yard picture, four circles
" has, and the *Thattoun* country." *Alesha*, the
same name, according to Sir WILLIAM JONES, is
the lion. *Thattoun* was a very large town between
Pegu and *Martaban*. It is now in ruins.
58. " The flag is *Pathatta* constellation, six circles it
" has."
59. *Eessa* constellation six circles has, of *Momain*
" country the constellation."
60. " Of *Akap*, a constellation of eight circles, *Daway*
" is the country." This is a second constellation
belonging to *Tavay*, see No. 36.
61. Of *Thanliak*, a constellation of three circles,
" *Kothambe* is the country." The figure is meant
to represent a spear's head.
62. " *Wethaga* has of a buffaloe's head the picture, and
fourteen circles."
63. " Of *Thuade* a great snake's-head picture, has
" three circles, and the *Thayndua* country." *Swati*,
the same name, is, according to Sir W. JONES,
the balance. *Thayndua* has also another con-
stellation, see No. 41.
64. " Of *Zeittara* the tiger's picture, has one circle,
" and the *Wethale* country."
65. *Hathadda* of an elephant's head the picture has,
" *Dhagnawade* is its country." *Hasta* of Sir
WILLIAM JONES. *Dhagnawade* is the polite name
for the castle of *Arakan*.
66. " *Kobiape* constellation with eleven circles has
" the *Myamma* country." *Myamma* is the name
by which the *Burmas* distinguish themselves.
67. " A fowl's foot is *Thareiddha*, a constellation
" of four circles, of *Laynzayn* country the con-
" stellation."

"stellation." *Laynzayn* is the vulgar name for
"the capital of the southern *Laos*."

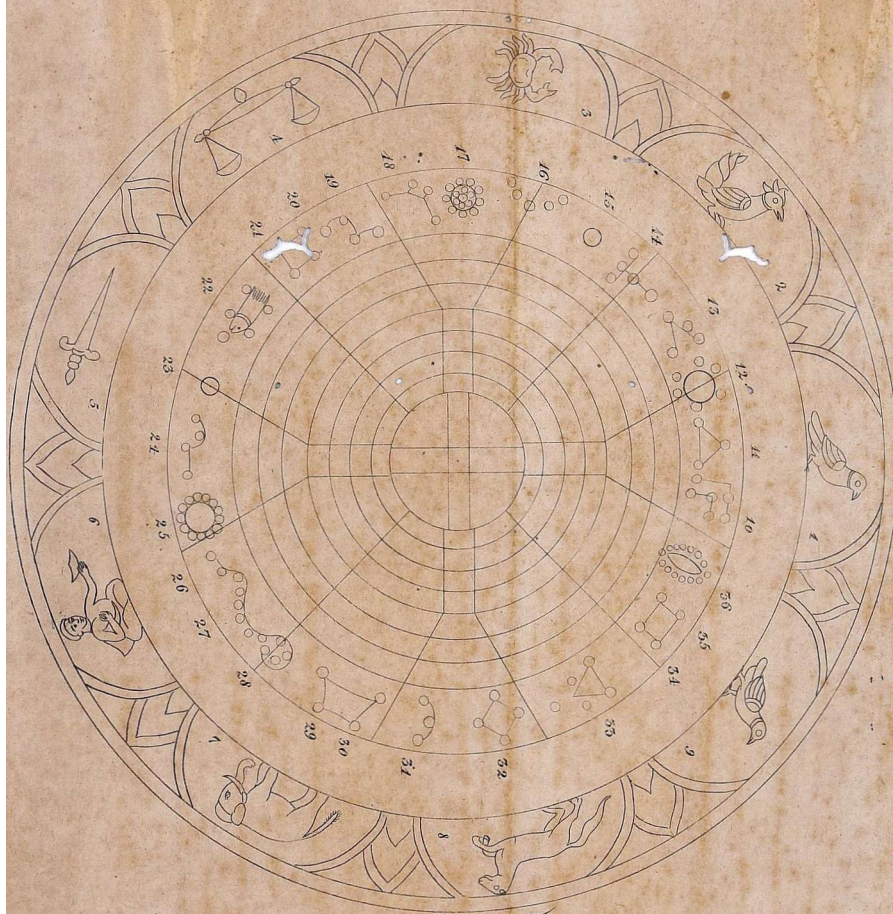
68. "A boat's ladder is *Tareiddha*, a constellation of
"six circles, of *Kula* country the constellation."
Kula is the name commonly given to *Europeans*,
but is applicable to all the western nations.

ALONG with the accounts of the *Burma* constellations, JOHANNES MOSES gave Captain SYMES two circular schemes, which evidently relate chiefly to a lunar zodiac. These schemes Captain SYMES obligingly communicated to me, but without any explanation,

THE ultimate division in the larger plan is into twenty-seven signs, representing the diurnal motion of the moon in her orbit. I neglected to procure the *Burma* names for these signs; as I was told, that they were all contained in the delineations of the sixty-eight constellations; and as I thought, from the disposition of the stars, that I should be able to find out what constellations were meant; but since I have had leisure to examine them, I find that this is by no means the case.

THE next division, and which is to be seen in the outer circle of both plans, is into nine signs, each containing three of the former. The names for these are: 1, the horse constellation; 2, the *Pyain* constellation; 3, the crow constellation; 4, the *Hayntha* constellation; 5, the *Kayn* crab constellation; 6, the balance constellation; 7, the *Zangiayn* constellation; 8, *Dana* constellation; 9, the elephant constellation. These are to be seen in the delineation, and list of the *Burma* stars, Nos. 10, 2, 41, 43, 34, 56, 61, 15, 22.

These



The BURMA LUNAR ZODIAC.

published by J. Snowell & Co Feb^y 1, 1801.

THE inner division in both schemes is into four. These are named *raung*, the meaning of which word I do not know: the first is named *Banraung*, the second *Ngue* or silver *raung*, the third *Shue* or golden *raung*, and the fourth *Mya-raung*. These, I conceive, represent the spaces of the zodiac passed through by the moon in each of her four phases.

THIS lunar zodiac is also in use among the *Brahmens*, and Sir WILLIAM JONES has favoured us with a representation of it after their manner*. They have the divisions into 4, 9, and 27: and the figures in the center are no doubt a representation of *Mienmo*, and the surrounding islands, with the princes of the *Nat Zadumaharit* sitting on mount *Jugando*: in one thing however there is a material difference. Sir W. JONES says, that the nine figures represent the sun, moon, and planets, with the dragon's head or ascending node, and tail or descending node. It is true, that the *Burmas* believe in a planet, which performs the same effect as the moon does when near her nodes at the time of a conjunction or opposition, that is to say, which produces an eclipse: but the division into nine, in use among the *Burmas*, is evidently zodiacal. The divisions are not called *Kiay*, which signifies a planet: but they named *Tara*, or a collection of fixed stars: and in both the written account, and in the delineation of the sixty-eight constellations, there is an account of the number of stars contained in each. Were we sure that these schemes were mentioned in the writings of the *Rāhāns*, and not lately introduced into the *Burma* kingdom by the *Brahmens*, we might easily account for this difference. It would in that case be probable, when, in compliance with the prejudices of their new converts, the *Brahmens* adopted this lunar zodiac, that seeing no utility in the division into nine, and having a more just notion of the planetary bodies, they filled up the places of these nine constellations with the different parts of the solar system. I make little doubt

* *Asiatick Researches*, II, 291, et seq.

doubt indeed, but that the *Brahmens* originally insinuated themselves into the courts of the *Hindu* princes as astrologers, in the same manner as we see them now doing in the courts of the *Indian* princes beyond the Ganges. By degrees they also introduced their superstition, building it in part on the doctrine previously existing in the country, and at length firmly establishing their favourite and destructive system of cast.

IN the larger plan, between the four *raung* and the twenty-seven constellations of the zodiac, we have a division into twelve, which, I should imagine, is meant to represent the sun's motion through the zodiac, during the twelve lunations of which the *Burma* year consists. At any rate, as has been mentioned before, the *Burmas* are acquainted with a solar zodiac divided into twelve signs, and represented by figures the same or analogous to ours. My friend SANGERMANO gave Captain SYMES a silver bason on which they were embossed. He conceived, and I think justly, that this zodiac had been communicated to the *Burmas* from *Chaldea* by the intervention of the *Brahmens*. And I find that in this conjecture he is supported by Sir W. JONES*. Both however, I am afraid, will excite the indignation of the *Brahmens*, who, as the learned judge in another place alledges, have always been too proud to borrow science from any nation ignorant of the *Vedas*. Of their being so proud as not to acknowledge their obligations, I make no doubt: but that they have borrowed from the *Chaldeans*, who were ignorant of the *Vedas*, Sir W. JONES himself has proved. Why then should he have opposed the sarcastic smiles of perplexed pandits to the reasoning of M. MONTUCLO†, when that learned man alledged that the *Brahmens* have derived astronomical knowledge from the *Greeks* and *Arabs*? The *Chaldeans* were certainly a branch of the *Arab* nation: and the expression of the *Brahmens* quoted by

* *Asiatick Researches*, II. 306.

† *Asiatick Researches*, II. 303, 289.

by him as proof, namely “ that no base creature can
“ be lower than a *Yavan* or *Greek**,” only exposes
their miserable ignorance, and disgusting illiberality.

“ XVII. BELOW the habitation *Zadumaharit*,” says
the missionary copying from the *Burmā* writings,
“ are found many *Nat* who inhabit waters, woods,
“ and mountains, in the shape of large birds, dragons,
“ and the like. The *Burma* writings however by no
“ means alledge, that these beings enjoy the same hap-
“ piness, or the same duration of life, as the *Nat*
“ *Zadumaharit*. These circumstances vary, accord-
“ ing to the nature of the actions performed by these
“ *Nat*, when in a human form. It is said that the
“ king of the dragons saw the first God, who appeared
“ in this world†, and that he will see the last; or in
“ other words, that the duration of his life will be
“ nearly equal to that of the world. It is also said
“ of this king of the dragons, that he always sleeps
“ at the foot of those mountains, from whence the
“ river *Casse* springs; and that he only awakes on the
“ appearance of a new God. That is, when any
“ being has arrived at such a degree of merit, as to
“ deserve to be declared a God, he eats rice, which
“ has been boiled in a golden goblet; he then, in
“ order to give the people a proof of his having ac-
“ quired divinity, throws the goblet into the river
“ *Casse*. The goblet swims up against the stream, till
“ it arrives at the place where the king of the dragons
“ sleeps. There it strikes against the rock, and makes
“ a noise, till the king awakes. There are also a kind
“ of *Nat*, named *Bommazo*, who live longer than
“ those of *Zadumaharit*.”

“ XVIII. ABOVE *Zadumaharit* is the *bon* or habi-
“ tation *Tavateinza*, which, as has been said, is situated
“ on the plane of *Mienmo*’s summit. The supreme ruler
“ or emperor of this habitation has subject to him
“ thirty-two inferior *Nat* princes. The great city
“ *Mahafudassana*,

* *Asiatick Researches*, II, 306.

† The *Burmas* believe, that in every world there arise four or five Gods,
one after the other.

“ *Mahafudaffana*, in which this emperor resides, has
 “ a square form. The pavement, streets, and ways,
 “ are entirely covered with silver or gold. The gilded
 “ wall, which surrounds the city, is a perfect square.
 “ Each of its sides is in length 10,000 *juzana*, in
 “ height 150*, and in width one *juzana* and a half.
 “ The gates are forty *juzana* high, are covered with
 “ gold and silver, and adorned with precious stones.
 “ Seven ditches, distant one *juzana* from each other,
 “ surround the walls of the city: and a *juzana* beyond
 “ the last ditch is a row of marble pillars, gilded and
 “ studded with jewels. At the farther distance of a
 “ *juzana* and a half are seven rows of palm trees, loaded
 “ with gems, pearls, gold and silver. Every where
 “ are to be found lakes of the most limpid water, where
 “ are kept gold and silver boats, into which the male
 “ and female *Nat* entering with their drums and mu-
 “ sical instruments, and pursuing one another through
 “ these delightful lakes, now dance, then sing; some-
 “ times pluck the odorous flowers from the trees,
 “ which hang over them; and sometimes admire the
 “ beauty of the birds, which frequent the trees and
 “ lakes. Beyond the palms every where grows the
 “ abovementioned *Padeza-byan*, the trees on which,
 “ in place of fruit, hang the cloathing and food of
 “ the *Nat*.”

“ TWENTY *juzana* to the north of this city is a
 “ garden named *Nanda*, 100 *juzana* in length, and as
 “ much in breadth. In its center is a lake of the
 “ same name, and equally pleasant with those just
 “ now described. In this garden chiefly grows that
 “ celebrated flower, which is as large as a chariot
 “ wheel. The garden is named *Nanda*, which sig-
 “ nifies a crowd, because the *Nat* frequent it in mul-
 “ titudes, in order to pull the flower, and wear it in
 “ their hair.”

“ To the east of the city, at the distance also of
 “ twenty *juzana*, is another garden, equally large and
 “ pleasant

* I suspect that either the *Latin* copiest or I have added here a cypher
 too much.

“pleasant as the former. It is named *Zeittalata**,
 “and in it grows that renowned twining plant, which
 “every thousand years produces a most exquisite
 “fruit. In order to get this fruit the *Nat* assemble
 “here in crowds for a hundred years before it ripens :
 “and for one whole year, sing and dance, accom-
 “panied by drums and other musical instruments.
 “Having eat of that fruit, the *Nat* become inebria-
 “ted for four entire months.”

“To the south and west of this city are also two
 “other gardens of the same size, and ornamented with
 “lakes, and beautiful trees. The garden to the south
 “is named *Parasu*, that to the west *Missata*.”

“To the north-east of *Mahafudassana* is a very
 “large hall, extending every way 300 *juzana*. In
 “circumference it is 900 *juzana*, and in height 450.
 “From its roof hang golden bells : and its stairs,
 “walls, and pillars, every where shine with gold and
 “silver, intermixed with precious stones. The pave-
 “ment is of crystal, and each row of pillars contain
 “100 columns, The road, which leads to this hall,
 “is twenty *juzana* long, and one broad ; and from
 “space to space are planted trees abounding with all
 “kinds of fruits and flowers. When the great em-
 “peror wants to go to this hall, winds arise, which
 “blow off all the leaves and flowers from the trees,
 “and fresh ones immediately succeed. With these
 “flowers, the *Nat* presiding over the winds, adorn the
 “whole road to the hall ; and the flowers are so
 “abundant, that they reach up to the knees of the
 “passengers. In the middle of this hall stands the
 “great imperial throne, whose plane extends a *juzana* ;
 “and over it is the white umbrella†. No throne
 “shines

* *Lata*, *Lota*, or *Lot*, in the language of the *Hindus*, signifies a climbing plant.

† Different ranks in the *Burma* empire are distinguished by their umbrellas. That of the king is white, with a deep fringe adorned with gold lace and plates. Those of the princes of the blood are gilded, and without a fringe. Those of the four great ministers of state, called *Wungyes*, are of the same shape with the royal one ; but are red. Those of the hereditary

“ shines like this with gold, pearls, and jewels. It is
 “ surrounded by the thirty-two thrones of the in-
 “ ferior *Nat* princes, and behind these sit the other
 “ *Nat*, each in his proper place. In this grand con-
 “ vention are also present the four chiefs of the *Nat*
 “ *Zadumaharit*. At the time in which the *Nat* thus
 “ crowd round the great emperor to do him honour,
 “ they touch their musical instruments, and sing me-
 “ lodiously. The four *Zadumaharit* princes then call
 “ the *Nat* under their jurisdiction, and send them into
 “ this southern island *Zabudiba*, commanding them
 “ to enquire diligently, if its inhabitants observe the
 “ holy days and laws, and exercise charity; or if, on
 “ the contrary, they violate the laws, and neglect their
 “ duty. At this command, quicker than the winds,
 “ the *Nat* pass through all the parts of this island;
 “ and having carefully noted, in a golden book, the
 “ good and bad actions of men, they immediately re-
 “ turn to the hall, and deliver their writing into the
 “ hands of the four *Zadumaharit* princes, who pass it
 “ to the lesser princes *Tavateinza*, and these forward it,
 “ till at length it reaches the great emperor. He,
 “ opening the book, reads aloud, and his voice, if it
 “ be natural and even, is heard to the distance of
 “ twenty-two *juzana*: but if it be raised, sounds over
 “ the whole habitation *Tavateinza*. If the *Nat* hear
 “ that there are many men who observe the law,
 “ practise good works, and bestow alms, they ex-
 “ claim, “ Oh! now the infernal regions will be
 “ empty, and our abode will be full of inhabitants.”
 “ If, on the contrary, there have been found few good
 “ men, “ O wretches, (say they smiling,) men and fools,
 “ who feasting for a short life, for a body four cubits
 “ in length, and for a belly not larger than a span,
 “ have heaped on themselves sin, on account of
 “ which they must be miserable in futurity.” Then
 “ the

hereditary governors of provinces, or tributary princes, are yellow. Those
 of governors of royal provinces, called *Myoorouns*, are blue. Lower
 officers have black umbrellas, but supported by very long shafts. People
 who have no rank, use black umbrellas with shafts of moderate length.

“ the great emperor, that he may induce men to live virtuously, charitably, and justly, speaks thus: “ Truly, if men fulfilled the law, they would be such as I am.” After this he, with all his train, to the number of 36,000,000 of *Nat*, return to the city, in the midst of music.

“ IN the center of this glorious city is built the palace of the emperor, of which the height is 500 *juzana*: but who can describe its beauty, ornaments, treasures, or the abundance of gold, silver, gems, and precious stones, with which it shines? Small standards, of gold and silver, are placed in every part. The chariot in which the great emperor is carried, extends 150 *juzana*, and in it are placed a great throne, and a white umbrella. This chariot is drawn by 2,000 horses, before whom is the great standard, 150 *juzana* high, which, when moved by the wind, yields a most agreeable murmur.”

“ TWENTY *juzana* to the north-east of the great city is a most celebrated tree, the sacred image of the habitation, which, like the sacred trees of the four great islands, lives for the duration of one world. Under this tree is a prodigious stone, sixty *juzana* long, fifty broad, and fifteen high. It is smooth and soft like cotton, and under the feet of the great emperor is elastic, being depressed when he stands on it, and rising again when he descends, as if it were sensible of the honored weight by which it is pressed. When the affairs of our southern island are prosperous and quiet, the half of the emperor's body sinks into the stone: but when a contrary state of affairs exists, the stone remains tense and rigid like a drum. This sacred tree is surrounded by some of the kind called *Padeza-bayn*, and by others producing both fruit and flowers. The road leading to this tree is twenty *juzana* long, and is every year frequented by the *Nat* resorting to the place. When the tree flowers, its ruddy splendour extends, all around, to the distance of fifty *juzana*, and its most agreeable odour is diffused twice that length. When it has flowered, the

“ keeper of the tree informs the emperor, who is im-
 “ mediately seized with a desire to see it, and says, if
 “ an elephant would now appear, it would be both a-
 “ greeable and convenient. No sooner has he spoken,
 “ than the elephant appears: for here, as well as in all
 “ the other habitations of the *Nat*, there are no animals,
 “ such as in our earth; but whenever any *Nat* has use
 “ for an animal, a temporary one is immediately creat-
 “ ed. This elephant has thirty-three heads, corres-
 “ ponding to the thirty-three *Nat* princes. Every head
 “ has seven teeth, which are fifty *juzana* in length. In
 “ every tooth are seven lakes, in every lake seven
 “ flowering trees, on every tree seven flowers, in every
 “ flower seven leaves, in every leaf seven thrones, in
 “ every throne seven chambers, in every chamber seven
 “ beds, in every bed seven *Nat* dancing girls. The
 “ head, on which sits the supreme emperor, is thirty
 “ *juzana* in bulk; and is ten times larger than the other
 “ heads. On the large head is raised a pavilion three
 “ *juzana* high, under which is fixed the ruby throne of
 “ the emperor. This elephant, called *Eravum*, ap-
 “ proaches the emperor, and after him the thirty-two
 “ princes mount. After the elephant the other *Nat*
 “ follow, each in his couch of state. Having come to
 “ the sacred tree to collect the flowers, this vast mul-
 “ titude dismount; and the emperor being seated on
 “ the stone, the whole sit down, each in his proper place,
 “ and begin to celebrate the festival, which continues
 “ for four months. They then gather the flowers, to
 “ do which they have no need to ascend the tree: for
 “ the *Nat* of the winds shake it, and make the flowers
 “ fall; and lest the beauty of the flowers should be
 “ spoiled, the winds support them, nor permit them to
 “ touch the ground. The whole bodies of the *Nat* are
 “ then covered with the odorous dust coming from the
 “ stamens of the flowers.

“ THE stature of these *Nat* is three *gaut*: and the du-
 “ ration of their lives four times that of the *Nat* *Zadu-*
 “ *maharit*, or thirty-six millions of our years. The

“ *Nat*

“ *Nat* of this habitation, like those of the higher kinds,
 “ do not require the light of the sun or moon, the light
 “ of their own bodies being sufficient: for they shine
 “ like so many suns or stars.”

“ XIX. It has been mentioned*, that the mountain
 “ *Mienmo* is sustained by three feet of carbuncle†.
 “ Now the space that lies between these is the habitation
 “ of a kind of *Nat* named *Affura*. Although these *Nat*
 “ inhabit a different abode, yet are they exactly of the
 “ same kind with the *Tavateinza*: for they were driven
 “ by guile from that habitation, which formerly they
 “ occupied. The manner in which this happened, is re-
 “ lated as follows in the *Burma* writings. *GODAMA*, be-
 “ fore he became a god, when he was in the state of a man
 “ in *Zabudiba*, with thirty-two other men of the same
 “ village, by the good work of repairing the high ways,
 “ and by other virtuous actions, deserved after death
 “ to become *Nat Tavateinza*. On their arrival the an-
 “ cient inhabitants of that happy abode, in sign of their
 “ joy, and with flowers in their hands, descended half
 “ way down *Mienmo*, in order to welcome their future
 “ companions. *GODAMA*, who then was called *MAGA*‡,
 “ began to contrive, how he might drive these *Nat*
 “ from their ancient possessions. He and his compa-
 “ nions accordingly pretended to have drunk wine:
 “ but what they drank, was not true wine. The former
 “ *Nat Tavateinza*, imitating the example of these men,
 “ drank real wine, and became intoxicated. Then
 “ *MAGA* making a signal to his companions, they drag-
 “ ged the *Nat*, while insensible with wine, by the heels,
 “ and cast them out of the abode *Tavateinza*. But as
 “ the lot, acquired by the merit of the good actions of
 “ these *Nat*, was not expired, a habitation formed it-

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“ self

* Page 176 of this Volume.

† In place of saying that *MERU* is supported by three feet, the *Brahmens* alledge, that it is placed on the back of a prodigious tortoise.

‡ *GODAMA* is said by the *Brahmens* to be the son of *MAGA* or *MAJA*.

“ self for them between the feet of *Mienmo*; and this
 “ habitation is called *Affura bon*, which in every thing,
 “ except its sacred tree, resembles that called *Tavatein-*
 “ *za**. In *Affura bon* there is also a tree, under which
 “ there are four immense stones, each of them 300 *ju-*
 “ *zana* square. On these rocks sit the four *Affura*
 “ princes, when they determine suits, and administer
 “ justice to their subjects. Among these princes, in
 “ the length of time, one has obtained supreme domi-
 “ nion, and has become emperor of all the *Nat* dwell-
 “ ing in this habitation†.

“ BESIDES this injury, the *Affura* have received an-
 “ other from the new inhabitants of *Tavateinza*: for
 “ the great emperor ravished a daughter of the *Affura*
 “ prince. Mindful of these injuries, the *Affura Nat*
 “ vowed perpetual war against the inhabitants of *Ta-*
 “ *vateinza*. When they used to see their sacred tree
 “ producing flowers different from those of their for-
 “ mer abode, breathing revenge, they were wont to as-
 “ cend *Mienmo*, and to take prisoners the giants, dra-
 “ gons, vultures, and other similar *Nat*, retained by the
 “ *Tavateinza* emperor as a guard for his frontiers. On
 “ the report of this, the emperor mounting his elephant
 “ 150 *juzana* high, used to call to his assistance the *Nat*
 “ of the sun, moon, and stars, and those of the winds
 “ and clouds. He then created new forms of *Nat*, and
 “ of these raised an army without the walls of the great
 “ city. But the *Affura* prevailing, forced him to retire
 “ within the walls. The rage of the *Affura* was then
 “ wont to abate; and the emperor having collected his
 “ forces, used to drive them from his walls, and to pur-
 sue

* We have here the most abominable cunning of GODAMA related as a laudable action: for, as I observed before, among his followers, cunning is looked upon as a virtue. (Page 185).

† The *Burma* monarchs, in their cities, courts, and manners, imitate as much as possible, those described as belonging to the *Nat* princes; and of course must greatly resemble the ancient princes of western *India*; from whom undoubtedly these descriptions have been borrowed; and probably as much resemble the originals, as the description in the *Arabian Nights* Entertainments do the courts of *Mohamedan* kings.

“ sue them in their flight. The *Affura* having failed,
 “ touched a drum made of the claws of Cancer, and
 “ then retired to their own abode. In these battles no
 “ one was killed: the *Nat* only tore one another. Now,
 “ however, the *Affura* remain quiet at home: nor do
 “ they any more engage in warlike enterprizes*.

“ ACCORDING to what GODAMA taught, whoever
 “ honours his parents†, and old age; whoever respects
 “ the three excellent things, namely, God, the law, and
 “ the *Rāhāns*; whoever abhors wrangling, and disputes;
 “ whoever is charitable, particularly to the *Rāhāns*:
 “ all such persons shall after death transmigrate into
 “ *Tavateinza*.”

“ XX. CONCERNING the happiness enjoyed in the
 “ higher abodes of *Nat*, and by the *Rupa*, and *Arupa*,
 “ the *Burma* writings are silent: they only in general
 “ state, that the happiness of each habitation is double
 “ of that in the one immediately below. It is also
 “ stated, that the lives of the inhabitants of each *bon*,
 “ endure four times as long as those of the next infe-
 “ rior species. According to this ratio, the duration
 “ of the life of all the beings above *Tavateinza* in-
 “ creases: so that the highest rank of *Nat*, called *Para-*
 “ *neiminatavassanti* live 576 millions of years. The
 “ prince of these *Nat*, whose name is MANNATMEN,
 “ has dominion over all the *Nat* of the other inferior
 “ habitations, and declares war against any new god
 “ on his first appearance. All his subjects being drawn
 “ out in battle array, occupy a square of eighteen

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juzana :

* These *Nat* are evidently the *Affura Loka*, or demons of the *Brahmens*, who place them at the south pole, while the north is occupied by the *Devas* or *Deities*.

† Filial respect seems to be almost equally strong among the *Burmas* as among the *Chinese*. No *Burma* is permitted to sit on a seat equally honourable with that of his father: if the father is on a chair, he must sit on the ground; if the father is on the ground, the son must sit behind. The son does not eat in his father's presence, and rarely speaks, except to answer a question.

“ *juzana**: he himself being in the center, is seated on
 “ an elephant 250 *juzana* high.”

“ XXI. The *Burma* writings, as has been said, make
 “ no mention of the kind of happiness enjoyed by the
 “ *Rupa* and *Arupa*: but if we may judge from the
 “ length of their lives, they must be infinitely more
 “ happy than the *Nat*. Of the three habitations, which
 “ form the first *Zian*, the first *Rupa* live twenty-one
 “ *Andrakat*; the second live thirty-one *Andrakat*; and
 “ the third live one *Affemchiekat*. Of the three abodes
 “ in the second *Zian*, the *Rupa* of the first live two
 “ *Makakat*; of the second, four *Makakat*; and of the
 “ third, eight. Again, of the abodes which are called
 “ the third *Zian*, the *Rupa* of the first live sixteen
 “ *Makakat*; of the second, thirty-two; and of the third,
 “ sixty-four *Makakat*. Of the two abodes forming the
 “ fourth *Zian*, the *Rupa* live 500 *Makakat*. Of these
 “ five remaining abodes of *Rupa*, which are placed
 “ perpendicularly above one another, the inhabitants
 “ of the first live one thousand, of the second two thou-
 “ sand, of the third four thousand, of the fourth eight
 “ thousand, and of the fifth sixteen thousand *Makakat*.
 “ Again, the life of the inhabitants of the lowest order
 “ of *Arupa* lasts for 20,000 *Makakat*, of the second for
 “ 40,000, of the third for 60,000, and of the highest for
 “ 84,000 *Makakat*.

“ THE happiness and length of the lives of beings
 “ increasing in proportion as their habitations are
 “ higher, a greater and greater elevation will be pro-
 “ cured by persons after death, in proportion as during
 “ life they have performed more good actions, and as
 “ they have possessed more liberality in bestowing
 “ charity.”

“ XXII. I AM now to give an account of the abodes
 “ of wretchedness, of the punishments inflicted on their
 “ inhabitants,

* I suspect that there is an error in the number here stated.

“inhabitants, and of the duration of their existence.
 “There are four states of *Apé* or misery. 1. That of
 “animals, whether they live in the water, or on the
 “earth, or whether they fly in the air: for, according
 “to the *Burma* writings, the state of all animals in-
 “ferior to man, is a state of misery. 2. That of the
 “wretched beings called *Preitta*. 3. The state of
 “those called *Affurighe*. 4. The state of the inhabi-
 “tants of *Niria*, which may properly be translated
 “hell. Of these beings I shall treat in order.

“THE *Burma* scriptures mention nothing concern-
 “ing the wretchedness or length of life of animals.
 “Some doctors however assert, that domestic animals
 “follow the fortunes of mankind: and that, when
 “men live long, they do so likewise. These doctors
 “also suppose, that animals not domestic have a short
 “or a long life, in proportion to the merit of their
 “actions in a former existence. It is however, say
 “they, found by experience, that the elephant lives
 “sixty years, the horse thirty, the ox twenty, and the
 “dog ten. By the same doctors it is alledged, that
 “lice, and other similar insects, live seven days; and
 “they confirm this by a story related in their books.
 “A certain priest conceived a violent liking for a
 “beautiful robe, which he preserved most carefully
 “from being worn. It so happened, that when this
 “priest died, he was immediately changed into a louse,
 “which took up its residence in the favourite robe.
 “According to custom, the other priests divided a-
 “mongst them the effects of the deceased, and were
 “about to cut up the robe, when the louse, by his fre-
 “quent going and coming, and by his extraordinary
 “gestures, showed, that the division of the robe
 “would be by no means agreeable to his feelings.
 “The priests being astonished, consulted God on
 “the occasion, who commanded, that they should
 “delay for seven days their intended division, lest
 “the louse should be enraged, and on that account

“descend into a state of misery yet more wretched.
 “Those men are changed into animals who do not
 “refrain their tongues, or the inordinate motions of
 “their bodies or minds, and who neglect to bestow
 “alms.”

“XXIII. THE second miserable state of existence
 “is called *Preitta*, of which there are various kinds.
 “Some *Preitta* are nourished on spittle, excrement,
 “and other foul substances, and dwell in public halls,
 “cisterns, and sepulchres. Others, wandering about
 “in woods or deserts, half wasted by hunger and
 “nakedness, pass the whole duration of a world in
 “howling and groans. Some by fiery whips are forced
 “to plough the earth with red-hot iron. Some, who
 “live on their own flesh, with their nails tear to pieces
 “their own limbs. Others, who are a *gaut* in size,
 “have a mouth no larger than the eye of a needle,
 “hence are they tormented with perpetual hunger.
 “Others are within on fire, so that at times the flames
 “even burst through their bodies. There is still
 “another species of *Preitta*, who by day enjoy the
 “pleasures of the *Nat*, but by night are tormented
 “as above. Those in a future life are changed into
 “*Preitta*, who during this give no daily provisions
 “to the priests, who do not supply them with cloath-
 “ing, who corrupt their manners, or who offer
 “violence to their persons, who give abusive language
 “to the observers of the law, who are avaricious, &c.”

“XXIV. THE third miserable species of beings,
 “called *Affurighe*, reside chiefly in the roots of certain
 “mountains far remote from the habitations of men.
 “Some of them however dwell in woods, and on the
 “desert coasts of the sea. They are subject to punish-
 “ments nearly the same with those of the *Preitta*.
 “There is a kind of intermediate species, called
 “*Affurighe-Preitta*. These beings have bodies three
 “*gaut* in length, but as emaciated as a corpse deprived
 “of flesh and blood. Their eyes project from the sockets
 “like those of a crab: and their mouths are on the
 “crowns

“ crowns of their heads, and as small as the eye of a
 “ needle, so that they are tormented with hunger.
 “ Those are subject to this punishment, who in their
 “ quarrels strike with sticks, or destructive weapons.

“ THE duration of these three *Apé* is not fixed, but de-
 “ pends on the lot of evil actions, as the *Burma* doctors
 “ speak. “ If this lot be heavy, the misery will con-
 “ tinue long: but if light, the unhappy beings will be
 “ the sooner relieved from punishment:” that is to say,
 “ according to the greater or less atrocity of the sins
 “ committed, the punishment will be of longer or
 “ shorter duration.”

“ XXV. *Niria* is the fourth miserable condition;
 “ and its habitation may be properly called the infer-
 “ nal regions. These are placed by the *Burmas* in the
 “ depths of this southern island *Zabudiba*, in the midst
 “ of the great rock *Sila pathavy*, and consist of eight
 “ great hells. Each great hell towards the four car-
 “ dinal points has four gates, leading to as many
 “ smaller hells: so that every great hell communicates
 “ with sixteen smaller ones, and besides is surrounded
 “ to the right and left by 40,040 still smaller. A space
 “ of 10,000 *juzana* square is occupied by each of the
 “ large hells, and its dependant small ones.

“ BEFORE the gate of each great hell sit the judges,
 “ who condemn the guilty according to the weight of
 “ their lot of evil deeds. These judges are selected
 “ from the *Nat Affura*: but their office does not pre-
 “ vent either them or their assistants from enjoying
 “ the pleasures of their happy companions. These
 “ judges have no occasion to examine into crimes of a
 “ very atrocious nature: the weight of these, say the
 “ *Rāhāns*, sinks the perpetrators at once into hell.
 “ These *Imamen* or judges then determine the punish-
 “ ments for smaller crimes. The worshippers of
 “ BOUDDHA, when bestowing alms, or performing
 “ other

“ other good actions, commonly use the ceremony
 “ of pouring a little water on the ground, which is
 “ explained to be emblematical of their wishing to
 “ participate the merit of good works with other be-
 “ ings. Those criminals, who during life performed
 “ this ceremony, the *Imamen* will mildly raise up, will
 “ assuage their fears, and exempt from the torments
 “ of hell, unless they have been guilty of any great
 “ crimes. But to those who have neglected this cere-
 “ mony, the *Imamen*, with a horrible countenance,
 “ will declare, that they have done no good action;
 “ then the criminals, all trembling, will dare advance
 “ no excuse: but the demons will advance, and snatch
 “ them away to punishment.”

“ XXVI. THE duration of these punishments, as
 “ has been already said, is not fixed and determined,
 “ but depends upon the lot of bad actions. The
 “ *Burma* writings enumerate four of these lots: the
 “ first they say is heavy, the other three light. The
 “ evil deeds, which after death produce the heavy
 “ lot, are chiefly five: 1, matricide; 2, parricide; 3,
 “ slaying a *Rāhān*; 4, striking a God; (thus DEVA-
 “ DAT, the name by which the *Rāhāns* know JESUS,
 “ incurred the heavy lot by throwing a stone at GO-
 “ DAMA;) 5, exciting dissensions among the *Rāhāns*.
 “ Those who have been guilty of such crimes, for the
 “ whole duration of a world, suffer, in one of the
 “ great hells, the punishment of fire, and other cruel
 “ torments. This lot is called heavy, and the first,
 “ because those who die under its weight, enjoy no
 “ benefit from the good actions they may have per-
 “ formed; at least, till the whole time of their punish-
 “ ment has expired. But even more severe than this
 “ is the lot of those called *Deitti*, or those impious
 “ persons who have discredited the evidences of GO-
 “ DAMA, or of some former God: who, contrary to
 “ the express doctrine of all Gods, deny *Nieban*, and
 “ the transmigration of men into animals, or into su-
 “ perior beings, according to the merit of their actions;
 “ who

“ who teach, that there is no merit in bestowing alms,
 “ or in performing the good works commanded by
 “ God; or who adore the *Nat* presiding over the
 “ woods and mountains. All such persons, if they
 “ obstinately persist in their infidelity, and irreligion,
 “ will be tormented, not for the duration of one world,
 “ but to all eternity. After the world is destroyed,
 “ they will pass to other places, or be eternally pun-
 “ nished in the air. But if obstinacy be not added to
 “ their crimes, the punishment will cease at the end
 “ of the world.

“ Of those lots which are not heavy, the first is
 “ that which receives a reward or punishment after
 “ death; and such crimes are punished in one of the
 “ great hells, according to their greater or less atro-
 “ city.* After this comes the lot of habitual sins;
 “ and though these sins be not atrocious, yet if they
 “ have become habitual, they occasion a lot, which
 “ induces a punishment in one of the seven great hells;
 “ but not in that named the great *Aviri*. The fourth
 “ lot arises from wicked desires, and is not punished
 “ in any of the great hells, but in some of the sur-
 “ rounding small ones.”

“ XXVII. BEFORE we mention the punishments
 “ which the damned suffer, it must be premised, that
 “ of the eight great hells, four are called *Aviri* or hot,
 “ and four *Logantret* or cold hells: because in these
 “ last the damned suffer intense cold. The infernal
 “ days and years also differ from those on earth: for
 “ every day in the great hells is equal to a thousand
 “ terrestrial years; whilst in some of the small hells it
 “ equals 600 years, in others 700, and in others 800.”

“ 1st. THOSE who are irascible, or cruel, quarrel-
 “ lous,

* THE original here is very obscure. I have translated it, as nearly as I could, word for word: but I am not satisfied about the meaning. Perhaps it is, that such crimes induce this lot, as are of a nature not to require the determination of the *Imamen*: and such, as that their opposite virtues lead to immediate high rewards?

“ lous, or drunken, who are dishonest in deed, word,
 “ or thought, or who are lascivious, will, after death,
 “ in the great hell *Seinzi* be torn to pieces with glow-
 “ ing hot irons, and then exposed to intense cold:
 “ after a time their limbs will again unite, and again
 “ will they be torn asunder, and exposed to the cold:
 “ and this alteration of misery will endure for 500 in-
 “ fernal years.

“ 2dly. THOSE who either by action or speech ridi-
 “ cule their proper parents, or magistrates, or *Rāhāns*,
 “ or old men, or the studious of the law; those who
 “ with nets or snares entrap fish, or other animals;
 “ all those will be punished in the great hell *Chalasot*
 “ for 1,000 infernal years: on a bed of fire they will
 “ be extended, and like so many trunks of trees with
 “ burning iron saws and hooks they will be cut into
 “ eight or ten pieces.

“ 3dly. THOSE who kill oxen*, swine, goats, or
 “ other such animals; and who are by profession hun-
 “ ters†; warlike kings; ministers and governors who
 “ oppress the people; all such will in the great hell
 “ *Sengata* be ground between four burning mountains
 “ for 2,000 years.

“ 4thly. THOSE who do not mutually assist their
 “ neighbours, and who on the contrary deceive and
 “ vex them; those who kill animals by immersing
 “ them in boiling oil or water; those who are drunk-
 “ ards,

* THE present *Burma* monarch, who enforces religious duties with considerable rigour, in a very particular manner punishes the death of the cow kind. The *Rahans*, it is evident, look on the killing of all animals with equal abhorrence; and it is probable, that the *Brahmens* have in this instance influenced the councils of the prince, and have deprived his subjects of a most wholesome and invigorating aliment.

† VENISON is the only meat permitted to be sold in the markets of the *Burma* empire, a privilege allowed to hunters, most probably on account of the Royal family. The hero *ALOUNGBURA*, the deliverer of his country, and father of the king, was originally a hunter. He had the good sense not to be ashamed of his origin, and, when he first rose into notice, assumed the name of *Moutzobo*, or the hunter-captain, a name which he bestowed on his favourite residence, when his merit and fortune had induced his subjects to call him the lord of the world.

“ ards, or who commit indecent and forbidden ac-
 “ tions; those who dishonor others; all such will have
 “ their bowels consumed by fire entering their mouths.
 “ This punishment will last for 4,000 infernal years.

“ 5thly. THOSE who take any thing contrary to the
 “ express will of the proprietor, whether it be by
 “ theft, guile, fraud, or by open violence; those
 “ magistrates who receive gifts, and in consequence
 “ decide causes unjustly; those officers who, after
 “ having possessed themselves of an enemy's country,
 “ destroy the inhabitants; those who deceive in scales,
 “ weights, or measures, or who by any other unjust
 “ means appropriate to themselves the goods of others;
 “ those who injure the property of the *Rāhāns*, or
 “ temples; all such, for the space of 8,000 infernal
 “ years, will be punished in the great hell *Maharo-*
 “ *ruva* by fire and smoke, which will enter by the
 “ eyes, mouth, and other openings, and waste away
 “ their whole bodies.

“ 6thly. THOSE who having killed hogs, deer, or
 “ such like animals, skin them, roast their flesh, and
 “ eat it; those who make arms; those who sell hog's
 “ flesh, or fowls, or wine, or poison; those who burn
 “ towns, villages, or woods, so that the animals liv-
 “ ing there perish; those who kill men by poison,
 “ arms, or incantations, or who kill animals by nets
 “ or gins; all these after death for sixteen thousand
 “ years will in the great hell *Tapana* be tumbled
 “ down headlong from a lofty burning mountain,
 “ there being transfixed on an iron spit, they will be
 “ cut and torn by the demons with swords and
 “ spears.

“ 7thly. The *Deitti*, or infidels, who have been
 “ already mentioned, will in the hell *Mahatapana* be
 “ first fixed with their heads downwards, and then
 “ pierced with hot spits as large as palm trees.

“ 8thly. PARRICIDES, matricides, and such as have
 “ the heavy lot, will be punished for the whole dura-
 “ tion of a world in the terrible of all hells *Mahaviri*,
 “ the pavement of which nine *juzana* in thickness is of
 “ red hot iron, and emits the most horrible smoke,
 “ and the most piercing flames.”

“ XXVIII. OF the smaller hells, which surround
 “ the eight great ones, and which are called by one
 “ common name *Uffantrek*, some are mentioned by
 “ particular names. In the excrementitious hell, for
 “ instance, there are worms as large as elephants,
 “ which bite the damned while they are floating in
 “ excrement. There is also a hell of burning ashes.
 “ In the hell of swords the damned are torn in pieces
 “ by the knives, swords, and other sharp instruments,
 “ among which they are rolling. The damned in the
 “ hell of hooks have their lungs, livers and bowels
 “ torn out by these cruel instruments: and in the
 “ hell of hammers they are miserably beaten with red
 “ hot implements of that kind. There is a hell of
 “ thorns and prickles, a hell of biting dogs, a hell of
 “ crows and vultures, which with their beaks and
 “ claws tear asunder the flesh of the damned. There
 “ is a hell in which the damned are obliged constantly
 “ to ascend and descend a tree named *lappan*, and
 “ armed with the sharpest thorns: another in which
 “ they are forced to drink putrid gore; and still another,
 “ where fiends beat, whip, and torment the damned.

“ IN the smaller hells are punished those who did
 “ not honour their parents, magistrates, and old age;
 “ who took wine or inebriating drugs; who corrupted
 “ the waters of lakes or wells; who destroyed highways;
 “ who were fraudulent and deceitful; who spoke roughly
 “ and angrily; who struck others with their hands or
 “ sticks; who paid little attention to the words of pious
 “ men; who afflicted others; who were speakers of scan-
 “ dal,

“ dal, passionate, envious, undervaluers of their neighbours; who used abusive language; who confined their fellow creatures with chains, bonds, or fetters; who admitted any forbidden thing in their words, actions or desires; and who did not console the sick with soothing words. All these crimes will be punished in the smaller hells, and that in proportion to the atrocity of the deed, and the frequency with which it has been repeated.

“ BESIDES these places of punishment there is another hell, which may be compared to an immense kettle filled with melted brass. The damned are forced to descend to the bottom of this kettle, then to rise to the surface, and 3,000 years are consumed in each descent, and in each ascent. To this hell are condemned the sensual persons, who corrupt the wives, the daughters, or the sons of others; and who, during the course of their lives, neglecting to observe the holy days, or to give alms, pass their time in feasting, drunkenness, and lascivious enjoyments.

“ IT has been already mentioned, that the equilateral spaces, which are supposed to be in the interstices of the different worlds, are full of water intensely cold. The *Burma* writings assert, that these are so many hells, to which those are condemned who give offence to their parents, or to the strict observers of the law. These people after death get bodies three *gaut* in length, with crooked nails on their hands and feet: sometimes like bats they creep through the caves, and dark caverns in the deep recesses of the mountains: at others they hang together on trees like a hive of bees, mutually tormenting and abusing themselves with the most dreadful words; then being instigated by a cruel hunger, they tear each other limb from limb. The limbs falling into the cold water are dissolved like salt: but the parts of their bodies being again united by
“ the

“ the power of fate, they repeatedly undergo the same
 “ torments.

“ HAVING thus explained the ideas of the *Burmas*
 “ concerning the various *bon*, or habitation, of misery
 “ and happiness, before we proceed any further, it is
 “ necessary to state, that the beings which inhabit
 “ even the highest of these abodes, may, on account of
 “ bad actions, sink into the infernal regions; or on
 “ account of their good ones, may be raised to a higher
 “ rank: but it is only in this island *Zabudiba* that
 “ *Nieban*, the most perfect of all states, can be ob-
 “ tained. To arrive at *Nieban* a person must see a
 “ god, and hearken to his discourses and evidences:
 “ and it is only in *Zabudiba* that the gods arise.
 “ There are some *Burma* doctors indeed, who assert,
 “ that in this island only beings can deserve to rise to
 “ a superiour, or to sink into an inferiour abode.”

A TOPOGRAPHICAL DESCRIPTION OF ZABUDIBA.

“ I HAVE said, that the *Burmas* allow the diameter
 “ of this island, which we inhabit, to be 10,000 *juzana*.
 “ From this extent they subtract 3,000 for woods and
 “ deserts, 4,000 for waters, and suppose 3,000 to
 “ remain as a habitation for mankind. I shall now
 “ explain their ideas concerning the topography of this
 “ abode: but my readers will be much disappointed,
 “ if they expect any thing like an accurate description
 “ of the earth, or of its divisions into kingdoms and
 “ provinces. For in the same manner, as what I have
 “ already delivered as the opinions of the *Burmas*
 “ concerning the universe, are nothing but vain,
 “ chimerical, and monstrous fables; so what they relate
 “ concerning the island *Zabudiba*, never existed, unless
 “ in the invention of *GODAMA*, or in the crude con-
 “ ceptions of his commentators. It is true indeed, that
 “ in the *Burma* writings mention is made of 101 nations,
 “ which are said to inhabit *Zabudiba*, and its dependant
 “ small islands: but of all the nations which are
 “ known really to inhabit the earth, we find none men-
 “ tioned

“tioned as a part of the one hundred and one, except
 “the *Chinefe*, *Siamefe*, and the inhabitants of *Tavay*,
 “*Pegu*, *Luos*, *Cuffay*, and *Arakan*.”

THUS SANGERMANO prefaces his account of the *Burma* geography: but I think some farther explanation necessary. The reader will soon perceive, that the missionary is entirely right with regard to the imperfect and absurd nature of the *Burma* topography of *Zabudiba*, of which the accounts seem evidently to have been introduced from *Hindustan*, along with the religion and laws of BOUDDHA, and of MENU: but I doubt not, that some parts of these accounts are derived from an observation of nature. I am also inclined to think, that he is rather severe on the knowledge which the *Burmas* possess of the geography of at least their neighbourhood. I found many of the *Burmas* who were very intelligent, and well informed, concerning the situation of the different parts of their extensive empire; who were not at all deficient in a knowledge of the neighbouring states; and who were very curious to know the situation of those at a greater distance. They at once comprehended the nature of our maps; and some of them could make delineations of their own country, which, with a considerable degree of neatness, were sufficient to give a tolerable idea of the course of rivers and mountains, and of the situation of towns, lakes, and provinces. I was informed, that, in the hall of the grand council in the palace of *Amrapura*, the king keeps a general map of his dominions, which has been corrected by comparing it with the various expeditions which the present royal family have undertaken, and with the lists of cities and villages, which the governors of provinces are annually obliged to transmit to court: and in these lists is given an accurate account, or one pretended to be so, of all the houses and male inhabitants in each district. Merchants and travellers put down in their books the names of all the places on such routes as they frequent, with their estimated distances: some such itineraries, and many of their delineations, I

have communicated to Sir JOHN SHORE: and if my stay in the country had been longer, I make no doubt, but that I could have procured several of the lists transmitted to court by the governors of provinces.

FOR the sake of the curious I shall here transcribe the list of the one hundred and one nations with which the *Burmas* are acquainted, using the mode hereafter to be explained of expressing the *Burma* writing by *Roman* characters, and adding a short explanation. From this I think it will appear, that the list is formed from a real knowledge of the nations, and not from the idle fables brought from *Hindustan*, and explained by the missionary. It is true, that of many of these names I can give no account; but that will by no means imply, that no such nation exists; for who would think that *Tarout* meant a *Chinese*, or *Kula* an *European*?

Loo mioo tăwă tăbă. Of men the nations one and an hundred.

- | | |
|---------------------|--|
| 1 <i>Myam-mā,</i> | The proper name of the <i>Burmas</i> . |
| 2 <i>Tă-lain,</i> | The inhabitants of the kingdom of <i>Pegu</i> . |
| 3 <i>Yun,</i> | The inhabitants of <i>Sayammay</i> or <i>Chiamay</i> . |
| 4 <i>Yoo-dă-yā,</i> | The <i>Siammese</i> . |
| 5 <i>Sham,</i> | The grand <i>Siams</i> of M. DE LA LOUBERE. |
| 6 <i>Layn-fayn,</i> | The inhabitants of lower <i>Laos</i> or <i>Lanjans</i> . |
| 7 <i>Gium,</i> | } These are two small rude tribes living in hilly and woody tracts in the <i>Sham</i> country. |
| 8 <i>Kiun,</i> | |
| 9 <i>Dha-nu,</i> | A rude tribe inhabiting the banks of the river <i>Thalhuayn</i> , north from <i>Martaban</i> . |
| 10 <i>Kă-rayn,</i> | A rude tribe inhabiting the woods of the <i>Pegu</i> kingdom, and those near <i>Prone</i> . |
| | 11 <i>Ku-lā,</i> |

- 11 *Ku-lā,* The *Europeans*, or the natives of the west.
- 12 *Pă-deik-kă-rā,* Another western nation; but which, I could not learn.
- 13 *Dă-way,* The natives of *Tavay*.
- 14 *Ræk-'kaik,*
- 15 *Ayn-giay,* Said to live between *Cuffay* and the *Kiaynduayn*.
- 16 *Tă-nayn-thā-rē,* The natives of *Tenasserim*.
- 17 *Sō-gē,* Hermits.
- 18 *Kieen-zout,* Said to live near *Cuffay*.
- 19 *Tă-rout,* The *Chinese*.
- 20 *Tă-ræk,* The *Tartars* governing *China*.
- 21 *Layn-thæk,* Said to be an independent people living near *China*.
- 22 *Pan-thè,*
- 23 *Pălè,* } Inhabitants of the mountains
- 24 *Pă-laung,* } north-east from *Ava*, who
- 25 *Thout-tan,* } pickle the tea leaves so much
- 26 *'Zū-laung,* } used in the *Burma* kingdom.
- 27 *'Zū-'lē,* Said to live seven days journey west from *Ava*.
- 28 *Tă-'ba-thē,* Live north from the last mentioned people.
- 29 *Hă-rē,*
- 30 *Zan-dā,* *Zandapure* is the name of the capital of *Laos*.
- 31 *Măl-lā,*
- 32 *Să-wā,*
- 33 *Să-wē,*
- 34 *Zeim,*
- 35 *Lă-hu,*
- 36 *Lă-myayn,*
- 37 *Zayn-g'yan,*
- 38 *Kian-dan,*
- 39 *U-thă-'bă,*

- 40 *Lă-pě-kā,*
 41 *Myoun,* A people inhabiting the hills between *Arakan* and *Chittagong*, called by the *Bengalese*, *Moroong*.
- 42 *Goun,*
 43 *Pat-tu,* The *Malays* of *Acheen*.
 44 *Zū-da,*
 45 *Nă-ba,*
 46 *'Bū-đaung,*
 47 *Layn-yaung,*
 48 *A-thā,*
 49 *Payn-g'ā,*
 50 *Meit-zeit,*
 51 *Lă-hæk,*
 52 *Rè-mē-duck,*
 53 *Kan-zæk,*
 54 *Taung-thū,*
 55 *Pyu,*
 56 *Kō-ză,*
 57 *Kam-yan,*
 58 *A-myayn,* A *Burma* city of this name.
 59 *Kă-kiayn,* A wild people on the frontiers of *China*.
- 60 *Thouk-kāda,* A *Siammese* city of this name.
 61 *Lă-'ba,*
 62 *Shein-dū,*
 63 *Rè-dū,*
 64 *Payn-wā,* A *Burma* city of this name.
 65 *Meiz-'zā,*
 66 *La-wa,* A very numerous tribe inhabiting the woods to the east of the *Martaban* river.

67 *Rè-'zun,*

- 67 *Rè'-zun,*
- 68 *'Zayn-té,*
- 69 *Peith-thè,*
- 70 *Taz'-zoo,*
- 71 *Thē-hò,*
- 72 *Sā-wē,*
- 73 *Rō-gā,*
- 74 *Keen-ză,*
- 75 *Mā-lein,*
- 76 *Sō-rā,*
- 77 *Zè-dout,*
- 78 *Să-hout,*
- 79 *Thărak,*
- 80 *Thak,*

Ceylon.

The people inhabiting the eastern branch of the *Nazf* river, who have sent a colony to the upper parts of the *Curnafooly*, and who are called by the *Bengalese*, *Chatn* and *Chatnmas*.

- 81 *Dō-rā,*
- 82 *Taung-rā,*
- 83 *Kă-thee,*
- 84 *Miăk-nā-mee,*
- 85 *Kiee,*
- 86 *Poun-nā,*
- 87 *Bō-dhě,*
- 88 *Eim-băt,*
- 89 *Kă-dū,*

Cussay or Meckely.

The Brahmens.

A tribe between *Martaban* and *Siam*.

- 90 *Lă-rō,*
- 91 *Thă-doo,*
- 92 *La-ngoun,*

Q 3

93 *Lă-rouk,*

- 93 *Lă-rouk*,
 94 *Pă-gnā*,
 95 *Biā-bā*,
 96 *Ram-man*,
 97 *Kiayn*, A numerous tribe in the mountains
 separating *Ava* from *Arakan*.
 98 *Pyö*,
 99 *Lă-waik*, The capital city of *Cambodia*.
 100 *Layn-nat*,
 101 *Oo-bye*,

BUT let us now return to the description of *Zabudiba*, as extracted by the missionary from the *Burma* writings.

“ XXIX. IN the most northern parts of *Zabudiba*,
 “ the *Burma* writers place an immense mountain, of
 “ which the perpendicular height is 500 *juzana*, and
 “ the extent it occupies is in circumference 9000
 “ *juzana*. It is named *Hemavunta*, on account of the
 “ perpetual snow with which it is covered*; and
 “ consists of 14,000 small mountains, one piled on
 “ another. In the declivities of this mountain are
 “ seven lakes, which receive the water produced by
 “ the melted snow. Of these lakes the depth is fifty
 “ *juzana*, and the circumference 150. From these
 “ lakes spring five great rivers, one of which is named
 “ *Gunga*; and from these rivers arise five hundred
 “ smaller streams. On *Hemavunta* grow various
 “ species of sandal wood: on this mountain live many
 “ *Nat* of the kind named *Zadumaharit*: and here are
 “ found the kings of elephants, and of horses, with
 many

* THIS *Hemavunta* is evidently the mount *Imaus* or *Emodus* of the
 ancients, or the *Himaleh* or *Himalaya* mountains of the present *Hindus*;
 all the three names deriving their origin from the phenomenon of snow, so
 wonderful to the inhabitants of tropical regions. PLIN. Hist. Nat. L. 6,
 c. 17.—RENNELL'S Memoir, p. 126.

“ many other animals not to be found near the habitations of man. Of these lakes the most celebrated is called *Anaudat**, which is surrounded by five mountains. These mountains, which are five hundred *juzana* high, incline their lofty summits over the lake, and prevent the sun's rays from reaching its waters, except for a short space annually, when the sun is in the inner road.

“ THE bowels of one of these mountains contain most copious mines of gold; and even its surface is thickly covered by that precious metal. The surface of the second mountain is covered with silver, and it contains also rich silver mines. The third contains mines of diamonds and rubies, and these stones glitter on its surface. The fourth of these mountains is also impregnated with all manner of jewels; and the fifth is covered with sandal-wood, clove and nutmeg trees. In this aromatic mountain are three arched habitations; one of gold, another of silver, and a third of carbuncle; and before these abodes grows a flowering tree one *juzana* high. In this delightful place dwell certain hermits, and men of eminent sanctity and morality, who appear in this world when the law of any god ceases. For the *Burma* writings declare, that when a god appears, and reveals his law, men are only bound to observe it for a fixed number of years after his death, at the expiration of which time every one is at liberty to follow the law of nature. Such is the brightness proceeding from these mountains, that it excludes the darkness of night.

“ THE water of *Anaudat* is limpid like crystal, nor does any foul thing live on its shores. Neither turtle nor fish dare swim in it; for the water is destined to be the drink of those illustrious saints above-mentioned. Only some *Nat* giants sport in the lake.

“ ON the eastern bank of *Anaudat* is the image of a

Q 4

“ lion's

* THE name, as pronounced at *Amarapura*, seemed to me to be *No-wa-dat*.

“ lion’s head, on the southern that of an elephant’s,
 “ on the western that of a horse’s, and on the northern
 “ that of a cow’s: and from these four heads are
 “ poured forth the streams of four rivers. The water
 “ which proceeds from the lion’s mouth, after making
 “ three turns round the lake, and mixing with the
 “ other waters, rushes through the eastern parts of
 “ *Hemavanta*; and after flowing through many in-
 “ hospitable regions, at length falls into the eastern
 “ sea*. In the same manner the waters, which pass
 “ through the northern and western mouths, after
 “ running thrice round the lake, form two rivers; one
 “ falling into the western†, the other into the northern
 “ sea‡. The water which flows from the elephant’s
 “ mouth, after turning, like the others, three times
 “ round *Anaudat*, runs directly south for sixty *juzana*,
 “ when ascending a small mountain, and rushing over
 “ an immense rock, it forms another lake fifty *juzana*
 “ in circumference; passing thence through a sub-
 “ terraneous passage for sixty *juzana*, it meets a great
 “ mountain||, which divides it into five large rivers,
 “ each of which has its proper name: and these are
 “ the five great rivers already mentioned, of which
 “ one is the *Gunga* or *Ganges*.§ From each of these
 “ five rivers proceed a hundred small ones; in all five
 “ hundred small rivers. But the banks of each of the
 “ four great rivers abound in that species of animal,
 “ from the image of whose head its waters rush out of
 “ the lake *Anaudat*. Thus the banks of the southern
 “ river

* This river is probably the *Yang-tse hyang*, the greatest river of *China*, and the source of which is at no great distance from that of the *Ganges*.

† The western river is no doubt the *Oxus Jihon* falling into the *Caspian Sea*; beyond which it is probable, that the *Hindus* in the age of *BOUDDHA* knew nothing.

‡ This is probably the immense river *Irtis*, of which the source is about 1,000 miles north from that of the *Ganges*.

|| Probably *Sewalich*.

§ To me this appears evidently to be an ill-digested account of the rivers, which fall into the head of the Bay of *Bengal*. The authors of the system conceived them all to come from one source, but that, by the intervention of the *Sewalich* mountains, they were separated into the form which they assume in *Hindustan*.

“river abounds in elephants, of the eastern with lions, of the northern with oxen, and of the western with horses*.”

THIS fable was at *Amarapura* often mentioned to me. The names of the five hills surrounding *Anaudat* are, *Sudafana*, *Pathoda*, *Gandomadena*, *Kelasapa*, and *Seitera*. The five branches of the elephant or southern river are *Gaynga*, *Yemuna*, *Mohé*, *Therapoo*, and *Rawadé*. I am convinced that this fable, not sufficiently understood, has been the foundation of the idea represented in many maps, of there being a lake *Chiamay*, from whence the *Ganges*, *Burrampooter*, *Ayrawade*, and other great rivers, take their rise. This opinion was confirmed by the mention of *Chiamay* made by M. DE LA LOUBERE; but the city so named by that excellent author, * (as the maps I presented to SIR JOHN SHORE clearly prove,) is the capital of a kingdom at present subject to the *Burmas*, and situated on the river of *Siam*, which arises on the frontiers of *China*.

THIS topography, mentioned in the books of the *Rāhāns*, however incorrect, in my opinion clearly points out the country in which the doctrine of BOUDDHA commenced. It must have been on the banks of some of the branches of the great southern river: and the northern parts of *Hindustan* are the most probable. BOUDDHA's knowledge of geography must have been very confined; but as we approach towards the place above mentioned, it assumes a form somewhat more particular and rational. From the accounts of the mountains, snow, seas, and rivers, given by his followers,

* By this account the *Ganges* should not come through the cow's mouth, but through the elephant's. The *Brahmins* apparently have misconceived this part of the fable; and the rock called the *Cow's mouth*, seems, as we extend our knowledge of geography, to elude our search. (RENNELL's Memoir, p. 371). The learned PAULINUS has, as I have already mentioned, (Note † in p. 175), confounded the fables of the mountains *Mienmo* and *Hemavanta*. Perhaps in this he has followed the *Brahmins*, from whose works chiefly his ideas seem to have been taken: and the *Brahmins* may differ from the *Rahans* as well concerning the situation of these mountains, as concerning the cow's mouth.

lowers, we may conclude that he was a near neighbour of *Thibet*: we may suppose, that he had seen the snowy mountains, and had heard of the great rivers running from thence into the *Siberian*, *Chinese*, and *Caspian* seas: and from his particularizing the branches of the southern river, we may conclude, that he dwelt on its banks. Had he been a native of *Thibet*, he never could have formed the gross misconception of the common origin of the *Bengal* and *Oude* rivers, nor of their manner of penetrating through the *Sewalick* mountains. I find that some persons* have alleged *BOUDDHA* to have been a native of *Aria* or *Korosan*. On what reasons this opinion is supported, I have not learned: but I think very strong ones will be required to invalidate this topographical argument, for his having been a native of the north of *Hindustan*. Upon consulting a *Brahmen* of *Bengal*, who is acquainted with the *Sanseerit* language, he says, that *BOUDDHA* was king of *Rakar*, which, according to him, is bounded on the east by the river of *Moorshedabad*, and from thence extends to *Benares*, being nearly the same with the foubah of *Behart*.

As far as relates to *Hindustan*, the *Brahmens* have adopted very nearly the geographical ideas of their predecessors the *Râhâns*†: but having come from *Egypt*, their knowledge of the western parts of the world

* *Encyclopedia Britannica*, article *Samanians*. This opinion may have originated from two passages in the fathers with which I have met in *PAULINUS*, (*Mus. Borg.* pag. 186 187.) και εκ Βακτρων των Περσικων Σαμαναιοι *CYRILL. ALEX.* Tom. 2. pag. 133. και Σαμαναιοι Βακτρων *CLEMENS ALEXAND. STROM.* lib. 1, pag. 359. The knowledge which the fathers of the church had of the sect of *BOUDDHA*, being chiefly obtained from such of the *Samanians* as resided in the *Persian* empire, and who must have entered *Iran* from *Hindustan* by the common route of *Bactria*, may readily account for these two passages.

† *BUDDHA*, the son of *JINA*, according to the *Bhagawat*, would appear at *Cicata*, which by a learned *Hindu* was said to mean *Dhermaranga*, near *Gaya*, (*Asiatick Researches*, II. 122.) But whether this *BUDDHA* be the same with the author of the *Burma* religion I do not know.

‡ See a treatise by the learned Mr. *BURROWS* in the *Asiatick Researches*,

world is much more extensive : nor need we require any further proof for their having come from *Egypt*, than their compleat knowledge of the *Nile*, which has been so ingeniously illustrated by the learned Mr. WILFORD.

“XXX. NEXT to the lake *Anaudat*,” continues “the missionary, “the most celebrated is that called “*Zaddan*, nearly equal in extent to *Anaudat*. In the “center of the lake, limpid water of a carbuncle colour “occupies a space of twenty-five *juzana*, around which, “in concentric circles, are placed five gardens, each a “*juzana* wide. In these gardens grow the various kinds “of flowering trees which thrive in water. Without “the lake are fields of corn, esculent seeds, gourds, “and cucumbers. Without these fields are gardens “containing every kind of fruit trees: such as a gar- “den of plantains, producing fruit as large as an “elephant’s trunk; a garden of ratans; and the like. “Lastly, without these gardens are fields of cotton. “All these fields and gardens surround one another “in concentric circles, and each is a *juzana* wide. “Without these gardens and fields the lake *Zaddan* “is surrounded by a mountain one *juzana* high, “of which the surface is covered with gold reflecting “a light that makes the whole lake shine. This “golden mountain is surrounded by another six *juzana* high, and full of carbuncles. This again is surrounded by a mountain five *juzana* high, and emitting from its side next *Zaddan* a splendor equal to “that of the sun. Round this is another mountain “four *juzana* high, and shining like the moon. Another mountain beyond this sparkles like crystal. “And lastly come two mountains; the one two, the “other one *juzana* high; and of both the interior “surfaces are black.

“To the west of the lake *Zaddan*, in the golden “mountain, is situated a celebrated cave, filled with “gold and jewels, and of which the mouth extends “twelve *juzana*. To the north is another lake, fifty “*juzana* in length, and as much in breadth. Its limpid

“id waters nourish various flowering trees, and its
 “fands are the minute fragments of diamonds and
 “crystals.

“Between these two lakes grows the great *Gnaung-*
*bayn**, a tree sacred among the *Burmas*, because
 “under its shade, say they, *GODAMA* received his
 “divine nature. Many smaller trees of the same
 “kind surround the great *Gnaung-bayn*, and under
 “the shade of one of these is the king of the elephants
 “wont to reside. This king, from the place of his
 “abode, is often named the elephant *Zadda*. Eight
 “thousand elephants, white, red, and black, are in
 “his train; and he has three queens. When he goes
 “into the lake, to wash and to amuse himself, he is
 “attended by all the 8,000; part of whom go before
 “and clear the way: others, while he is washing,
 “weave crowns and belts of flowers, which, on his
 “coming out of the water, they present to their king,
 “who thus adorned returns to the great tree: the ele-
 “phants then in proper order, first the white, then
 “the red, and then the black, go into the lake to
 “wash themselves: and on coming out, having adorn-
 “ed their bodies with flowers, they go and stand in
 “the presence of their king. Then the black ele-
 “phants plucking some flowers from the tree, give
 “them to their females, who deliver them to the fe-
 “male red elephants, and these again to the white
 “females, who present them to the king, and to his
 “queens, that they may eat. Then the others dis-
 “perse themselves through the woods, every one
 “finding his own food. And thus they daily pass
 “their time. During winter they live in the great
 “cave above mentioned, and during summer under
 “the great *Gnaung-bayn*, which from its trunk sends
 “forth 8,000 large roots, one for every elephant.”

“XXXI. NEAR these same lakes, and the five others,
 “are said to be found many extraordinary species of
 “wild

* *Ficus indica*.

“ wild beasts, and of birds : and among others five kinds
 “ of the lion that frequents certain great forests. The
 “ most celebrated of these is the lion *Chalarafi*, whose
 “ throat, legs and feet, and the tip of whose tail, are
 “ red; and from the top of whose head a red streak
 “ runs along his back, and descending by his sides, ter-
 “ minates at the navel. His mane also is red, and his
 “ roar is heard through an extent of thirty-three
 “ *juzana*. The other animals, when they hear the
 “ tremendous sound, dare not remain in their resting
 “ places. His agility is wonderful; and his fleetness
 “ such, that in a moment he runs a league, taking
 “ 140 cubits at each spring. When he wants to un-
 “ load his bowels, to enjoy a female, or to satisfy his
 “ hunger, he comes out from his cave, and roars
 “ thrice terribly. The echo answers all around for
 “ three *juzana* : and before the echo has ceased, he
 “ has preyed on many deer, and other animals. His
 “ strength is so immense, that he kills the largest ele-
 “ phant with the same ease as another lion would the
 “ timid hare. It is further said, that this lion sleeps
 “ on his right side, with his tail under him, and with
 “ all his limbs properly disposed. When he awakes,
 “ if he finds that during his sleep he has altered this
 “ posture, as a kind of punishment he stays in his
 “ cave all that day. There is also another kind of
 “ lion, which has a human head, but a lion's body*.
 “ This kind is never seen but when a God appears
 “ on earth.”

“ XXXII. In these regions dwells a king of the
 “ *Nat* BOMMAZO†. He lives for the duration of a
 “ whole world, and his virtue is said to be great. It
 “ is related of this king, that at a certain time hav-
 “ ing passed through the whole world, he found all
 “ the habitations of the *Nat* nearly empty : for an im-
 “ mense multitude of *Nat*, as well as of men, had
 “ assembled in a certain kingdom to hear GODAMA,
 “ who was then preaching a divine sermon. Then
 “ great

* This lion seems to be the *Narjina* of the *Brahmens*.

† Page 205 of this Volume.

“ great envy seized on the *Nat* king, because he observed all the *Nat* giving a preference to the holiness and virtue of GODAMA. With his subjects therefore he went to a burial place in the vicinity of where GODAMA was preaching. After having rolled themselves among the ashes of the dead, and having put round their necks broken urns, with loud shouts, and beating on urns in place of musical instruments, they advanced to the multitude, who were listening to the preacher, in expectation of diverting the attention of the hearers from the sermon. Many, who were of a volatile disposition, at the unusual sound, turned aside their eyes; but the greater number neither looked aside, nor gave the smallest attention to the actions of the *Nat*; and GODAMA himself continued his discourse, as if nothing extraordinary had happened. The *Nat* therefore, perceiving that his attempt to disturb GODAMA was in vain, retired greatly discomposed.

“ ON another occasion, when the same great *Nat* BOMMAZO saw GODAMA passing, he said to his companions contemptuously, and ironically, that the virtue of GODAMA was great; and impudently proposing to try which of them could perform the greatest miracle, he said, ‘O GODAMA, let each of us hide his body, and see which will best discover the other.’ Although GODAMA was sensible of the childishness of such a trial, yet fearing, if he declined it, that both men and *Nat* would be apt to undervalue his divinity, he mildly indulged the *Nat*, desired BOMMAZO to hide himself, and at the same time with his hands he covered his face. The *Nat* prince by his power immediately changed his body into a particle of sand, and penetrating into the centre of the earth 100,000 *juzana* deep, he there hid himself. But GODAMA, although he had kept his eyes shut, perceived every thing by the power of his divine wisdom, and going to the aperture through which the grain of sand had entered, he covered with his left hand the opening, while with
“ his

" his right he moved the earth, and forced the *Nat*
 " from his concealment. He then said, ' O *Nat*, come
 " forth!' The great BOMMAZO, thinking that GODA-
 " MA had done this by chance, wanted again to hide
 " himself: but GODAMA called out, and said, O *Nat*,
 " do you not know, that I am acquainted with the
 " most secret thoughts of your heart? Come out
 " then, nor any longer pretend not to hear.' Then
 " the *Nat* perceiving that he could be no longer hid,
 " came out, and turning to GODAMA, said, ' Now, in
 " your turn, conceal yourself.' GODAMA not con-
 " verting his great body into a grain of sand, but into
 " a most minute and invisible atom, stood upon that
 " part of the BOMMAZO which is between the eye-
 " brow and the eye-lid, and called out, ' Now seek
 " me.' The BOMMAZO hearing the voice of GODAMA
 " very near, immediately opened his eyes; and when
 " he could see nothing near, he began to look every
 " where after GODAMA. He searched the four great
 " islands of this earth, and the two thousand small
 " ones; he examined the whole ocean, and the lofty
 " and inaccessible mountains of *Zetchiavala*; from
 " thence ascending *Mienmo*, he visited the habitations
 " of all the *Nat*, the *Rupa*, and *Arupa*: he then pe-
 " netrated into several other worlds; but being at
 " length fatigued, and declaring himself overcome,
 " he said, ' O great GODAMA, no longer hide thyself,
 " but appear.' Then GODAMA forthwith creating a
 " magnificent ladder, composed of gold, and orna-
 " mented with pearls, applied it to the eye of the
 " great BOMMAZO; and assuming the natural size of
 " his body, and the most splendid ornaments, with the
 " greatest pomp, descended to the ground from the eye
 " of the BOMMAZO. This miracle being seen, the
 " great *Nat* astonished, threw himself at the feet of
 " GODAMA, and humbly confessing his arrogance and
 " pride, besought pardon; and from thenceforward,
 " he venerated BOUDDHA as a God: and not only during
 " the life of GODAMA, but ever since his death, this *Nat*
 " has continued to worship him carefully and devoutly."

“ OF THE DESTRUCTION AND REPRO-
 “ Duction OF WORLDS.

“ XXXIII. THE *Burma* writings alledge three re-
 “ mote causes for the destruction of a world; luxury,
 “ anger, and ignorance. From these, by the power
 “ of fate, arise the physical or proximate causes;
 “ namely, fire, water, and wind. When luxury pre-
 “ vails, the world is consumed by fire; when anger
 “ prevails, it is dissolved in water; and when igno-
 “ rance prevails, it is dispersed by wind. The *Bur-*
 “ *mas* do not suppose, that a world is destroyed and a
 “ new one instantaneously regenerated; but that the
 “ destruction takes up the space of an *Affenchickat*,
 “ that the reproduction takes up another, and that a
 “ third *Affenchickat* intervenes between the end of
 “ the old world and the beginning of the new.”

“ XXXIV. BEFORE we proceed to explain the
 “ opinions of the *Burmas* concerning the destruction
 “ of a world, it will be necessary to recollect, that
 “ they suppose sixty-four alterations in the length of
 “ man’s life to happen during the existence of one
 “ world*. They suppose also, that almost the whole
 “ human race perishes at each of those sixty-four pe-
 “ riods, in which the length of life is reduced to ten
 “ years. And they farther suppose, that this destruc-
 “ tion befalling the human kind is analogous to the
 “ crimes which have produced the fatal abbreviation
 “ of life. Thus when luxury prevails amongst men,
 “ the greater part of them perish by hunger, thirst,
 “ and wretchedness: when anger is the cause of short
 “ life, perpetual contentions and wars arise, and the
 “ bulk of mankind perishes by the sword or spear:
 “ finally, if ignorance be the prevailing crime, man-
 “ kind, worn out by a horrid consumption, waste away
 “ to mere skeletons. After the greater part of men
 “ have by such disasters perished, a great rain falls,
 “ and sweeps away into the rivers the unburied bodies
 “ and filth. Then follows a shower of flowers and
 “ sandal-wood to purify the earth: and all kinds of
 “ garments

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“garments fall from above. The scanty remains of
 “men, who had escaped from destruction, now creep
 “out from caverns and hiding places, and repenting of
 “their sins, from henceforward enjoy longer lives.”

THE *Burmas* not only conceive, that the length of mens' lives is extended by virtue, and shortened by vice; but also that moral excellence, especially in their princes, is followed by much physical advantage, by a favourable change in the seasons and productions of the earth, and especially by a great abundance of the precious metals and stones*. This doctrine of the Divine Providence bestowing physical rewards upon moral excellence, although perhaps in many cases prejudicial to the good of society, seems to have been much admired by the late emperor of *China* YONG-TCHING, who was by no means a superstitious prince, but appears even to have rejected all the revelations introduced by various sects into his dominions. In consequence of some political intrigues of the *Jesuits*, as it is commonly supposed, he had banished the missionaries, which no doubt gave great uneasiness to many of their converts. Two governors of provinces endeavoured to persuade him, that, wherever temples of the God of armies (probably churches) had been erected, those provinces were exempted from locusts, and other destructive vermin: other officers had mentioned to him different superstitious expedients for procuring rain. In his answer, of which GROSIER † has favoured us with a translation, he indeed treats as a ridiculous error the belief that prayers offered up to pretended beings can remedy our afflictions: but he at the same time lays it down as an infallible doctrine, that our plains may be desolated by inundations, drought, or insects, as a punishment inflicted by heaven on the emperor or his officers, who having deviated from integrity and justice, by that means may be brought back to a sense of their duty. *Daliránt reges, pleñuntur Achivi.*

VOL. VI.

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“XXXV.

* Note ‡ in page 193 of this Volume. † General Descrip. of *China*, II. 185.

“ XXXV. But to proceed with the account of the
 “ destruction of a world; the *Burma* writings relate,
 “ that 1,000 years before such an event, a certain *Nat*
 “ descends from the superior abodes to this island. His
 “ hair is dishevelled, his countenance mournful, and
 “ his garments black. He passes every where through
 “ the public ways and streets, with piteous voice, an-
 “ nouncing to mankind the approaching dissolution.
 “ In the same manner as the fowls of heaven and the
 “ fish of the sea, by a certain natural instinct, have a
 “ foreboding of storms; so the *Nat* in their minds per-
 “ ceive the approach of a world’s destruction. Then
 “ mankind are strongly excited to an observance of
 “ the law, and especially to the performance of such
 “ good works, as may entitle them to ascend to the
 “ abodes of the *Rupa*, and *Arupa*. These good works
 “ are chiefly four: charity, the honouring of parents
 “ and old age, justice, and the love of our neighbours.
 “ The *Nat* are thus solicitous to encourage men in ob-
 “ taining a place in the abodes *Rupa* and *Arupa*, be-
 “ cause when the world is destroyed by wind in conse-
 “ quence of mens’ crimes, all the habitations of *Rupa*
 “ and *Arupa* perish: but when it is destroyed by fire,
 “ or water, many of these abodes remain untouched.

“ ON hearing the terrible forebodings of the *Nat*,
 “ men shudder, and with their utmost power apply
 “ themselves to practise the four above-mentioned good
 “ works. The *Nat* also who inhabit *Mienmo*, and the
 “ superior abodes, are elevated to the different *Zian*.
 “ The infernal beings, even the lots of whose evil deeds
 “ have now expired, are born men, and endeavour to
 “ lead such a life as may entitle them to a place in the
 “ *Zian*. It is only for the impious, and for infidels, that
 “ there is no salvation. Transferred to the frigid spaces
 “ interposed between the different worlds*, these sin-
 “ ners are there left to undergo eternal punishment.
 “ Irrational

* Page 175 of this Volume.

“ Irrational animals are supposed to perish along with the world.”

“ XXXVI. It has already been stated, that the world is destroyed either by fire, or by water, or by wind. When it is to happen by fire, as soon as the *Nat* has ceased to admonish men, a heavy rain falls from heaven, fills all the lakes, causes torrents, and produces an abundant crop. Mankind, now filled with hope, sow seed more plentifully: but this is the last rain, not a drop falls for 100,000 years, and plants with every vegetating thing perish. Then die all animals, and passing on to the state of *Nat*, are from thence transferred to the abodes *Zian* or *Arupa*. The *Nat* of the sun and moon having now become *Zian*, these luminaries are darkened, and vanish. In their stead two suns arise, which are not *Nat*. The one always succeeds the other, rising when it sets; so that there is no night, and the heat consequently becomes so intense, that all the lakes and torrents are dried up, and not the smallest vestige of a tree remains upon the surface of the earth. After a long interval, a third sun arises. Then are dried up the greatest rivers. A fourth sun succeeds, and two being now constantly above the horizon, even the seven great lakes disappear. A fifth sun arises, and dries up the sea. A sixth sun rends asunder this and the other 1,010,000 earths, while from the rents are emitted smoke and flame. Finally, after a very long interval, a seventh sun appears, by which *Mienmo*, and all the inhabitants of the *Nat*, are consumed: and as in a lamp, when the wick and oil are exhausted, the flame goes out; so when every thing in this and the other 1,010,000 worlds is consumed, the fire of its own accord will die away. From the last great rain, to the final extinction of the fire, is one *Affenchiekat*.”

“ XXXVII. SUCH is the manner in which the world is destroyed by fire. When the destruction is

“ fire, seven times by water, and once only by wind;
 “ and that in the same order as in the plan. The
 “ perpendicular lines represent the times of destruc-
 “ tion, and the horizontal ones the proportionate
 “ height to which each destruction reaches. Thus
 “ when fire is the agent it reaches to the height No. 1.
 “ and the five inferior *Zian* are destroyed. After a se-
 “ ries of sixty-four destructions of the world, the last
 “ of which happens by wind, the first of the next se-
 “ ries is occasioned by fire, and the same order is re-
 “ peated. The world which immediately preceded
 “ this, was destroyed by fire, which reached to the
 “ height marked No. 4.”

“ XXXVIII. THE conceptions of the *Burmas* rela-
 “ tive to the reproduction of a world now come to be
 “ explained. As we have seen, they allege three
 “ causes of destruction, fire, rain, and wind; but, ac-
 “ cording to them, the only cause of reproduction is
 “ rain. One *Affenchiekat* after the destruction of a
 “ world rain begins to fall like mustard seed, and in-
 “ creases by degrees till each drop becomes 1000
 “ *juzana* in size. This rain fills all the space, which
 “ had been formerly occupied by the destroyed habi-
 “ tations, and even a greater: for by the wind it is
 “ gradually inspissated to the precise bulk of the for-
 “ mer worlds. The rains, thus inspissated by the
 “ wind, form on their surface a crust, out of which
 “ arise, first, the habitations of the *Zian*, and then
 “ *Mienmo*, with all the abodes of the *Nat* who dwell
 “ near that mountain. The rain continuing to be in-
 “ spissated, forms our earth, with the mountain *Zet-*
 “ *chiavala*, and finally all the other 1,010,000; and
 “ all these are exactly in the same disposition, order,
 “ situation, and form, which they had in their former
 “ existence. These changes, both in the destruction
 “ and reproduction of worlds, take place, not by the
 “ influence of any creative power, but are occasioned
 “ by the power *Damata*, which is best translated by
 “ our word fate.”

“ XXXIX. It farther remains to be explained,
 “ how the inhabitants of a new world are produced.
 “ The *Burmas* conceive, that on the surface of the
 “ newly-regenerated world a crust arises, having the
 “ taste and smell of butter. This smell reaching the
 “ nostrils of the *Rupa* and *Zian*, excites in these beings
 “ a desire to eat the crust. The end of their lives as
 “ superior beings having now arrived, they assume
 “ human bodies, but such as are shining and agile,
 “ and descend to occupy our earth, and the other
 “ 1,010,000, which are adjacent*. These human
 “ beings for some time live on this preternatural food
 “ in tranquillity and happiness. But being afterwards
 “ seized with a desire and love for property, the nec-
 “ tarious crust disappears as a punishment for their
 “ crime; and their bodies being deprived of trans-
 “ parency and splendour, become dark and opaque.
 “ From this loss of light, dark night commences, and
 “ mankind are in the utmost perturbation: for as yet
 “ there is neither sun nor moon. Immediately how-
 “ ever the sun begins to appear in the east, dissipates
 “ the fears of man, and fills him with delight. Hence
 “ is the sun called *Suria*. But this joy is soon fol-
 “ lowed by new distress: for the sun performing round
 “ *Mienmo* his daily revolution, is soon hid by that
 “ mountain, and darkness again commences. Men are
 “ again afflicted by this new deprivation of light, and
 “ in perturbation exclaim, ‘ O that light, which came
 “ to illuminate the world, how quickly hath it vanish-
 “ ed!’ While they are with ardent vows desiring
 “ another light, behold in the same eastern region, and
 “ in the beginning of night, the moon appears accom-
 “ panied by all the stars, and all mankind are wonder-
 “ fully delighted. Now they say to one another,
 “ ‘ How timely is this appearance! This luminary
 “ has appeared as if it had known our necessity; let
 “ us

* The souls destined to animate human bodies are by the *Brahmens* called *Brama*, which is evidently the same word with the *Biamma*, or first inhabitants of the earth, according to the *Rāhāns*: for the *Burma* pronunciation makes no difference between R and I.

“us therefore call it *Zanta**.’ This appearance of
 “the sun, moon, and stars, happened on a *Sunday*,
 “at the full moon of the month *Taboun*, which corre-
 “sponds partly with our *March*†: and at this very
 “instant of the sun’s appearance, every thing on the
 “earth became such as it has ever since continued to
 “be. As when rice is boiled, some of its particles
 “will remain crude and undressed, while the remainder
 “is sufficiently boiled; so likewise, say the *Burma*
 “doctors, by the power of *Damata*, or fate, part of
 “the earth remains plain, part rises into mountains,
 “and part sinks into vallies.”

“XL. IN the foregoing paragraph it has been
 “mentioned, that on the surface of the earth there
 “had been generated a certain crust like butter, which
 “had disappeared, as soon as avarice, and the desire
 “of property, began among men. This crust pene-
 “trating the interior parts of the earth, and reaching
 “the great rock *Sila-pathavy*, converted its upper
 “parts into mud, earth, and dust. When the buty-
 “raceous crust descended into the earth, in its stead
 “sprung forth a certain climbing plant, which also
 “had the taste of butter. This plant continued to be
 “the common food of men till avarice again pre-
 “vailed; then it disappeared. In its place, from the
 “merit of certain good men, there came out of the
 “earth’s bowels a kind of excellent rice already
 “cleared of its husk. Pots also filled with this rice
 “grew of their own accord; and men had only to
 “place them on a stone then common, which spon-
 “taneously emitted fire sufficient to boil the rice.
 “Every where also were to be found meats various
 “according to each person’s desire.

“IN the beginning, when men fed on the crust, and
 “on the climbing plant, the whole of this food was
 “changed into flesh and blood: but when they began
 “to eat rice, the grosser parts of that diet required

R 4

“after

* The *Pali* word for necessity. † See page 170 of this Volume.

“ after digestion to be evacuated. In consequence,
 “ the different canals, and organs, necessary in the
 “ human body for evacuation, were of their own ac-
 “ cord generated. After having eaten rice, men began
 “ to have luxurious desires, and the different organs
 “ of sex appeared; for before that time mankind were
 “ neither male nor female. Those who in a former
 “ life had been males, now obtained the male organs
 “ of sex; and those who had been women, obtained
 “ female organs. When the difference of sex first
 “ appeared, men contented themselves with mutual
 “ lascivious glances: but afterwards they married.
 “ Nevertheless there remained many virgins of great
 “ virtue, and many holy men, who were called
 “ *Manussa Biamma*. These neither practised agricul-
 “ ture, nor any mechanical art; but only underwent
 “ the great labour of making offerings and bestowing
 “ alms. These men long observed inviolate chastity:
 “ but when in the progress of time they perceived
 “ their numbers daily lessening, many of them, in
 “ order to raise up an offspring, contracted marriages;
 “ and those who are now called *Brahmens*, are de-
 “ scended from these last alliances. The *Manussa*
 “ *Biamma*, who had retained their chastity, were very
 “ indignant on hearing of this conduct in their com-
 “ panions; and loathing much their depravity, ever
 “ after held them in the utmost contempt, spit in their
 “ faces, and abhorred to have any community with
 “ them in eating, cloathing, or dwelling. From this,
 “ say the *Burma* doctors, has arisen among the *Brah-*
 “ *mens* the custom of not eating or washing with the
 “ rest of mankind. But although the law of *GODAMA*
 “ permits marriages; yet as, without the strict obser-
 “ vance of celibacy, no person can arrive at *Nieban*,
 “ so therefore all wise men have considered marriage
 “ as a deed not of a perfect nature.”

“ XLI. THE *Biamma*, who had married, by de-
 “ grees built houses, villages, and towns: but when
 “ they began to multiply, there arose among them
 “ contentions

“contentions and quarrels; for avarice prevailing,
 “every one consulted his own immediate interest,
 “without attending to the injury he might do to his
 “neighbour. At length these disputes came to be
 “determined by strength; and to put a stop to this
 “violence, it was determined in common council to
 “elect a prince, who should be able to reward accord-
 “ing to merit, and to punish according to the atrocity
 “of crimes. And a certain man being found amongst
 “them, who excelled the rest in stature and beauty,
 “and who had always been more observant of the
 “laws than the others, this person was created king
 “and lord of the earth: because he had been chosen
 “by common consent, he was called MAHASAMATA;
 “because he was made lord of the earth, he was called
 “KATTIA; and because he punished according to the
 “laws, he was named RAZA. From this MAHA-
 “SAMATA descended a series of forty-four kings, of
 “whom, according to the most learned of the *Burmas*,
 “the tenth was GODAMA*.”

THE account of the missionary here is not very clear. It is not evident, whether GODAMA, as descended from MAHASAMATA, was a *Brahmen*; or whether both princes are considered to be descended from the *Biamma*, who married before the *Brahmens*. If the former be the case, the *Rāhāns* make their god to be an apostate *Brahmen*: if the latter be their meaning, they suppose the *Brahmens* to be a sect of dissenters from their religion. I imagine, that little credit can be given to either opinion. The *Rāhāns* are evidently mistaken in their account of the origin of the *Brahmens*; for the aversion to eating in common with others does not originate with mankind, but with the *Brahmens*. I think it indeed probable, that this account has been lately framed by the *Rāhāns*, with a view of rendering odious to their followers a race of priests,

* Compare this account with the History of *Cashmere*, p. 163 of this Volume.

priests, so formidable among ignorant people from their hypocrisy, mortifications, and impudent pretensions to supernatural powers.

I THINK that Sir W. JONES and PAULINUS have succeeded in proving, that the religion of the *Brahmens* is essentially the same with that of the *Egyptians*; and therefore I must think it probable, that the two religions had a common origin: but notwithstanding the etymological labours of the latter author, I must agree with the former, and with M. ANQUETIL DU PERRON, in thinking, that *Egypt* is the source from whence this worship has been spread over a great proportion of the world. In fact, during the most remote periods, to which history reaches, we find this religion universally established in *Egypt*. Later, but as soon as our knowledge extended to *India*, we find there established two sects: the *Magi*, and the *Samanians*, or priests of GODAMA. We afterwards learn, that the *Brahmens* were a set of priests in *India* following nearly the same worship with those of *Egypt*. We find them about the time of CHRIST gaining a superiority over the worshippers of BOUDDHA; and about nine hundred years afterwards, we find them totally overthrowing his doctrine in its native country*. That the *Vedas*, which are commonly supposed to be the oldest books of the *Brahmens*, are inferior in antiquity to the time of BOUDDHA, is evident from the mention which they make of that personage. The strongest objection against this opinion of the *Egyptian* origin of the *Brahmenical* worship, appears to me to be the cosmography of the *Brahmens*, the same nearly with that of the *Rāhāns*, and in my opinion evidently framed in the north of *Hindustan*. A solution of this difficulty may however be given. We may readily suppose the *Brahmens* to have been a colony of *Egyptians*, who formed their first establishments in the

* PAGE 165 of this Volume.

the vicinity of *Bombay**; and by degrees engrafted their superstition on the ignorance of the *Hindus*, adapting the *African* deities and mystical philosophy to the *Asiatick* fables and heroes, and carefully introducing the *Egyptian* cast and ceremonies with all their dreadful consequences.

"THE *Burma* doctors," continues the missionary, "admit of four classes of men; the first, descended from MAHASAMATA, are princes; the second, descended from the *Manussa Biamma*, who married, are the *Brahmens*; the third, descended from such men as married before the *Manussa Biamma*, are the *Sathe* or rich: in the fourth class, called *Suchive*, are included all other men, merchants, artificers, labourers, and the like."

This opinion might be supposed to imply, that the sect of BOUDDHA admitted of cast, in a similar manner with that of the *Brahmens*; but as far as relates to its followers in the *Burma* empire, and in *Siam*, I can assure the reader, that so cruel and so abominable a distinction is utterly unknown, except by report, and from the example of the *Hindus* settled in those countries. At what time then was the doctrine of cast established in *Hindustan*? PLINY is the only antient author to whom on this subject I can at present refer. He mentions a division of ranks among various *Indian* nations, which he calls *vita multipartita*: but from what he says, it would not appear to have been universal at the time he received his intelligence: neither is it by any means clear, that his *vita multipartita* means cast. It is to be observed, that all *Roman* citizens followed nearly the same manner of life: they were soldiers and statesmen; and when not employed in either of these

* THE images in the cave at *Elephanta* appear to me, now that I am acquainted with the subject, evidently to be those of the gods of the *Brahmens*. I well remember, when I viewed them, (although then quite unacquainted with the controversies concerning their origin), that I was struck with the *African* appearance of their hair and features; and conceived them to have been the work of SESOSTRIS, as I had imbibed the vulgar idea, that they were not the idols of the *Brahmens*.

these capacities, they were all cultivators of the land. To them therefore a distinction of professions in the citizens of a state would appear strange: and I am apt to think, that the *vita multipartita* of PLINY more resembles the division of ranks and professions among the *Burmas*, or in modern *Europe*, than it does the cast of the *Brahmens*. The passage I allude to is,

“*Namque vita mitioribus populis Indorum multipartita
 “degitur. Alii tellurem exercent, militiam alii ca-
 “pessunt, merces alii suas evchunt, respublicas optimi
 “dilissimi temperant, judicia reddunt, regibus assident.
 “Quintum genus celebrata illic, et prope in religionem,
 “versa sapientiæ deditum, voluntaria semper morte vi-
 “tam, accenso prius rogo, finit*. Unum super hæc est
 “semiferum, ac plenum laboris immensi, et quo supra
 “dicta continentur, venandi elephantes domandique,
 “Iis arant, iis invehuntur, hæc maxime novere pecu-
 “aria: iis militant dimicantque pro finibus.†”* It is to be observed, that this description neither agrees well with the present divisions of the different casts, nor does it call the learned *Brahmens*; on the contrary, PLINY speaks of the *Brachmanæ* not as a class or order in society, but as a nation, or as a name common to many nations. He mentions, that SENECA had attempted to procure the names of all the people inhabiting *India*, and had actually heard of one hundred and eighteen nations. The most considerable of these he afterwards enumerates: “*Gentes, quas
 “memorare non pigeat, Ismari, Cosyri, Izgi, et per
 “juga Chisfotofagi, multarumque gentium cognomen
 “Brachmanæ quorum Maccocalingæ, flumina Pumas et
 “Cainas (quod in Gangem influit) ambo navigabilia.‡”*

This

* It is to be observed, that this manner of ending life, attributed to the learned of antient *India*, more resembles that in use among the priests of *Pegu* (LOUBERE'S *Relation du Siam*) than it does that recommended by the *Brahmens*, who according to ABUL FAZIL (*Ayeen Akbery*) think it meritorious to terminate life by cutting the throat at the confluence of the *Ganges* and *Jumna*, or by exposing themselves to the alligators at the mouth of the holy river.

† Nat. Hist. L. 6, c. 19.

‡ Nat. Hist. L. 6, c. 17.

This circumstance surprizes me, as the general recollection of my reading induces me to believe, that the *Brahmens*, as a religious sect, had been established in *India* before the time of ALEXANDER, from whose expedition PLINY's knowledge of the northern parts of *Hindustan* is chiefly derived. To those who have an opportunity, I leave it to determine the time when *Brahmen* came to be the name applied to the religious of *India*. With PLINY it seems to be analogous to the *Brahmens* of *Kushup**, or perhaps the *Biamma* of the *Rahāns*†. Mr. HARRINGTON has suggested to me, since I wrote the above passage, that all the countries in which BRAHMA was worshipped might be called *Brahmenical*, an opinion which I think not improbable. If it be just, it will show the progress made by the *Brahmens* in *India* in the fourth century before the birth of CHRIST.

“ XLII. It being admitted, that all mankind are
 “ the offspring of the same stock, namely of the *Bi-*
 “ *amma*, who descended from the abodes of the *Rupa* ;
 “ a certain *Burma* doctor asks, why there is not the
 “ same language among all nations; and whence arises
 “ that variety of manners, religions, complexions,
 “ and features, so observable among the inhabitants
 “ of this earth? This same doctor thinks he answers
 “ this question, by saying that the first inhabitants of
 “ the world, after having greatly multiplied by marriage,
 “ were forced to emigrate into various parts of
 “ the earth; and as in these the climate, air, water,
 “ natural productions, and temperature, are extremely
 “ different, such circumstances could not have failed
 “ to produce an effect on the manners, religion, and
 “ appearance, of those who were under their influence.
 “ For if in one kingdom the inhabitants vary
 “ in stature and colour, how much more evident must
 “ this difference be amongst the inhabitants of remote
 “ countries? And as children descended from the
 “ same parents are called by different names; so of
 “ the

* Page 164 of this Volume. † Pages 245 & 248 of this Volume.

“the descendants of the *Biamma*, some are called
“*Burmas*, some *Cussays*, some *Peguese*, and some
“*Siammese*. He also alleges, that, according to a
“person's lot of good or evil deeds, he is born either
“a *Burma*, or a *Siammese*, or a *European*. It some-
“times also happens, that he who was at first born
“of an ignoble family, shall afterwards be born of an
“illustrious race: but this not from his original lot
“of nativity, but from some accidental good works.
“For diversity of names the same author thus ac-
“counts. It may so happen, says he, that the same
“person, according to the different actions he may
“have performed, may be considered in different
“points of view, and thus obtain different appella-
“tions: and this he confirms by the example of Go-
“DAMA, who, according to his various attributes and
“excellencies, is called by various names.

“THE same author inquires, by what power and
“cause the various kinds of trees and herbs have
“appeared in the world? He supposes them to have
“arisen from the seeds of the antecedent world con-
“tained in that rain by which the new earth was
“reproduced. The same however he does not ven-
“ture to affirm of the mines of gold, silver, and
“precious stones, which he alleges have not from
“the beginning existed in the world, but have origi-
“nated from the virtues of good men. Thus when
“just and upright princes reign on earth, and when
“many men are celebrated for sanctity and virtue,
“then the tree *Padeza* appears; from the heavens
“showers of gold and precious stones descend; in
“the bowels of the earth many mines of gold and
“silver are discovered; the sea also throws up on its
“shores various kinds of riches, and whatever is
“sown comes to perfection. On the contrary, when
“unjust kings have reigned, or when men have neg-
“lected the laws, not only have new riches remained
“undiscovered, but all the old wealth has disappeared;
“the mines of gold and silver have been exhausted;
and

“and the fruits of the earth have become of such
 “a noxious quality, as to induce upon mankind
 “misfortune, disease, and pestilence.”

Such are the general doctrines of the sect of BOUDDHA, as extracted from the writings of the *Rāhāns* by SANGERMANO; doctrines which, although intended to lead mankind to the performance of good works, are involved in the most puerile and absurd fables.

THE religion of the *Burmas* is singular, as exhibiting a nation considerably advanced from the rudeness of savage nature, and in all the actions of life much under the influence of religious opinions, and yet ignorant of a Supreme Being, the creator and preserver of the universe. The system of morals however recommended by these fables, is perhaps as good as that held forth by any of the religious doctrines prevailing among mankind. The motives also by which these fables excite to good works, unite the temporal nature of the *Jewish* law to the future expectations of the *Christian* dispensation: while having adapted the nature of the rewards and punishments to the conception of our present faculties, they have all the power of the *Mohamedan* paradise; and having proportioned these punishments and rewards to the extent of virtue or vice, they possess the justice of the *Roman* purgatory, but without giving to priests the dangerous power of curtailing its duration. BOUDDHA has no doubt given to the bestowing alms on the clergy a conspicuous place among the virtues: but his clergy for support are entirely dependant on these alms; as they have not ventured to propose any stated, lasting, or accumulating property, being annexed to their order; nor have they assumed to themselves any rank or power in the management of secular affairs. Except this elevation of an inferiour virtue to the rank of an important duty, and the merit which we shall find given to the ceremony
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of pouring forth water on certain occasions, there is perhaps no considerable objection to any of the morality recommended by GODAMA, unless it be his considering it criminal to put any animal to death for the use of 'man*'; and his representing celibacy as a kind of virtue, or at least as a more perfect state than marriage: an idea, though common to some of the authors of prevailing religions, yet certainly productive of much misery, and of the worst consequences. It must however be confessed, that the practice of morality among the *Burmas* is by no means so correct, as might be perhaps expected among a people whose religious opinions have such an apparent tendency to virtue. In particular, an almost total want of veracity, and a most insatiable cruelty in their wars and punishments, are observable among them on the slightest acquaintance.

HAVING now considered in a general manner the religion and science of the *Burmas*, I must descend somewhat more to particulars: and in giving an account of their faith, I cannot follow a better guide than the treatise of the ZARADO. It will give the reader not only a faithful abridgment of the religious doctrine of the *Rāhāns*, but will also show him the progress made by the best informed priests of the country in the art of composition and instruction.

BUT as a preface to this treatise, I must here insert some observations on the history and name of the god.

THE author of the *Alphabetum Tibetanum* supposed BOUDDHA to have been the same with the JESUS of the *Manichæans*; and father PAULINUS, in his triumph over this absurdity, denies that any such person ever existed. Entirely neglecting the authority of the
 numerous

* THE worshippers of GODAMA do not look on any animal food as unclean: it is only the depriving it of life which they regard as criminal. Accordingly they eat all manner of carrion, and many disgusting reptiles are their favourite food.

numerous sect of BOUDDHA, who all suppose him to have really lived, and to have been an *Indian* prince, the learned *Carmelite* from some coincident attributes believes BOUDDHA and HERMES to have been the same. He supposes them, as well as all the other gods of the *Greeks* and *Brahmens*, not to have been real beings, but personifications of the elements and heavenly bodies. In applying this supposition to BOUDDHA, as worshipped by the *Rāhāns*, he quite overlooks the essential difference of their making GODAMA an only God, and that the doctrine of personification necessarily implies polytheism, a system of belief held in abhorrence by these priests. I think it a more probable opinion, when the *Brahmens* introduced their doctrine into *Hindustan*, that they could not venture to deny the divinity of the god of the country; but on comparing his attributes with those of their different gods, that they alleged him to be the same with their TOTH; and by adopting him and his titles into the list of their deities, and many of the prejudices of his followers into their capacious system, they greatly facilitated the progress of their doctrine. It is true, that the various accounts of GODAMA, said to be given in the legends of the different nations following his religion, agree so little together, that they can hardly be made matter of historical evidence. But many of these differences may have arisen from the mistakes of travellers; and it is only by procuring faithful translations of the different legends, that we can be enabled to determine what credit is due to their contents. In the mean time I must say, that I know of no plausible reason for believing that GODAMA did not exist, and was not an *Indian* prince, as his followers universally allege. The father, although a catholic, seems to found his objection on the supposition, that mankind could never be so absurd as for any length of time to worship a man.* But the whole difficulty of PAULINUS is

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removed

removed by the doctrine of GODAMA. His followers are, strictly speaking, atheists, as they suppose every thing to arise from fate: and their gods are merely men, who by their virtue acquire supreme happiness, and by their wisdom become entitled to impose a law on all living beings. If the BOUDDHA of the *Rāhāns* were merely the genius of the planet Mercury, as PAULINUS so violently urges,* why do his followers place his abode or palace in the lowest habitation of *Nat*, among beings equally liable with mankind to old age, misery, change, and gravity? That the *Egyptian* religion was allegorical, I think, the learned father, with many other writers, have rendered extremely probable; and consequently I think that the doctrine of the *Brahmens* has in a considerable measure the same source: but I see no reason from thence to suppose, that BOUDDHA, RAMA, KISHEN, and other gods of *India*, may not have existed as men: for I have already stated it as probable, when the *Brahmens* arrived in *India*, that they adapted their own religious doctrine to the heroes and fabulous history of the country. Neither do I think it altogether impossible, that even in *Egypt* the priests, who at first introduced the worship of the elements and heavenly bodies, afterwards applied to these deities the names of such persons as were most celebrated among their countrymen, and intermingling the legendary tales concerning these personages with their own mystical philosophy, produced that absurd mass of theology, by which a great part of mankind have been so long subjugated.

DIFFERENT learned men have supposed BOUDDHA to have been the same with NOAH, MOSES, or SIPHOAS, thirty-fifth king of *Egypt*: but as I have not at present access to the works of HUET, VOSSIUS, or TOURMONT, I do not know on what reasons such suppositions have been formed. Sir W. JONES supposed BOUDDHA to have been the same with SESAC OR SESOSTRIS,

* *Mus. Borg.* page 69.

SESOSTRIS, king of *Egypt*, “Who by conquest spread
 “ a new system of religion and philosophy, from the
 “ Nile to the Ganges, about 1,000 years before
 “ CHRIST*.” The affinity of the religion of *Egypt*
 with the present superstition of *Hindustan*, and the
 fatal resemblance of the words SESAC and SAKYA, one
 of the names of GODAMA, seem to have given rise to
 this supposition. In my opinion, however, no two
 religions can be well more different, than that of the
Egyptian polytheist, and that of the *Burma* unitarian.
 SESAC or SESOSTRIS is indeed placed by antiquarians
 at the time to which the learned judge alludes: but
 I shall hereafter have occasion to show, that, according
 to the most probable accounts, the origin of the reli-
 gion of GODAMA ought to be referred to a much later
 period†. That the religion of the *Brahmens* was
 introduced from *Egypt*, I have already mentioned as
 an opinion highly probable‡: but I suspect that this
 happened by no means so early as the time of SESOS-
 TRIS, whose object in his military expeditions appears
 rather to have been plunder, and the capture of slaves,
 than the propagation of religion or philosophy. The
 persecution of the *Egyptian* priests by CAMBYSES is a
 more likely period for any very extensive emigration
 into *India*; at the same time it is not improbable, that
 the *Egyptians*, who before this traded to *India*, had
 previously communicated some knowledge of their
 science to the *Hindus*.

It must be observed that the god, of whose doctrine
 we are now going to give an explanation, has a great
 variety of names, which are apt to produce much
 confusion. GODAMA or KODAMA is the most common
 appellation among his worshippers in *India* beyond
 the Ganges. It seems also to be common among the
Hindus, and by Sir WILLIAM JONES copying I sup-
 pose from the *Sanscrit*, is written GOTAMAS.|| This

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name

* *Asiatick Researches*, II, 380.

† See note † in page 265 of this volume.

‡ See page 148 of this volume.

|| *Asiatick Researches*, IV, 170.

name PAULINUS informs us may be written GODAMA or GAUDAMA, and literally signifies cow-herd, but metaphorically king*. It has however been mentioned to me, on the authority of a pundit belonging to our supreme native court in *Bengal*, that the meaning of GODAMA is eminently wise, a sage. SOMONA, the name prefixed to this appellation by M. DE LA LOUBERE, signifies that he had adopted the dress of a *Rāhān*, as I was informed by MUE-DAUNG SEITAGIO, an intelligent *Siammese* painter at *Amarapura*. The same circumstance is implied by BURA-ZAYNDU, one of the most common titles bestowed on him in the *Burma* empire: for his images are almost always in the dress of a *Rāhān*. Many other appellations are given to GODAMA from the postures in which he is represented in his various images. Thus a famous image at *Pougan* is named ANANDA, which signifies plenty, from its supposed efficacy in producing that blessing.

IN the *Pali* language, and among the *Cingalese*, a common name for this divinity is BOUDDHA. This Mr. CHAMBERS writes BUDDO†, PAULINUS BUDHA‡, and from these two authors I have collected the following corruptions of that name. BUDDA, or BUTTA, of BEAUSOBRE and BOCHART, BOD of the *Arabians*, BODDA of EDRISI, *Boutta* of CLEMENS ALEXANDRINUS, and BAOUTH of M. GENTIL. This name is said to be an appellation expressive of wisdom||. I can readily agree with these two learned men, that the POUT of the *Siammese*, POUT, POTT, POTI, POT of the natives of *Thibet*, and the BUT of the *Cochinchinese*, may also be corruptions of BOUDDHA. The *Siammese* painter told me, that the most common name for GODAMA among his countrymen is POUTTEE SAT, which he interpreted into BURALOUN, a common appellation among the *Burmas*. Among these indeed I very rarely heard BOUDDHA used, probably because BURALOUN has the

* *Mus. Borg.* page 8.

† *Asiatick Researches*, I, 142.

‡ PAULINUS *Mus. Borg.* page 71.

|| STEPHENS'S translation of FARIA Y SOUZA, II, page 4, chap. 19, par. 26.

the same meaning. Mr. CHAMBERS, following M. GENTIL, and followed by PAULINUS, conceives the Fo or FOHI of the *Chinese* to be also a corruption of BOUDDHA. The etymology is here so forced, that I do not think it merits great attention: yet I allow it to be a probable opinion, although not completely established, that Fo and BOUDDHA are the same god*. The derivation of TAAUTOS, TOOTH, or TOUTH, the *Egyptian* name for HERMES, from the same word BOUDDHA, † seems to me perfectly fanciful: and I must entirely dissent even from the rational Mr. CHAMBERS, when he supposes BOUDDHA to be the same with the WODEN of the *Scandinavians*. No two religions surely can be more totally different; nor can I conceive it to be a sufficient proof of a common origin, that the same day of the week is called after the two gods. No circumstance indeed seems to have occasioned more mistakes among the antiquarians, than from one or two coincident attributes to suppose two divinities of different nations to be the same: an error adopted by all the *Greeks* and *Romans*, whether from respect to their gods, or from national vanity.

A CONSIDERABLE degree of confusion is to be found in the various accounts of the religion of the *Chinese*. GROSIER, the latest author on the subject, with whom I have met, seems by no means to have had good information. I know well that some of the *Brahmenical* gods are worshipped in *China*, having seen their images in that great temple opposite to *Canton*, which was the palace of the last native princes of the *Chinese* empire. I have lately seen some elegant drawings of the *Chinese* gods, belonging to the Reverend Mr. BROWN, of *Calcutta*: and as far as I can trust to my memory, they appear to be very exact representations. Although the *Chinese* have given to these idols their own features, and dress, with new names, yet there can be no doubt of their being the same with the gods of the *Brahmens*. Among them YOU-LOE-FAT, the god of

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wisdom,

* See note † in page 268 of this volume.

† PAULINUS *Mus. Borg.* page 73.

wisdom, has a very strong resemblance to the images of GODAMA; and perhaps the *Chinese* ambassadors, and their suite, whom I saw at *Amarapura* worshipping the images of BOUDDHA, conceived the two deities to be the same. When in the first century of the *Christian* æra the superstition of a *Chinese* monarch had introduced into his dominions the religion of the *Brahmens*, his successors were too just to hinder their subjects from worshipping what gods they thought proper; but they were too wise to admit the *Brahmens* as priests, or to tolerate their intriguing spirit, or their detestable system of government: a conduct entirely similar to that wisely adopted towards the *Jesuits* by the late emperor YONG-TEHING. On the whole I am inclined to believe, that the religion most commonly professed by the vulgar *Chinese*, has nearly the same affinity to that of the *Brahmens*, which the sect of quakers has to our established church. It is true, that they have *Bonzes*, or regular priests: but these are neither *Brahmens*, nor are they acknowledged by the *Rāhāns* to be legitimate priests of BOUDDHA. But the worship of these *Brahmenical* gods, as communicated to the *Chinese*, is quite distinct from that of GODAMA. Whether the god Fo be one of these gods of the *Brahmens*, or whether he be SHAKA, or whether all the three be distinct, I will not presume, for want of sufficient information, to assert: but there is a great probability, that a very considerable sect among the *Chinese* worship GODAMA under the name of SHAKA, or, as the *Portuguese* write it, XACA.

THE sect of BOUDDHA is said by some to have been introduced into *China* in the year of our æra 63*. Others allege, that this event did not happen till the year 519: and that the apostle was a certain DARMA, third son of an *Indian* king, the twenty-eighth in descent from SHAKA, or as, the *Dutch* write, SJAKA.

* FARIA Y SOUZA translated by STEPHENS, II. p. 4, C. XVI. par. 12.
GROSIER's general description of *China*, II, 215.

SHAKA.* The name SHAKA SIR WILLIAM JONES wrote SAKYA, and PAULINUS SHAKYA. It signifies, according to that learned etymologist, the cunning, the god of good and bad fortune †. From *China* the religion of SHAKA seems to have spread to *Japan*, *Tonquin*, *Cochinchina*, and the most remote parts of *Tartary*.

It must however be observed, that the religion of *Cochinchina*, described by BOIRET ‡ as that of BUT, THAT-DALNA, NHIN-NHUC of THICA MAUNI-PHUT, and alleged to have been introduced from *Ceylon* in the reign of the *Chinese* emperor MINH-DE, seems to differ in many essential circumstances from the doctrine of the *Burma Rāhāns*. The *Cochinchinese* are alleged to suppose, that BUT created the heavens, the earth, and indeed the whole universe: and from BOIRET's mentioning that they adore BUT as the principal deity, we may infer, that they allow of other gods. The priests of the *Cochinchinese* are alleged to be pretenders to the arts of magic, enchantment and necromancy, and to implore the divinity to assist them in such deceptions. In these circumstances the worship of BUT in *Cochinchina* differs from that of BOUDDHA in *Ava*; and I suspect, that there, as well as in *China*, the prevailing vulgar religion is the worship of the gods of the *Brahmens* freed from the doctrine of cast; and that BOUDDHA is with them the favourite god, as different members of the *Egyptian* theocracy in different places met with very different degrees of respect. Still however the accounts I have seen of the vulgar religion in these eastern regions are very unsatisfactory; and the hints given us by ALEXANDER of *Rhodes*, || concerning the doctrine of THICA in *Tonkin* and *Cochinchina*,

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bear

* KEMPFER, *Amœn. Exot.* 608, as quoted in HARRIS's voyages, I. 543.

† Mus. Borg. pag. 80. ‡ PAULINUS Mus. Borg. pag. 89 et seq.

|| *Dictionarium Anamiticum* Rome, 1651, page 761.

bear a much stronger resemblance to the worship of the *Rāhāns*, than the accounts of BOIRET.

THESE various names applied to the god, of whom I am treating, are all appellatives, expressing his various attributes, as we use the terms, almighty, the most high, and other similar phrases, to denote the Creator of the universe. Many other appellations of BOUDHA may be seen in PAULINUS, who copies them from the *Amarasinha*, a work of the *Hindus*; but as I do not know, that these titles are ever bestowed on GODAMA by those who worship him as the only god, I shall forbear to enumerate them.

THE name by which this divinity was called on earth, was probably DHERMA or DHARMA rajah; although it must be observed, that among the *Hindus* it has never been customary to call any prince by his proper name. This custom has been communicated to the *Burmas* with such strength, that it is almost impossible to learn the name of any prince during his reign. His titles only can lawfully be mentioned; and the law is enforced with such rigour, that *Burmas*, even in *Calcutta*, shudder when requested to mention the dreadful name; nor am I satisfied, that either Captain SYMES, or I, could ever procure the real name of the reigning monarch. DHERMA rajah signifies, according to PAULINUS, the virtuous or beneficent king,* and may be only a title bestowed on that prince, whose real name, as his reign still continues, it may not be lawful to mention. This etymologist also alleges, that the name HERMES must be derived from the *Sanfrit* word *Dherma*, signifying virtue or beneficence: although interpreter was imagined to be the meaning of this word by the *Greeks*, as the father probably would say, owing to their ignorance of the *Samfcrdam*, as he has chosen to name the language of the *Hindus*. His opinion however is supported with ingenuity; and the word *Turm*, which WINCKELMANN luckily found upon two old pots in *Italy*, is by no means

* *Mus. Borg.* page 75.

means a weak support to an etymological reasoner. Having thus endeavoured to collect the various appellations bestowed on the god of the *Burmas*, I proceed with the translation of

A SHORT VIEW OF THE RELIGION OF
GODAMA*.

“A CATHOLICK bishop, residing at *Ava* sometime ago, asked the chief *Rāhān*, called ZARADOBURA, to give him some short treatise, which would explain the heads of the law taught by GODAMA. The ZARADO, willing to satisfy the bishop, wrote for his use the following treatise:

“THE gods who have appeared in this present world, and who have obtained the perfect state *Nieban*, are four; CHAUCHASAM, GONAGOM, GASPA, and GODAMA.

“Q. Of which of these gods ought the law at present to be followed?

“A. Of the god GODAMA.

“Q. Where is the god GODAMA?

“A. GODAMA, at the age of thirty-five years, having attained divinity, preached his law for forty-five years, and brought salvation to all living beings. At eighty years of age he obtained *Nieban*, and this happened 2362 years ago.† Then GODAMA said, After I shall have departed from this earth, I will preserve my law and disciples

* I HAVE little doubt, but that the author of this treatise was the same ZARADO who wrote the *Compendium legis Barmanorum*, of which PAULINUS gives us an account. The treatise however translated by SANGERMANO does not contain several of the circumstances said to be mentioned in that of the museum of the liberal and learned cardinal BORGIA.

† I AM not certain whether the original means, that GODAMA died 2362 years before the period at which the bishop received the book from the ZARADO; or whether, in translating it, father SANGERMANO reduced the time to the year 1795, in which I saw him: I believe the latter to be the case, although the difference will not be great, as the bishop died at *Ava* a few years ago. Much reasoning of Sir WILLIAM JONES, on the age in which BOUDDHA lived, may be seen in the *Asiatick Researches*,
(II,

“ples for five thousand years: and he commanded
 “that his images and relics should be worshipped,
 “which has accordingly been ever since done.

“Q. In saying that GODAMA obtained *Nieban*, what
 “is understood by that word?

“A. When a person is no longer subject to any of the
 “following miseries, namely, to weight, old age,
 “disease, and death, then he is said to have ob-
 “tained *Nieban*. No thing, no place, can give us
 “an adequate idea of *Nieban*: we can only say,
 “that to be free from the four abovementioned
 “miseries, and to obtain salvation, is *Nieban*. In
 “the same manner, as when any person labouring
 “under a severe disease, recovers by the assistance
 “of medicine, we say he has obtained health: but
 “if any person wishes to know the manner, or
 “cause of his thus obtaining health, it can only
 “be answered, that to be restored to health signifies
 “no more than to be recovered from disease. In
 “the same manner only can we speak of *Nieban*,
 “and after this manner GODAMA taught.

“Q. Is not GODAMA the only true god on the face
 “of this earth?

“A. GODAMA

(II, page 121, and the following). It would appear by this, that the *Brahmens* differ some thousands of years in their accounts of the time of his appearance. From the immense variations of time in the chronology of the *Brahmens*, no trust can rationally be put in their account. The opinion of the *Chinese* states SHAKA to have lived 1028 years before CHRIST: but as this opinion can only be founded on the authority of the *Indians*, who introduced the worship of BOUDDHA into *China*, it proves no more than the *Indian* ideas at the time: otherwise it would deserve much credit. GEORGI, from the writings of *Thibet*, reduces the æra of BOUDDHA to the year 959 before CHRIST. If I am right in my conjecture, the ZARADO's 2362 *Burma* years, equal to nearly 2341 of the *Julian* reckoning, would place the death of GODAMA 546 years before CHRIST. The *Siamnese*, whose vulgar æra commences with the death of GODAMA, make that event to have happened in the year 544, (*Relation du Royaume de Siam, par M. DE LA LOUBERE*, II, 160,) within two years of the ZARADO's estimate. The *Cingalese*, according to Mr. HARRINGTON, make the æra of GODAMA's death 542 years before CHRIST. PAULINUS, calculating from the date given in the *Borgian* manuscript, reduces the *Siamnese* period four years: and in all such differences of opinion, the safest to follow is the latest date, as most likely to approach the truth.

“ A. GODAMA is the only true and pure god, who
 “ knows the four laws called *Sizza*, and who can
 “ bestow *Nieban*. In the same manner as on the
 “ destruction of a kingdom many arise, who aspire
 “ to the throne, and who assume the royal insignia;
 “ so when the time fixed for the duration of the
 “ law preceding GODAMA had expired, and it had
 “ been prophesied for a thousand years, that a new
 “ god was about to appear, six men before the
 “ coming of GODAMA pretended, that they were
 “ gods, and each of them was followed by five
 “ hundred disciples.

“ Q. Did those false gods preach no doctrine?

“ A. They did preach: but that, which they taught,
 “ was false.

“ Q. What did they teach?

“ A. One taught, that the cause of all the good and
 “ evil, which happen in the world, of poverty and
 “ wealth, of nobility and want of rank, was a cer-
 “ tain superiour *Nat* of the woods, who on this
 “ account ought to be worshipped by mankind.

“ A second taught, that after death men were by no
 “ means changed into animals, and that animals on
 “ being slain were not changed into men: but that
 “ after death men were always born men, and
 “ animals born animals*.

“ A third denied the proper *Nieban*, and asserted, that
 “ all living beings had their beginning in their mo-
 “ ther's womb, and would have their end in death:
 “ and that there is no other *Nieban*, but this
 “ death†.

“ A fourth

* THIS was probably the doctrine adopted by the *Burmas* before they were converted to the religion of BOUDDHA: for it is yet retained by the *Karayn*, a rude tribe still occupying many of the woods in the *Pegu* and *Burma* kingdoms.

† GROSIER, in his account of the *Chinese* religion, (II, 222,) has either confounded this heretical *Nieban* with the true doctrine of the *Rahans*, or else the religion he has described as that of FO, must be different from that of GODAMA. In that work also many detestable practices are ascribed to the *Chinese Bonzes*, which, so far as I could learn, were entirely unknown to the *Rahans*; and also many foolish and gross superstitions, and penances, which they never practise.

- “ A fourth taught, that all living things neither had
 “ a beginning, nor would have an end: and that
 “ every thing which happens arises from a fortui-
 “ tous and blind fate. He denied the lot of good
 “ and evil deeds, which, according to the law of
 “ GODAMA, is the efficient cause of all the good and
 “ evil that happen to living beings.
- “ The fifth taught, that *Nieban* consists in nothing
 “ more than the life of certain *Nat* and *Biamma*,
 “ who live for the whole duration of a world.
 “ He asserted, that the chief good works are to
 “ honour our parents, to endure the heat of the
 “ sun or of the fire, and to support hunger; that
 “ there is no crime in killing animals. He said,
 “ that such as performed these good works, would
 “ be rewarded in a future life; and that such as
 “ did the contrary, would be punished.
- “ The last taught, that there existed a being, who had
 “ created the world, and all things which are
 “ therein, and that this being only is worthy to be
 “ adored*.

“ Now

* HERE the ZARADO probably alludes to DEVADAT, as the *Rāhāns* call JESUS CHRIST. The *Siammese* painter before-mentioned told me, that DEVADAT, or, as he pronounced it, TEVEDAT, was the god of the *Pye-gye*, or of *Britain*; and he conceived, that it is he who, by opposing the good intentions of GODAMA, produces all the evil in the world. I am inclined to believe, that the legend of TEVEDAT, of which M. LOUBERE has given us a translation, has been composed since the arrival of the *Portuguese* in *India*, in order to prevent the propagation of their religion, so well adapted, by its splendour and mysteries, to gain the belief of an ignorant people. Some antiquarians have thought, that much light may be thrown on the history of *Hindustan* by the legends of the gods as delivered by the *Brahmens*: but much caution would be necessary, even when for such a purpose we made use of the less miraculous legends of the *Burma* heroes, who are the same with the gods of the *Brahmens*: for it is reasonably to be suspected, when they want to serve any particular purpose, that both *Rāhāns* and *Brahmens* bring out occasionally either a new legend, or an addition to an old one. In so doing, the *Brahmens* are indeed perfectly safe; for if ever there were any historical writings among the *Hindus*, they have long since been destroyed. The arguments of PAULINUS (*Mus. Borg.* pag. 121 et seq.) on this subject deserve much attention, although to many he will appear to have pushed his conclusions farther than his arguments will warrant. It is to be regretted, that the vigilant zeal of the father should have induced him to forget the civility due to adversaries, and to be uncandid in attributing improper motives to those, who happen to differ from him in opinion.

- “ Now all these false gods or deitti taught such
 “ things, not because they believed them to be
 “ true: but in order to answer questions which
 “ had been proposed to them, they said whatever
 “ at the time came into their minds. •
- “ Q. When the true god GODAMA appeared, did not
 “ the false gods renounce their doctrines?
- “ A. Some of them did: but others still continue
 “ obstinate: and with all these GODAMA fought in
 “ the kingdom *Saulti* near the tree *Manche*: what
 “ greater miracle can be performed*?
- “ Q. In this conflict who gained the superiority?
- “ A. GODAMA did: on which account the ringleader
 “ of the false gods was so ashamed, that tying a pot
 “ about his neck, he threw himself into a river,
 “ and was drowned. •
- “ Q. The master being dead, did his followers re-
 “ nounce his doctrine?
- “ A. Some of them renounced his doctrine: but
 “ others did not. It is easy with your nails, or
 “ with *Megnapt*, to take a thorn out of your feet,
 “ or hands: but it is very difficult to pluck forth
 “ from the minds of men the doctrines of false gods.
- “ Q. Cannot this be done by any means?
- “ A. The warnings of just men, like the *Megnapt*, can
 “ only effect it.
- “ Q. What are the warnings and doctrines of these
 “ just men?
- “ A. In the first place, whoever kills animals, or
 “ commits the other wicked actions, which are con-
 “ trary to the five commandments, is liable to the
 “ lot

* THIS conflict of GODAMA with DEVADAT, and the other deitti, PAULINUS imagines to be the same with the doctrine of the *Magi* concerning ORMUZED and ARIMANIUS (*Mus. Borg.* pag. 51): which appears to me to be nearly as improbable, as the opinion of the *Râhâns* concerning the identity of JESUS CHRIST and DEVADAT. In the *Titans* of the *Grecians*, the father also discovers this doctrine of the *Magi*. However these same *Titans*, with perhaps as much probability, are alleged by Governor POWNEL to have been a hord of savages from the north, under the command of their *Hetman Briareus*.

† THE instrument with which the *Burmas* pluck their beards.

“ lot of evil deeds : but whoever bestows alms,
 “ practises the ten virtues, and adores god and the
 “ *Rāhāns*, will obtain the lot of good deeds. In
 “ the second place, in the same manner as the
 “ shadow and body are inseparable, so during all
 “ the successive destructions of future worlds, these
 “ lots of good and evil inseparably follow all living
 “ beings, and are the sufficient causes of all the
 “ good and evil, by which these beings are effected :
 “ from these lots beings are born noble, or ignoble ;
 “ from them men pass into animals, or into *Nat*.
 “ This is the doctrine revealed by GODAMA, and
 “ it is called the doctrine of SAMMADEITTI. This
 “ doctrine is the great *Megnap*, or nail, which com-
 “ pletely plucks forth from the minds of men the
 “ thorns of the deitti. O ye masters and wise men
 “ of all nations, *Armenians*, *English*, *French*, and
 “ *Dutch*, proclaim it to all living beings !

“ Q. Did these six false gods, who taught that it is
 “ good to honour our parents and teachers, to
 “ suffer heat, cold, and the like, receive no benefit
 “ by the performance of such actions ?

“ A. As when any one eats bitter fruit, which he
 “ supposes to be sweet, in the act of eating he does
 “ not find it sweet, but on the contrary bitter : or
 “ as when any one drinks mortal poison, thinking
 “ it to be a valuable medicine, his so thinking
 “ does not prevent his death : so it is with these
 “ six deitti, who pretended to be gods, and did not
 “ abjure their doctrine ; although they endured
 “ hunger, thirst, heat, and cold, thinking such to
 “ be good, yet have they received no advantage,
 “ but have passed into the infernal regions, where
 “ they suffer many evils and tortures. Therefore,
 “ O ye teachers of the *English*, *Armenians*, *Dutch*,
 “ and others, and ye the wise men of all nations,
 “ take heed to the above example, and like lights
 “ in a dark place teach others, who wander in the
 “ errors of the deitti, so that they may escape from
 “ these, as from an inhospitable and desert path,
 “ and arrive at the ample and straight road of the
 “ true doctrine and faith.

“ Q. What

“ Q. What is the doctrine, and law, which GODAMA delivered to be observed by all men ?

“ A. It consists chiefly in observing the five commandments, and in abstaining from the ten sins.

“ Q. What are the five commandments ?

“ A. I, From the meanest insect up to man, thou shalt kill no animal whatever. II, Thou shalt not steal. III, Thou shalt not violate the wife or concubine of another. IV, Thou shalt tell nothing false. V, Thou shalt drink neither wine, nor any thing that will intoxicate; thou shalt not eat opium, nor other inebriating drug. Whoever keeps these five commandments, during all successive transmigrations, shall either be born a nobleman, or *Nat*; and shall not be liable to poverty, nor to other misfortunes, and calamities.

“ Q. What are the ten sins ?

“ A. These are called by the common appellation *Duzzaraik*, and are divided into three classes. In the first class are comprehended the works which are contrary to the commandments; namely, I, the killing of animals; II, theft; III, adultery. In the second class are contained; IV, falsehood; V, discord; VI, harsh and indignant language; VII, idle and superfluous talk. To the third class belong, VIII, the coveting of your neighbours goods; IX, envy, and the desire of your neighbours death, or misfortune; X, the following of the doctrine of false gods. He who abstains from these sins, is said to observe *Sila*: and every one who observes *Sila* in all successive transmigrations, will continually increase in virtue, till at length he will become worthy of beholding a god, of hearing his great voice; and thus he will obtain *Nieban*, and be exempted from the four known miseries, namely, weight, old age, disease, and death. We must also believe, that GODAMA taught, if we observe his laws, we shall see the other gods, who are to arise after him.

“ Q. Besides

- “ Q. Besides these already mentioned, are there any
 “ other good works which ought to be practised ?
 “ A. There are. One good work is called *Dana* ;
 “ a second is called *Bavana*.
 “ Q. In what consists *Dana* ?
 “ A. *Dana* consists in giving alms, particularly to
 “ the *Rāhāns*.
 “ Q. In what consists *Bavana* ?
 “ A. It consists in thoughtfully pronouncing these
 “ three words, *Aneiṣṣa*, *Doccha*, and *Anatta*. By
 “ the word *Aneiṣṣa* is understood, that he who
 “ pronounces it, recollects, that by his particular
 “ situation he is liable to vicissitudes : by the word
 “ *Doccha* is understood, that by the same situation
 “ he is liable to misfortune ; and by the word
 “ *Anatta*, that it is not in his power to exempt
 “ himself from being liable to change and to mis-
 “ fortune. Whoever dies without having observed
 “ the *Sila*, *Dana*, and *Bavana*, will certainly pass
 “ into one of the infernal states, and will become a
 “ *Nirea*, a *Prietta*, or some animal.
 “ Every one, who dies without the merit of some
 “ good action, performed during his life, may be
 “ compared to him, who, without a store of pro-
 “ visions, travels through inhospitable deserts : to
 “ him, who without arms, penetrates into a place
 “ abounding in robbers or wild beasts : to him
 “ finally, who in a small and leaky boat, attempts
 “ to pass a vast, tempestuous, and whirling river.
 “ Moreover whoever, either priest or layman, gives
 “ up himself to the five carnal works, or to the
 “ pleasures received by the five senses, who does
 “ not observe the five commandments, and who
 “ does not abstain from the ten sins called *Duzza*-
 “ *raik*, is like a moth, which attracted by the shining
 “ of a candle, flutters round the light, till it perishes
 “ in the flame : or he is like a person, who seeing
 “ a spot of honey on a sword, is unmindful of the
 “ edge, and in licking the honey cuts his tongue,
 “ and dies : or he is like a bird, who, eager for the
 “ bait

“bait, does not perceive the springe laid for it: or
 “like a stag, who running after the female, observes
 “not the arms nor the snares of the hunter. This
 “person not attending to future danger, but solicited
 “by the five carnal delights, will either pass to the
 “infernal regions, or will transmigrate into an animal.
 “By such similitudes did GODAMA teach.

“Revolving these things in your minds, O ye
 “*English, Dutch, Armenians*, and others, adore Go-
 “DAMA the true god; adore also his law, and his
 “priests; be solicitous in giving alms, in the obser-
 “vance of *Sila*, and in performing *Bavana*. But a
 “true and legitimate priest of GODAMA is not to be
 “found except in this empire*, or in the island of
 “*Ceylon*: and you, O bishop, have obtained a great lot,
 “who have been thought worthy, although born in
 “one of the small islands depending on *Zabudiba*, to
 “come hither, and to hear the truth of the divine
 “law. This book, which I now give you, is more
 “estimable than gold and silver, than diamonds and
 “precious stones: and I exhort all *English, Dutch,*
 “*Armenians*, and others, faithfully to transcribe its
 “contents, and diligently to act according to the pre-
 “cepts therein contained.

“THE title assumed by the writer of the above
 “treatise was I ATULI ZARADO, great-master of the
 “king of the nine provinces of the *Shan*, of the
 “province of *Cussay*, of the three provinces of *Giun*
 “*Yun* and *Han*, of the three provinces of *Pegu*, and
 “of the seven provinces of *Burmas*: prince of the
 “golden umbrella, of the palace of the sun and moon;
 “and also supreme lord of the white elephant, of the
 “red elephant, of the black elephant, &c. &c. &c.”

OF THE PRIESTHOOD.

THESE titles of the chief priest of the country lead
 me to describe that order of men, so intimately con-
 nected with religion and learning.

VOL. VI.

T

ALL

* *Siam* was then subject to the *Burmas*.

ALL the priests of GODAMA are properly what in a Roman catholic country would be called regulars. There are no secular or officiating priests, having charge of the worship of the lay part of the community. These priests, by *Europeans* commonly called *Talapoins*, and by *Mohammedans*, *Raulins*, are in the *Burma* language called *Rāhāns*, and in the *Pali*, *Thaynka*. This is the proper name, as in *Europe* similar priests are called monks: but as in catholic countries the monks from respect are commonly addressed by the title of father; so among the *Burmas* the *Rāhāns* are commonly spoken to by the name *Poun-gye*, which signifies great virtue.

Somona or *Samana* is also a title bestowed on the priests of GODAMA, and is likewise applied to the images of the divinity, when represented, as he commonly is, in the priestly habit. From this name the whole sect of BOUDDHA have been by many called *Samanians*, a name frequently mentioned by the ancient writers, and said to be derived from the *Sanscrit* word *Saman*, signifying gentleness or affability*. The learned PAULINUS supposes the *Samanians* and *Magi* to have been the same, an opinion which he has been by no means able to render probable. The accounts of the religion of the *Samanians*, as extracted from the writings of the *Rāhāns* by SANGERMANO, the treatise of the ZARADO, and the book *Kammua*, in my opinion show the two sects to be essentially different. The *Magi* believed in two principles, the one producing all the good, the other all the evil in the world. The former they compared to light or fire, and worshipped the sun and fire, as emblematical of the beneficent principle: but they worshipped no images. They were much addicted to astrology, and have even given their name to all pretenders to supernatural powers. But the *Samanians* consider every thing as arising from fate by means of water, and look on their divinity as merely a great moral teacher. DEVADAT they do not esteem a principle of nature,

* PAULINUS *Mus. Borg.* pag. 18.

nature, but a wicked person now undergoing the punishment of his crimes; and who has involved mankind in sin and misfortune by teaching a doctrine contrary to that of GODAMA. Indeed the little mention made of him in the cosmography, in the book *Kammua*, and by the ZARADO, shew that he is not so essential a being in the doctrine of *Rāhāns*, as ARIMANIUS was in that of the *Magi*. Besides the *Rāhāns* worship images; and are so far from adoring fire, they never kindle one, least they should destroy the life of some animal. Magic and astrology they also abhor, and detest bloody sacrifices. The *Magi*, on the contrary, sacrificed animals. There is even reason to believe,* that human sacrifices were common among the followers of ZOROASTER, and by them introduced into the horrible rites of a great part of the ancient world. I therefore conclude that the *Magi* were a different sect from the *Samanians*; and I doubt not, that they were a sect of much greater antiquity.

PAULINUS also supposes the religion of the *Magi* to be the same with that of the *Brahmens*, or of ancient *Egypt*,† but in this too I think he is mistaken. The good and bad principles of the *Magi*, and their want of images, of the personification of the deities, and above all, of cast, are great differences. Besides, the two systems are considered as distinct by the ancients, who surely were the best judges. The religion of the *Magi*, PAULINUS, with great probability, contends ‡ came from *India* to *Persia* in the reign of CYRUS, about 560 years before the birth of CHRIST, and from *Persia* was afterwards dispersed over the western nations. || How then could the father suppose the doctrine of the *Magi* to be the parent of the religion of *Egypt*? a religion which had subsisted there, and had been transferred to *Greece*, certainly many ages before the invasion of *Cambyfes*.

T 2

THESE

* PLINII Natur. Histor. lib. 30, cap. 1. † Mus. Borg. pag. 188.

‡ Mus. Borg. page 141.

|| This is confirmed by the opinion of PLINY (lib. 30, cap. 1.), who thought, that magic was first introduced into *Europe* by the army of XERXES.

THESE *Rāhāns* live together in convents or colleges, by them named *Kiaung*, which are by much the best habitations in the empire. They are, as far as I could judge, very decent in their lives, remarkably kind and hospitable to strangers, the best informed men in the country, and very highly respected by the inhabitants. Every college has a head named *Zara*, of which the literal meaning is reader; but the name may be translated abbot; though by the *Portuguese* missionaries these superiors of convents have been more commonly styled bishops. As every great personage builds a *Kiaung*, and procures the *Rāhān*, who is his spiritual guide, to reside in it as superiour; so there comes to be a kind of distinction in rank between the different *Zaras*: those who preside over convents built by the powerful and rich, having more spacious colleges, and more *Rāhāns*, under their authority in consequence of better accommodation, and greater means of subsistence, are no doubt more respected than those who are at the head of *Kiaungs* built by persons of less distinction. In a particular manner is respected the *ZARADO*, or royal abbot, who may be likened to the king's confessor. His apartments are very superb, his attendants very numerous: next to the king he is the person to whom the greatest external homage is paid: and he is permitted to sleep under a *Pyathap*,* a dignity not enjoyed by even the king's eldest son, who already possesses one half of the imperial power. But although these heads of colleges have thus different degrees of dignity, according to the rank of the person whose spiritual teachers they are; yet I understood, that every *Zara* managed the affairs of his own college without any appeal to the superiour of the governor's convent, or even to the *ZARADO*. What power the *Zaras* have over the *Rāhāns*, who live in their own convents, I do not know; but it is probably considerable, as they receive from their inferiours great marks of submission and respect.

THE

* A kind of gilded spire in several stages, and ending in an obelisk.

THE respect given by the lay inhabitants to all *Rāhāns* is very great. The road on all occasions is yielded up to them; they are almost always addressed by the names of *Poungye* and *Bura*; and in their convents they are permitted to use painting and gilding, things prohibited to every other subject: nay, they are even in some cases permitted to plaster the outside roofs of their *Kiaungs* white, and white is the royal colour, the most distinguishing of all royal insignia, and common only to God and the king. Although the priests are thus honoured, yet even the highest of them retain the greatest simplicity in their manners. The dress of the *ZARADO*, when we had the honour of visiting him, did not differ from that of the prostrate multitude, by which he was surrounded. I was told also, that when some years ago he was at *Rangoun*, he used, like other *Rāhāns*, to perform his rounds barefooted, and to receive from door to door the rice that was offered as alms. In this perhaps there was somewhat more than humility; as wherever he went, the streets were covered with cloth, and the men were prostrated imploring his blessing; while the women kept out of his way, as too imperfect beings to be in the presence of a man so weaned from the pleasures of the senses. He is however a person of mild and agreeable manners, and seems well informed; but with a considerable affectation of meekness, and of contempt for worldly cares. At *Loungye* I met with a *Zara* of my acquaintance begging rice in the same manner as the inferiours; and although he was an old infirm man, he had ventured out to a considerable distance, and that in rainy weather.

I HAVE already mentioned the charity of the *Rāhāns*, which is exerted especially towards strangers; consequently there is no country, where a stranger, unacquainted with every one, and an outcast, would be less likely to suffer want than in the *Burma* empire: nor during my stay there did I see one common beggar. In the neighbourhood of convents, the pious

founders generally build houses for the accommodation of strangers and travellers. These houses are commonly very good defences against the weather; nay, many of them are very handsome. Any person may there pass the day or night, and he is sure of being kindly received by the *Rāhāns*, and of being by them supplied with provisions. Besides this virtue, the *Rāhāns* are very humane, and in consequence have often disputes with the magistrates. It is a law, that no criminal can be executed within the gates of a city: nor can he be put to death, should a *Rāhān* touch him when leading to the place of execution. This privilege the *Rāhāns* often exert; and although they no doubt are sometimes bribed thus to save a bad man, yet I believe they much oftener interfere to prevent injustice. Another great virtue of the *Rāhāns* is toleration. From the discourse of the ZARADO, it is evident, that they wish to make converts to the religion of GODAMA, and that they think their religion intended to save all men who are willing to believe: but I never saw nor heard of any attempt by the *Rāhāns* to use violence in this conversion; or to hinder any man from worshipping God in whatever manner he thought proper: we every where saw tolerated the church, the mosque, and the pagoda: and their priests publicly permitted to use their peculiar dresses, and even to assume in their houses those kinds of roofs which are appropriated to officers of considerable rank. Religious processions are publicly made by foreigners; and many infidels are admitted to hold publick offices, and places of some distinction: nay, some of these officers are allowed to preside at games instituted in honour of religious festivals.

As far as I could learn, the *Rāhāns* do not at all officiate in the temples, like the parish priests or secular clergy of *Europe*. Very few of them were present at any of the religious ceremonies or processions that I saw; not even in those made at the consecration of a young priest. Neither did I see many of them at the
temples

temples, either on holy days, or at other times: and although some of their convents are generally situated in the neighbourhood of the greater temples, yet that is by no means universally the case: nor did I ever see any of them, who appeared to take charge of a temple, or of the images belonging to it. Their time seems to be employed in instructing the youth in reading, writing, and acquiring such knowledge as the nation possesses, especially in religion, history, and law; and in soliciting provisions for themselves, and for the needy. Their religious worship, I believe, they almost always perform within the walls of their own convents: in all of them they have images, to which at the usual times they chaunt their prayers.

It is said, that formerly there were convents of women, who entered into orders while young virgins, who continued for life to observe celibacy, and all the rules of the *Rāhāns*, and who were dressed in yellow. This has been abolished, probably by the policy of the kings now governing in eastern *India*, who think, by the pleasures of a number of women, to allure men into their service. And now a few old women only enter into a kind of orders, shave their heads, and assume a white dress. These attend on the temples and on funerals, and are a kind of servants to the *Rāhāns*: although they never live within the walls of their convents. The *Pali* books, however, containing the form of admitting women into the sacerdotal order, and the rules for their conduct, are still to be found in the libraries of the *Rāhāns*.

In order to give a clear idea of the manner of life and duties prescribed to the *Rāhāns*, I cannot do better than insert a translation of a *Latin* version of the canonical book called *Kammua*. An elegant copy of the original *Pali* was sent by the king to Sir JOHN SHORE. The whole I shall endeavour to explain by notes: and to those who wish to enter more into particulars, I would recommend M. DE LA LOUBERE'S

translation of the maxims of the *Talapoins*, given us in his invaluable account of the *Siammese* kingdom. It must be observed, that a translation of the *Kammua*, which is contained in the collection of Cardinal BORGIA,* seems to differ in some particulars from that given by father SANGERMANO. In the latter, no mention is made of fire and water being the principles of all things, of the purifications of the *Rāhāns* by fire and water, of these priests passing their time entirely absorbed in a meditation of the Supreme Being, or of the confession of sins on the days of the full and new moon. Father PAULINUS alleges the *Borgian Kammua* to contain all these circumstances: and I can only account for such a difference by supposing, that they are not contained in the original work, but in the explanatory glossary, which is said to accompany the *Borgian* copy. I never, however, heard of these doctrines prevailing among the *Rāhāns*: nor is there any hint given of them in the cosmography of SANGERMANO, or in the treatise of the *Zarado*.

TRANSLATION of KAMMUA-ZA, or the BOOK
KAMMUA.

“ IN the ceremony of ordination, before the *Sabeit*† is delivered to the candidate, he must approach his master *Upize*‡, and say three times, ‘ Lord, are not you my master *Upize*?’ He is then ordered to advance

* PAULINUS *Mus. Borg.* pag. 84.

† The *Sabeit* is a round black covered vessel, generally made of lacquered basket-work, and used by the priests in their morning rounds to receive the alms of the charitable.

‡ AT ordination there are assisting a great number of *Rāhāns*, and the *Upize* is one of the eldest present, and presides in the assembly. It would appear from the account of M. DE LA LOUBERE, that in *Siam*, ordination can only be performed by a particular kind of superior, named *Sancrat*. Perhaps *Sancrat* and *Upize* may mean the same rank: although I did not understand, that among the *Burmas* it was necessary for the *Upize* to be a *Zara*, much less that there was any distinction of rank among these superiours, farther than what has been already mentioned.

“ advance to the *Kammuzara**; and having approached near, he is thus interrogated:”

Kammuzara. “ O candidate, is this your *Sabeit* ?”

Candidate. “ Verily my lord it is.”

Kam. “ O candidate, is this your garment ?”

Cand. “ Verily my lord it is.”

“ THEN shall the *Kammuzara* say, Retire from this, and wait at the distance of twelve cubits. He shall then read, addressing himself to the assembly of priests, Let the assembly of priests hearken to my words. The present candidate humbly asks from his *Upize* the sacerdotal rank: and surely this is now both a convenient time and place for ordination. In the mean time I will admonish the candidate. You O candidate hearken. At this it is by no means allowed you to tell falsehoods, or to conceal the truth. There are certain defects, which are contrary to the priesthood, and which prevent any person from being received into the priestly order: and as you are now before this assembly of *Rāhāns* to be interrogated concerning these defects, you must answer truly, and declare, what defects are in you, and of what nature they are: what defects you have not, and in what manner you are free from them. Do not be silent: but, lest you should be hindered by fear or shame, bend down your head. Now all those in the assembled council are about to interrogate you.

“ THEN some priests in the assembly shall thus interrogate the candidate.

Priest. “ O candidate, are any of the following diseases on you? Are you afflicted with the leprosy, or with any other foul disorder?

Candidate. “ My lord I have no such disorder.

Priest.

* The reader of the book *Kammuzara*.

Priest. " Have not you the scrophula, or some kind
" of herpes?

Cand. " My lord I have not any such disease.

Priest. " Have you not the schirrhus, cancer, or itch?

Cand. " My lord I have not.

Priest. " Are you afflicted with the asthma, or cough?

Cand. " My lord I am not.

Priest. " Are you not maniacal, or do you not labour
" under those diseases which proceed from a cor-
" rupted blood, or from the influence of giants,
" *Lamia*, or evil spirits, or of the *Nat* of the woods
" and mountains?

Cand. " I do not my lord.

Priest. " O candidate, are you a human being?

Cand. " I am a human being my lord.

Priest. " Are you a male?

Cand. " I am a male.

Priest. " Are you a lawfully begotten son?

Cand. " I am a lawful son.

Priest. " Are you not in debt?

Cand. " I am not my lord.

Priest. " Are you not the dependant of some officer?*

Cand. " I am not my lord.

Priest.

* FROM these questions it will appear, how anxious the *Rāhāns* are not to render the order of priesthood disreputable, by admitting into their fraternity low people, or such as have loathsome diseases. But there are also other reasons for the restrictions here imposed. Celibacy would have no merit in a person deprived of his virility: besides impotence, although an involuntary misfortune, is almost always viewed with contempt. It would be injustice to admit persons in debt, or dependants on great men; for the creditors could not afterwards recover their debt by selling the *Rāhān*: and all the dependants on the *Burma* nobles are in their debt. But the great object of thus confining the priesthood to the higher ranks probably is, that at the consecration, the parents may be enabled to give handsome presents to the convent. In fact, the ordination of a son to the priesthood generally costs the family more than his marriage, and setting up in the world, would do: fifty or sixty *Peiththa* of silver (from 210 to 260 lb. weight) is said not to be uncommon for a wealthy man in a provincial town to expend on such occasions,

Priest. " Have your parents given you leave?

Cand. " They have my lord.

Priest. " Have you compleated your twentieth year?

Cand. " My lord I have compleated it.*

Priest. " Have you not in readines your *sabeit* and
" garments?

Cand. " They are ready my lord.

Priest. " How are you called?

Cand. " I am called *Naka*; that is to say, candidate.

Priest. " What is the name of your master *Upize*?

Cand. " My master *Upize* is called *Affeienteittrit*,
" or excellency.

" AFTER these questions the reader of *Kammua*
" shall again say, Most virtuous lord and priests here
" assembled, I beseech you to hear my words. This
" candidate humbly begs from his *Upize* to be admit-
" ted into the sacred order, and I have already given
" him admonition. Now certainly a very conveni-
" ent time for my lords has arrived: the candidate
" ought therefore to approach the assembly, and beg
" this order from them. The priests shall then say,
" Approach. The candidate shall approach, and say,
" I ask the order of priesthood from the *Rāhāns*.
" My lords, if you have compassion on me, snatch
" me from the lay state, a state of sin and error; and
" appoint me to the sacerdotal state, a state of virtue
" and perfection; and three times shall the candidate
" pronounce these words. Then shall the *Kammua*-
" *zara*

* THIS regulation is very commonly neglected. Rich men, who wish to give their sons a good education, generally make them *Rāhāns* about the age of twelve or fourteen years: and the youths continue in the college till they be twenty-four, or twenty-five. Being then fit for business, they leave the convent, and marry: for it is in the power of a priest to relinquish his order whenever he pleases, and to return to the world: and this he does without incurring any considerable scandal. The poorer sort of people send their boys to the convents, where as menial servants they attend on the *Rāhān* who acts as their master, instructing them to read and write: and there are very few men in the country who are not able to do both with facility. Fewer women learn these accomplishments; but still there are many who do, and who are very well informed in such learning as the *Burmas* possess.

“ zara say, My virtuous lords here assembled, attend
 “ to my words. This candidate has asked from his
 “ *Upize* the sacerdotal rank : and he, who thus asks,
 “ is without any defect or impediment, and has pre-
 “ pared all necessaries*. The candidate also in the
 “ name of his *Upize* beseeches the assembly, that they
 “ would speedily make him a priest. Is it conveni-
 “ ent and expedient for the assembly in the name of
 “ the *Upize* to confer on this person the order of
 “ priesthood? To whatever person this appears con-
 “ venient let him be silent; but if the candidate to
 “ any one appear unworthy of the rank, let that per-
 “ son speak. The reader shall thrice repeat these
 “ words, beginning with My virtuous lords, &c.
 “ He then shall proceed, and say, Now since none
 “ of the priests speak, but all are silent, it is a sign,
 “ that it is proper for this candidate from a state of
 “ imperfection and sin to pass into the state of per-
 “ fection, from the state of a layman into that of a
 “ priest: and it is a sign, that in the name of the
 “ *Upize* the assembly are resolved to make this can-
 “ didate a priest. Therefore by the consent of the
 “ *Upize*, and of all the assembly, this person is here-
 “ by ordained a priest.

“ THE reader afterwards proceeds, and says, The
 “ fathers ought to mark under the shade of what foot,
 “ in what day, in what hour, in what season, whether
 “ summer or winter, whether in the morning or even-
 “ ing, this person has been ordained a priest. And
 “ moreover the newly ordained priest is to be admo-
 “ nished concerning the four things which priests are
 “ allowed to do, and the four things which they
 “ are

* THESE necessaries are the *Sabeit*, a proper yellow garment, a large fan serving for an umbrella, a mat and pillow for a bed, a bucket to draw water, and a bottle to keep it, a drinking cup, and a chamber pot. This utensil is peculiar to the *Rāhāns*, and not used by any of the other inhabitants: the *Rāhāns* being afraid of killing some insect by performing on the ground their natural functions.

“ are prohibited from doing. Wherefore, I the reader
 “ admonish him in these words.

“ IN the first place the sacerdotal order consists in
 “ eating that food only which is procured by the la-
 “ bour and motion of the muscles of the feet. Where-
 “ fore it behoves you, O young priest, during the
 “ whole course of your life, to struggle, that you may
 “ live on food procured by the labour of your feet.
 “ But if alms and offerings abound, that is to say, if
 “ your benefactors come to you, and offer food, you
 “ may lawfully use the following kinds of provisions:
 “ 1st, all kinds of food, that are offered to *Rāhāns* in
 “ general; 2d, provisions that are offered to you in
 “ particular; 3d, provisions which are sent along with
 “ a letter; 4th, provisions that are offered on the days
 “ of the full and new moon; 5th, provisions given on
 “ festivals by your benefactors. Of all these provi-
 “ sions you may lawfully eat. The new priest shall
 “ answer, Verily my lord I have heard.*

“ THE

* IN fact, the *Rāhāns* are allowed to eat every thing, which they receive as a present, provided it be ready dressed; for they never kindle a fire, for fear of destroying some life. What is meant by procuring their food by the labour of their feet, is this: every morn'g, as soon as they can distinguish the veins on their hands, the whole *Rahans* issue from their convents, each with his *Sabit* under his arm. They spread themselves all over the neighbouring streets and villages, and as they pass along, stop a little at the different doors, but without saying a word. If the people of a house are disposed to be charitable, or have not already given away all that has been prepared for the purpose, a person, generally the mistress of the house, comes out, puts the ready dressed provisions into the *Sabit*, and the *Rāhān* goes on silent, and without returning thanks. Nor does he ever solicit for any thing, should it not be convenient or agreeable for a family to bestow alms: but after standing for a few minutes proceeds on his round. So delicate are they in this particular, that it is sinful for a *Rāhān* on such occasions to cough, or make any signal, by which he might be supposed to put the laity in mind of their duty. To the greater part of convents however such begging is not necessary for a subsistence, as the offerings sent to the different *Rāhāns*, by the persons whose spiritual guides they are, to the sons of the wealthy by their parents, and to the whole on holy days and festivals, are generally more than sufficient for their own maintenance. As they literally take no care for to-morrow, the superfluity they daily give away to animals, to the poor, and to needy strangers or travellers. However, that they may be able to supply these various demands, and comply with the letter of this law,

law,

“ THE reader then proceeds. In the second place
 “ the order of priesthood requires the use of garments
 “ covered with dust, of garments which have been
 “ thrown into public sepulchres: wherefore, O young
 “ priest, you must, during your whole life, use such
 “ garments as are stained with the dust of the field.
 “ However, if induced by your learning and teach-
 “ ing, many benefactors resort to you, then are you
 “ permitted to use the following cloaths in your dress;
 “ namely the cloths talled *Choma*; cloths made of
 “ cotton, silk or wool; cloths made of the bark of
 “ certain trees; cloths made of the feathers of certain
 “ birds. It is lawful for you to use all the above-
 “ mentioned cloths. The new priest answers as before.*

“ THE reader then proceeds. In the third place,
 “ the sacerdotal rank requires its members to live in
 “ houses constructed under the trees of the woods.
 “ Therefore, O newly ordained priest, you ought du-
 “ ring the whole of your life to inhabit such houses.
 “ Nevertheless, if your genius and doctrine attract
 “ many benefactors, you may inhabit houses of the
 “ following

law, even when they are in no want of provisions, the *Rāhāns* make their daily rounds. In consequence we find in the *Burma* dominions none of those well endowed convents in retired places, such as are in many parts of *Europe*: but the convents are always in the neighbourhood of towns, and always in proportion to the wealth and number of inhabitants. The finest *Kiaungs* in old *Ava* are now deserted, and their gilded halls have become the habitations of outlaws and unclean animals. Hence also it is, that near many of the most celebrated temples there does not live a single *Rāhān*. *Kaungomudo* and *Shue Loga tharabu* are both temples of great dimensions, and high celebrity; and at certain seasons vast multitudes of the laity resort thither on account of their supposed sanctity: but at present there is not in their vicinity a sufficient number of inhabitants to support a convent, and therefore no *Rāhāns* live near them.

* SEVERAL of these cloths I have never seen: but the *Rāhāns* are well clothed with a large yellow or yellowish mantle, which they throw round them in a decent and becoming manner. Under this they have several smaller pieces of dress, which however I never observed with sufficient accuracy to enable me to describe. They shave the head and beard, are very clean in their persons, and always go bare-footed. None of them wear jewels, or ornaments of gold or silver. In hot weather, I never saw them indulge themselves by exposing their naked bodies; much less do they, like the jogies of *Hindustan*, ever expose their nudities; but are singularly modest and decent in their dress and behaviour.

“ following kinds: namely, houses surrounded with
 “ walls;* houses ending in a pyramid;† such houses
 “ as are triangular or four sided; such as are adorned
 “ with flowers and figures carved in wood;‡ such as
 “ are built with arches. || In such, and the like houses,
 “ you may for the future dwell. The newly ordained
 “ priest answers as above. §

“ AGAIN the reader says, in the fourth place, O
 “ new priest, during the whole course of your life,
 “ you are only to use such remedies as men have
 “ thrown away for being useless. However, if your
 “ virtue, and manner of teaching, procure you bene-
 “ factors, you are permitted to use as remedies, but-
 “ ter, milk, whey, oil, honey, sugar syrup, and the
 “ like. The new ordained priest answers, Verily my
 “ lord I have heard ¶.”

“ AGAIN the reader of *Kammua* says, Since you
 “ have

* SUCH houses are not permitted to be used except by persons of very high rank.

† SUCH houses are only permitted to God, the king, and the *Rāhāns*.

‡ THESE ornaments are only used in charitable or religious buildings, such as *Kiaungs*, chapels, and the public buildings for the reception of travellers.

|| It is a singular circumstance, that the art of constructing arches should have been lost among the *Burmas*. From many buildings, especially at *Pougan* and *Gnaungoo*, it appears, that formerly they could construct very excellent brick arches, both circular and gothic: but now no one in the empire can be found sufficiently skilful to arch over the opening of a window. Masonry indeed has fallen into neglect, the jealousy of the late princes having prohibited to private individuals the use of brick or stone houses.

§ I shall hereafter give some farther account of these buildings. Suffice it now to say, that I believe, none of the *Rāhāns* live at present in the woods. Their *Kiaungs* are generally situated in the most agreeable places that can be found in the immediate neighbourhood of large villages, towns, or cities. The surrounding grounds are well cleared and inclosed, and generally contain many fine trees, especially the tamarind, mango, coconut, and palmira. *Kiaung* is the name which I heard used for these buildings by every one in the *Burma* empire, except SANGERNANO, who used the word *Bau* or *Bao*. At the time I took this name to be some vulgar Portuguese word: but I have since learned, (PAULINUS Mus. Borg, pag. 24,) that it is the *Pali* name for a convent, derived from *Bhava* or *Bhavana*, the *Sansemit* word for habitation.

¶ IN fact, I found the priests willing to take any medicine which I prescribed.

“ have been admitted into the order of priesthood,
 “ you are no longer permitted, after the manner of
 “ laymen, to commit any carnal deed, either alone,
 “ or with another, whether it be man, woman, or
 “ beast. A priest who after the manner of laymen
 “ commits such actions, is no longer to be esteemed
 “ one, nor as appertaining to the divine order. To
 “ what can such a person be compared? In the same
 “ manner as in a beheaded man the head can never be
 “ again joined to the body, and so live; so the priest,
 “ who after the custom of laymen has committed for-
 “ nication, or any similar act, is cut off from the
 “ priestly order, never more to be restored to their
 “ number. It behoveth you therefore, O young
 “ priest, during the whole course of your life, never
 “ to commit such deeds. The newly ordained priest
 “ shall say, Verily my lord I have heard your words*.

“ THE reader then says, It is by no means per-
 “ mitted to a *Rāhān* to steal, or to take to himself
 “ even the value of a dram of silver. The priest,
 “ who steals even such a value, is to be esteemed as
 “ fallen from the priesthood, and is no longer to be
 “ numbered in the divine order. Such a priest may
 “ be compared to the withered leaf of a tree: and as
 “ this can never again recover its verdure, so the
 “ priest, who steals even a dram of silver, no longer
 “ can be esteemed as belonging to that sacred order.
 “ Wherefore, O young priest, during the whole
 “ course of your life, abstain from theft. The young
 “ priest answers as before.

“ THE reader then says, It is unlawful for a priest
 “ to

* FROM this it might be inferred, that unnatural practices were very common among the *Burmas*; and in various old accounts of *Pegu* we have mention made of such having been the case, and of some very absurd regulations having in consequence been established. At present, as far as I could learn, neither these regulations are observed, nor even in convents are at all practised the crimes on account of which they were imposed. The present royal family have been too wise to trust to such frivolous devices, and the number of common women, which, under certain regulations, they permit in every considerable town, has probably been an effectual remedy for the greater vice.

“ to take away the life of any animal, should it be
 “ even the smallest insect. The *Rāhān*, who taketh
 “ away the life of the vilest insect, shall no longer be a
 “ priest, or of the divine order. To what thing can
 “ he be compared? He is like a great rock rent in
 “ two parts: as it is impossible that the rock should
 “ ever again be united, so it can never happen, that
 “ he should again be reckoned a priest, or of the di-
 “ vine order. Wherefore you, O newly ordained
 “ priest, ought to take care, during the whole course
 “ of your life, not to commit any such murder.
 “ The newly ordained priest answers as before.

“ THE reader of *Kammua* then says, Whoever is ad-
 “ mitted into the priesthood, can by no means be per-
 “ mitted to extol himself as a saint, as a person endowed
 “ with any preternatural gifts; such as the gifts called
 “ *Meipo* or *Zian*: Neither is it for him lawful to de-
 “ clare himself a hermit, or a person that loves solitude.
 “ The priest who, prompted by ambition, falsely and
 “ impudently pretends to have obtained the extraor-
 “ dinary gifts of *Zian* or *Meipo*, or to have arrived
 “ at *Nieban**, is no longer a priest of the divine
 “ order. To what can he be compared? In the
 “ same manner as a palm-tree cut through the middle
 “ can never be rejoined, so as to live; in such man-
 “ ner shall this ambitious priest be unworthy of being
 “ esteemed as belonging to the sacred order. Where-
 “ fore, O young priest, during the whole of your life
 “ avoid such criminal excess. The young priest
 “ shall answer, Verily my lord I have heard all, that
 “ even till now you have said.”

END OF THE BOOK KAMMUA.

THE month of *Namiaung*, the second of the *Burma*
 year, is the season in which young men are admitted
 VOL. VI. U into

* WE have already explained the meaning of *Zian* and *Nieban*.
Meipo is said to mean those prerogatives, which are exercised by such as,
 quite free from worldly thoughts, employ their time entirely in sublime
 meditations. What a wide difference is here between the priests of the
Burmas and of the *Hindus*!

into the priesthood. While we were at *Rangoun* during this season, I had frequently an opportunity of seeing part of the ceremony. For several days previous to assuming the habit, the young men's parents gave great entertainments. Sheds were built in the streets opposite to their houses, and under these were erected seats adorned with flags, and flowers natural and artificial. Here generally assembled four or five of the young candidates, dressed out in the most gaudy manner, and sat admiring the supple motions of dancing girls, or laughing at the grimace of players and mimics. During this time, at least once a day, the candidates went through the town in a procession, consisting of ten or five or six hundred persons. The following order, that I observed in one of these processions, will give an idea of the whole.

1. Drums and *Burma* hautbois.
2. Young girls gaudily dressed, their heads adorned with tinsel, gum flowers, and the wings of an elegant beetle, the *Buprestis ignita* of LINNÆUS.
3. Well dressed young women, carrying on their heads basons filled with fruits and flowers, an offering for the temple.
4. The fathers and male relations of the young men, with their attendants carrying their swords of state, and other insignia of royal favour. Among them was a ZAREGYE, an officer of considerable rank in the town.
5. Well dressed women carrying on their heads pots of rice, a present for the *Rāhāns*.
6. Bamboo stages, each carried on four men's shoulders, and supporting an imitation of the *Padezabayn*. This consisted of a large upright bamboo, in the center, with many smaller fixed into it, in imitation of branches, which were ornamented with tinsel and gum flowers. An umbrella terminated the whole, and from the branches were suspended the different kinds of utensils which are used by the *Rāhāns*: such as *sabeits*, fans, water-buckets, bottles, &c. &c.

7. Women

7. Women carrying on their heads pillows made of stuffed mats, some of them very fine. These also were an offering to the *Rāhāns*.
8. An offering of mats and small carpets, which serve the *Rāhāns* for beds. These also were carried on women's heads.
9. Yellow cloth for the dress of the *Rāhāns*, put up in rolls ornamented with flowers, and carried in the same manner.
10. The candidates, each carried by four men on a bamboo stage. They were richly dressed in velvet and gold lace, with many golden ornaments, and their heads were covered with tinsel and gum flowers.
11. A cart, drawn by two buffaloes, adorned with flags, flowers, and the like: and containing dancing girls, and a band of music.
12. The mothers and female relations of the young men.
13. Several officers of government with their attendants and badges of honour: but not in high dress. Among them was the *Akoonwun*, or collector of the land-tax of the province, an *Armenian Christian*.

THE whole was very gaudy, and must have cost a great deal of money. The women were all well dressed in silk and muslin. Many of them wore very fine muslin, and had much gold and silver in their ornaments. All of them had good sandals covered with scarlet cloth. Their deportment, although lively, was modest, and graceful. In many other processions the candidates were mounted on horseback.

AFTER having thus for some days enjoyed the splendour and amusements of the world, the young *Rāhāns* must bid adieu to the pleasures of the senses: they are conducted to the assembly of the *Rāhāns* to be ordained; are deprived of all their ornaments, and of their hair, and assuming the yellow habit, leave behind, their parents and the world.

It will be observed, that no *Rāhāns* assisted in the processions: and I may say the same of all the religious ceremonies which I saw the laity perform. On the grand festivals the laity endeavour to please God by all kinds of amusements; by wrestling, dancing, music, plays, and fireworks. On other occasions they solicit GODAMA's favour by prayers and offerings at the temples.

AMONG the worshippers of BOUDDHA, there are *So-ge*, or hermits, who pretend to a high degree of sanctity, arising from a mortification of their passions and appetites. They ought to live in caves, woods, and subterraneous buildings, of which we saw many remains in the neighbourhood of *Gnaungoo*. It was one of these hermits, named MENU, who is said to have formed the code of *Burma* laws, a fable probably invented to increase their authority. MENU was also, according to the *Brahmens*, the author of their laws; but the MENU of the *Brahmens* is, according to the two legends, as different from the MENU of the *Burmas*, as the two codes of laws are different in their justice and tendency. These *So-ge*s at present are not numerous in the *Burma* dominions, I not having seen one; but in *Hindustan*, under the name of *Jogies*, they are still very common, and are highly indecent, from their going about the streets, and entering all houses absolutely naked. They are not of the *Brahmenical* order, and to me seem to be the remains of the gymnosophists mentioned by antient authors, and, I suspect, often by inaccurate antiquaries, confounded with the *Brahmens*. PAULINUS every where in his account of the *Borgian* museum, confounds these *Zoges*, *Jogies*, or, as he wrote, *Yoguis*, with the *Samanians* or *Rāhāns*: for this however he assigns no reason. Among the *Burmas* I always heard them distinguished as two different orders. But in reality all religions have had their *Zoges*. Men who thought to acquire the favour of God by enduring misery in this life, or who, by pretending to more than common sanctity, and com-

mand over their passions, have wished to impose on the weakness of their neighbours, have, I believe, been found among unenlightened nations of all religious persuasions: and it appears to me, that the *Zoges* are nothing more than such deluded or deluding persons.

It has already been said, that *GODAMA* commanded his images and relics to be worshipped*. The largest and most celebrated temples are generally in the form of a pyramid, and are supposed to contain some of those relics; such as a tooth, a bone, a hair, or a garment. To these temples, as containing the sacred relic, the prayers of the devout are addressed, and their offerings presented. The pyramids are often of a great size, constructed of solid brick-work plastered over, and generally placed on a prodigious elevated terrace. The base of the pyramid is frequently surrounded by a double row of small ones; and the summits of the whole are always crowned with umbrellas, made of a combination of iron bars into a kind of fillagree-work, and adorned with bells. Many of these pyramids are from three to five hundred feet high. In the larger temples the umbrella, with at least the upper part of the pyramid, and often the whole, is entirely gilded over: and then the title of *Shué*, or golden, is bestowed on the edifice. Other temples of nearly a similar structure, but hollow within, contain images of *GODAMA*, to which the adoration of his disciples is directed. Both these descriptions of temples are in common called *Būrā*, which M. Loubere writes *Pra*, and says that it means respectable. It is a phrase only given either to God, and to his images, relics, temples, and priests; or to the king, and those governing in his name. An inferior gives it to the meanest officers of government; but a superior never gives it to an inferiour, as our king often calls his nobles, my lord, a title somewhat analagous. Neither is *Bura* ever applied to a stranger: a man

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who

who has any dependance on a *European*, will call him *Thakiayr*, or *Mayn*, which signify prince, but he will by no means call him *Bura*. Although this be the common name for these temples, yet it is only a term of respect; their proper name in the *Burma* language being *Zedee*.

ALTHOUGH many large temples, which are hollow within, contain such images as are considered of particular sanctity; yet the greater number of the images destined for the adoration of the laity, are placed in chapels, if I may so use the word, which surround the pyramids containing the relics of GODAMA's person, and which the *Burmas* call *Bura Kiaung*. In these images GODAMA is always represented as a young man of a placid countenance, with strongly characterised *Burma* features, and generally in the dress of a *Rāhān*. His postures are various. The most common is that of sitting cross legged upon a throne, with his left hand resting on his leg, and holding a book, and with his right hand hanging over his knee. In other images he is represented standing, and that in four postures; each differing somewhat in the position of his hands. In others he is represented reclining on a couch, with his head supported on pillows*. The throne on which he is placed, is exactly like the royal throne. Having imagined, that the delineations of the *Hindu* gods floating on the leaves of the lotus, derived their origin from imperfect traditions concerning the deluge, the vigorous fancy of PAULINUS discovers a representation of the elegant flowers of that plant in the simple ornaments of these thrones. *Mus. Borg.* pag. 67, compared with tab. 1. fig. 5. The images of the god are of very various materials; clay, copper, silver, and alabaster. Many of them are completely gilded, and many partly gilded, and partly ornamented with paintings of flowers. The size also of these images varies exceedingly: some are not above six inches high, and others are of a most colossal stature. I saw an image
in

† See page 260 of this Volume.

in old *Ava*, consisting of one solid block of pure white alabaster, and in a sitting posture: I had no opportunity of measuring its dimensions; but its fingers appeared to me to be about the length and thickness of a large mans' thigh and leg, from whence a conjecture may be made of the immensity of the whole.

ANOTHER object of great veneration among the worshippers of GODAMA are stones of considerable dimensions, carved with various hieroglyphics, and said to represent, or to be the impressions of his feet. The hieroglyphics, on the different stones which I saw, were not alike. In the *Burma* language these stones are called *Kye do bura*, or the respectable royal foot. One of them, on the mountain *Amala Saripadi*, * in the island of *Ceylon*, has given rise to various fables; *Christians*, *Jews*, and *Muhommedans*, uniting to call the mountain ADAM'S-peak, and the stone the impressions of ADAM'S-foot.

BESIDES these objects of adoration, there are many images common about the religious buildings of the *Burmas*. The principal disciples of GODAMA, especially his two favourites, MOKELA and SARIBOUT, with many other persons, who assisted the god when on earth, are by his followers considered as saints: and many images of these saints, dressed like *Rāhāns*, generally accompany those of their master. MOKELA and SARIBOUT occupy the most conspicuous places, the one sitting on the right hand, and the other on the left of GODAMA. The images of the other saints are generally in the posture of adoration. In some chapels there are many images of these saints, without any of the divinity. There is a group of female figures very common at the temples: it represents a princess with her attendants: the princess is on her knees offering up her long hair. It is said, that once, when GODAMA was like to perish in a river, he was saved by this princess,

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* STEPHENS's translation of FARIA Y SOUZA, T. 2. p. 4. c. 19. par. 25.

princess, who threw him a rope which she made of her hair. The ends of the walls, which project on the different terraces, as you ascend to the temples, are generally ornamented with figures of GODAMA's cook, a fat, deformed, but droll looking fellow. Besides human images, there are also at the *Burma* temples many representations of elephants, monkies, and other animals, but especially of lions couchant, which often are of a most colossal size. The *Burmas* however, although they consider these disciples, persons, and animals, as venerable, on account of the services they performed to GODAMA, have no idea of worshipping their images; nor, as far as I could learn, of imploring them to use in their behalf their interest with the divinity: much less do they ever address their prayers to the gods of the *Brahmens*, a custom which seems to have been adopted by some of the *Cingalese*, or natives of *Ceylon*. It is however true that the *Burmas* are well acquainted with the gods of the *Brahmens*, and have many legendary books containing an account of their adventures, especially those of RAMA, king of *Paranudee*: but they look upon these personages merely as heroes, or as remarkable men, only admirable for the wonderful actions they performed. In some of their temples, and in the carved ornaments of *Kiaungs*, and of houses for the reception of strangers, there are representations of the actions of these heroes, and of the *Nat*. Among these the figure of GANESA is one of the most common.

EVERY true worshipper of GODAMA prays before he goes to sleep, and before he rises in the morning, which is generally at dawn of day. The old men, and women of all ages, are more regular in their devotions than the youths, as is the case, I believe, in all countries, where the women are not degraded into the rank of brutes. In praying they use rosaries, often made of amber beads, and often of various seeds, especially of the *Canna indica* LIN. and *Cassalpinia oleosperma* Rox. The former plant is peculiarly sacred

to BOUDDHA, as it is supposed to have sprung from his blood, when once on a time he had cut his foot, by striking it against a stone. I believe they have fixed forms of prayer in the *Pali* language; at least I never could understand one word of their prayers, farther than that they contained many repetitions of the different appellations of the divinity; but that might have been owing to the manner in which they were chaunted. The priests have no regular daily service like the mass: but they have certain forms of prayer, which they use on the dedication of a temple or *Kiaung*, or on certain festivals, on which presents are offered to them. The women also, in all their little distresses and fears, such as in thunder, or in a squall of wind on the water, invoke the *Nat*: and they seldom get fruit, but they put it on their heads, turn to the four quarters of the earth, and call on the *Nat*, either wishing for their protection, or to show, that with these amiable beings they would willingly participate the good things of this life.

BESIDES these private devotions, it is customary to make offerings at the temple. The king daily sends his offering to a small temple, which is within the palace; and many people make occasional offerings, especially when they, or any of their family, are in distress. But the common times for making offerings at the temples are the four phases of the moon, especially the days of full and change, which may be called the *Burma* sabbaths. They reckon *Friday* very unfortunate, and consequently undertake no business on that day: but they keep holy no day of the week, which with most nations is probably an astronomical division of time. While we were at *Amarapura*, I observed, that the *Burmas*, on their sabbaths, fasted from sun rise to sun set; and I was told, that very strict people never slept in their houses on the night following these holy days: but I have now reason to believe, that such strictness and fasting are only required for three months of the year, which are therefore a kind of lent.

THE offerings made at the temples are very various: boiled rice, fruits, especially the cocoa-nut, flowers natural and artificial, and a variety of curious figures made of paper, gold leaf, and the cuttings of the cocoa-nut kernel, are the most common. It is also very customary for the rich to offer elegant white umbrellas with golden ornaments, large slippers, canes, pillows, and all manner of utensils, gilded, and of the finest materials: these are deposited in the temples or chapels for the use of the divinity. The poor, in place of these costly offerings, content themselves with paper imitations of the same utensils. These gifts are placed before the god or his temples on altars, or on wooden benches: and the eatables become a prey to the crows and dogs. People who have been in peril by water, present models of ships or boats; some of which are formed with considerable neatness. One of the most common ways for a person to express his devotion, is by gilding a patch of a temple, of which many on this account make a very motley appearance. The king's royal munificence is extended to a very great amount, in gilding anew many large temples. We were told, that this part of his expence amounted annually to 20,000 *peiththa* of silver, or nearly 86,805 lb. weight of that valuable metal. The expence of *Eimshè mayn*, or the heir apparent, is also considerable in the same way. When we visited the celebrated temple *Ananda*, the person, who superintended the repairs then carrying on by the prince, told us, that four *peiththa* of pure gold* were prepared for the gilding, which would be bestowed on the inside of that edifice. The roads leading to the principal temples, near populous places, are on holy-days lined with stalls, and little portable shops, where gold leaf, ornamented fruits, flowers natural and artificial, and other similar offerings are sold: so that the devout walk out, buy their offering by the way, and go to the temple where it is to be presented. The women are by far the most numerous

* Value about £830.

numerous devotees, and go in considerable numbers together, and in their best dress. They resort to the galleries and houses built for the accommodation of those who frequent the temple: there they assemble in crowds to adjust their dress and offerings: for a while they talk, laugh, and amuse themselves; then they repair to the temple, fall on their knees, say their prayers, make their offering, and depart. Bloody sacrifices, among the disciples of the mild GODAMA, would be beholden with abhorrence.

THE two principal festivals, which we saw, were on the occasion of the new year, and on the ending of lent. During the first, we were at *Pegue*, and were present at many of the games and entertainments, given during its celebration. Only one day's amusement was at the grand temple, *Shue-Modo*, and no religious ceremony, as far as we saw, took place. The most singular amusement at this festival, is the concluding one of throwing water, which to a rude people affords very good sport. For the whole last day of the festival, the men are permitted to throw water at the women, and the women at the men: such women as are with child being however exempted. All the young people look with joy for this merry day, and it is conducted with the greatest good humour, the one sex not being likely to give offence to the other.

LENT having ended, during the whole month *Sa-deen-giut* there are illuminations: every house has erected by it a kind of mast, from which are suspended one or more lamps. In the royal palace, a pyramid of lamps, at least 150 feet high, was supported by a bamboo scaffolding. From the lodgings of the deputation, this illumination of *Amarapura* made a very splendid appearance across the lake, by which we were separated from the city. It is at this time that the nobles from all parts of the empire resort to court to pay their homage to the king. On this occasion we had an opportunity of seeing a model of the hill *Mienmo*, which was erected in the outer court of the

the palace. It was constructed of paper and bamboos, and agreed very well with the account given by the missionary SANGERMANO.

DURING the principal days and nights of these festivals, there is an almost constant succession of wrestling, dancing, music, processions, fireworks, and theatrical entertainments: but of these, it is not at present my intention to give a description.

To finish what I have to say on the religion of GODAMA, it would appear by all the accounts given me, that the *Burmas* received their laws, religion, and government, from the people of *Arakan*, a people speaking the same language with themselves, and from these circumstances often called *Myamma-gye*, or great *Burmas*. This happened about 600 years ago: but the people of *Pegue* and *Arakan*, had received the same gifts from *Ceylon* a considerable time earlier. Previous to this, the *Burma* empire had probably been occupied by tribes in a state of civilization similar to that of the *Karayn*, *Kiayn*, *Lowa*, and other simple nations, who now inhabit the wilder parts of *India* beyond the *Ganges*. Whether or not this knowledge, derived from *Ceylon*, has been of use to these eastern nations, cannot easily be determined. These simple tribes have perhaps more skill in agriculture, and more industry than the *Burmas*; they have art enough to manufacture comfortable, and even handsome cloathing: they are a peaceable people, little inclined to war: among themselves they retain that civil liberty, which most tribes in a similar state enjoy; and it is universally agreed, that their morals are extremely good: but then they have no laws; are ignorant of even the art of reading; and their religious notions are so crude, that although they believe in a future state, yet they are ignorant of its being a state of reward or punishment.

THOSE of the *Chinese*, who have adopted the religion of SHAKA, have probably obtained it from
Hindustan,

Hindustan, by the route of *Thibet*. It is undoubtedly the *Chinese* who have communicated this religion to *Japan*, and to their former dependants in *Tonkin* and *Cochinchina*. Nor is it by any means improbable, that it is through *China* that this worship has extended to *Siam*. M. DE LA LOUBERE informs us, that the *Siamese* pretend to have got their religion from *Laos*, in which case it must have come from *China*. Indeed, from its very early introduction into that empire, at the latest in the sixth century of the *Christian* æra, it has had abundance of time to have reached *Siam* as early as we can suppose that country to have been civilized.

IN consequence of this universal diffusion of the religion of BOUDDHA over the countries to the east of *Hindustan*, it has been imagined, that all the nations inhabiting these extensive regions, and that even the *Chinese*, are of the *Hindu* race; but can we be justified in forming such an opinion, because about 1700 years ago some priests came from *Hindustan* into *China*, and converted to their opinions a multitude of the lower people? As well might we say, that the *Romans* in the time of TRAJAN, and of his virtuous and powerful successors, were *Jews*, because some priests had then come from *Jerusalem*, and had converted, to their opinions, a great number of the *Roman* populace, and slaves. The learned and manly Sir W. JONES, among the vast variety of objects which engaged his attention, seems to have hastily adopted this opinion. He supports the hypothesis entirely on a passage in the institutes of MENU, where, says he, “ we find the following curious passage: “ Many families of the military class having gradually “ abandoned the ordinances of the *Vedas*, and the “ company of the *Brahmens*, lived in a state of degradation, as the people of *Pundraca*, the *Chinas*, “ and some others.” He then says, “ this being direct, positive, disinterested, and unsuspected, would “ decide the question, if we could be sure that the
word

word *China* signifies a *Chinese**." Setting aside the difficulties attending the proof of this, of which he has by no means given a compleat solution, I would ask, if it is not to be highly suspected, that the *Brahmens*, like all other bigotted and ignorant sects, wish to exalt themselves by making all nations inferior to their own? I have before observed, that the laws of MENU in use among the *Burmas* are very different from those translated by Sir W. JONES†. The *Burma* code is certainly more than six hundred years old, as it was introduced from *Ceylon* at least so long ago; but it would be very difficult to show, in a country where there are no annals, that the institutes of MENU have existed in their present form for the half of such a period. The *Burma* copy makes no mention of this state of degradation. Were it ascertained, that the GOTAMA mentioned in the *Vedas*‡ was the same with GODAMA of the *Rāhāns*, it would be evident that the *Chinese* could not have abandoned the ordinances of the *Vedas*: for at the time of GODAMA, the *Chinese* were a civilized people, with nearly the same laws which they at present enjoy, and the *Vedas* of consequence would be of later date than their institutions. It is however alleged, that there have been more than one GODAMA or BOUDDHA: but whether this opinion be well founded, or whether the GODAMA mentioned in the *Vedas*, be the institutor of the *Burma* religion, or whether he lived earlier or later than that legislator, I do not pretend to ascertain.

A FEW more particulars remain to be mentioned relating to the learning of the *Burmas*.

THE *Burmas* have among them many histories, containing an account of the lives and actions performed by the different families of their princes. These histories

* *Asiatick Researches*, II, 369. † Page 292 of this Volume.

‡ Sir WILLIAM JONES, in the *Asiatick Researches*, IV, 170.

tories are, I am told, very fabulous; every action being attended by omens and prodigies. Still however they may throw some light on a part of the world hitherto so little known: and I am hopeful soon to be able to lay before the learned, a translation of the *Maha-rafa Wayn-gye*, the most celebrated historical work of the *Burmas*. These people have also translated histories of the *Chinese* and *Siammese*, and of the kingdoms of *Kathee*, *Ko-shanpyee*, *Pagoo*, *Saymmay*, and *Laynzayn*. Of all these I saw copies, and several of them I procured for Sir JOHN MURRAY.

ON medicine the *Burmas* have several books. They divide diseases into ninety-six genera, and of these several are subdivided into many species. Their books contain descriptions of all the ninety-six diseases, with various recipes for their cure. Of the animal kingdom, mummy is a favourite medicine. The *Burmas* are acquainted with the use of mercury in the cure of the venereal disease: but their manner of giving it is neither certain nor safe. They make a candle of cinnabar and some other materials, and setting fire to it, the patient inhales the fumes with his nostrils. The patient is however rarely able to persevere long in this course, as it always produces a want of appetite, and extreme languor. The greater part however of the *Burma* remedies are taken from the vegetable kingdom, especially of the aromatic kind, nutmegs being one of their most favourite medicines. They are well acquainted with the plants of their country, and for a vast number have appropriate names. On the whole, however, the practice of their physicians is almost entirely empirical; and almost every one has, or pretends to have, a number of private recipes, on which the success of his practice chiefly depends. I was often tempted by wonderful stories concerning the efficacy of these nostrums, in order to induce me to purchase the secret, which some of them pretended to have been handed down from their fathers for several generations. Indeed I found

found a great spirit of illiberality among my brethren of trade; nor were they exempt from imposing on the weakness of the sick, by a pretension to supernatural powers. In spite however of all these indirect means of influence, I found them deservedly not in possession of an honourable estimation among their countrymen. One curious custom relating to the *Burma* physicians may be mentioned. If a young woman is dangerously ill, the doctor and her parents frequently enter into an agreement, the doctor undertaking to cure her. If she lives, the doctor takes her as his property; but if she dies, he pays her value to the parents: for in the *Burma* dominions, no parent parts with his daughter, whether to be a wife, or to be a concubine, without a valuable consideration. I do not know whether the doctor is entitled to sell the girl again, or if he must retain her in his family; but the number of fine young women, which I saw in the house of a doctor at *Myeda*, makes me think the practice to be very common.

In surgery, the skill of the *Burmas*, I believe, goes no farther than dressing wounds, and setting bones. Of late indeed they have introduced from *Arakan* the art of inoculation for the small-pox. This practice has however not become general, as a very great proportion of the people's faces are pitted by that disease.

ON law, the *Burmas* have many treatises; both containing the laws of *MENU*, and copious commentaries on these. Whether they still have any copies of the law, as originally imported from *Ceylon*, I know not: but I was told, that the *Damathat-gye*, or code in common use, has suffered several alterations, and additions, made by the decrees of various princes.

I HEARD of no poetry, which the *Burmas* possess, except songs. Of these they have a great number on a variety of subjects, and are fond of quoting

them on many occasions. Their music, both vocal and instrumental, appeared to me very bad. Some of their musical instruments are, indeed, not so barbarously noisy, as those of the *Hindus* and *Chinese*; but the airs, which the *Burmas* performed on them, I could not at all comprehend. On the contrary, many of the *Hindu* and *Chinese* airs seem to me not at all unpleasant: but I must confess, that I am entirely unskilled and rude in the science of music.

The *Burmas* have dramatic entertainments, used at all festivals, and well described by M. DE LA LOUBERE in his account of *Siam*. The performers indeed, which we saw, were all *Siammesz*. Although these entertainments, like the *Italian* opera, consist of music, dancing, and action; with a dialogue in recitative; yet we understood, that no part but the songs was previously composed. The subject is generally taken from some of the legends of their heroes, especially of *RAMA*; and the several parts songs, and actions, being assigned to the different performers, the recitative part or dialogue is left to each actor's ingenuity. If, from the effects on the audience we might judge of the merit of the performance, it must be very considerable; as some of the performers had the art of keeping the multitude in a roar. I often, however, suspected that the audience were not difficult to please: for I frequently observed the *Myoowun* of *Haynthawade* (the man of high rank whom we most frequently saw), thrown into immoderate laughter by the most childish contrivances. These eastern nations are indeed a lively, merry people; and like the former *French*, dance, laugh, and sing, in the midst of oppression and misfortune.


The original of most of the *Burma* books on law and religion is in the *Pali* or *Pale* language; which undoubtedly is radically the same with the *Sanscrit*. I was assured at *Amarapura* that the *Pali* of *Siam*, and *Pegu*, differed considerably from that of the *Burmas*, and an intelligent native of

Tacay, who had been at *Cingala* or *Candy*, the present capital of *Ceylon*, and at the ruins of *Anuradapura*, the former capital, assured me, that the *Pali* of that island was considerably different from that of *Ava*.

In many inscriptions, and in books of ceremony, such as the *Kammua*, the *Pali* language is written in a square character, somewhat resembling the *Bengal Sanscrit*, and called *Magata*. Of this a specimen may be seen in the description of the *Borgian* museum by PAULINUS*. But in general it is written in a round character nearly resembling the *Burma* letters. Of this kind is the specimen given by the accurate M. DE LA LOUBERE, and which some persons have rashly conceived to be the *Burma*. There is no doubt, however, that all the different characters of *India*, both on the west and on the east of the *Ganges*, have been derived from a common source: and the *Burma* writing of the whole appears to be the most distinct and beautiful.

In their more elegant books, the *Burmas* write on sheets of ivory, on very fine white palmira leaves. The ivory is stained black, and the margins are ornamented with gilding, while the characters are enamelled or gilded. On the palmira leaves the characters are in general of black enamel; and the ends of the leaves, and margins, are painted with flowers in various bright colours. In their more common books, the *Burmas* with an iron style engrave their writing on palmira leaves. A hole, through both ends of each leaf, serves to connect the whole into a volume by means of two strings, which also pass through the two wooden boards, that serve for binding. In the finer binding of these kind of books the boards are lacquered, the edges of the leaves cut smooth and gilded, and the title is written on the upper board, the two cords are by a knot or jewel secured at a little distance from the boards, so as to prevent the book from falling to pieces,

but sufficiently distant to admit of the upper leaves being turned back, while the lower ones are read. The more elegant books are in general wrapped up in silk cloth, and bound round by a garter, in which the *Burmas* have the art to weave the title of the book.

As there are but few of the *Burmas* who do not read and write, almost every man carries with him a *parawaik* *, in which he keeps his accounts, copies songs, till he can repeat them from memory, and takes memorandums of any thing curious. It is on these *parawaiks* that the *Zares* or writers in all courts, and public offices, take down the proceedings and orders of the superior officers : from thence copying such parts, as are necessary, into books of a more durable and elegant nature. The *parawaik* is made of one sheet of thick and strong paper blackened over. A good one may be about eight feet long, and eighteen inches wide. It is folded up somewhat like a fan, or thus *a*  *b* each fold, or page being about six inches, and in length the whole breadth of the sheet. Thence, wherever the book is opened, whichever side is uppermost, no part of it can be rubbed, but the two outer pages, *a. b.* and it only occupies a table one foot in width by eighteen inches long. The *Burmas* write on the *parawaik* with a pencil of steatites. When in haste the *Zares* use many contractions, and write with wonderful quickness. I have seen them keep up with an officer dictating, and not speaking very slow. But when they take pains, the characters written on the *parawaik* are remarkably neat. Indeed this nation, like the *Chinese*, pique themselves much on writing an elegant, and distinct character. When that, which has been written on a *parawaik*, becomes no longer useful, the pages are rubbed over with charcoal, and the leaves of a species of *Dolichos* : they are then clean, as if new, and equally fit for the pencil.

* I do not know, but that this ought to be written *Paruæk*.

Every convent has a collection of books : several of which are pretty considerable. The most common copiers are indeed the *Rahans*, who, prepare books both for their convents, and for presents to their lay benefactors. These books are kept in chests, much ornamented with gilding, and bits of looking glass, fastened on with lacquer, in the shape of flowers. At *Amarapura* we were shewn a part of the royal library. This is a brick building, surrounded by enclosed courts, and temples, which occupy a delightful situation, in the N. W. angle of the city. Near it is a small, but most elegant *Kiaung*. To this, at times, the monarch retires ; and we were shewn the gilded couch on which he reposes, while the *ZARADO* reads to him, and instructs him in the duties of religion. The library itself is neither a convenient nor handsome building. The gallery, into which we entered, contained about a hundred chests, gilded on the sides, and lacquered above, with the general title of their contents written in golden letters. The chests were large, and if full, must have contained many thousand volumes. As we saw only a part, I presume that the king's collection is very extensive. He is, indeed, said to be a very intelligent, and learned prince. He was very desirous of obtaining some *Brahmen* more learned, than those he had, to instruct him in astronomy : and he had caused the institutes of *MENU* to be translated from the *English* of Sir WILLIAM JONES. He must therefore have heard of what is pursued among the *Europeans*, in at least oriental literature : and it is to be hoped, that some more useful books may attract his notice : books which might tend to improve the people, and give them more enlightened notions of politics, of the arts, and of science. Hitherto, I suspect, the laws, or religion, of the *Burmas*, have contributed little to the happiness of the people ; but fortunately they have not, like those of the *Brahmens*, placed any insurmountable obstacles in the way of national improvement.

IX.

NARRATIVE

OF

A JOURNEY TO SIRINAGUR.

By CAPTAIN THOMAS HARDWICKE.

HAVING sometime ago visited the mountainous country of *Sirinagur*; I hope a succinct detail of some of the most remarkable circumstances, which occurred in that journey, will not be unacceptable to the *Asiatick Society*.

On the 3d of *March*, 1796, I commenced the journey, from *Futtehghur*, in company with Mr. HUNTER; and we arrived, on the 19th of the same month, at *Anoopshcher*: our route was circuitous, for the purpose of visiting the several indigo plantations, established by *European* gentlemen, in this part of *Dooab*. Here were conspicuously displayed, the effects of skill, of industry, and of a spirit of commercial enterprize, in beautifying and enriching a country, which in other parts exhibiting only waste and forest, supplies, indeed, matter to gratify the curiosity of a naturalist, but suggests to the philanthropic mind the most gloomy reflections.

At *Anoopshcher* I recruited the necessary supplies for the prosecution of my journey, and on the 23d, continued my march alone; for my fellow-traveller was under the necessity of returning, from this place, to attend the residency with DOWLAT ROW SINDIAH, on a visit to the *Marhatta* camp.

On the 30th of *March*, I arrived at *Nejeebabad*: the town is about six furlongs in length; with some regular streets, broad, and enclosed by barriers at different

distances, forming distinct bazars. In the neighbourhood, are the remains of many considerable buildings. Near the south-west end of the town is a large garden, called *Sultan Bagh*; containing in the center a spacious square building, erected by one of the sons of NEJEEB-UD-DOWLAH.

On the north-east side of this garden, and at the distance of 300 yards, is another, in which lies buried NEJEEB-UD-DOWLAH:; his grave is without ornament, raised on a terrace, a few feet from the ground, in an area of about eighty yards, surrounded by a square building, formed into apartments and offices, for the accommodation of the servants, appointed to perform the usual ceremonies, for the benefit of departed souls.

A considerable traffic is carried on here, in wood, bamboos, iron, copper, and tincal, brought from the hills. It is also the center of an extensive trade from *Lahore*, *Cabul*, and *Cashmir*, to the east and south-east part of *Hindustan*.

At the distance of ten miles and six and a half furlongs, from *Nejeebabad*, on the road to *Hurdwar*, is *Subbul-gurh*, a very extensive line of fortification, enclosing the town; both of which exhibit little more than naked walls falling to decay. Much of the ground, within the fort, is in cultivation. In the south-east curtain, or face of the fort, is a lofty brick-built gateway. The high road leads close past the north-east bastion, and continues along the north face, the whole length, within thirty or forty yards of the ditch.

On the 1st of *April*, I arrived at *Unjennee Ghat*, about three miles below *Hurdwar*, on the eastern side of the river. The town of *Hurdwar* occupies a very small spot, consisting of a few buildings of brick, the property

property of eminent *Gooseyns*. It is situated on the point of land at the base of the hills, on the western side of the river.

The stream here divides itself into three channels, the principal of which is on the eastern side, and running along a pleasant bank, called *Chandee Ghat*, meets the base of the hill, which gives this name to the *Ghat* below. The deepest channel at present is in some places about fifteen feet, a depth not long continued; and near the termination of each reach of the river, the stream breaks, with rapidity, over beds of large loose stones, sometimes with no more water than sufficient to give passage to large unloaded boats. The points of the islands, several of which are formed in the bed of the river, are principally of loose pebbles and sand; but, the rest of the land, between the different channels is covered with the *Mimosa Catechu*.

The ascent of the hill, called *Chandee*, commences at a little distance from *Unjennee*, from which, to the top of the hill, I consider about two miles and a quarter. Some part of this distance, however, is a long and elevated level bank. The ascent to the high part of the hill, is very steep; the path narrow, and requiring much attention and exertion, to prevent accidents in stepping, from the looseness of the stones and earth.

On the top of this hill is a *Tersool* or trident, about fourteen feet high, of stone, supported by a small square base of mason-work; the base of the forks is ornamented, on the east side, with figures of the sun and moon, between which, upon the shaft, is the figure of *GANESA*.

Near the base of the shaft, are the figures of *KAALKA DEVI*, and *HANUMAN*, the former on the east, the latter west. The space on the summit of this hill, is not twice larger than the square of the pedestal

destal of the trident: from this, a narrow ridge leads to another hill, something higher: and in this manner the hills here are mostly connected; the highest being generally of a conical form. They are very thinly clad with vegetable productions: the trees are few, and small; and the grass, at this season of the year, parched up. In some parts of the hills, however, where the aspect is more northerly, the grass is more abundant, finer, and seemingly much liked by the cattle.

On the top of *Chandnee*, a *Bramen* is stationed to receive contributions from visitors during the continuance of the *Mela*: the produce, he says, upon an average, is for that time, about ten rupees per day.

This *Mela*, or fair, is an annual assemblage of *Hindus*, to bathe, for a certain number of days, in the waters of the *Ganges*, at this consecrated spot. The period of ablution is that of the Sun's entering Aries; which, according to the *Hindu* computation, being reckoned from a fixed point, now happens about twenty days later than the vernal equinox. It accordingly fell on the evening of the 8th of *April*. But every twelfth year, when Jupiter is in Aquarius, at the time of the Sun's entering Aries, the concourse of people is greatly augmented. The present is one of those periods, and the multitude collected here, on this occasion, may, I think, with moderation, be computed at two and a half millions of souls*. Although the performance of a religious duty is their primary object, yet, many avail them-

* This estimation may appear enormous; and it therefore becomes necessary to give some account of the grounds on which it was formed. Small sums are paid by all, at the different watering places; and the collectors at each of these, in rendering their accounts to the *Mehunts*, who regulate the police, are obliged to form as exact a register, as a place of so much bustle will admit of. From the principal of these offices, the number of the multitude is found out, probably within a few thousands. The *Goosseyn*, on whose information the calculation was formed, had access to these records; and the result, as delivered above, was thought more likely to be under, than over the truth.

selves of the occasion, to transact business, and carry on an extensive annual commerce. In this concourse of nations, it is a matter of no small amusement to a curious observer, to trace the dress, features, manners, &c. which characterize the people of the different countries of *Cabal*, *Cashmir*, *Lahore*, *Butaan*, *Sirinagur*, *Cummow*, and the plains of *Hindustan*. From some of these very distant countries, whole families, men, women, and children, undertake the journey, some travelling on foot, some on horseback, and many, particularly women and children, in long heavy carts, railed, and covered with sloping matted roofs, to defend them against the sun and wet weather : and during the continuance of the fair, these serve also as habitations.

Among the natives of countries so distant from all intercourse with people of our colour, it is natural to suppose that the faces, dress, and equipage of the gentlemen who were then at *Hurdwar*, were looked upon by many as objects of great curiosity : indeed it exceeded all my ideas before on the subject, and as often as we passed through the crowd in our palanquins, we were followed by numbers, of both women and men, eager to keep pace, and admiring, with evident astonishment, every thing which met their eyes. Elderly women, in particular, salaamed with the greatest reverence ; many shewed an eagerness to touch some part of our dress ; which being permitted, they generally retired with a salaam, and apparently much satisfied.

At our tents, parties succeeded parties throughout the day, where they would take their stand for hours together, silently surveying every thing they saw.

Sometimes more inquisitive visitors approached even to the doors of the tent, and finding they were not repelled, though venturing within, they generally retired, with additional gratification ; and frequently

quently returned, as introductors to new visitors, whose expectations they had raised, by the relation of what themselves had seen.

The most troublesome guests were the *Goosseyns*, who being the first here in point of numbers and power, thought it warrantable to take more freedoms than others did : and it was no easy matter to be, at any time, free from their company : it was, however, politically prudent, to tolerate them ; for, by being allowed to take possession of every spot round the tents, even within the ropes, they might be considered as a kind of safe-guard, against visitors of worse descriptions ; in fact, they made a shew of being our protectors.

In the early part of the *Mela*, or fair, this sect of *Fakeers* erected the standard of superiority, and proclaimed themselves regulators of the police.

Apprehending opposition, in assuming this authority, they published an edict, prohibiting all other tribes from entering the place with their swords, or arms of any other description. This was ill received at first, and for some days it was expected force must have decided the matter ; however, the *Byraagees*, who were the next powerful sect, gave up the point, and the rest followed their example. Thus the *Goosseyns* paraded with their swords and shields, while every other tribe carried only bamboos through the fair.

The ruling power was consequently held by the priests of the *Goosseyns*, distinguished by the appellation of *Mehunts*, and during the continuance of the *Mela*, the police was under their authority, and all duties levied and collected by them. For *Hurdwar*, though immediately connected with the *Mah-ratta*

ratta government, and, at all other seasons, under the rule and controul of that state, is, on these occasions, usurped, by that party of the *Fakeers*, who prove themselves most powerful; and though the collections made upon pilgrims, cattle, and all species of merchandize, amount to a very considerable sum; yet no part is remitted to the treasury of the *Mahratta* state.

These *Mehunts* meet in council daily: hear and decide upon all complaints brought before them, either against individuals, or of a nature tending to disturb the public tranquillity, and the well management of this immense multitude.

As one of these assemblies was on the high road near our tents, we had frequent opportunities of noticing their meetings; and one of our sepoy, having occasion to appear before it, in a cause of some consequence, it gave us an opportunity of learning something of the nature of their proceeding.

The sepoy, it seems, on leaving the station, where his battalion was doing duty, was entrusted, by one of the native officers, with fifty rupees, and a commission to purchase a camel. With the intention of executing this trust, he mixed with a crowd, where some camels were exposed for sale; and while endeavouring to cheapen one to the limits of his purse; shewing the money, and tempting the camel merchant to accept, for his beast, the fifty rupees, he drew the attention of a party of *Marwar* men, who were meditating a plan to get it from him. Five or six of those men, separating from the crowd, got round him, said, they (or one of them) had lost his money, to the amount of fifty rupees; that he, the sepoy, was the man who had it; and, with much clamour and force, they got the money from him. Fortunately, the sepoy's comrades were near; he ran towards them and communicated the alarm, and got assistance,

assistance, before the fellows had time to make off, or secrete the money; they, however, assumed a great deal of effrontery, and demanded that the matter should be submitted to the decision of the *Mehunts*: before this tribunal the cause was consequently brought, and an accusation laid against the sepoy, by these men of *Marwar*: the money was produced, and lodged in court, and the cause on both sides, heard with deliberation. Unlucky for the *Marwarees*, they had neither opportunity to examine or change the money; and knew not what species of coin made up this sum: which circumstance led to their conviction: for being enjoined by the *Mehunts*, to describe the money they had lost, they named coin very different from what the purse contained: but when the sepoy was called upon to answer the same question, he specified the money exactly. The judges immediately gave a decision, in favour of the sepoy, and restored him his money: the *Marwars* were fined each in the sum of five rupees, and sentenced to receive each fifty stripes, upon their bare backs with the *Korah*.

The *Goosseyns* maintained an uncontested authority, till the arrival of about 12 or 14,000 *Seek* horsemen, with their families, &c. who encamped on the plains about *Jualapore*. Their errand here was avowed to be bathing; and soon after their arrival they sent OODASSEE, their principal priest or *Gooroo*, to make choice of a situation on the river side, where he erected the distinguishing flag of their sect, for the guidance and direction of its followers, to the spot. It appeared, however, that no compliments or intimation of their intentions, had been made to the ruling power; and the *Goosseyns*, not willing to admit of any infringement of their authority, pulled down the flag, and drove out of the place those who accompanied it. Some slight resistance was shewn by the *Seeks*, in support of their priest, and the dignity of their flag, but was repelled with much violence, and the

Goosseyns,

Goosseyns, not content with driving them away, abused and plundered the whole party, to a considerable amount.

The old priest OODASSE, on his return to the *Seek* camp, complained to Rajah SAHEB SING, their chief, in the name of the body collective, of the insult and violence they had met with from the *Goosseyns*.

A consultation was immediately held by the three chiefs of the *Seek* forces, viz. Rajah SAHEB SING of *Puteecalah*, and ROY SING and SHERE SING of *Booreah*, who silenced the complainants by promising to demand redress and restitution for what they had been plundered of.

A VAKEEL was immediately dispatched, with a representation, from the *Seeks* to the *Mehunts*, or priests of the *Goosseyns*, pointing out the right, they conceived they possessed, in common with all other nations, to have access to the river; and complaining of the wanton insults they had met with, from their tribes, when in the peaceable execution of their duty: however, as they had no remedy, to make amends for some part of the ill treatment they met with, yet they demanded an immediate retribution of all they had been plundered of, and free access to the river or place of bathing.

The *Mehunts* heard their complaints, expressed concern at what had happened, and promised their assistance, in obtaining the redress sought for: and the matter, for the present, rested here; the *Goosseyns* giving back, to the *Seeks*, all the plunder they had taken, and admitting of their free ingress and egress to the river.

All was pretty quiet, during the few remaining days

days of bathing; but on the morning of the 10th of *April*, (which day concluded the *Mela*) a scene of much confusion and bloodshed ensued. About eight o'clock on that morning, the *Seeks* (having previously deposited their women, children, and property, in a village, at some distance from *Hurdwar*) assembled in force, and proceeded to the different watering-places, where they attacked, with swords, spears, and fire-arms, every tribe of *Fakeers* that came in their way. These people made some resistance, but being all on foot, and few, if any, having fire-arms, the contest was unequal: and the *Seeks*, who were all mounted, drove the poor *Sannyassees*, *Byraagees*, *Goosseyns*, *Nagees*, &c. before them, with irresistible fury. Having discharged their pieces within a few paces, they rushed upon those unfortunate pilgrims with their swords, and having slaughtered a great number, pursued the remainder, until, by flight to the hills, or by swimming the river, they escaped the revenge of their pursuers.

The confusion, spread among other descriptions of people, was inconceivable; and every one, thinking himself equally an object of their resentment, sought every means of safety that offered: many took to the river, and in the attempt to swim across, several were drowned: of those who endeavoured to escape to the heights, numbers were plundered, but none who had not the habit of a *Fakeer* was in the least hurt: many parties of straggling horsemen now ranged the island, between *Hurdwar* and *Unjinnee gaut*; plundering the people to the very water's-edge, immediately opposite to us; fortunately for thousands, who crowded to this *gaut*, the greatest part of one of the vizier's battalions, with two six-pounders were stationed here; two companies of which, with an addition of a few of our own sepoy, and a native officer, whom Captain MURRAY very judiciously sent across the river, kept the approach of the horse in check. Finding they could not attack the crowd on the water's-edge, without receiving a smart
fire.

fire from the sepoy, as well as exposing themselves to the fire of their guns, they drew off, and by about three o'clock in the afternoon, all was again quiet.

At this time, the cause of such an attack, or the future intentions of this body of *Seeks*, was all a mystery to us; and popular report favoured the conjecture, that they intended to profit from the present occasion, and by crossing the river, at a few miles lower down, return, and plunder the myriads of travellers who crowded the roads through *Rohilcund*. However, the next morning discovered they had no such intentions; as, from the adjacent heights, we saw them take their departure, in three divisions, bending their march in a westerly course, or directly from us. The number, which had crowded to the river side, opposite to our tents, was too great to be ferried over in the course of the night, and consequently remained in that situation: fearful of the approach of day, and in dreadful alarm from the expectation of another visit from the *Seeks*, but by eight o'clock, their minds were more at ease, and they offered up their prayers for the *English* gentlemen, whose presence, they universally believed, had been the means of dispersing the enemy.

From the various information we had now collected, we concluded this hostile conduct of the *Seeks* was purely in revenge against the tribes of *Fakeers*: many of the wounded came to our camp to solicit chirurgical assistance and they all seemed very sensible, that they only were the objects of the enemy's fury.

Accounts agree that the *Fakeers* lost about five hundred men killed, among whom was one of their *Mehunts*, or priests named MAUNPOOREE; and they had many wounded: of the *Seeks* about twenty were killed, but the number of wounded not known.

The

The mountains in the neighbourhood of *Hurdwar* afford, but little amusement for the mineralogist ; nor is a fossil to be found in them, impregnated with any other metal than iron.

In some situations, where the fall of water has exposed their surface, for one or two hundred feet, nothing more is exhibited than an argillaceous marl, varying in hardness and colour, according to the metallic particles they contain : sometimes this variety is shewn very distinctly, *stratum super stratum*, the lowest consisting rather of siliceous particles, having loose quartzose sand, with very little earthy mixture ; and crumbling to pieces with the least application of force ; the next a fine smooth marl, of a dull cineritious grey, compact, and soapy to the touch : it is quickly diffusible in water, and does not effervesce in acids. The next is of a pale liver-coloured brown, possessing properties like those of the preceding one, but somewhat more indurated, and most likely containing more iron : the fourth, or superior stratum is still browner than the last, and exhibits, in its fracture, small shining micaceous particles. In other places, the whole side of a mountain consists of siliceous sand, mixed with mica and some calcareous earth ; the whole very slightly connected, laminated, and tumbling in large quantities into the water-courses below ; sometimes found sufficiently indurated to bear the violence of the fall. From the place called *Neel Koond*, a winding nullah, of about a mile in length, falls into the *Ganges* a little above *Unjinnee* : in the bed of it, a greater variety of stones is found than might be expected from the nature of the hills, in which the source of it lies ; thus granite, and opaque quartz, of different colours, are found in pretty large rounded masses : yet no such stones, as far as observation can trace, form any part of the mountains, in this neighbourhood.

The high ground between the bank of the *Ganges*
and

and the mountains, also contains many of these stones, in a loose unconnected state; some lying very deep in the earth, as may be seen on the side of the bank exposed to the river: these bear a perfect resemblance to those stones in the beds of the nullah, and *Ganges*, which owe their form to the attrition of rolling currents for ages: but the elevated situation in which these are bedded, leaves no room for supposition, when, if ever, they were subject to such action.

The riches of the vegetable kingdom, however, made ample amends for the want of variety in the mineral productions. As an enumeration of the plants I met with, during my stay at this place, would interrupt the thread of my narrative, I have subjoined them in the form of an appendix, together with all the others found in the course of my tour; adding such remarks on their history, or æconomical uses, as I judged might be interesting. I have only to observe, that the season just now is not very favourable for finding herbaceous plants in flower; the greatest abundance of this description is brought forward by the periodical rains, and a visit in the months of *September* and *October*, would, no doubt, be attended with a very successful investigation. On the other hand, to explore the loftier products of the extensive forests, with the deliberation the research requires, it should be begun in *January*, and continued to the end of *April*.

As a necessary measure, previous to my proceeding on my intended journey to *Sirinagar*, I dispatched a servant, with a letter, to the rajah of that place; signifying my intentions of visiting his capital, and forwarding, at the same time, a letter I had the honour to receive, from the vizier, ASOPH-UL-DOWLAH, through the kind influence of the resident, Mr. CHERRY. My servant returned on the day I was quitting *Hurdwar*, (12th *April*) with the rajah's acknowledgement of my letter, and a perwannah or pass

through his dominions written in the ancient *Hindu* character.

On the 12th of *April*, I took my departure from *Hurdwar*, or *Unjinneeghat*; and on the 13th, making two marches of it, arrived at *Nejeebabad*. This was certainly a retrograde motion, but two or three reasons operated, to induce me to change the route I originally intended to take; first, *Hurdwar* was a place of less security for the cattle and baggage I must leave behind, and the difficulty of feeding them greater, than in a place where established bazars produced abundance of grain.

Secondly, some little conveniences necessary to my manner of travelling, I could not get made up here; and thirdly, the road direct from *Hurdwar* to *Sirina-gur*, was more difficult of access and worse supplied with provisions and water, than the one recommended from *Nejeebabad*; I therefore decided in favour of the latter.

Among other preparations while here, a substitute for a palankeen was requisite, and I made up what is called a *Chempaan*, which is nothing more than a litter, of about five feet in length and three in breadth, supported between two bamboos, or poles, fixed to the sides a little above the bottom, and carried in the manner of what is called in *Bengal* a *Tanjaan*, by a short yoke fixed between the poles near the ends, and parallel to them.

On the 20th, I commenced my march from *Nejeebabad*, and encamped at the petty village of *Coodwara*, at the distance of eighteen miles. This village is situated at the distance of three furlongs, within the barrier of this *ghat*, where is the first ascent of the hills through a rugged road. The barrier is a large double gate of plank, flanked on the left by a precipice, and on the right by a wall of loose stones, connected with the neighbouring ridge of hills. This point of land, including the village, is nearly encircled by the *Koa-nutlah*, a shallow, but clear and rapid stream; but being surrounded on the

the north, east, and south, by higher mountains, the situation, must be, at some seasons, intolerably hot, and probably unhealthy.

These ranges of hills rise, with a moderate, though unequal slope, from the plains below, and are skirted by deep forests, extending from *Hurdwar* through *Rohilkund*, *Oude*, and the countries to the eastward, and produced many kinds of valuable timber, and an abundant store of plants, never yet, perhaps, brought under the systematical examination of the botanist. They also abound with game of many descriptions. Elephants are found here, and sometimes range beyond the skirts of the woods, to the great injury of whatever cultivation they meet with: but their depredations are particularly directed to sugar plantations.

They are considered inferior, in size and value, to the elephants brought from the eastern countries; and are seldom caught, but for the purpose of taking their teeth.

The soil of these forests varies, from a black fat earth, where the trees or shrubs which it nourishes, acquire a large size; to a firm reddish clay, and mixtures of gravel and loose stones of various descriptions.

On the 21st, I marched to *Amsore*, a small village on a little cultivated spot. The first part of the road lay in the bed of the *Koa-nullah*, and the whole of it was so rugged, that although the distance is only computed four coss, and I judge it not to exceed seven miles, I employed three hours and a half in walking it, and my baggage did not arrive till six hours after I set off. The general direction of the road is about N. E. by E.

On the 22d, a walk of two hours and forty minutes

carried me to *Ghinouly*, the distance of which from *Ansore*, I compute to be eight miles; the road being much less obstructed than yesterday. Towards the beginning of this day's march, the road passes between two stupendous rocks. The stones, in this part of the nullah, lying in very large masses, the stream passing between with very great rapidity, and the only path across being on spars laid from rock to rock, the passenger is exposed to imminent danger. Farther on, I met with one of the small water-mills, called *Punchuckee*, which was now working. The construction is very simple: the stones which are little larger than those turned by the hand, and called *chuckies*, are worked by means of an horizontal wheel; the spokes of which are cut like the valves of a venetian window, and set obliquely into the case of a perpendicular shaft; and, upon these valves, a stream of water, from a narrow spout, at about four feet elevation, falls, with force enough, to give brisk motion to the machine. The water is brought to it, by banking up the stream of the nullah, till it acquires the necessary elevation. The hopper is a conical basket, suspended with the narrow end of the cone over the hole in the stones; and being kept in a gentle motion, it supplies them constantly and regularly. In this manner, two men relieving each other, will grind from four to six maunds of grain in twenty-four hours.

The village at *Ghinouly* consists of three huts. Seldom more than five or six together are to be met with; and it is a large village that has so many as ten.

The hills in this situation, are not so close as those in the road behind me; the ground between, on each side the nullah, elevated and very pleasant; and the cultivation carried to the very summits of those mountains. The sides of all, look greener than those hitherto seen, but I was not yet sensible of
any

any moderation in the heat of the day. The thermometer was up to ninety-five, and never lower than seventy-two within my tent.

On the 23d, after a walk of three hours and ten minutes, I arrived at *Dosah*, an inconsiderable village on the banks of the nullah, along which lay the greatest part of the road, from last encampment. This day's journey exhibited a considerable variety of scenery, being now a rugged path, between abrupt impending rocks, and now, little open spaces, surrounded with gently sloping hills, the sides of which are diversified with clumps of fir, oak, and saul, and with cultivated ground. In one of these latter situations, the water is conducted from one side of the nullah, to the fields on the other by an ingenious, though simple contrivance. A trough, formed by hollowing the body of a large fir-tree, is placed across, where the over-hanging rocks favour the communication, and conducts a stream, sufficient for the purpose of irrigation.

The *Koa-nullah* has its source about three miles above *Dosah* to the north, and its first small branch rises in a spring at *Dewara-Kaal*, and receives increase from several small rills, issuing from the surrounding hills, between *Dewara-Kaal*, and this place.

The bed of the nullah here contains great quantities of *Mica*, of various tints, according to its impregnation with iron or other metallic ores: the mountains exhibit it in very considerable masses; and, in many places, it falls crumbling down their sides, into the water-courses below. Thence it is carried away, by the currents, shining at the bottom, with a lustre little less brilliant than silver. None of it, however, is of so pure a transparency as to serve the purposes to which this substance is usually applied.

The thermometer, to-day, was at the highest ninety, and at four in the morning down to sixty-five; the wind variable and threatening change of weather.

The sportsman may here find ample source of amusement. Black partridge, hares, and quail, are found in plenty, without much labour; and the eager pursuer, who does not consider the ascending of heights, and creeping into jungles, material obstacles to his amusement, will find two species of fowls, and the deer called *parah*, by the natives (*Cervus Porcinus*, L.).

The fish of the nullah are small, but make a very tasted fry, and are an acceptable variety to the scanty supply of animal food procurable: they are mostly of the genus *Cyprinus*, four species of which I particularly remarked. The manner of taking fish in these shallow rapid nullahs may not be unworthy of notice. One method is by rod and line; about eight or ten yards of one end of the line is filled with nooses, or snares, formed of horse hair from one to three or four hairs strong, according to the size of the fish expected to be caught; and at intervals of about fifteen inches, oblong pieces of iron are fixed, to prevent its being carried away by the force of the current: the other end of the line, perhaps ten or twelve yards, is passed through a bow, at the end of a short rod, and kept in the hand below, and both are managed in the same manner as a trowling rod and line; thus prepared, the fisherman casts the end with the snare across the stream, where he lets it remain about half a minute, during which time, he pokes a light forked stick, carried in the right hand, into holes about the stones, thus driving the fish up the stream, against the snares of the line, and on taking it up, generally has secured from one to four fish. By these simple means, he seldom fails, in about half an hour, to get a tolerable fry.

Another

Another method, practised by the natives, is to stupify or kill them, with vegetable substances: for this purpose they make choice of a pool formed by the current, and turning the stream, by heaping up stones, stop up the supply of fresh water into it, in the same manner, closing every outlet, then bruising the fruit of a tree common here, they cast a quantity into the pool, and in about half an hour, its deleterious effect seldom fails to shew itself: the fish, unable to preserve their equilibrium, tumble about, rise to the surface of the water, and are easily taken with the hands.

On the 24th, in three hours thirty-five minutes, I reached *Belkate*. The scenery, on this day's march, was more beautifully diversified, than in any preceding one. The forests of oak, fir, and boorans*, are here more extensive, and the trees of greater magnitude than any I have yet seen. Unfortunately, neither the traveller's mind, nor his eye, can be enough disengaged, to admire, in security, the sublimity of this prospect: for after the ascent of a pretty high ridge of mountains, the road is continued along their side; winding, and so narrow, that without constant attention, you are in danger of being precipitated into an alarming depth of valley on the right.

The spot, on which I encamped, is a narrow valley, separating the villages of *Bedeyl* and *Belkate*, which are nearly opposite to each other; the river *Nayaar* running between, with a stream beautifully transparent, in the direction of W. N. W.

The principal source which forms this river, if I am to trust the authority of the natives, lies at a place called *Doobree*, about forty eight coss, or four days journey east (to a man on foot, without burthen;) and issues, in a considerable stream, from the root of a tree called *Beh-kul*. It falls into the *Ganges*, about

* See the catalogue annexed to this paper.

nine miles below *Dew-praag*, with which I find the natives have some communication in the rainy season; and through this channel carry on a small traffic in iron, grain, &c. in canoes formed from the trunk of large *Semel* trees.

I crossed the river, in knee-deep water, and pitched my tent under a large mango tree, where two or three trees more afford ample shade for servants of all descriptions.

The mountains in the neighbourhood of this valley lie in lamellated strata of various coloured fissile stones or sl te, from a dull clay colour, to ash, bluish black, light brown, and ferruginous brown; in some places a vein of white quartz runs through, in an irregular direction.

The houses here are covered, with a kind, much resembling the common writing slate.

On the 25th I walked, in two hours and fifteen minutes, to *Nataana*, a village of five or six houses upon the brow of a sloping hill. It looks into an excessive deep valley, formed, by the surrounding hills, into a narrow bottom, resembling an inverted cone, and cultivated in ridges, down their sides, to the very base. The road from *Belkate* ascends gradually, and the elevation here is such as considerably to reduce the temperature of the air. From an accident to my thermometer, I could only estimate this by my sensations, which did not indicate a higher degree than eighty-five at noon. The natives say, it continues thus cool, all the month of *May*, and they seldom, at any time, experience excessive heat.

I pitched my tent, at the distance of three quarters of a mile from the village, near a little stream of water,

ter, which supplies the wants of the inhabitants. It issues from the mouth of a bull, rudely hewn out of the rock, and fall into a reservoir below. The stream is not larger than a musquet barrel, but the supply is always constant and clean. The wheat, in some parts, is now ripe, and the women employed in reaping it.

The mountains, for some miles round *Nataanee*, have a naked appearance. No trees to be seen, but upon distant hills; some bushes grow along the ridges, formed for banking up the earth; and the standing corn is almost the only vegetation besides, to be seen. The soil is scanty, and very stony; and the crops thin, except those near the village, which are improved by the little manure the inhabitants give the land; they seem too indolent, however, to extend this improvement beyond one or two ridges: indeed, as the carriage must be upon their own backs, the labour would be great. Their only cattle are bullocks, but those, as far as I could observe, are not used for the carriage of burthens. They draw the plough, trample out the corn: and the milk of the cows forms a principal part of the people's sustenance. Ever since I ascended the ghauts, I observed the same features mark the breed of oxen in those hills; they are low, not exceeding the height of the small *Bengal* cows; their bodies short and thick, legs very short; but slight appearance of that fleshy protuberance, common to the male of these animals in *Hindustan*; their horns are short, tapering, wide at their base, and gradually approximating towards their points, with a slight curve inwards: their heads short, and thick: the prevailing colour is from red to dark brown; with black noses, and black tips to their tails.

Curiosity led me into the village, but what chiefly excited my attention, was the appearance of uncleanness, indolence, and poverty; the only proof of their attention to some kind of comfort, is in the structure

ture of their houses, which are of stone, laid in common mortar, with a sloping roof, covered with fine slate, raised to a second floor, which is occupied by the family, while the lower, or ground one, gives cover to their cattle in bad weather.

Their cows are the only animals to be met with among them, they have neither dog, cat, goat, sheep, nor common fowls.

On the 26th, I marched to *Adwaanee*, along a range of mountains, covered with forest trees, of various species. The distance from *Nataana*, by computation of the natives, is six coss. I was three hours and five minutes in walking it, and considering the nature of the road, and time lost by the stopping, I conclude the true distance to be about eight and a half miles. The distance would be considerably less, on a line drawn from *Nataana* to this place, which regains the former direction, and places *Adwaanee* about N. E. from the point marched from.

This situation is a narrow, elevated ridge, exposed to the influence of a bleak and chilling wind. The only remnant of human industry is the scattered ruin of a house for the accommodation of travellers.

On the 27th, at half an hour past four in the morning, I proceeded on my journey. The road continuing with an ascent, for about half an hour, brought me to the summit of a ridge, from whence is seen the lofty chain of snowy mountains, in a very extended line, from east to west. Those mountains are seen from some parts of *Rohilcund*; but so remote and indistinct, as to give no idea of the magnificent scenery that now opened to my view; the grandeur of which was every moment encreasing by the more powerful illumination of the rising sun.

One of the most conspicuous summits of this chain is distinguished by the name of *Hem*, near the base of which is the famous place of *Hindu* worship called *Buddee-nauth*. It is marked to travellers by the greater breadth of its top; and rising in four or five rugged, but rather conical points. Its bearing from where I made these notes was N. N. E.

The road, from this ridge, gradually descending, I arrived, at thirteen minutes past seven, at *Teyka-ca Maanda*. Here is only one indifferent building, for the accommodation of travellers, and a few scattered hamlets appear on the sides of distant mountains.

The air proved here as cold as at *Adwaanee*, and having no shelter from trees, was the more smartly felt. The rocks are of a coarse dull granite in some places; and in others, extensive beds of various kinds of schistus appear; most of them lying in a vertical position and near the upper surface, dividing into fine laminæ, exhibiting colours, inclining to purple, yellow and green. That most exposed to the air crumbles to dust under its influence.

On the 28th, I walked, in two hours fifty-five minutes, to *Chet-kote*, situated in a confined valley, where the heat was excessive. In the early part of the march, over a gentle ascent, the snowy mountains, which had been concealed by a hill in front, suddenly emerging, presented a spectacle truly magnificent.

29th April, 1796, *Sirinagur*.

I left *Chet-kote* this morning at twenty-five minutes past four, the descent still continuing; and twenty minutes walk brought me to a pretty large nullah which falls into the *Aluknundra*, a short distance below *Sirinagur*. By banking up the stream, it is raised to an height sufficient to work two or three

three of those little mills called *Pun Chukees*, which from their vicinity to the metropolis, are kept in constant employ. This nullah is called *Koonda Gaad*. The road continued along it for twenty-two minutes through little fields of unripe corn: leaving the nullah, I ascended for thirteen minutes, which brought me to the summit of a ridge, from whence I had a distinct view of the town and valley of *Sirinagur*; and the winding course of the *Aluknundra* river through it, running in a direction from east to west along the north side of the town. On the top of this hill, a *Fakeer* has stationed himself, to contribute to the relief of the thirsty traveller, and deals out the waters of the holy *Ganges* for a pecuniary compensation.

About fifteen minutes before six o'clock, I reached the valley, and the banks of the river five minutes after. I was here met by a person of the rajah's household, who was sent to congratulate me, on having surmounted the obstacles of a difficult journey; and to know what he could do for me, or what contribute to my immediate accommodation; offering, if a house would be acceptable, to clear one for my reception. The compliment was pleasing, but I knew too well the structure of their habitations, to suppose they could furnish me with better accommodation than my tent. Therefore I declined the offer, and chose for my encampment, a pretty thick mangoe grove, on the south west end of the town, near the foot of the hills.

As I may now promise myself a little rest from daily fatigue, I will take a slight retrospect of the country I have travelled over, before my attention is called to the objects that may here be worth particular notice.

From the ghaut of *Coadzeára* to *Sirinagur*, is an assemblage of hills, jumbled together in many forms and directions, sometimes in chains, lying parallel to each other, but of no great extent, and often connected.

needed at their termination, by narrow ridges, running at right angles across the vallies between. The summits of all are very narrow, and of various shapes, and the distances between each range short, consequently the vallies much confined, and a late traveller justly observes, "Not a spot is to be seen that would afford room to accommodate one thousand men in tents."

Some of these ranges are covered with forests, and are always green, some are naked and stony, neither affording shelter to the birds of the air, nor the beasts of the field. The number in cultivation form the smallest part, but so few traces of either houses or inhabitants are to be seen, that to sum up the whole in one general conclusion, depopulation and poverty are striking features throughout, and a greater share of the country seems in the undisturbed possession of the birds and beasts of the forests, than appropriated to the residence of man.

In the evening of this day, the rajah paid me the compliment of a visit, accompanied by his two brothers, and some other officers of his suite, besides a considerable crowd; of which, however, many more were led to gratify curiosity than belonged to the train of the rajah. Himself and brothers were on horseback, and except one or two others, the rest followed on foot. They dismounted at the entrance into the grove, where I met the rajah, and after the usual salutation, he introduced me to his brothers PRA-KEREM-SAH and PRETEM-SAH.

This ceremony over, we proceeded to the tent, which was soon filled by this party of all descriptions: much order, however, was observed, and the rajah, after some few questions and complimentary remarks, staid about twenty minutes, when night approaching, he apologized for his hasty departure, and took leave.

He appears to be about twenty-seven years of age, in stature something under the middle size, of slender make, regular features, but effeminate. He speaks quick, and not remarkably distinct.

His elder brother is a stouter and more manly person; about twenty-four years, though he has the looks of riper age than his brother. They bear no resemblance to each other. The younger is a strong likeness of the rajah in make, features, and voice; a little under him in size, and, I believe, about nineteen years of age.

In their dresses, no signs of greatness or ostentation appear; they were in plain muslin jamahs with coloured turbans and kummerbunds, without jewels or other decorations, nor was the dress of the rajah in any respect more distinguishing, than those of his brothers.

I found the heat of this day very distressing; sometimes without a breath of air, and when any was evident, it came with an unpleasant warmth.

In the evening of the following day, I returned my visit to the rajah. He received me at the entrance of a court in front of the house, and conducted me by the hand to a square terrace in the center of it. I was here introduced to his vizier and dewan; and after being seated, and compliments over, he commenced a conversation, by asking several questions relative to my journey, manner of travelling, purpose for which I undertook such an expedition, repeating several he had asked the preceding day, on that subject.

He made some remarks relative to the extent of the *British* possessions in *India*, spoke of the late *Rohilla*

Rohilla expedition, and noticed the knowledge the *English* possess in the art of war with admiration, and as unequalled by any other nation. He begged to be indulged with a sight of the exercise as practised by our troops, and the little party of sepoys with me performed it, much to his amusement and satisfaction.

After a stay of about an hour, the evening being far advanced, I took my leave.

The valley of *Sirinagur* extends about 2 m.ile an a half to the eastward, and as much to the westward of the town. The river *Aluknundra* enters the valley near a village called *Seerkote*, which bears E. , N. from the town. Its course is nearly from east to west; the breadth of the channel from bank to bank about 250 yards; but in the dry season it does not exceed eighty or 100 yards. At the western extremity of the valley, the current strikes with violence against the stony base of the mountain. Near this place, the river is crossed by means of a contrivance called here a *joolah*. Two scaffolds are erected in form of a gallows, one on each side of the stream: over these are stretched very thick ropes, to form, on each hand, a support for the rest of the bridge. To these, by means of pendant ropes, a ladder is fixed horizontally, and over this tottering frame the travellers pass. The main ropes are so slack that the middle of the bridge is within a foot of the water, its breadth will barely admit of two persons abreast. The current beneath runs with rapidity, and it would be dangerous even to a good swimmer, to fall from this bridge into the river. The breadth of the stream, at this part, is about eighty yards, and its depth from ten to twenty feet.

Its bed is composed of large rounded stones, pebbles, gravel, and sand. In two or three places, large fragments

fragments of rock remain ; but if no obstacles of greater consequence exist, to retard the navigation of this branch of the river, floats of timber, or canoes, might at all seasons find a passage through.

The town of *Sirinagur* occupies nearly the center of the valley ; it is in length about three quarters of a mile ; the breadth is much less ; its form somewhat elliptic. It is formed with little attention, either to order or convenience. The houses are of stone, rough and irregularly put together, with the common earth ; generally raised to a second floor ; and all are covered with slate. They are so crowded as to leave little more space for the street, than is sufficient for two persons to pass one another. The principal street, and indeed the only one deserving that name, runs east and west, through the middle of the town : this is pretty broad, and is the only bazar, or market of the place.

The rajah's house is about the middle of the town, and is the largest in it ; one part of it being raised to a fourth story. It is built of a coarse granite, has the appearance of being very old, is much out of repair, and exceeding shabby.

The town, viewed from an eminence, exhibits nothing striking or pleasing to the fancy.

The roads which lead into the town, excepting one, are very narrow, planted on each side with hedges of *Euphorbia Canariensis*, and backed with a wall of loose stones.

In a country, possessing such a variety of climate, it is natural to ask, what advantages induced the primitive settlers to prefer the burning valley
to

of *Sirinagur* for the seat of government, to the more temperate and healthy situations in other parts of this mountainous tract. The result of my enquiries was what I expected. No other parts of the mountains, in the vicinity of the holy waters of the *Ganges*, possess, at the same time, an equal extent of plain ground, and convenience of a sufficient and constant supply of running water, two indispensable requisites in the formation of an extensive settlement, and particularly to settlers whose religious tenets teach them (and justly so) to consider the former among the most valuable gifts of nature; and enjoin them to a very liberal use of that blessing in the performance of some of the sacred functions of their cast.

The foundation of this *raje*, by the records kept in the archives of the state, is placed at a very remote period, but they are so blended with fabulous description, that the account will hardly admit of being related, much more of receiving the sanction of authenticity.

It is stated that 3774 years before the accession of the present rajah, the country was divided into twenty-two purgunnahs, under the government of several chiefs, independant of each other, that they were united by the victorious exertions of a native of *Ahmedabad Gujerat*, named **BOHG DHUNT**, who with his brother **SEDJE DHUNT**, left their native country, to seek for better fortune: and entering the hilly tract, now called *Sirinagur*, took service with the rajah of the country. The former entertained in the service of the *Chaandpore* rajah, with whom, in a few years, he acquired considerable consequence, and was entrusted with high military authority. In this situation, at the advice of a *Jougee*, who appeared in a vision, he formed the ambitious design, not only of seizing the possessions of his master, but of aiming at the conquest of the whole country; and such was his success, that after deposing the rajah of *Chaandpore*, who was by far the most powerful in the country,

try, the rest became an easy conquest, and in the space of a few months, the whole twenty-two districts are said to have been subdued to his controul, and he continued to govern them under the title of rajah of *Gerual* (the ancient name of the country) during the rest of his life. Dates are wanting to ascertain the length of his reign, as also to prove who were his successors, till the fifteenth generation of lineal descent, when ADJEY PAAL appears. He is said to have been the founder of *Sirinagur*, and there fixed the seat of government, where it has continued, under a succession of sixty rajahs, including the present reigning one PURDOO MAAN SAA.

At my particular request to the rajah, I was furnished with the following table of the princes who have governed this country.

NAMES.	Number of years reigned.	NAMES.	Number of years reigned.
Bogh-Dhunt, the first rajah, between whose reign and Adjeý Paal, 900 years passed, of which no records exist,	900	Mungul Sain,	32
Adjeý Paal,	50	15 Choora Mun,	29
His son, Bejeý Paal,	60	Chinta Mun,	33
Laak Paal,	55	Pooren Mun,	27
5 Dehrm Paal,	65	Birk-e-Baan,	79
Kerrem Paal,	70	Bir Baan,	81
Narrain Deo,	72	20 Sooreý Baan,	79
Hurr Deo,	45	Kerreg Singh,	60
Govin Deo,	49	Sooret Singh,	72
10 Raam Deo,	51	Mahah Singh,	75
Runjeet Deo,	53	Anoop Singh,	59
Inder Sain,	35	25 Pertaur Singh,	29
Chunder Sain,	39	Hurree Singh,	39
		Jaggen Naat,	55
		Byjee Naat,	65
		Gookul Naat,	54
		30 Raam Naat,	75
		Goopce Naat,	82

Lechme.

NAMES.	Number of years reigned.	NAMES.	Number of years reigned.
Lechme Naat,	69	Renjeet Narrain,	31
Preeim Naat,	71	Raamroo,	33
Saada Nund,	65	Chirstnroo,	49
35 Perma Nund,	62	Jeggeroo,	42
Maha Nund,	63	55 Herroo,	32
Sooka Nund,	61	• Futteh Sah,	39
Suba Chund,	59	Dooleb Sah,	50
Tarra Chund,	44	• Purteet Sah,	35
40 Maha Chund,	52	Lallet Sah,	40
Goolab Chund,	41	who died in 1781,	
Ram Narrain,	59	and left four sons,	
Gobind Narrain,	35	was succeeded by	
Lechmen Narrain,	37	the eldest	
45 Jegget Narrain,	32	60 Jakert Sah, • 2½	
Mataub Narrain,	25	and was succeed-	
Sheetaub Narrain,	37	ed by his brother	
Aunund Narrain,	42	the present Rajah,	
Herry Narrain,	45	61 Purdoo Maan Sah.	
50 Mahah Narrain,	33		
		Total of years	3,774½

The extent and limits of this *raje*, according to the information given by the rajah's dewan, are marked on the south by *Koadwara ghat* computed forty coss from *Sirinagur*. On the north by *Bud-dreenaut*, called ten days journey, and on the west by *Beshaw*, thirty days journey.

The annual revenue of this country, if the rajah's word is to be taken, does not exceed five lacks and six thousand rupees. This includes duties on exports and imports, the produce in grain, &c. working of mines, and washing of gold.

The collections on cultivation are in some places paid in kind, in others in specie, and generally in the proportion of one half of the produce of the soil.

The remittances in specie, to the capital, I believe, are very inconsiderable; for a great deal goes in the payment of the troops allowed to each district, one fourth of whom are never in employ. It is also a custom to pay, by *tunkhas* on different districts, the troops about the capital, some descriptions of servants, and even the dancing girls and musicians who are kept in monthly hire.

Of the latter description I met several, travelling, perhaps twenty or thirty cosses, with an order on some Zemindar for three or four months arrears of pay.

The produce on washing the sands for gold does not depend on the quantity found, but upon the number employed in this business, each man undertaking this research, pays to the rajah, for that privilege, the sum of one hundred rupees yearly, and the quantity obtained is the property of the worker, without deduction.

The different places, where it is sought for, are *Kerempraag*, *Pacenkunda*, *Dewpraag*, *Rickercase*, and *Laker-ghat*.

The position of these five places, from the best descriptions I could obtain, are as follows: *Kerempraag* lies three days journey to the eastward of *Kedarnaat*, and on a small river called the *Pinder*, which has its source in the district called *Budhaan*, farther east, but here joins the *Alukmunda*. *Pacenkunda*

kunda is on the *Ganges*; *Dewpraag* at the confluence of its two branches, called *Aluknundra* and *Baghyretty*; *Rickercase* is on the *Ganges* about 120 cosses above *Hurdwar*; and *Laker-ghat* a few cosses lower, on the same river.

At *Naagpore* and *Dhunpore*, the former forty cosses N. E. and the latter fifty cosses N. of *Sirina-gur*, are two copper mines. These are worked eight months in the year, the richness of the ore varies much, but upon an average produces fifty per cent of pure metal; one half of which goes to the rajah, the other to defray the expence of extracting it from the mines, smelting, and paying overseers.

At *Dessouly* fifty or fifty-five cosses east of *Sirina-gur*, is a lead mine, the whole produce of this goes to the rajah, and the people, who work it, are kept in constant pay, though their labour is only required eight months out of twelve, and sometimes not so long; the quantity of ore extracted being in proportion to the demand the rajah has for it. As a greater encouragement to the people who undertake the working of this mine, and in consideration of the injury to which their health is exposed, they have small portions of land given to them, on the produce of which no tax is levied by the Zemindar.

Iron is produced in several parts of the country; but particularly at *Chaandpore*, *Belungh*, *Beechaan*, and *Cholah*, but the labour of extracting it is so great, that the rajah gives up the whole to those who will work it.

Other sources of revenue are the importation of rock-salt and borax from *Bootan*; musk in pods, chowries, hawks male and female, from the countries bordering on *Buddreenaat*.

From *Pacenkunda* comes a species of blanket called *Punckee*. They are of sheep's wool, of a texture resembling those sold in the *Dooab* and called *Looees*, but stronger and finer.

From *Rohilcund* all kind of cotton cloths are imported, as also considerable quantities of salt, the kind brought from *Lahore*, known commonly by the name *Nemuk Lahoorce*. This the *Bootan* people carry back in exchange for the merchandize they bring. A kind of rice is also imported from the southern countries, below the ghats, remarkable for the odour it diffuses, when boiled. It is produced in several parts of *Hindustan*, but particularly in the mountainous countries of *Ramghur*.

At the different ghats or passes into the mountains, duties on imports and some kinds of exports are levied; which, according to the best information I could obtain, is on an average about six per cent on their value, but on some particular articles, an additional duty is laid. The pass at *Coadzwara* is rented by an officer called *Hakem*, who pays annually to the rajah twelve thousand rupees.

Upon the authority of the rajah's historian, this *raaje* was, for many years, exempt from tribute to any one. In the reign of ACBAR, that prince demanded of the rajah of *Sirinagur*, an account of the revenues of his *raaje*, and a chart of the country. The rajah being then at court, repaired to the presence the following day; and in obedience to the commands of the king, presented a true statement of his finances, and for the chart of the country, he humorously introduced a lean camel, saying "this is a faithful picture of the territory I possess; *up and down* (*ooncha neechu*), and very poor." The king smiled at the ingenuity of the thought, and told him that from the revenues of a country realized with so much labour, and in amount so small, he had nothing.

thing to demand. From that period, to the invasion of the country, by the *Gorka* rajah, it does not appear that tribute has been paid to any one; but on the restoration of peace, some time in the year 1792, that rajah demanded, in consideration of relinquishing all the conquests he had made in the *Sirinagur* country, that it should be subject to the payment of the sum of 25,000 rupees annually. This stipulation was ratified by the *Sirinagur* rajah, and the tribute is regularly paid. A vakeel, on his part, resides at the court of the *Gorka* rajah; and at the period when the tribute becomes due, an officer is sent, half way between *Napaul* and *Sirinagur*, to meet and receive it.

The standing forces of the rajah consist of about 5000 men, commonly called *Peüdahs*: these are variously armed, according to the custom of the part of the country in which they are stationed; that is to say, with match-locks, bows and arrows, and the sword and shield: the greater number bear the latter, and it is the established and favourite weapon of the country. This body of men is distributed through the several districts, to assist in the collections of the country. One thousand of the number remain at the capital. No attention is shewn either to their dress, or discipline, and they are paid with little regularity.

The natives of *Sirinagur* profess the *Hindu* religion, in the exercise of which I could not discover any variation, from the practice of the lower parts of *Hindustan*.

The town is inhabited by two races of people, distinguished by a difference of feature. This I am inclined to account for, by supposing that many of the natives of the lower countries have, at different and distant periods, emigrated to this part of the world, for the advantage of commerce. It is also common for men of opulence and extensive trade, in other

parts of *India*, to send their agents here, to establish a kind of central communication, between *Bootaan* and the lower *Hindustan*. Many of these people have settled for the rest of their lives, and their families, naturalized, and knowing no other homes, have continued, and increased. From the difference, in stature and features, between these people and the aborigines of the country, it may be concluded that they have little or no intercourse together. The latter are of lower stature, they have better proportioned limbs, faces rounder, eyes a little smaller, and noses shorter, but not flattened.

The dress of the *Sirinagur* mountains is seldom more, among the men, in the cold season, than a coarse thick blanket, folded loosely over the body, so as to cover all the breast, and reaching just below the knee. The legs and arms remain uncovered; on their heads they wear a small cap, and on their feet, a kind of netted sandal, made of leather thongs, with soles of thicker leather. In the hot season, they wear a kind of frock, of a coarse cloth, manufactured in the country, from the common cultivated hemp. This the women also wear, made into a close bodied kind of gown and petticoat, with sleeves to the elbow, above the breast drawing together with a string. Over all, they wear a loose cotton cloth, of lighter texture; they have seldom any other ornaments than beads of glass about their necks, and rings of various coloured glass upon their wrists.

I observed many of the natives of *Sirinagur* afflicted with those tumours in the neck commonly called wens: some were of a very large size, but never troublesome, or attended with pain. From my enquiries, this disorder is not general through the country, but incident only to those natives who reside near rivers which receive increase from the melting snows.

The country to the northward of *Sirinagur*, when viewed from one of the highest ridges, above the valley, discovers five or six ranges or broken chains of hills rising with a gradation above each other. The last or most elevated, reaches, to appearance, about half way up from the base of the stupendous *Himalaya*, whose snowy summits terminate the view from hence. None of the intermediate ranges exhibit the smallest appearance of snow; and though, in the winter season, those nearest to the high ridges, may receive partial falls of it, yet no part remains long upon their surfaces.

With the inclination to pay all possible deference and submission to the accuracy and judgment of Mr. DANIEL, who visited this capital in 1789, yet I must here notice a remark by Mr. RENNELL in his last valuable memoir of a map of *Hindustan*, given upon the authority of the former. The reader is there induced to conclude that a part of the base of the snowy mountains, is at a very inconsiderable distance from the valley of *Sirinagur*.

Mr. DANIEL acknowledges, however, he trusted to the reports of the natives, who make the distance fourteen or fifteen geographic miles. But it is certainly much greater, and, I believe, cannot be less than eighty *English* miles.

I have observed elsewhere that in tracing the river *Aluknundra* from below upwards, through the valley of *Sirinagur*, the course is eastern; and I find, as far as the information of the natives can be trusted, that in a distance of about three days journey, it takes a more northerly direction, near a place called *Roodreepraag*, where it is joined by a river about half its size, called *Kallee Gonga*, the source of which is in the mountains near *Kidaar-nauth* to the north: and its principal branch from a place called *Sindoo Sogur*, issuing out of the rocks. From *Roodreepraag* the course is continued about N. E. and
at

at the distance of three days journey, in that direction, near *Kerempraag*, the *Aluknundra* receives a small river, called *Pinder*, the source of which is in *Budhaan*, the country bordering the rajah's territories on the N. E.

From *Kerempraag*, at the distance of two days journey, in much the same direction, and near a place called *Nundpraag*, it receives the *Gurrela Ganga*. This branch runs through the district of *Dessouly*, and has its source in the mountains to the eastward.

From *Nundpraag*, the *Aluknundra* is said to take a more northerly direction, and at *Bissenpraag*, receives a river from the eastward as large as itself, called *Dood Ganga*, or the milk river, it also is known by the name *Dhoulee*. Pretty near its junction with the *Aluknundra*, it runs between two villages called *Gurpa* and *Nitty*.

Bissenpraag is situated near the base of the mountain, on which stands the famous temple of *Buddreenaat*; and is of some importance, as being the residence of the pundits and principal *Hindus* of *Buddreenaat*. Here they hold their *durbars*, exercise their laws and the duties of their religion, in the greatest state of security from foreign intruders, and can at any time seclude themselves from the rest of the world, by a removal of the *joalahs* or rope bridges, which form the communication across the *Aluknundra*.

The town consists of about 800 houses, it is a place of some trade, and the inhabitants are all *Hindus*: my informer told me, no one of any other religion, has yet found his way to *Buddreenaat*, and that if I attempted the visit, it must be at the express permission of the rajah of *Sirinagur*. It was, hitherto, a part of my plan, to proceed as far as that celebrated spot, and I had every encouragement to believe

believe this permission would have been granted me. But I found, on the most particular enquiry, as to the nature of the road, that I should not be able to execute the journey in less than fifteen days; even without halting, for the purpose of rest, or prosecuting any enquiries, relative to the nature or productions of the country. My return, therefore, could not have been effected in time to leave the mountainous country before the commencement of the periodical rains. I consequently determined on leaving *Sirinagur*, and marching back by the tract I came.

The immediate execution of this plan became necessary, because the excessive heat had already begun to shew its influence upon my servants, two or three of whom were laid up with violent fevers. I therefore took leave of the rājāh on the evening of the 2d, and next morning began my march towards *Puttehgurh*; which was accomplished, without any occurrence, that merits to be recorded.

ENUMERATION of PLANTS noticed in the preceding Tour, between Hurdwar and Sirinagur, in the months of April and May, 1796.

MONANDRIA MONOGYNIA.

Costus Speciosus of Dr. SMITH.—Common to the skirts of these mountains; the stems now in a dry and withered state, the roots brought thence have since flowered. Flowers white, large, produced in a close imbricated terminal spike. Leaves sessile, in spiral like order, lanced, entire, one nerved, smooth, veinless. Calyx above, cylindrical, tubular, three-cleft; divisions lanced, erect, coloured, permanent. Petals three, unequal, ovate, pointed, with the base slightly truncated. Nectary one leaved, large, waved, spreading, two lipp'd: base tubular, superior lip oblong, lanced, three toothed, shorter than the inferior, anther-bearing. Anthers oblong, two parted, adhering to the upper lip of the nectary, an inch below the point. Germ beneath, roundish, gibbous, style shorter than the nectary, filiform, placed between the anthers. Stigma headed. Pericarp, &c. as in LIN. crowned with the highly coloured calyx. Flowers in August.

Curcuma.—In the forests between Hurdwar and Coodwara ghat, now in flower. Scape from nine to twelve inches high, crowded with yellow flowers and numerous large, ovate-pointed bracts, imbricated; and towards the extremity of the scape, highly coloured with a rose red. Leaves radical, long, and lanced, but do not appear during inflorescence.

DIANDRIA MONOGYNIA.

Jasminum 1.—With climbing stem, columnar; branches opposite, distant. Leaves simple, opposite, petioled, oblong, ovate, acuminate, entire, smooth, four inches by one and a half. Flowers axillary.

axillary, sometimes terminal; peduncles long, slender, threadform, two or three from the same base, one flowered. Calyx very small, tubular, five-toothed; toothlets short. Corol tubular, long. Border five-parted, divisions longer than the tube, linear. Found climbing among other bushes at *Dosah*.

Jasminum 2.—Leaves simple, paired, few, petioled, ovate, much rounded, entire, terminated by a short obtuse acumen; the large leaves three and a half inches long, two and a half broad. Flowers in small terminal cymes. Calyx belled, small, five-toothed; toothlets linear, distant. Corol tubular, cylindrical. Border the length of the tube, five-parted, oblong, equal. Grows to a small tree, in the forests about *Hurdwar*. Flowers, white, sweet scented.

Jasminum 3.—Leaves alternate, pinnated with an odd one; leaflets from two to three pair, subsessile, lance-ovate, entire, smooth, the lower ones least, terminal one largest, eleven lines by five, but variable. Petioles angular. Peduncles terminal, slender, one flowered. Calyx small, belled, five-toothed; toothlets, awled, small, distant. Corol, tubular, long. Border five-parted, divisions ovate, shorter than the tube, spreading. Branches angular, straggling. Found on the side of a water-course, between the mountains at *Adwaanee*, grows to a large bush, flowers yellow, and very sweet.

Justicia Thyrsoformis.—Leaves opposite, petioled, elliptico-lanceolate, entire. The flowers are produced on thyrse-like terminal spikes, intermixed with numerous oblong bracts, ringent, and of a dull orange colour. It comes nearest to *Justicia Coccinea* of Dr. SMITH, in 2d *Fas.* No. 8. The trivial name is added on the opinion of Doctor ROXBURGH. It grows to a large strong bush on the sides of the *Koa-mullah*, near *Amsour*.

Salvia integrifolia.—Leaves opposite, sessile, sub-ovate, entire, woolly, mostly from the lower part of

of the stem. Flowers in whorls; of a light blue, about six in each whorl. Calyx two lipped, the upper lip three toothed, the lower two toothed, and twice longer; the mouth much enlarged. Grows among stones, with a strong fibrous root, difficult to withdraw. Stem herbaceous, about a foot high, angular. The natives gather the young flowers and dress with their common food. The specific name is given on the opinion of Doctor ROXBURGH.

TRIANDRIA MONOGYNIA.

Valeriana.—Leaves various, those of the root hearted, obtuse intire; petioles semicylindrical, long, downy, stem leaves sessile, more pointed, sometimes slightly lobed at the base. Flowers triandrous, of a pale pink and white, in compound terminal umbels. Seeds crowned with a twelve-rayed pappus. Root fleshy, sending forth many long slender fibres, soon after taken out of the earth, becomes highly scented, which it retains as long as in a vegetating state. It is found in several parts of the mountains, affects moist and shaded situations, is herbaceous, grows to about eighteen inches high, very slender. It seems to differ only in the root from the *Jatamansi* of Doctor ROXBURGH, to which these have no resemblance.

TETRANDRIA MONOGYNIA.

Ixora. tomentosa of Doctor ROXBURGH.—Found in the neighbourhood of *Ghinouly*, near the *Koa-nul-lah*, acquires the size of a pretty large tree, though of deformed growth, now in flower. Flowers white, numerous.

PENTANDRIA MONOGYNIA.

Androsace, rotundifolia. — A beautiful little herbaceous plant, found in great abundance on the most elevated ridges of mountains, one day's journey

journey S. W. of *Sirinagur*. Leaves radical, petioled, subrotund, irregularly sinuated. Petioles very long, villous. Flowers about the size of a cowslip, in umbells, a pretty mixture of white and red, with tints of yellow. Involucre, many-leaved, the leaves toothed. Perianths, unequal, in some flowers larger than the corol, many scattered hairs mixed with the flowers.

Lonicera quinquelocularis.—A pretty large bush, with long slender branches. Leaves opposite, petioled, ovate, pointed, sometimes elliptical, entire. Flowers axillary, on short solitary peduncles, each peduncle raising two sessile florets. At the base of the florets, a one-leaved bract, or rather, I think, common calyx, two parted, divisions ovate, concave, coloured. Proper perianth above, small, five toothed, coloured, withering. Corol, one petalled, tubular. Border two parted, or two lipp'd; upper lip oblong, obtuse, entire, reflected; lower more than twice broader, four toothed. Pericarp in an half ripe state, appears to be a capsule, five celled, with about five small, ovate, red seeds in each cell. Doctor ROXBURGH considers the characters of *Lonicera* and *Hamellia* united in this plant, but thinks the irregular corol will fix it as a specimen of the former, and to the second section thereof, and comes nearest *Xylosteum*, but the five celled capsule, and very short common peduncle precludes the idea of their being the same. It grows in the vallies about *Adwuanee*.

Verbascum Thapsus.—In the valley near *Dosah*; a robust plant, from four to five feet high, and from the profusion of its yellow flowers, very showy. The natives have a superstitious notion of the efficacy of this plant in protecting them from the visitations of evil spirits. It is known by the name *Aakul-ber*, or *ver*.

Datura, Stramonium.—In every part of the mountains, where villages are found. The natives are well acquainted with its narcotic powers, and infuse the

the seeds to increase the intoxicating powers of their common spirituous liquors. The capsules they use as a suppurative. *Datura* is also the name of this plant, in most parts of *Hindustan*; and probably has been carried from the east, to the western world.

Ehretia Tinifolia.—Found both above and below the ghauts—grows to a pretty large tree, now in flower, ripens its fruit about the end of *May*. The berry is about the size of a pepper corn, one celled, four seeded, of an orange yellow insipidly sweet. The natives pickle the unripe berries in vinegar, and eat with their common food.

Vitilago.—Leaves alternate, petioled, two faced, oblong-ovate, acuminate, slightly serrated, serratures wide, unequal: petioles very short, cylindrical, downy. Panicles terminal, peduncles, downy. This plant climbs over other trees with a strong contorted stem. The natives of the mountains apply the bark in a green state, to many useful purposes, as cordage.

Celastrus Scandens 1.—In most of the forests about *Hurdwar*, and vallies above the ghauts.

Celastrus 2.—Leaves alternate, petioled, subrotund, acuminate, serrulate, smooth. Branches slender, cylindrical, spotted. Flowers, in terminal dichotomous, panicles, very small, pale green. Grows to a small tree—in the valley about *Dosah* and *Ghinouly*.

Cedrela.—The tree commonly called *Toon*, described by Sir WILLIAM JONES, in A. R. vol. IV, page 281, is found in the forests bordering the mountains below the ghauts. Grows to a tall tree, but seldom of considerable thickness. Is more in esteem for household furniture by *Europeans*, than for any use the natives put it to; bears resemblance to mahogany, but of much coarser fibre.

Doubtful genus coming nearest to *Hirtella*.—A small tree on the verge of a rivulet, a few miles S. W. of *Sirinagur*, near the road. Leaves diffuse, petioled, ovate, entire smooth. Petioles long, cylindrical, highly

highly coloured, of a dark shining red, the nerves and veins of the leaves, young branches and leaves coloured in the same manner. Flowers very small, produced on terminal compound diffuse panicles. Peduncles long, very slender, filiform, hairy, stained. Calyx beneath, five cleft, divisions equal, ovate pointed. Corol, five petals, equal, ovate, obtuse, filaments five, very short. Germ, reniform, compressed. Style from the depressed margin of the germ, very short. Stigma simple, a little depressed. Pericarp, resembles a legume, about the size of the seed of *Ervum-lens*, reniform, containing one seed of the same shape, attached to the suture of the valve.

Vitis.—Leaves agree pretty well with the description of *v. Indica*, except that in this plant, they are extremely hoary on both sides, white beneath, brown above, five nerved. The petioles, peduncles, and cirri, are also very hoary. Grows in dry situations in the forests about *Dosah* and *Belkate*, now in flower.

Gardenia Uliginosa 1. ROXBURGH.—Grows to a large tree in the forests on the borders of the mountain, between *Hurdwar* and *Coadwara*. The flowers hexandrous, very large, coriaceous, of a cream white. It is found also in the lower parts of *Rohildund* near *Futtehgurh*, flowers in the month of *June*.

Gardenia 2.—A small tree in the vicinity of *Hurdwar*, thorny, branches opposite and thorny, thorns opposite, diverging, rigid streight, one terminating the branch, an inch or more in length. Leaves obvate, attenuated at the base, half sessile, bundled, three or more entire. Flowers mostly hexandrous; of a yellowish white mixed with green, scattered about the extremities of the branches, sessile; during inflorescence, few leaves on the tree, and those of the preceding year, ripe fruit remaining, about the bigness of a middle sized orange, orbicular; resembles more a drupe than berry. Seeds nume-

rous, nestling in a softish pulp, contained in a hard five or six valved shell, and this enveloped in a spongy fleshy pulp, half an inch thick, of a greenish white within, externally of a brownish ash, and smooth.

Gardenia 3.—A plant of humble growth, shrubby, none seen exceeding two feet in height, growing among fragments of rocks on the elevated ridge near *Chichooa*. Leaves terminating the branches, without order, rather crowded, petioled, mostly obovate, entire, smooth, one inch by half an inch, petiole very short. Flowers axillary, single, on solitary short peduncles, of a greenish white colour, and very sweet to the smell. Perianth above, one leaved, half five cleft, divisions awled, erect, permanent. Corol, funnel form, tube long, widening upwards, partly closed about the middle by a ring of silky down. Border five-parted, divisions ovate, equal. Filaments short, within the tube. Anthers oblong, partly within the tube. Germ globular. Style length of the tube. Stigma two lobed, lobes, ovate, flattened, appressed. Pericarp, a berry crowned with the calyx, about the size of a common pea, one celled, four seeded.

Nerium reticulata. 1.—A strong climber, about the trees near *Amsour*.

Nerium 2.—With leaves opposite, petioled, ovate, pointed entire, downy; petioles very short, gibbous: follicles two, long, a little compressed, breadth of the forefinger. The flowers terminate the branches, on four or five short divided peduncles, about the size of a primrose, of a greenish white, very sweet scented. It is found in plenty in the forests at the foot of the ghaut. Both flower and fruit now on the tree. The nectary in this species differs from the generic description; it is here composed of twelve yellow tridentated scales, about half the length of the stamens, neither are the anthers terminated by threads, but rigid at the apices. I have called it a *Nerium* in deference to the

the judgment of a better botanist, but it will bear comparison with the next genus *Echites*, I think. *Echites Antidysentricum*. Rox.—A small tree in the forests about *Hurdwar*. Leaves opposite, half or sub-petioled, ovate, oblong, pointed, entire, waved, smooth, shining, one nerved, with many pairs of lateral, parallel, ribs. The *Linnean* characters of the fructification, do not strictly agree with this plant. The nectary is here wanting. Anthers almost at the bottom of the tube, filaments, scarcely any. The follicles agree with those of *Nerium Antidysentricum*. The seeds are in great repute among the natives of *Hindustan* as a vermifuge.

Genus not determined.—A small tree, or rather large bush, growing by the road side near *Tyika-ka-Ma-anda*. Leaves about the tops of the branches, irregularly opposite, petioled, ovate, variously pointed, serrated, smooth, one nerved; petioles short. Flowers paniced about the ends of the branches—yellowish, with many brown veins, more coloured above. Calyx five cleft, expanding, the divisions slightly lacerated at the edges, rounded, coloured. Corol, five petaled—petals oblong, ovate, obtuse, twice larger than the calyx, with a short claw. Filaments five, shorter than the corol, enlarged below, and resembling the germ, slightly coalescing at the base into a ring. Anthers oblong, erect. Germ above, orbicular, smooth, the size of the glandulous base of the stamens, in the center of them. Style the length of the stamens, filiform, stigma simple, truncated. Pericarp, not seen.

PENTANDRIA DIGYNIA.

Apocynum.—A strong climbing bush, spreading itself with much profusion over the under wood of forests between *Dosah* and *Sirinagur*. The flowers numerous, pure white, and highly scented, size of a primrose, branches cylindrical, opposite, leaves in the same order, petioled, lance-ovate, entire, smooth; petioles short. Calyx five-parted, small, lanceed, downy. Corol one petaled, wheeled, tube,

length of the calyx. Border five cleft, segments, equal, rounded, spreading. Nectary, five glandulous bodies, surrounding the germ, filaments five, short, compressed, internally downy, anthers rigid, oblong, pointed, converging, cleft at the base. Germs two. Style length of the stamens, stigma oval, compressed, two lobed, attenuated. Pericarp, follicles two, oblong, bellied, pointed, smooth, one celled, one valved, seeds numerous, imbricated, compressed, crowned with long silky pappus. It bears some affinity to the genus *Echites*. It is also found in several parts of *Rohilcund* and the *Dooab*.

Asclepias doubtful.—A shrubby climber, now coming into flower—branches cylindrical, smooth, opposite. Leaves opposite, heart ovate, much rounded beneath, pointed above, petioled. Flowers in axillary nodding cymes, of a pale green. Calyx five-cleft, small, villous, divisions ovate, equal, spreading. Corol flat, border five-cleft, segments broad, obtusely ovate. Nectary, five glandular corpuscles, into which the anthers are inserted without filaments. Germs two, styles none. Pericarp not seen, therefore its place in the system yet doubtful. Found near the ghat of *Coodwara*.

Herniaria, doubtful.—A shrubby bush, with numerous slender stems and branches, and covered with a profusion of minute yellow flowers. Leaves alternate, petioled, ovate, rather elliptical, entire, smooth, petioles short. Calyx five-parted, divisions unequal, erect, coloured. Corol none. Nectary, five minute glandulous, three toothed scales, surrounding the foot of the styles. Filaments five, capillary, longer than the calyx, erect, inserted into the base of the calyx. Anthers, simple, erect. Styles two, filiform. Stigmas simple, recurvated. Germ too minute for inspection in its present state, and as the pericarp is not yet seen, future observation must determine the genus yet doubtful. Many bushes of it grow in the forest about *Coodwara*—it was observed in the middle of *May*, therefore we
may

may conclude the month of *June* would be a fitter time for the examination.

Gentiana Nana.—Growing and flowering, in much abundance and beauty, on the elevated mountains near *Chichooa*.

PENTANDRIA TRIGYNIA.

A slender twiggy climbing plant, on the mountains near *Hurdwar*. Branches alternate, columnar, smooth, scattered. Leaves, alternate, shortly petioled, ovate, oblong, attenuated, sometimes a little hearted at the base, entire, smooth, distant. Near the termination of each branch is generally one simple cirrus. Flowers terminal, sometimes axillary, in slender diffuse panicles, rather inconspicuous, and very small. Calyx, one leaved, half five-cleft, divisions equal. Corol none. Stamens five, little longer than the calyx. Anthers twin. Germs three, orbicular, smooth, very small. Style one, the length of the stamens. Stigma headed, five-cornered. Pericarp.

PENTANDRIA PENTAGYNIA.

Linum trigynum. ROXB.—A plant well known in our gardens at *Cawnpore* and *Lucknow*, by the name *Gul-ashurfee*, is a native of the high mountains, between *Nataana* and *Adwaanee*. It is perennial, shrubby, grows to a spreading bush about four feet high, stem and branches erect, slender, piped. It makes a handsome appearance with its numerous yellow flowers in *March* and *April*, would doubtless by some care thrive in the climate of *Britain*.

HEXANDRIA MONOGYNIA.

Berberis Illicifolia.—Grows in plenty in the valley through which the *Koa-nullah* has its course, now full in flower, and green fruit. The fruit when ripe is black, and eat by the natives. The wood is of a

deep yellow, and used in dying, but under the management of the natives the colour is not permanent.

HEXANDRIA TRIGYNIA.

Rumex Aegyptius and *Rumex Acetos. l'a.*—Along the sides and dry parts of the *Koa-nullah*.

OCTANDRIA MONOGYNIA.

Polygonum Convolvulus.—Growing along the sides of the *Koa-nullah*. In some parts of these mountains it is cultivated for common food among the poorer natives.

EÑEANDRIA MONOGYNIA.

Laurus Cassia.—Grows to the size of a small tree, on the sides of the mountains, near the roads to the northward of *Belkate*. In addition to the *Linnean* generic characters, noticed. Petals hairy, anthers the length of the filaments, slightly compressed, four celled, four valved, or with four lids, which on the exclusion of the pollen, fly up, and leave the cells very distinct.

DECANDRIA MONOGYNIA.

Bauhinia Scandens.—Growing on the skirts of the forest along the *Ganges*, near *Hurdwar*, spreading itself most profusely over the heads of every other tree; and mostly concealing with its broad leaves, the foliage and branches of the trees on which it climbs. The flowers are a mixture of white and cream colour, produced on simple terminal racemes. Stamens unequal, three only fertile. Legume large compressed. Found also on the mountains above the *ghats*.

Bauhinia Variegata.—Common to the mountains; also a variety with milk white flowers, both in flower.

Guilandina

Gaillardina Moringa.—In the forests at the foot of the mountains. Trees very large and numerous, now in fruit only.

Muraya Exotica.—Growing to the size of a large bush in the valley near *Amsour*, now in flower.

Melia Azadirachta.—Grows to a large spreading tree in the forest near *Coodwara*, now in flower.

Doubtful.—Growing near *Coodwara* at the foot of the ghat, and in the neighbourhood of *Hurdwar*, a large spreading lofty tree, full in flower, the young leaves just starting forth; these are pinnated: leaflets from five to six pair, with an odd one, sessile, ovate, pointed, serrated. Flowers of a pale yellow, varied by tints of brownish orange from the coloured calyxes, produced on terminal compound racemes. Calyx one leaved, pitched, coloured, mouth five-cleft, expanding, withering. Corol petals five, lance-linear, alternate with the divisions of the calyx, and inserted into the sinuses. Stamens, filaments ten, awled, hairy, the alternate ones shorter, inserted into the calyx, anthers oblong, furrowed. Pistil, germ above, roundish, slightly depressed. Style thread-form, the length of the calyx, hairy, partly coloured. Stigma, headed, depressed, five-cornered. Pericarp drupe, dry, orbicular, with distant rounded angles, depressed. Seed, nuts five, size of a small peppercorn, roundish, hard, furrowed, each containing one seed, of the same form. It comes nearest to *Quisqualis*, and if it cannot be admitted there, will probably form a new genus.

Doubtful.—Growing in forests of oak on the high ridge of mountains near *Akcaanee*, a large tree, just now conspicuous, for its abundant display of large crimson flowers, leaves without order about the upper part of the branches, petioled, lance-oblong, entire smooth above, hoary white beneath. The flowers, are produced on terminal simple racemes. Calyx one leaved, very small, coloured, five toothed, toothlets obtuse, the two superior

ones larger, deciduous. Corol, one petaled, large, tubular, bell mouthed, tube very wide, contracting at the case. Border five cleft, divisions broad, unequally end nicked. Stamens, filaments ten, of unequal lengths, the longest the length of the corol, erect, appressed to the sides of the germ. Anthers oblong, thick, incumbent. Germ above, columnar, hoary, marked with the pressure of the stamens. Style longer than the stamens. Stigma headed, round, depressed. Pericarp, capsule, columnar, ten celled, many seeded. It approaches nearest to *Rhododendron*, but will probably not be admissible there; and, perhaps, will form a new genus. The natives called it *Boorans*, the wood is used for making the stocks of matchlocks.

Arbutus doubtful.—A tree of medium size found in forests of fir, oak, &c. between *Nataana* and *Adzwanee*, crowded racemes of white monopetalous flowers, terminal and drooping. Leaves alternate, petioled ovate, pointed, entire. Calyx half five-cleft, small, divisions ovate, erect. Corol pitcher-ed, many times longer than the calyx, bellied, neck very narrow; mouth five toothed, toothlets equal, short, obtuse. Stamens, filaments ten, sometimes longer than the corol, and confined by the narrowness of the neck within it, awled, thick at the base, somewhat hairy, inserted into the base of the tube. Germ above, globular, seated on a five-cornered fleshy receptacle. Pericarp (in an unripe state) berry five-celled, many seeded. The natives call the tree *Aiaar*, and apply the expressed juice of the leaves with much success in cutaneous eruptions.

DECANDRIA TRIGYNIA.

Banisteria Bengalensis, *Lin. Syst. Nat. cur.* GMEL. II. p. 724.—*Gærtnera Indica*, *ib.* p. 685.—*Hiptage Mada blota*, GÆRTNER, II. 169, t. 116.—*Gærtnera Racemosa*, ROXB. *Ind. Plants*, Vol. I. N. 18.—This plant so well described by the late Sir WILLIAM JONES, vol. IV. *Asiatick Researches*,

searches, grows in great abundance in several parts of the mountains, but particularly on the banks of the *Koa-nullah* near *Dosah*, climbing profusely upon other trees, and beautiful in display of its crowded racemes of flowers.

DECANDRIA PENTAGYNIA.

Spondias Myrobalanus.—A forest tree between *Am-sour* and *Ghinouly*, now in flower.

Sedum Album.—Growing out of the interstices of stone walls, laid against the slopes of mountains, to retain the soil from washing down. The white flowers have tints of pale red, and make a pretty show in so humble a plant.

Ovalis Acetosella.—On the heights of *Chichooa*, on a small spot of pasture.

Cerastium Alpinum.—About *Teyka-ka-Maanda*.

Doubtful.—Found in the neighbourhood of *Adwaanee*. A slender bushy shrub. Leaves opposite, sub-petioled, lance-ovate, sometimes obtuse, serrulate, rough, downy beneath. Calyx one-leaved, belled: border half five-cleft: division equal, ovate, pointed, erect. Corol, petals five, ovate, cut off at the base, equal, about twice longer than the calyx, spreading. Nectaries, ten oblong, compressed, erect scales, forming a coronet, but not conjoined; as long as the petals, the alternate ones less, broadest at their apices, and widely notched, staminiferous, seated on the germ-covering receptacle. Stamens, filaments ten, very short, filiform, of which five are inserted into the apices of the longest nectarious scales, and five into the sides of the shorter, about the middle. Anthers globular, four cornered, alternately less, erect. Germ above, globular, covered with a fleshy depressed ring. Styles five, filiform, length of the petals, approximated, rising through the middle of the germ-covering receptacle. Stigmas simple. Pericarp (in an unripe state) capsular, round, five-celled. Seeds numerous, attached to
1 a recep-

a receptacle in each cell. It will most likely form a new genus. The flowers are white, on terminal, solitary racemes, and scattered.

DODECANDRIA MONOGYNIA.

Cartaeva Tapia.—A forest tree in the neighbourhood of the mountains, and now in flower.

Grislea-tomentosa, Dr. ROXBURGH.—In great plenty about *Hurdwar*, and the interior part of the mountains. The flower used as a cooling medicine by the natives, and as a colouring drug in combination with the root of *Morinda Citrifolia* in dying red, as described by Dr. HUNTER, in *Asiatick Researches*, vol. IV.

DODECANDRIA TRIGYNIA.

Euphorbia-Canariensis.—In several parts of the mountains.

ICOSANDRIA MONOGYNIA.

Punica-granatum.—Growing on the sides of the mountains, between *Belkate* and *Nataana*, two or three small trees, now in flower; the fruit never eatable the natives say; called by them *Daarmee-Kutta*.

Prunus.—A cherry tree, of common size, found in several places, between the mountains. Leaves irregularly alternate, petioled, serrulated, smooth, shining, with two globular glands at the base.—The fruit in clusters, about the size of the black *Hertfordshire* cherry, of a roundish oval, acid and astringent in a ripe state, and of a dull red colour. The nut furrowed and thick. The wood is in much esteem among the travelling *Fakeers* for bludgeons and walking sticks, and known in common by the name of *Puddum*.

ICOSANDRIA DIGYNIA.

Cratægus.—Growing among detached rocks on the high

high mountains near *Chichooa*. Stem woody, slender, procumbent. Branches without order, mostly two-faced, columnar, terminating with an obtuse rigid point. Leaves, the youngest fascicled, when more advanced appear alternate, petioled, wedge-form, sometimes ovate, entire, hairy beneath, smooth and shining, above five-eighths of an inch in length, including a petiole of one-eighth. Peduncles axillary, solitary, one-flowered, short, hairy, Calyxes hairy.—Flowers white, fragrant. Berry, size of a common pea, red when ripe.

ICOSANDRIA PENTAGYNIA.

Pyrus.—With branches alternate, slender, cylindrical. Leaves, about the ends of the branches, long-petioled, ovate, acuminate, serrulate, smooth. Peduncles solitary, cylindrical, long, erect, intermixed with the leaves. Fruit globular, size of a pigeon's egg, of a russet-brown, spotted, harsh to the taste, and stony. Grows to a small tree in several parts of the mountains between *Nataara* and *Adcaamee*. Flowers in *March*.

Spiraea? doubtful.—Leaves alternate, oblong, ovate, petioled, entire towards the base, obscurely crenate upwards, sometimes entire. Corymbs terminal. Flowers small, numerous, of a yellowish white. Calyx, corol, stamens, and pistil, not materially differing from the *Linnean* characters; but to these must be added in the present species—Nectary twelve small, fleshy, compressed, oblong scales, covering the base of the stamens, and united below to the side of the calyx, emarginated above. Pericarp not seen. Grows to a slender tall twiggy bush. Found a few miles S. W. of *Sirinagur*, near the village of *Nandaala*. It most resembles *S. Crenata* of LINNÆUS.

ICOSANDRIA POLYGYNIA.

Rosa.—Stems numerous, smooth, thorny. Leaves alternate.

alternate. Petioles thorny, pinnated, from three to five pair of leaflets with an odd one, ovate, pointed, smooth, serrated. Germ ovate, smooth. Peduncles hispid. Flowers pure white, in great profusion; and highly fragrant, resembling in smell the clove. Very large bushes of this rose are found in the vallies of these mountains, called by the natives *Koonja*.

Rubus.—Numerous straggling bushes, found most part of the way between *Coadwara ghat* and *Sirinagur*, producing yellow fruit the size of the common red raspberry, of an agreeable acidulated sweet, and which affords a most acceptable means of relieving the thirsty traveller. The stems, branches, and petioles, are very hispid, and armed with short recurvated prickles. Racemes terminal. Flowers white. Leaves alternate. Leaflets ovate, pointed, serrated. Called by the natives *Gocry-phul*.

Rubus Idaeus.—Found in oak forests, a few miles S. W. of *Sirinagur*, and in the valley of *Sirinagur*. Flowers of a pink red. Fruit, agreeable to the taste, but possessing, in a very small degree, the flavor of cultivated raspberry. The stems and branches smooth, armed with strong recurvated prickles, as also the common petiole. Leaflets, from three to five pair, with an odd one. Sessile ovate, deeply serrated, white beneath.

Fragaria Sterilis.—On the sides of those mountains which are much shaded, and soil rich.

Potentilla fragarioides.—On the mountains about *Nataana*.

Potentilla reptans.—On the high ridge near *Chichooa*.

POLYANDRIA MONOGYNIA.

Lagerstroemia Montana, ROXBURGH.—This tree grows to sixty or seventy feet high. Stem straight, thick, and clear of branches to a great height (forty feet). Flowers with much beauty in the month of *May*. Grows both above and below the *ghats*. Trees not numerous.

Doubtful. ✓

Doubtful.—Found between *Adwaanee* and *Teyka-ha-Maanda*, a small tree thickly covered with flowers of a yellowish white, and so fragrant as to be evident to the senses at a considerable distance. It bears the following characters. Leaves alternate, petioled, ovate, serrated, about the base almost entire, smooth above, nerves hairy beneath. Petioles very short, channeled hairy. Racemes rather simple, terminal, and from the axills of the leaves, numerous. Peduncles hairy. Calyx perianth, one leaved, half five-cleft, coloured: divisions thin, obtusely ovate, rather unequal. Corol, petals, five, ovate, rounded, two a little less, slightly adhering to each other at the base. Nectaries, five rounded, compressed glands, sitting on the germ, surrounding the style. Stamens, filaments thirty or more, longer than the corol, unequal, slightly attached in parcels to the base of the petals. Anthers roundish, erect. Germ beneath. Style shorter than the filaments, thicker, compressed. Stigma headed, depressed. Pericarp (in an unripe state) two celled, in each two or three ovate seeds. It has most affinity, perhaps, with the genus *Tilia*, except in the pericarp, and on the examination of this, when it can be obtained perfect, we must depend to ascertain its place in the system.

POLYANDRIA POLYGYNIA.

Uvari.—Near *Coadwara*, above the *ghauts*, a very lofty tree.

DIDYNAMIA GYMNOSPERMIA.

Ballota.—A bushy half shrubby plant on the side of the mountains, and near the road descending into the valley of *Belkate*. About three feet high, seemingly annual, stems and branches four cornered. Leaves opposite, petioled, ovate, acuminate, serrated, (teeth distant, deep, obtuse), downy, veined. Flowers axillary. Peduncles very short, solitary, six flowered, have the appearance of verticels, bracted.

bracted. Calyx tubular, long, ten striated, bell-mouthed: border five-parted: the divisions sub-ovate, veined, leaf-like, as long as the tube, erect. The rest of the fructification not differing materially from the generic characters of LINNÆUS. The whole plant is extremely bitter, and used by the natives in watery infusions as a stomachic.

DIDYNAMIA ANGIOSPERMIA.

Bignonia Chelonoides.—Grows to a pretty large tree in the neighbourhood of *Hurdwar* and *Coodwara*. Nothing remains to be said in addition to the minute description given of this plant by the late Sir WILLIAM JONES, *Asiatick Researches*, vol. IV.

Gmelina Arborea.—A large spreading tree in the neighbourhood of *Hurdwar*, and forests on the skirts of these mountains, now in flower, the fruit ripens about the end of *May*. The wood is light, and used by the natives of *Hindustan* for making the cylinders of those drums called *D'holuks*. Name of the tree *Kum-haar*.

Volkameria? bicolor.—A very handsome species, (if a *Volkameria*) the trivial name taken from the party-coloured corol, one division of which is of a fine blue, the other pure white. Racemes terminal, compound, large. Leaves opposite, petioled, from six to ten pairs on a branchlet, ovate, lance-acuminated, entire towards the base, above, (as far as the acumen), serrated. The calyxes and seeds of this plant are highly aromatic. It grows in abundance in several vallies of these mountains, now in full flower, and ripened seeds.

Vitex trifolia.—Common both above and below the *ghauts*.

MONADELPHIA MONOGYNIA.

A tree in the forests near *Coodwara*, now in fruit, a large berry, as big as a common sized lemon, and somewhat of that shape, growing in close clusters,

ters, five or six, sessile, and crowned with the enlarged permanent calyx, some retaining the whole of the dry fructification, perfect enough for examination, and which exhibit the following characters. Calyx four-parted, above: divisions ovate, obtuse, concave. Corol, petals four, rather obovate, oblong, twice the length of the divisions of the calyx (1 inch $\frac{1}{4}$), truncated at the base, stamens, filaments very numerous (300), capillary conjoined below in a ring, and seated on the receptacle covering the germ. Style longer than the stamens, thicker, filiform. Stigma headed. The berry is composed of a spongy whitish pulp. Seeds, six, eight, or more, nestling, about the size of the seeds of a citron, and of that form, a little compressed. Leaves, terminating the branches, subsessile, subrotund, attenuated at the base, ending in a short acumen above, serrated large, a perfect description and figure of this plant, may be expected from the extensive and invaluable collection of Mr. R. BRUCE, where it has been for some years, and forms one of the many new genera, wherewith that gentleman is about to enrich the science of botany.

MONADELPHIA DECANDRIA.

Geranium.—A very slender herbaceous kind, growing among weeds and bushes on the highest mountains about *Nataana*. Leaves petioled, from three to five lobed, lobes trifid; petioles very long, filiform. Peduncles axillary, solitary, resembling the petioles, one flowered. Flowers pale rose, with a deep purple eye at the base of each petal.

MONADELPHIA POLYANDRIA.

Bombax Ceiba.—Grows in the vallies of these mountains to a very considerable tree, none exceeding it in size, and regularity of growth: its wood is converted to many uses, where lightness more than strength is sought for. For the scabbards of swords, it is much used, and canoes of large
size

size are hollowed from its trunk. A variety of this tree is also found with flowers of a reddish yellow, the petals, oblong ovate.

Bombax Gossypium.—A small tree, a great ornament to the sloping sides of the mountains in the vicinity of *Hurdwar*, the flowers yellow, large, and conspicuously bright, on simple terminal racemes, no leaves during inflorescence. The wood of this tree resembles, for its lightness, that of *Bombax Ceiba*, and the young branches abound in a transparent white mucilage, which is given out on immersion in cold water. Seeds sent to the botanical garden in *Calcutta* have come up.

DIADELPHIA DECANDRIA.

Robinia 1.—A large tree with spreading bushy head, leaves pinnated, leaflets petioled, two pair with an odd one, large, ovate, entire, shortly acuminate, smooth, shining. Racemes axillary, simple, large and showy; flowers white mixed with pink. Peduncles common, columnar, long; proper, short, one-flowered. Legume short, between oval and kidney shape, turgid, a little compressed, one seeded, seed more reniform, compressed, covered with a dark brown arill. The leaves, racemes, &c. have an unpleasant smell. The natives apply the expressed juice of the unripe legumes, as a remedy for the itch. The tree is called by them *Pitappra*, is found both below and above the *ghats*.

Robinia 2.—With woody climbing stem and branches, leaves pinnated with an odd one, leaflets from three to five pair, with short gibbous petioles, oblong ovate, (five inches by three) obtusely pointed, entire, common, petioles very long, downy. Racemes terminal, simple, flowers of a dull white. Peduncles downy. Legumes, oblong, linear, compressed, smooth. Seeds about six, compressed, of a roundish kidney shape. The ripe legumes fly open with considerable force, and noise, and take a twisted form. It is common in every forest above the *ghats*, is found also along the banks

banks of the *Ganges*, as low as *Futtehgurh*, where seeds are probably brought by the current, and lodged, not being found in the jungles of the *Dooab*.

Robinia 3. Doubtful.—With strong contorted stem, twenty inches circumference, climbing over the highest trees in the forests about *Hurdwar*, now without leaves (*April*), but loaded with long terminal pendulous racemes of blue and white flowers. Peduncles columnar, downy, proper, one flowered. Legumes long, sub-linear, compressed, pointed with the persisting style, hairy, adhering to the skin when handled, and slightly irritating. Seeds about six, kidney shape, compressed, smooth, varying in colour, size of those of *Ercum-lens*. The parts of fructification agree best with the characters of *Robinia*. The leaves not yet seen.

Pterocarpus —The common tree in the forests, on the skirts of these mountains, delights in a flat, rich soil. Is a timber of extensive use, hard, durable, and handsome, well known in *Hindustan*, under the name of *Seessoon*.

POLYADELPHIA POLYANDRIA.

Hypericum.—An under shrub, of much beauty, on the elevated hills, between *Dosay* and *Bedeyl*. Grows to about three feet high, branches numerous, cylindrical, smooth, all terminated with corymb-like clusters of large yellow pentagynous flowers. Leaves opposite, sessile, oblong, oval, entire, smooth, the large leaves about three and a half inches by one and a half. Capsule five-celled, many seeded : seeds oblong.

SYNGENESIA POLYGAMIA ÆQUALIS.

Premnanthes.—A very pretty half shrubby species, growing out of the hard clay banks of the *Ganges*, near *Hurdwar*, stems numerous and procumbent, very leafy, and marked with the vestiges of fallen

leaves. Flowers in corymb-like panicles, terminating the branches, a pretty mixture of white and red, florets five-fold. Leaves without order, petioled, obovate, widely serrated; entire towards the base. Seeds five, crowned with a hairy pappus, seated on the naked receptacle.

On the sides of the mountains between *Dosah* and *Belkate*, a small tree, with black fissured bark, irregular crooked branches. Leaves about the ends of the branches without order, petioled, elliptical, one-nerved, entire, about six inches long, white beneath, with a dense cottony down, smooth above; petioles and peduncles, downy, like the leaves. Flowers in cymes terminating the branches, possessing the following characters. Calyx oblong, formed of about twelve unequal imbricated lance-shape scales, increasing in size from the base, the interior series much longer, erect, and retaining the florets. Corol compound, tubular; corollets hermaphrodite, constantly four equal. Proper, tubular, slender, longer than the calyx; border five-cleft; laciniae long, linear. Stamens, pist, &c. as in the genus *Cacalia*. Seeds solitary, oblong, attenuated at the base, silky pappus hairy, stiff, erect, the length of the stamens. It comes nearest to the genus *Cacalia*, and to *C. Aselepiadea*.

Leontodon taraxacum.—On the high mountains near *Chichooa*.

Hypochoeris glabra and *Hypochoeris radiata*.—On the mountains about *Teyka-ka-Maanda* and *Chichooa*.

SYNGENESIA MONOGAMIA.

Lobelia Kalmii.—On the sides of the mountains near *Dosa*.

Viola palustris.—On the sides of the mountains between *Adwaanee* and *Teyka-ka-Maanda*.

Impatiens Noli-tangere.—In the bed of the *Koa-nullah*, a showy handsome plant, now in flower.

GYNANDRIA

GYNANDRIA DIANDRIA.

Limodorem.—In the low grounds near *Asoph-gurh*, below *Hurdwar*. Bulbs solid, large, smooth, mostly triangular, the corners pointed, sending forth a few fibres; scape simple, from the middle of the bulb, columnar, smooth; erect, about twelve inches high. Flowers scattered; petals oblong-linear, nearly equal: nectary three-cleft, the middle division much larger, rounded. It resembles *L. Virens* of Doctor ROXBURGH.

Epidendrum 1.—Leaves two ranked, sessile, sheathing the stem, oblong-linear, carinated, ending as if cut off. Racemes axillary, simple, drooping: peduncles as long as the leaves, cylindrical; *proper*, one flowered. Flowers scattered, large, white mixed with pink, and very fragrant. Bracts lanced, concave, coloured, one to each proper peduncle. Nectary, horn-shaped, incurvated. It adheres to the stems of trees, by many strong fibres shooting forth from among the leaves. It approaches nearest to *E. furcun*.

Epidendrum 2.—Leaves radical, sessile, lanced, entire, succulent, the interior margin of each leaf, near the base, is split open longitudinally, forming a sheath which receives the edge of the adjoining leaf: leaves seldom exceeding one inch and a half in length: racemes simple, from the centre of the leaves, but little longer, slender, many flowered. Capsule six-angled, broader above. Roots fibrous, numerous, slender, spreading themselves into the fissures of the bark of large trees. The above two species, common both in vallies, and on the tops of mountains.

GYNANDRIA DECANDRIA.

Helicteres Isora.—In great abundance along the skirts of the mountains from *Hurdwar* to *Coodwara*, now in flower, very well known in most bazars under the name *Meroterie*, from the resemblance its contorted capsules bear to a screw, an *Hindutree* name for that instrument.

GYNANDRIA POLYANDRIA.

Grewia 1.—With leaves alternate, short petioled, three nerved, ovate, much pointed, serrated, harsh to the touch. Calyx, five-leaved: leaves lance-linear, nerved, spreading. The petals resemble the leaves of the calyx, but are smaller. Filaments numerous, germ roundish, obtusely four cornered, villous. Stigma headed, depressed, five lobed, or cleft. The flowers are of a greenish white, mostly in threes on one common peduncle; peduncles solitary, and opposed to the leaves. Grows to a small tree, numerous on the islands of the *Ganges* near *Hurdwar*.

Grewia 2.—Leaves alternate, petioled, three nerved, ovate, serrated, tomentose, more so beneath than above, white, and resembling the feel of velvet: petioles very short, downy: peduncles axillary, crowded, short, trichotomous, downy. The flowers are much smaller than in the preceding species, and of an orange yellow; the calyxes covered with the same velvet-like nap, the germ thickly enveloped therein, and the younger branches also covered with it. This grows to a large tree in the mountains about *Amsore*. Fruit not seen.

Pothos.—With large hearted petioled leaves, entire, without nerves, smooth. Petioles long, carinated, sheathing the stem. Flowers not seen; the large cylindrical spadix now crowded with ripe seeds, of an irregular ovate shape, about the size of a common pea, covered with a soft aril of a deep red, numerous, and affixed to a common receptacle, the whole externally defended by a thick capsular covering, internally, marked with as many cells as seeds, externally, with numerous reticulated lines, and minutely dotted. On handling the broken pieces of this covering, many shining needle-like points penetrate the skin, and produce irritation. The stems slender, jointed, sending forth fibres, which spread on the bodies of those trees over which they climb. The natives call it

Haat-phool,

MONOECIA TRIANDRIA.

Haat-phool, from the irritation excited on incautiously handling it. It seems to be *Adpendix-porcellanica* of RUMPHIUS.

Phyllanthus grandifolia.—Now in flower on the sides of the mountains near *Bedeyl*.

MONOECIA TETRANDRIA.

Betula.—Leaves alternate, petioled, ovate, obtuse, obscurely serrated. Peduncles axillary, aments fessile, conical, about the size of a small nutmeg, the dry aments the only part of the fructification seen. Grows to a pretty large tree, the bark is an article of trade into the plains of *Hindustan*, said to be used by the manufacturers of chintz to dye red, known by the name of *Atteess*. Saw several trees between *Dosah* and *Belkate*.

Cicca disticha.—*Averrhoa acidula*, LIN. Syst. ed. XIII, 357.—*Terme*, GÆRTN. 2. 487. t. 180.—*Phyllanthus*, ROX.—A forest tree in the vallies of these mountains, now in flower, grows to a considerable size.

Morus 1.—Leaves alternate, petioled, oblong, ovate, widely and unequally serrated, acuminate, rough, three nerved, about four and a half inches long. Petiole one and a half inch, channelled. Peduncles axillary, solitary, short, hairy. Aments, cylindrical, short, dense, florets all female. Grows to a small tree in the jungles about *Dosah*.

Morus 2.—Leaves alternate, petioled, ovate, pointed, a little hearted at the base, from three to five lobed, unequally serrated, teeth obtuse, scabrous, about two and a half inches, and petiole three quarters of an inch. Peduncles fascicled axillary, aments diffuse, florets peduncled, all male. Grows to a small tree in the forests near *Coadwara*.

Morus 3.—Leaves alternate, petioled, ovate, somewhat hearted, acuminate, widely and unequally serrated, downy on both sides, and rough to the touch, six inches long; petiole one inch, channelled.

nelled. Peduncles axillary, solitary, short: aments cylindrical, dense, short, both male and female. The fruit when ripe about the size of the first joint of the middle finger, of a deep red, approaching to black; insipidly sweet, and mucilaginous. Grows to a tall tree with spreading head, found near the village of *Nataana*.

MONOECIA POLYANDRIA.

Quercus.—Leaves alternate, petioled, ovate-lance, serrated, teeth distant and rigid, smooth and shining above, hoary, with a dense down beneath, one nerved, from which are fourteen or fifteen pairs of parallel veins. The full grown acorns now on the trees, consequently flower in the coldest time of the year, and we may conclude from its situation here, it would bear the climate of *Britain*. The thickest forests are in the neighbourhood of *Adwannee*; the trees rather low, but have the appearance of age, though none exceeded in circumference twelve feet, and fifty in height. The wood is of a reddish brown, very hard, and for this property refused by the natives for any purpose but firewood.

Juglans.—Three or four trees in the neighbourhood of *Nataana*, the fruit yet small, covered with a dense hair. Leaves pinnated with an odd one: leaflets sessile, lance-oblong, entire, smooth, the lower pair least, each pair increasing in size upwards. Growing on the sides of the mountains in a very stony soil.

Carpinus doubtful.—A low ill formed tree on the sides of the mountains, between *Dosa* and *Belkate*. Leaves without order about the ends of the branches, pinnated: leaflets about four pair, broad ovate, very obtuse, entire, beneath downy: common petiole columnar, downy, at its origin gibbous: proper, very short, cylindrical, downy. Flowers on long amentaceous spikes, crowded, but not imbricated, those bearing the female flower longest. Calyx of the male flowers is formed of six spreading

spreading unequal leaves, the middle one many times longer than the rest, one nerved, veiny. Corol none. Filaments from seven to eleven, scarcely evident, inserted within the leaves of the calyx. Anthers oblong, four cornered, thick, hairy, erect.—Female, Calyx one leaved, three parted, resembling a ternate leaf, with sessile leaflets, the divisions unequal, the middle one much the longest, oblong, rounded above, one nerved, veined. The only appearance of corol, are four oblong scales, seated on the germ, round the foot of the style, spreading, equal. Germ globular, a little pointed above, hairy. Style short, thick, cylindrical: stigmas two, about the length of the style, thick, slightly compressed, hairy. Pericarp, capsule, globular, two-celled, hairy. This has not been seen in its perfect state.

MONOECIA MONADELPHIA.

Pinus tæda.—Between *Ghinouly* and *Sirinagur*, several mountains are seen covered with this species of fir, the tallest appeared to be from sixty to seventy feet in length; one, which had fallen, measured sixty-five feet, and in circumference seven feet and a half. The natives prefer it to most other wood, for building, and many other uses, for the convenience with which they work on it, with their bad tools. It is also used for the purpose the trivial name implies, and is the only light they employ in their copper and lead mines. The means of transporting this useful timber from the situations it is found in, to the plains of *Hindustan*, appear too difficult and expensive, to offer any encouragement for such an attempt.

DIOECIA DIANDRIA.

Salix.—Leaves alternate, petioled, lanced, acuminate, unequally serrated, smooth, white beneath. Stipules lateral, semicordate, large, serrated, paired. It flowers in *November*, and in a considerable num-

ber of willows, all produced from the same source, none but male plants have been found, and the flowers hexandrous. They grow in plenty on the banks of the *Ganges* above and below *Hurdwar*, acquire the height of forty feet, in circumference seldom exceeding thirty inches. The wood is white, and very fragile.

DIOECIA PENTANDRIA.

Xanthoxylon.—A small thorny bushy tree, growing on the sides of the mountains, about *Nataana*, and other places. Leaves unequally pinnated; leaflets sessile, from three to six pairs, the lower pair smallest, increasing upwards, the terminal one being the largest, oblong-lance, obscurely and distantly serrated, dotted, smooth, largest about three inches long and one broad, between each pair of leaflets, a solitary straight rigid prickle. Petiole winged, along the middle prominent. Flowers inconspicuous; on short, axillary, compound, racemes (both on male and female plants). The short bunches of fruit ripen in *May*, the capsule about the size and shape of a small pepper-corn, these and every part of the plant, possess an aromatic and durable pungency. The natives scour their teeth with the young branches; and chew the capsules as a remedy for the tooth-ach. They believe that the capsule, with the seeds bruised, being thrown into water, renders it fit for drinking, by correcting any noxious quality which it may have. The branches cut into walking sticks, with their thorns rounded off, have a formidable appearance, and may properly be called *Herculean* clubs. It differs much from the figure in *CATESBY's Carolina*.

Cannabis Sativa.—This plant is cultivated in several parts of the mountains, for two purposes: one for the manufacture of a coarse thick cloth, which the poorer people wear, and the other in making an intoxicating drug. Much used, mixed with tobacco, in smoking, by the people of many parts of

of *Hindustan*, and is an article of traffic, between the inhabitants of this range of mountains to the eastward, and the natives of the low countries.

DIOECIA DODECANDRIA.

In a shaded valley near *Ghinouly*, a tall, slender, straggling tree, now in flower, the fructification too complicated for abbreviated description, or comparison with other genera, therefore the full characters are here given. Branches alternate, straggling, few. Leaves alternate, towards the extremities of the branches, petioled, ovate, entire, smooth above, slightly downy beneath, about nine inches in length. Petioles very short, columnar. The flowers are axillary, produced in a kind of single umbell, three or more from the same axill. Common peduncles cylindrical, about half an inch in length, downy; *partial*, similar, a little shorter; *proper*, still shorter, about two lines in length.

Characters of the male flowers. Calyx universal involucre, five-parted (perhaps five-leaved): divisions rounded, concave, expanding; *partial*, of similar form, carrying six florets in its base; *proper* perianth six-parted, divisions lance-ovate, hairy, expanding, sometimes reflected. Corol none. Stamens, filaments mostly thirteen, filiform, unequal in length, hairy, inserted into the base of the calyx, the seven shortest or interior series, furnished towards the foot of each, with a pair of compressed kidney shaped glands, inserted singly by a minute thread into the sides of the filament; the six exterior or longest, simple. Anthers oblong, four-celled, two of which are lateral, and two near the apex in front, each furnished with a lid, which on the exclusion of the pollen are forced up and shew the cells distinct.

Female—Calyx, universal and partial involucre as in the male. *Proper* perianth, five or six cleft, less hairy,

hairy, more coloured than in the male, the laciniae of the border, small, ovate, thin, withering. Corol none, unless the coloured perianth is so called. Nectaries, six pair of glands resembling those of the male flower, affixed in the same manner, to six short, hairy filaments, with the addition of a linear hairy scale, or filament at the back of each, but distinct, all inserted into the base of the calyx. Pistil, germ above, roundish, ovate. Style cylindrical, obscurely furrowed down the middle; stigma two-parted, spreading. Pericarp, a berry, at present about the size of an orange seed, ovate, one-celled, one-seeded.

N. B. Sometimes the glands in the male flowers are one less, the same number of filaments, however, remain (13). The partial involucre is sometimes found with five florets only in its base, the number of its divisions in that case was one less, viz. four. The flowers of the male plant are larger and more numerous. The natives distinguished the male and female trees by different names, the former they called *Kutmoreea*, and the latter *Pup-reea*. It is found also in the forests near *Coadwara*, below the *ghat*.

POLYGAMIA MONOECIA.

Terminalia Alata-glabra.—Grows to a very lofty tree in the vallies of these mountains. Stem straight, and clear from branches to a great height. The characters given to the genus *Chuncoa*, in GMELIN'S edition of the *Systema Naturæ*, agree well with this plant.

Mimosa Catechu 1.—In great abundance in the forests of these mountains, and islands of the *Ganges* near *Hurdwar*, now destitute of foliage, a shabby thorny tree, the dry legumes hanging in great abundance; flowers during the rainy season.

Mimosa 2.—A large tree bearing great resemblance to *Mimosa lebeck*, now in flower in the forest near *Coadwara*. Leaves twice pinnated, abruptly,
from.

from ten to twelve paired ; leaflets sessile, from thirty-two to thirty-four pair, halved longitudinally, oblong, about three-eighths of an inch long by one-eighth, downy. Petioles and peduncles downy, one globular gland on each common petiole, an inch below the leaves, and another similar, but smaller, between the terminating pair of leaflets. Stipules lateral, paired, ovate, acuminate, one nerved, veiny, downy, large. Those on the peduncles resemble them, and are perhaps bracts. The flowers resemble those of *M. lebbeck*. It comes nearest to *M. arborea*.

POLYGAMIA TRIOECIA,

Ficus-laminosa.—An humble species, growing among detached rocks in a small water course, and other moist places along the valley of the *Koa-nullah*. The stem is procumbent, shrubby, diffuse. Leaves opposite, lanceolate, entire ; fruit laminous. The natives collect the leaves to feed their cattle with, and call it *Chanherree*.

Ficus 2.----A slender bushy kind, in dry elevated situations, near *Dosa*. Leaves alternate, on short hairy petioles, ovate, pointed, entire, thickish, with prominent reticulated veins. Peduncles axillary, solitary, cylindrical, short, hairy ; fruit globular, about the size of a marrow-fat pea, downy. Calyx beneath, three parted, downy ; it bears some resemblance to *F. pumila*.

Ficus 3.----Growing in the same situation with the above, a stronger bush. Leaves alternate, few, distant, oblong ; sometimes much rounded above, but acuminate entire, rough, three nerved, with distant veins running into each other along the margin of the leaf : petioles very short, hairy. Fruit axillary, solitary, sessile, rough, globular, about the size of a small gooseberry. Comes nearest to *F. Microcarpa*.

Ficus 4.—A large tree in the forests along the *Koa-nullah*, though on elevated situations. Leaves ovate, obtuse, entire, large, downy. Peduncles
variably

variably produced from the stem and branches, crowded, cylindrical, short, downy. Fruit globular, as large as a small pullet's egg, when ripe, eatable, of a yellowish green, mixed with red, not very desirable to the taste of an *European*, but by the natives esteemed a good fruit. Called by them *Timla*.

CRYPTOGAMIA FILICES.

Asplenium.—Growing on the bodies of trees covered with moss. Frond simple, lance-linear, narrow, attenuated at both ends, smooth, entire: the fructification in distinct distant, round, parcels along the margin, and over which, when mature, the sides of the frond are reflected, the whole contorting and resembling a worm.

Polypodium.—Growing in similar situations with the above. Frond simple, lance-linear, acuminate, entire, woolly. The fructification covering the whole of the disk, except at the two extremities; the opposite side smooth and pitted. Roots, fibrous, numerous, capillary.

Adiantum Serrulatum.—Frond composite, leaves longitudinally striated. Found on the sides of every hill.

Marattia alata and *laevis*.—These two beautiful ferns are mostly found together, in moist and shaded situations, particularly on the more elevated part of the mountains about *Adwaanee* and *Natana*.

Among many plants observed, whose place in the system, for want of particular parts of the fructification, could not be ascertained, the following may deserve noticing here.

Ka-iy-p, hul, country name. GLADWIN'S *Mat. Med.*—This is a middle sized tree, indigenous to these mountains, the bark of which is much valued in *Hindustan* for its aromatic and medicinal properties, and sold in every bazar under this name. The fruit

fruit is a drupe, about the size of a small nutmeg, of a round oval, the nut bony, furrowed, one celled, one seeded, covered with a thin pulp, with a carbuncled surface, red when ripe, and very agreeable to the taste, highly esteemed by the natives. The branches are opposite, cylindrical, much marked with the vestiges of fallen leaves. Leaves irregularly opposite, rather crowded about the extremities of the branches, petioled, ovate, pointed, sometimes elliptical, entire, smooth: petioles short, channelled. Flowers, according to information from the natives, in the month of *March*. It would probably bear the climate of *Britain*.

No name.—In the neighbourhood of *Hurdwar*, a large spreading tree, without foliage, or flowers, the full pericarps hanging in many clusters, consisting of five inflated large kidney-shape capsules, united at one end to the apex of a short woody peduncle, pointed at the other, the points inclined inwards, each capsule in size, &c. resembling the follicle of *Asclepias-gigantea*, downy, one-celled, with a dorsal suture the whole length. Seeds from six to eight, ovate, about the size of a citron seed, black, covered with a white mealy substance, attached by one end to the edges of the suture. Some appearances warrant the conclusion it is a species of *Sterculia*. From the body of the tree exudes a white pellucid gum, discovering similar properties to the gum taken from *Sterculia-platanifolia*, and which so much resembles gum *tracanth*, that it has been collected and sold, on the supposition of being such. Whether it will stand the test and be received as such in *Europe*, time will show. The plant producing that genuine gum, is not found on this side of *India*, to the best of my information.

TO SIR JOHN SHORE, BART.

PRESIDENT OF THE ASIATIC SOCIETY.

DEAR SIR,

WITH this, I take the liberty of sending you an account of the excavations near the town of *Ellora*, differing somewhat from the paper formerly submitted to you, but still requiring all the indulgence then claimed, for the disadvantages under which it was written. Some drawings and a plan accompany it, that will, I hope, prove illustrative of the description. For the plan and the measurements, I am indebted to Lieutenant JAMES MANLEY, and have entire reliance on their accuracy.

The drawings were taken by a very ingenious native in my service, named GUNGARAM, whom I sent to *Ellora* for that purpose, previous to going thither myself, when he was unfortunately too much indisposed to attend me ; so that the opportunity of correcting what was done, substituting more eligible points of view, or adding to my collection, was lost; and I am reduced to the alternative of sending them, with all their numerous errors and imperfections, or sacrificing, to my conviction of those imperfections, the desire of conveying to you, agreeably to promise, some idea, however inadequate, of works, concerning which it has been, and still is, rather my wish to excite, than my hope to gratify, curiosity. That arduous task, I shall leave to the fine taste, masterly pencil, and laudable industry, of Mr. WALES, an artist, mentioned in a former letter, who has already made great progress in such a collection of these wonderful antiquities, many of them hitherto unheard of by *Europeans*, and first discovered by his enquiries, as with the addition of those of *Ellora*, which he means to visit,

visit, will at once engage and satisfy the expectations of the learned and the curious.

Under these circumstances, I no longer hesitate to submit the drawings, with all their errors and inaccuracies, to your notice and disposal, thinking it necessary, at the same time, to acquaint you, that as my draftsman will attend Mr. WALES in his intended journey to *Ellora*, he will be enabled, by the liberal instructions of that gentleman, to correct his errors of delineation and perspective; and as it is reasonable to suppose that most of Mr. WALES's own views will be from different points, I hope this prospect of being furnished with a new set of those now sent will regulate you as to any present public use of them, unless for the purpose above mentioned, of awakening curiosity to the produce of Mr. WALES's skill and industry.

My enquiries, as to the origin or date of these wonderful works, have not hitherto been satisfactory. Doubtless, however, it is, that they are the works of people, whose religion and mythology were purely *Hindu*, and most of the excavations carry strong marks of dedication to MAHDEW, as the presiding deity. The fanciful analogies of some travellers (particularly that attributed to the eight handed figure of VEER BUDDUR, holding up raja DUTZ in one hand, and a drawn sword in another, with the famous judgment of SOLOMON) now vanish; and we seek no longer for colonies of *Jews, Egyptians, Ethiopians, or Phenecians*, to supercede the more rational mode of accounting for such works in the enthusiastic labour and ingenuity of the natives of the country; by which means, the wonder is at least simplified, no trifling point to minds in quest of, and in love with truth.

The difference of the inscriptions, in some of the caves, from the present known characters of *Hindustan*,
may

may be objected to their being the produce of *Hindu* artists; but it is well known, that the formation of letters undergoes great changes in the course of ages, and that such may be the case, with respect to the excavations on this side of *India*, may be fairly inferred, from the difficulty with which the ingenious Mr. CHARLES WILKINS traced and recovered, as I have been informed, some inscriptions in the neighbourhood of *Ghya*. But I am inclined to think, that we are not sufficiently acquainted with the characters of the south of *India*, such as the *Tumhole*, *Arree*, *Kinaraa*, and *Telinghee*, to pronounce on their affinity to those in the excavations, which will be fully submitted to the scrutiny of the learned in Mr. WALES's intended work.

Though I have above mentioned my persuasion, that the generality of the excavations I have seen, not only at *Ellora*, but elsewhere, are dedicated to MAHDEW; yet I do not mean thereby to abandon an idea, that the most northerly caves of *Ellora*, occupied by the naked sitting and standing figures, are the works of the *Sewras* or *Juttees*, who, by the *Brahmens*, are esteemed schismatics, and whose sect, called *Srawuk*, is very numerous in *Guzerat*. The tenets, observances, and habit, of the *Sewras* are peculiar, and in many points very different from other *Hindus*. Their adoration of the deity is conveyed through the mediation of ADNAUT and PARISNAUT, the visible objects of their worship, personified as a naked man sitting or standing. This sect is supposed to be of a comparatively modern origin, if so, and the foregoing hypothesis of the dedication of the temples to their idol, be admitted, the limit of their possible antiquity follows, but without ascertaining, or affecting, that of the others.

On this very interesting point, I mean the antiquity of these astonishing works, I shall here trouble you with the different accounts of two intelligent men,

men, one a *Mahommedan* the other a *Hindu*. The first, named MEER ALA KHAN, an inhabitant of *Ahmednugger*, who said that he had heard it from a person of acknowledged erudition, but whose name I forgot. The second, a *Brahmen*, inhabitant of *Roza*, who quoted a book entitled *Sewa Lye Mahat*, or the grandeur of the mansion of SEWA, i. e. MAHDEW, as his authority; for the authenticity of which I have hitherto sought in vain.

The *Mahommedan* says, “the town of *Ellora* was built by rajah EEL, who also excavated the temples, and being pleased with them, formed the fortress of *Deoghire* (*Doulutabad*), which is a curious compound of excavation, scarping, and building, by which the mountains were converted into a fort, resembling, as some say, the insulated temple in the area of the *INDUR Subba*. EEL rajah was contemporary with SHAH MOMIN ARIF, who lived 900 years ago.”

The *Brahmen* on the other hand, says, “That the excavations of *Ellora* are 7894 years old, formed by EELOO rajah, the son of PESHPONT of *Elichpore*, when 3000 years of the *Dwarpa Yoag* were unaccomplished, which added to 4894 of the present *Kal Yoag*, makes 7894. EELOO rajah’s body was afflicted with maggots, and in quest of cure, he came to the famous purifying water named *Sewa Lye*, or, as it is commonly called *Sewalla*, that had been curtailed by VISHNU (at the instigation of YEMDURHUM, or JUM, the destroying agent) from sixty bows length (each four cuvits square), to the size of a cow’s hoof. In this water, EELOO dipped a cloth, and cleansed with it his face and hands, which cleared him of the maggots. He then built *Koond* (or cistern) and bathing therein, his whole body was purified; so that, looking on the place as holy, he first constructed the temple called *Keylmas*, &c. to the place of *Biskurma*.”

This wide difference in the era between the *Hindu* and the *Mahommedan*, must remain, I fear, inexplicable; while our attention is necessarily attracted to their agreeing in the person of EEL EEA, or EELoo rajah, as the author of the excavations, whose being identified as living in the same age with a well known character, seems to throw the weight of probability into the *Mahommedan's* scale; and it must be remarked, that however fond the writers of that faith may be of the marvellous, in points of preternatural agency, according to their own system; yet, as annalists, they seem more entitled to credit than the *Hindus*, whose historical and theological chronology, is greatly mixed with, and obscured by, fable.

The *Koond*, or cistern, mentioned by the *Brahmens*, is extant, and in perfect preservation, just without the town of *Ellora*, and the holiness of its water is still in such high estimation as to render it a *Teerut* (pilgrimage) of great reputation and resort, under the appellation of *Sewalla Teeruit*, or *Koond*. The neighbouring temples probably form a part of the attraction, as they are much frequented by devout *Hindus*.

It is necessary to observe, that there are a great many other excavations in the semicircular mountain that commands a view of the fine valley of *Ellora*, which, indisposition prevented my visiting.

Whether we consider the design, or contemplate the execution, of these extraordinary works, we are lost in wonder at the idea of forming a vast mountain into almost eternal mansions. The mythological symbols and figures throughout the whole, leave no room to doubt their owing their existence to religious zeal, the most powerful and most universal agitator of the human mind.

The ancient *Brahmens*, avoided the contamination of cities, and affected the purity and simplicity of rural retirement; when far removed from observation, the imagination of their disciples probably enhanced the merits of their sanctity. To alleviate austerities, and to gratify the devout propensities of these holy men, naturally became objects of pious emulation. Under this influence, the munificence of princes may have been engaged to provide them retreats, which sanctified by the symbols of their adoration, were at once suited, in simplicity and seclusion, to those, for whom they were intended, and in grandeur to the magnificence of their founders. Thus power and wealth may have been combined, under the guidance of enthusiasm, to produce monuments, scarce less extraordinary or less permanent, though less conspicuous and less known, than the pyramids.

But though the high antiquity of the generality of these excavations is incontrovertible, being lost in fable, and vulgarly ascribed to the preternatural power of the five *Pandoo* brothers; yet are there exceptions, of which I saw an instance in a hill near a garden in the neighbourhood of *Aurangabad*, where there are two excavations, but of inconsiderable dimensions, formed, as I was credibly assured, by raja PAUR SING, one of the *Rajpoot Ameers* of AURINGZEBE'S court, as a place of retirement, during his attendance on that monarch in his excursions to the neighbouring garden.

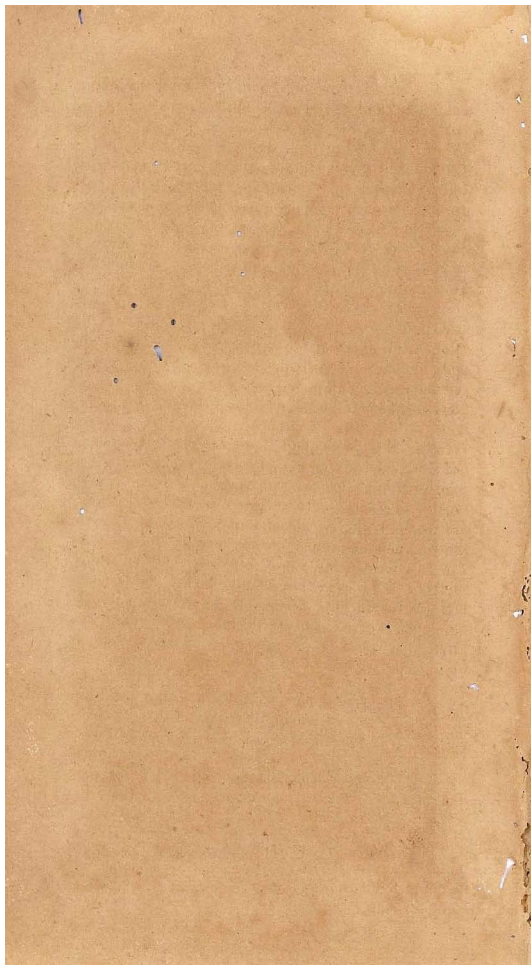
Begging your excuse for this trouble,

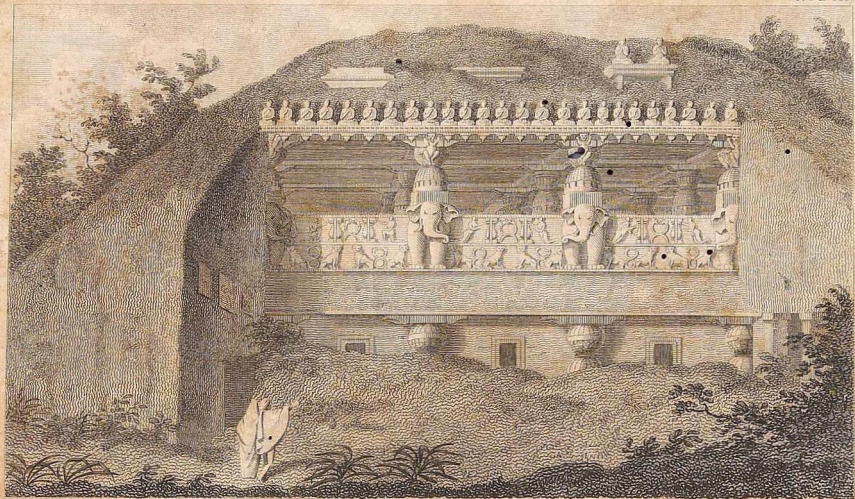
I remain, dear Sir,

Your most obedient humble servant,

C. W. MALET.

POONAH, 22d December, 1794.





View of the Cave of Jugnath. Lubba near Ellora.

X.

DESCRIPTION of the CAVES or EXCAVATIONS, on the mountain, about a mile to the eastward of the town of Ellore, or, as called on the spot, VERROOL, though therein there appears inaccuracy, as the foundation of the town is attributed to YELLOO, or ELLOO rajah, whose capital is said to have been ELLICHPORE.

I SHALL begin this description from the northernmost caves, and continue it in the order as they are situated in the mountain, which runs in a small degree of circular direction from N. 25 W. to S. 25 E.

JUGNATH SUBBA, *Plate A. Front S. 15 E.*

This is a fine excavation that fronts the entrance of the area, having, on the left side *Adnaut Subba*, and on the right some other small excavations almost choked up, as is also the lower story, scarce so much of it appearing as is represented in the plate. The ascent to the upper story is by a flight of steps, in the right corner of this excavation, the inside of which is in very fine preservation, many parts of the ceiling, pillars, &c. having the coat of lime, with which the marks of the chisel have been concealed, and which has been curiously painted, still adhering to the stone. An idea of the front of this fine cave is tolerably conveyed in the etching. Opposite to the front of the cave is a large figure sitting cross-legged, with his hands in his lap, one over the other, which the *Brahmen* who attended me called JUGNATH; his two attendants, he called JAY and BIDJEE*. On each

* In the *Hindu* mythology, JAY and BIDJEE, or WIJEE, are the porters or door-keepers of VISHNU.

side of the entrance of the recess are two standing figures, whom he called SUD and BUD. The whole room, except the open front, has the same figures as that in the recess; but of a smaller size. They all appear to be naked, and to have no other covering on the head than curled hair. The *Brahmen* who shews the caves has a legend that they were fabricated by BISKURMA*, the carpenter of RAMCHUNDER who caused a night of six months, in which he was to connect these excavations with the extraordinary hill and fort of *Doulutabad*, or *Deoghire*, about four coss distant; but that the cock crowing, his work was left unfinished, and the divine artist took the *Outar* of BODE. In the left hand side of this fine cave, there is a coarse niche that opens into the *Adnaut Subba* below. This cave consists of two oblong squares, the inner one being formed by twelve pillars, the four at each end differing from those in the centre.

Dimensions of *Jugnath Subba*.

	Feet. Inches.	
Width of the cut through the rock at the entrance, - - -	35	
Height of the principal figure, sitting,	4	2
Whole length of the cave, - -	57	
Length of the inner square from the base of the pillars, - - -	34	
Breadth of the whole cave, -	47	7
Ditto of the inner ditto, - -	20	
Ditto to the plain work of the recess, -	56	7
Circumference of the shaft of one of the four middle pillars, - -	9	7½
One side of the base of ditto, - -	4	9
From the base to the capital, - -	10	2
From ditto to the stone beam, - -	11	4
From the floor to the ceiling, -	13	4½

* VISWA, or WISMA KURMA, creator or maker of the world.

	<i>Fect. Incher.</i>
Height of a pillar to the commencement of the capital, - - -	6 11
Ditto of ditto to the appearance of a stone beam, - - -	7 10
Ditto of the rock at the front of the cave on the outside of the entrance, -	27

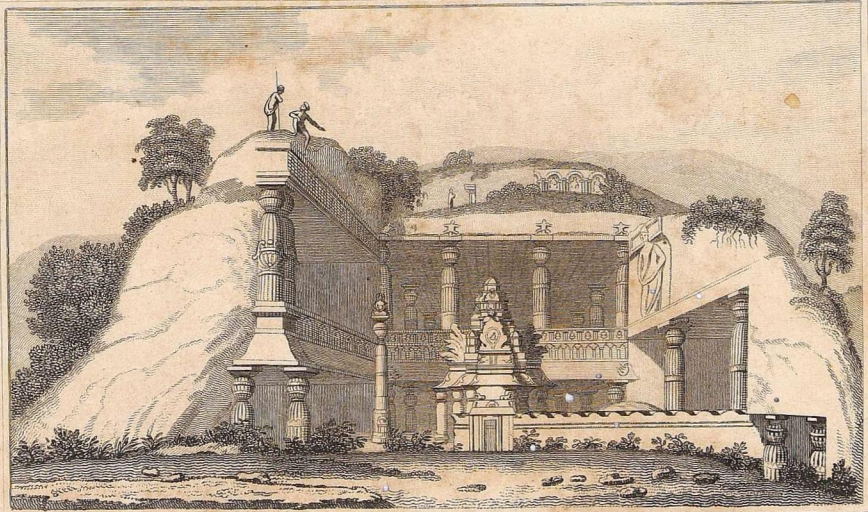
INDUR SUBBĀ. *Front South. B.*

You enter this magnificent cave, or assemblage of caves, by a handsome gateway cut from the rock, on which are too lions couchant. There is a small cave much choked, before the gateway on the right hand. From the doorway, you enter an area, in which stands a pagoda, or temple (C) of a pyramidal form, in which is placed a kind of square altar, with figures on each side, of the same kind as in the last *Subba*. This temple is elaborately finished with sculpture, and a mass of sculptured rock serves as the gate, left and fashioned, when the avenue to the inner apartments was cut through the stony mountain.

In the same area, on the left hand side, is a very handsome obelisk, (C) the capital of which is beautified with a group of sitting human figures that are loosened from the mass. The obelisk is fluted and ornamented with great taste, and has a very light appearance.

On the right hand side of the area, is an elephant but without rider or *Hoda*.

On the left hand side of the same area, is an excavation, with a figure, like the preceding ones, in the recess opposite the entrance. In this there are also the remains of painting on the ceiling, &c. with abundance of sculptured figures on the sides within, and without of elephants, lions, &c. On the right hand side, the excavations are imperfect above and below.



View of Indur Sabha in Ellora.

below. After passing the same temple in the area, you come to the entrance of the lower story of this *Subba*, which is in a very unfinished state, but has a figure in the recess opposite the entrance like the former.

From this lower story, you ascend to the upper by a flight of steps, on the right hand side, fronting the top of which, is a gigantic figure of *INDUR*, (Plate D. No. 1.) with a *tiara* on his head, a *janoee* or *Brahmen* string, over his left shoulder, sitting on an elephant couched. Opposite to him is *INDRANEE* (No. 2) his consort, seated under a mango tree, on a lion. At the end of this cave is a recess with the same figure as in the former, who seems to be the presiding idol in the caves yet seen. This room is formed into two nearly square divisions by twelve pillars. In the middle of the inner square is an altar.

There is a redundance of figures in this fine cave, so as to preclude particular description, and leaves me at a loss whether most to admire the minuteness of the parts or the beauty of the whole. The latter will be better understood from the measurement. The etchings will give a faint idea of the former.

	<i>Fect.</i>	<i>Inches.</i>
Base of the obelisk (N. B. it is much decayed), - - -	4	2
Height of the excavation of the area, - - -	39	
Depth of area, - - -	54	
Breadth of ditto, - - -	44	
Gateway high, - - -	8	
Ditto broad, - - -	6	
Temple, square, - - -	18	
Ditto height, - - -	27	
Obelisk, - - -	22	
Ditto with the figures at the top, - - -	24½	

Circumference

	<i>Fet.</i>	<i>Inches.</i>
Circumference of the obelisk, -	12	
Elephant, long, - - -	13	5
Ditto, high at the shoulder, -	9	
Left hand cave in the area, deep with niche, - - -	32	
Ditto ditto, ditto, with-out niche, - - -	26	
Ditto ditto, ditto, breadth, - - -	27	
Ditto ditto ditto height, - - -	12	
Another small cave on the same side, deep, - - -	15	8
Ditto ditto broad, - - -	8	
Ditto ditto high, - - -	7	
Lower story, deep, from the entrance to the door of the recess, - - -	79	
Ditto breadth, - - -	38	4
Ditto height of ceiling, - - -	14	
Ditto square of pillars, being plain, - - -	4	
Upper story, deep, from the figure in the recess to the opposite veranda, - - -	78	
Ditto from the plane of the two walls, - - -	66	
Ditto breadth, - - -	66	9
Ditto height of the ceiling, - - -	14	
Ditto principal figure in the recess, sitting, - - -	5	1

PURSARAM SUBBA.

On the left hand side of the upper story of the *Indur Subba*, there is a passage into this *Subba*, which though smaller than any of the foregoing, is exactly alike, and equal to them in the fabrick and preservation of its work. There is a passage from it into the upper story of *Jugnath Subba*, already described, which will explain the contiguity of these three caves.

Dimensions

Dimensions of *Pursaram Subba*.

	Feet.	Inches.
Depth from the front to the figure in the recess, - - -	36	
Ditto from the plane of each wall, .	30	8
Breadth, - - -	25	6
Height of figure in the recess, sitting,	3	3
Ditto of ceiling, - - -	8	10
Square of pillars at the base, -	2	3

DOOMAR LEYNA, W. 15 S. distance from the last about $\frac{1}{4}$ mile.

The entrance to this stupendous excavation is through a cut, or lane, in the solid rocky mountain. On the left hand side of this lane, is a cave that is near choked up with earth. The lane terminates from without at a doorway, through which you enter an area, at the end of which, opposite the door, is a small cave. On the right hand of the area is the great excavation, having at its entrance, two lions couchant, one of which has lost its head. You enter this cave by a kind of veranda, on the left hand side of which is a gigantic sitting figure of DURMA rajah, with a club in his hand, and a *jinoee* over his shoulder. On the right hand WISWEYSHWUR MAHDEW, in a dancing attitude, with a group of figures round him, among which is the bull *Nundee*.

After passing this veranda, the cave widens very considerably, and still more after passing the next section of pillars, till you come to the centre or fourth section, on the left of which is the centre door of a very fine square temple, on the right entrance of which is a fine standing figure of MUN, a *tiara* on his head, a *jinoee* on his shoulder, and BOU-ANNEE standing by him, with two small figures above. On the left hand is exactly the same group, said to be POUAN and LUCHME. On the side facing the alley, are similar groups, said to be CHUND and his wife SUCKABYHE on the right, and PRICHUND and

and his son *Govinda* on the left. The same groups appear on the back part of the temple (which has four doors) near the wall, under the names of *Sunk* and *Mahsunk*; and on the remaining side, under the names of *Sid* and *Rid*; but I place not much faith in these accounts of the *Brahmen* who explained them to me. After passing the four sections of pillars, one end of which is occupied by this temple, the remaining two decrease in the same order as at the entrance by the alley. It should not be forgotten that the temple above described is completely occupied by the altar and *Ling* of *MAHDEW*. Opposite to this temple, and to the right as you enter by the alley, there is a fine open entrance, leading directly up to a square temple. On the right hand side of this grand entry, is a group (Plate E.) of *MAHDEW* and *PURWUTTEE*, supported with their heavenly suite, by *ROUX*. On the left side is *VEER BUDDER* with eight hands. In one is suspended the slain rajah *DUTZ*. The other wields a sword, striking the elephant *Erawuttee* on the head. Two support a canopy. One has transfixed *DYTASEER* with a spear. One holds a snake. One a vessel to receive the blood of the slain *DYTASEER*; and one is broken, but which originally held the bottom of the spear, with which *DYTASEER* is transfixed. *LUCHME* is sitting beneath him.

The end opposite the entrance by the alley, and which exactly resembles it, has a small area descending a great depth by steps to a pool of water, supplied by a cascade that falls during the rainy season from the whole height of the mountain. Over the staircase is a small gallery, meant seemingly to sit and observe the falling stream.

On the right hand side, as you enter from this avenue, there is a group of a standing woman and seven smaller figures. The left hand has nothing. On entering the first section of pillars, there is, on the right hand,

hand, a representation of the nuptials of GOURA MAHDEW) and PARWUTTEE, with a great number of figures above, Rajah DUTZ and ALIA, PARWUTTEE's father and mother on one side, and BRIMHA, in a sitting posture, performing the marriage ceremony, with VISHNU standing behind him. In front of this group are the circles cut in the floor for performing the *Ludcha Home*, or nuptial sacrifices. On the left hand side is another group of MAHDEW and PARWUTTEE, with the bull *Nundee*.

There are, as in the other, the remains of painting in this cave, but principally on the ceiling. The heads of the figures in this cave are generally adorned with highly decorated *tiaras*. The thighs of some of the men have *cholnas*, but I cannot discriminate any other parts of their drapery.

Dimensions of *Doomar Leyna*.

	Foots.	Inches.
The cut, or alley, through the rock from the beginning to the door of the cave,	100	
The breadth of ditto,	-	8
Height of the rock through which the cut is made at the entrance,	-	31
Ditto ditto in the area,	-	61 6
Cave on the left hand side of the alley, nearly choked, in length,	-	66
Depth of the said cave,	-	26
Height remaining unchoked,	-	6
Door at the entrance of the area, height,	11	6
Ditto, breadth,	4	4
Area length,	51	4
Ditto breadth,	26	
Cave, opposite the door length,	28	6
Ditto breadth,	17	3
Height partly filled up, remaining,	10	6
Square of the pillars,	-	2 4½
		Breadth

	Feet.	Inches.
Breadth of the first section of pillars on entering the great cave, from wall to wall, - - -	51	6
Ditto of the second ditto, - - -	90	3
Ditto of the third, fourth, and fifth ditto, - - -	135	1½
The two remaining the same as the two first.		
The depth from the ingress at the alley to the egress at the tank, - - -	135	10
The square of the temple occupying the left hand side as you enter from the alley, - - -	30	7
Height from the floor to the ceiling, - - -	16	10
Square of the pillars at the base, generally, - - -	4	3
Height from the highest figures, being those on the four sides of the temple, - - -	13	6
Breadth of the southern area cut through the rock, - - -	18	6
Length ditto ditto - - -	55	

Number of pillars 44, the space occupied by the temple interrupting the ranges. It is well worthy notice, that one of the beams of stone, that, crossing this cave, rests on the heads of the pillars, is much thicker than the rest; which, it may be supposed, arose from the workmen perceiving some flaw in such an immense space of ceiling supporting such a mass of mountain above.

There are thirty steps on the southern entrance, but as they do not reach a third of the way to the water, it may reasonably be supposed that the stupendous fall from the top of the mountain to the present bottom, 120 feet, must have greatly deepened the reservoir since its first construction. This fall forms a *nullah* that runs by the village of *Ellora*.

	Feet.	Inches.
Length of the gallery over the southern stair case, - - -	29	
Breadth ditto ditto - - -	14	
Height, ditto ditto - - -	7	6

JUNWASSA,

JUNWASSA, or the place of NUPTIALS----
Aspect W. N. W.

This excavation is just across the chasm that lies between it and *Doomar Leyna*. It is much inferior to the preceding. It has a veranda with windows, by which the inner cave is enlightened, in which there are figures of MAHDEW, VISHNOO, and BRIMHA, on the left of the door; BHULLEL, LUCHME, and NARRAIN, on the right; and on the left hand extremity, of the *Bharra Outar*, in which the boar is represented as bearing *Pritwa* or the world on his tooth, and having *Seys* under his foot. On the right hand end side is a sleeping figure of KOOM KURN, with a woman chafing his belly. You enter the cave from the veranda by a door. In the cave there are no figures of any note, though there are niches. It remains, therefore, only to give the dimensions of this cave, and proceed to others more worthy notice.

Dimensions.

	Feet.	Inches.
Length of veranda,	64	
Breadth ditto,	8	
Height ditto,	12	2
Breadth of the door way entering the cave from the veranda by four steps,	5	5
Height ditto,	8	
Length of the wall, after entering the door, without including two recesses at each end,	66	11
The two recesses at each end, square,	6	
The two recesses, height,	6	
Breadth of the hall,	19	6
Height ditto,	11	2
Another recess on the right hand within the hall, square,	7	0

The

				Feet	Inches
The recess containing the temple,	depth,			22	5
				11	11
Ditto,	height,	-	-	8	2

A few yards further to the right is another part of the *Jumeassa*, with nearly the same aspect, N. 80 W. as the last, with an open front of four pillars, three feet six inches square at the base, and thirteen feet high, and two pilasters. After crossing the room or hall on entering, a recess is formed by contracting the length of the hall. On each side in this recess are female figures. The front of the recess is formed by two pillars and two pilasters, the singular style of which, appears in the annexed Plate F. In the recess is a square temple, having in it a raised altar with the *Ling* of MAHDEW. On each side of the door of this temple, are two gigantic male figures, with each a smaller female. The *Brahmen* that attended me, called the male figures CHUND and PRICHUND. There is a passage round the temple in the recess.

Dimensions of this excavation.

				Feet	Inches
Length of the hall, including a recess at each end of 15 feet each,	-	-	-	111	
Breadth of the hall, or first section,	-	-	-	22	4
Height ditto ditto	-	-	-	15	
The recess in which the temple stands,					
deep,	-	-	-	40	
Ditto, breadth,	-	-	-	37	8
Temple, square,	-	-	-	21	
Door of the temple, breadth,	-	-	-	4	4
Ditto, height,	-	-	-	8	11

COMAR WARRA, *Aspect* W. N. W.

This cave is near the last. Its entrance deformed by fallen rock, and accumulated earth. It is composed of four sections, divided by four pillars, though the outer one is unsupported by any at present, whatever it may have been formerly, and it is from the immense overhanging mass of unsupported rock,

this group is another of KAL BEHROO, the principal figure being in a dancing attitude, and musicians in the group.

Re-entering the hall again from the recess, on the right is a group of MAHDEW and PARWUTTEE, playing at *Chousur*, with NARRUND sitting between them, stimulating a feud, to which PARWUTTEE by the throw of her right hand, seems well disposed; which is below represented as having taken place, while a burlesque figure on the right is turning up his backside at them.

On the right hand side of the left recess, at the end of the hall, is the group of BOUANEE MYSASEER; on the left hand, that of SWAMMY KARTICK with his peacock and two mendascers.

On the extreme wall, in the centre of this recess, is represented the nuptials of JENNUCK Rajah, at which there is a great attendance of figures, and amongst them, one holding a cocoa-nut used on such solemnities. Below are sitting GUNNES, BRIMHA, &c. officiating at the marriage ceremony.

Re-entering the hall again from the left recess, there is on the left hand a group of GOURA and PARWUTTEE in heaven supported by ROUON.

On each side of the pillars, before you enter the recess, are female figures.

On each side of the door of the temple in the recess are two gigantic and two smaller figures; the former said to be AHRAON MEYRAON; the smaller ones KEYROO BHUT on the right, and VISHROO on the left, challenging each other to a combat of wrestling.

Many of the pillars of this cave are elaborately ornamented. Very near this cave is another small one containing the *Ling* of MAHDEW, which does not require particular notice, and still a little further, another of considerable dimensions, but quite plain, and almost choked up both within and at the entry.

There are also three or four other excavations of the same rank between the last mentioned and the next great work of *Keylas*.

Dimensions.

		<i>Fect.</i>	<i>Inches.</i>
Length of the hall, including the recess at each end of nine feet each,	-	90	8
Depth of the cave, including the recess in which the temple stands,	- -	72	5
Height,	- - -	15	0
Square of the temple in the recess,	-	31	0

The front of this excavation has four pillars and two pilasters; and at the commencement of the recess, two pillars and two pilasters.

KEYLAS *alias* PARADISE. *Aspect West.*

This wonderful place is approached more handsomely than any of the foregoing; and exhibits a very fine front, in an area cut through the rock. On the right hand side of the entrance is a cistern of very fine water. On each side of the gateway, there is a projection, reaching to the first story, with much sculpture and handsome battlements, which, however, have suffered much from the corroding hand of time. The gateway is very spacious and fine, furnished with apartments on each side that are now usually added to the *Dewries* of the eastern palaces. Over the gate, is a balcony, which

which seems intended for the *Nobut Khamneh*. On the outside of the upper story of the gateway are pillars, that have much the appearance of a *Grecian* order. The passage through the gateway below is richly adorned with sculpture, in which appear BOUANNEE USHTBOOZA on the right, and GUNNES on the left. From the gateway you enter a vast area cut down through the solid rock of the mountain to make room for an immense temple, of the complex pyramidal form, whose wonderful structure, variety, profusion, and minuteness of ornament, beggar all description. This temple, which is excavated from the upper region of the rock, and appears like a grand building, is connected with the gateway by a bridge left out of the rock, as the mass of the mountain was excavated. Beneath this bridge, at the end opposite the entrance, there is a figure of BOUANNEE sitting on a lotus, with two elephants with their trunks joined, as though fighting, over her head. On each side of the passage under the bridge is an elephant, marked (a) in the plan Plate G, one of which has lost its head, the other its trunk, and both are much shortened of their height by earth. There are likewise ranges of apartments on each side behind the elephants, of which those on the left are much the finest, being handsomely decorated with figures. Advanced in the area, beyond the elephants, are two obelisks (b), of a square form, handsomely graduated to the commencement of the capitals, which seem to have been crowned with ornaments, but they are not extant, though from the remains of the left hand one, I judge them to have been a single lion on each.

To preserve some order, and thereby render easier the description of this great and complex work, I shall, after mentioning that on each side of the gateway within there is an abundance of sculpture, all damaged by time, proceed to mention the parts of the centre structure; and then, returning to the right side, enumerate its parts; when taking the left hand, I shall terminate the whole in a description of

the end of the area, opposite to the gateway and behind the grand temple. Exemplifying the whole by references to the annexed plan.

CENTRE BELOW.

Passing through the gateway (1) below, you enter the area (2), and proceeding under a small bridge, pass a solid square (3) mass which supports the bull *Nundee* stationed above; the sides of this recess are profusely sculptured with pillars and figures of various forms; having passed it, you come to the passage under another small bridge, beneath which there is, on one side, a gigantic sitting figure of Raja BHOJ surrounded by a group of other figures. Opposite to which is as gigantic a figure of GUTTORDHUJ, with his ten hands. At the end of this short passage commences the body of the grand temple (4), the excavation of which is in the upper story that is here ascended by flights of steps on each side (5).

RIGHT AND LEFT HAND SIDES OF THE TEMPLE
BELOW.

The right hand side is adorned with a very full and complex sculpture of the battle of RAM and ROUVON, in which HUNOMAUN makes a very conspicuous figure. Proceeding from this field of battle, the heads of elephants, lions, and some imaginary animals, are projected as though supporting the temple, till you come to a projection (6), in the side of which, sunk in the rock, is a large group of figures, but much mutilated. This projection was connected with the apartments on the right hand side of the area by a bridge (7), which has given way, and the ruins of it now fill up the sides of the area. It is said to be upwards of 100 years since it fell.

Passing the projection of the main body of the temple, it lessens for a few paces, then again projects (8), and after a very small space on the line of
of

of the body of the temple, the length of this wonderful structure, if what is fabricated downwards out of a solid mass can be so called, terminates in a smaller degree of projection than the former. The whole length is supported, in the manner above mentioned, by figures of elephants, lions, &c. projecting from the base, to give, it should seem, the whole vast mass, the appearance of moveability, by those mighty animals. The hindmost, or eastern extremity of the temple, is composed of three distinct temples elaborately adorned with sculpture, and supported like the sides, by elephants, &c. many of which are mutilated. The left hand side (I mean from the entrance) differs so little from the right, that it is unnecessary to be particular in mentioning any thing, except that opposite the description of the Battle of RAM and ROUVON, is that of KEYSO PANDO, in which the warriors consist of footmen, and others mounted on elephants, and cars drawn by horses, though I observed none mounted on horses. The principal weapon seems the bow, though maces and straight swords are discoverable.

CENTRE ABOVE.

The gateway consists of three centre rooms (9) and one on each side (9). From the centre rooms, crossing the bridge (10), you ascend by seven steps (11) into a square room (12), in which is the bull *Nundee*. This room has two doors and two windows. Opposite the windows are the obelisks (*b*) before mentioned.

From the station of *Nundee*, you cross over the second bridge (13), and ascend by three steps (14) into a handsome open portico (15), supported by two pillars (above each of which, on the outside, is the figure of a lion, that though mutilated, has the remains of great beauty, and on the inside, two figures resembling sphynxes) towards the bridge, and two pilasters that join it to the body of the temple, the grand apartment of which (16) you enter from the

portico by four handsome steps and a door way, on each side of which are gigantic figures. Advancing a few paces into the temple, which is supported by two rows of pillars, beside the walls that are decorated with pilasters, there is an intermission of one pillar on each side, leading to the right and left, to an open portico (17), projecting from the body of the temple, from the right hand one of which, the bridge already mentioned as broken, connected the main temple with the side apartments, to which there is now no visible access, but by putting a ladder for the purpose, though I was told there is a hole in the mountain above that leads into it, which I had not time nor strength to explore. The access to the opposite is by stairs from below. The recess (18) of the *Ling* (19) of MAHDEW to which there is an ascent of five steps, forms the termination of this fine saloon, on each side of the door of which is a profusion of sculpture. The whole of the ceiling has been chunamed and painted, great part of which is in good preservation.

A door (20) on each side of this recess of the *Ling* of MAHDEW leads to an open platform (21), having on each side of the grand centre pyramid, that is raised over the recess of the *Ling*, two other recesses (22), one on each side, formed also pyramidically, but containing no image. Three other pyramidical recesses (23), without images within them, terminate the platform, all of them elaborately ornamented with numerous figures of the *Hindu* mythology. Many of the outer as well as the inner parts of this grand temple are chunamed and painted. The people here attribute the smoky blackness of the painting within, to AURUNGZEBE, having caused the different apartments to be filled with straw and set on fire; which I can reconcile on no other ground, than to efface any (if any there were) obscenities, as there are many in the sculpture. Upon the whole, this temple, of which I was too much indisposed to give even the inadequate account that I might, if in perfect health, has the appearance of a magnificent fabric,

bric, the pyramidal parts of which seem to me to be exactly in the same style as that of the modern *Hindu* temples.

RIGHT HAND SIDE OF THE AREA.

This side of the rock has a continuance of excavations, as marked in the plan, but all those below, except the veranda, which I shall quit for the present, are of little note, and those above, of three stories called *Lunka* (24), which appear much more worthy of attention, are inaccessible, but by a ladder, from the fall of the bridge; I shall therefore proceed to the

LEFT HAND SIDE OF THE AREA.

In which there are excavations of some consideration below, from which you ascend to an upper story called *Pur Lunka*, by an indifferent stair-case, into a fine temple (25), at the extremity of which is a recess containing the *Ling* of MAHDEW, and opposite thereto, near the entrance from the stair-case, is the bull *Nundee*, with two large fine figures resting on maces on each side of the recess in which he sits. The ceiling of this temple is, I think, lower than any of the foregoing. The whole of this temple is in fine preservation, strongly supported by very massy pillars, and richly ornamented with mythological figures, the sculpture of some of which is very fine. The ceiling, like the others, has the remains of painting visible, through the dusky appearance of smoke, with which it is obscured. Descending from *Pur Lunka*, you pass through a considerable insculptured excavation (26) to a veranda (27), which seems allotted to the personages of the *Hindu* mythology, (a kind of pantheon) in open compartments: these figures commence on the left hand with—1st, the *Ling* of MAHDEW, surrounded by nine heads, and supported by ROUON. 2d, GOURA PARWUTTEE, and beneath ROUON writing. 3d, MAHDEW, PARWUTTEE, and beneath *Nundee*. 4th, ditto ditto. 5th, VISHNU. 6th, GOURA. PARWUTTEE. 7th, a *Bukta*, (votary) of VISHNU with

his legs chained. 8th, GOURA PARWUTTEE. 9th, ditto. N. B. These representations of GOURA and PARWUTTEE all differ from each other. 10th, ditto. 11th, VISHNU and LUCHMEE, 12th, BUL BUDDER, issuing from the *Pind*, or *Ling* of MAHDEW. Here ends the left hand side, and commences the eastern extremity or end of the area (28), in which the figures are continued, viz. 13th, GOURA and PARWUTTEE. 14th, BEHROO, with GOVIN RAJ, transfixed on his spear. 15th, DYTASEER on a chariot, drawing a bow. 16th, GOURA and PARWUTTEE. 17th, KAL BEHROO. 18th, NURSING Outar, issuing from the pillar. 19th, KAL BEHROO. 20th, BAL BEHROO. 21st, VISHNU. 22d, GOVIN. 23d, BRIMHA. 24th, LUCHMEDASS. 25th, MAHMUND. 26th, NURRAIN. 27th, BEHROO. 28th, GOVIN. 29th, BAL BEHROO. 30th, GOVIN RAJ and LUCHMEE. 31st, KISSUNDASS. Here ends the veranda of the eastern extremity, and I now proceed with that on the right hand (29) having in my description of that side stopped at the commencement of this extraordinary veranda for the purpose of preserving the enumeration of the figures uninterrupted, viz. 32d, MAHDEW. 33d, ITTULDASS. 34th, DHURM RAJ, embracing UGGAR KAUM. 35th, NURSING destroying HURN KUSHB. 36th, VISHNU sleeping on *Seys Naug*, the *Kummul* (lotus) issuing from his navel, and BRIMHA sitting on the flower. 37th, GOVERDHUN. 38th, MAHDEW BULLEE, with six hands. 39th, KRISHNA, sitting on *Gurroor*. 40th, BHARRA Outar. 41st, KRISHNA CHITTERBOOZ trampling on *Callea Naug*. 42d, BALLAJEE. 43d, ANNA POOMA. It is to be observed, that almost all the principal figures are accompanied in their respective pannels by others explanatory of the character of that part of the history of the idol in which it is represented. Had not my strength failed me, I should have been much more particular than I have been, in this and every other part of so wonderful a place, though the utmost minuteness could not have done

done justice to it. I am sorry to observe, that from the appearance of the hill above this veranda projecting greatly beyond the pillars at the eastern extremity, (as marked in the plan by the line 30) the water, during rains, must fall into the area in a perfect torrent, or cascade, of the whole height of the superincumbent rock, a number of loose pieces of which, lying on the slope above, seem ready for precipitation down the scarp.

Dimensions of the *Keylas*.

	Fect.	Inches.
Outer area, broad, - - -	138	0
Ditto, deep, - - -	88	0
Greatest height of the rock through which the outer area is cut, -	47	0
Gateway, height, - - -	14	0
Ditto, breadth, without the modern building, - - -	14	4
Passage of the gateway, having on each side rooms, fifteen feet by nine,	42	0
Inner area, or court, length from the gateway to the opposite scarp,	247	0
Ditto breadth, - - -	150	0
Greatest height of the rock, out of which the court is excavated, - - -	100	0
LEFT SIDE OF THE COURT, LOWER STORY, VIZ.		
A small cave—in front, two pillars, and a pilaster at each end, with three female figures buried up to the knees, with rubbish, length, - - -		
	22	6
Ditto, ditto ditto, breadth, - - -	8	0
Ditto, ditto ditto, height, - - -	9	8
Another excavation, in front five pillars, two pilasters, length, - - -		
	57	9
Ditto, breadth, within the benches that are round this cave, - - -	6	0
Ditto, height, at the end of this is a staircase to the upper story, - - -	10	4
Interval unexcavated, - - -	20	0
Another excavation, having two large square plain pillars, and two pilasters		

in

in front, with a bench round the inside, the rock projecting beyond the pillars, length,	-	-	54	6
Ditto, ditto ditto, breadth,	-	-	12	6
Ditto, ditto ditto, height,	-	-	16	0
Door-way, leading to a gallery or veranda, five feet eleven inches high, by two feet nine inches wide. Gallery, containing figures. Length from the door-way to the extreme depth of the whole excavation,	-	-	117	8
Ditto, broad,	-	-	13	0
N. B. In this length are eleven pillars, each two feet eight and a half inches square.				

Ditto, height within the pillars. The projecting rock is about three feet lower, extending irregularly in the course of the length from seven to thirteen feet beyond the pillars, - 14 8

END OF THE AREA OPPOSITE THE GATEWAY BEHIND
THE TEMPLE.

Whole breadth from side to side, measuring from the inner wall of the gallery on each side,	-	-	186	6
Breadth of the gallery, including the pillars, there being seventeen in this range,	-	-	13	4

N. B. The rock projects beyond the pillars along this range and the right hand one irregularly from fifteen to twenty-two feet, and is lower than the ceiling.

RIGHT HAND OF THE COURT, LOWER STORY, VIZ,

Figure gallery, or veranda, of the same dimensions as the preceding parts of the same gallery for the space of ten pillars, the angle one being included in the foregoing, three of which are broken, it is said to make trial of the power of the deity of the place, and

when

when it was found that the superincumbent rock did not sink, the temple, said to be *Arungzebe*, forebore further trial.

Door-way, two feet four inches broad, by five feet high, leads to a veranda, within this veranda is a room of sixty feet by twenty-two and eleven feet four inches high. Right end unfinished.

Length,	-	-	-	-	60
Breadth,	-	-	-	-	17
Height,	-	-	-	-	13

A small projecting room, fifteen feet by thirteen, and six feet high, being choked with several finely sculptured figures.

An excavation raised twelve feet from the surface of the court.

Length,	-	-	-	-	36	10
Depth,	-	-	-	-	14	9
Height,	-	-	-	-	12	

There is a multiplicity of figures in this apartment, detached from the wall. Amongst the rest a large skeleton figure with a smaller one on each side. The principal is sitting, with each foot on a prostrate naked figure.

An excavation, which has a small recess, opposite the entrance, of six feet by seven and eight high.

Length,	-	-	-	24
Depth	-	-	-	18
Height	-	-	-	10

An excavation terminating the lower story, on the side, length,

on the side, length,	-	-	-	24	
Ditto, - depth,	-	-	-	10	
Ditto, - height,	-	-	-	11	6

except between the two pillars, where the roof is arched, the first instance I have seen of the arch, and is there fourteen feet eight inches high.

LEFT HAND SIDE, UPPER STORY, VIZ.

Feet. Inches.

A small unfinished excavation, the dimensions of which were not worthy taking.

Pur Lunka, is a fine lage excavation, ascended by a flight of twenty-five steps, and a doorway of three feet eight inches broad, by seven feet seven inches high, length, exclusive of the recess, in which is the temple of MAHDEW,

70 7

Ditto breadth,

61 9

Ditto height,

14 6

Recess, in which stands the temple of MAHDEW, depth,

26

Ditto breadth, (N. B. the temple on the outside is twenty-six by twenty feet).

39

N. B. The whole of this apartment is full of figures, some very finely sculptured, and the centre floor is raised one foot, and the ceiling in proportion.

RIGHT HAND SIDE, TWO STORIES.

FIRST STORY.

A large room, formerly connected with the grand temple by a bridge, now broken down, depth,

18

Ditto length, laterally,

60

Ditto height,

16

Another room, within the foregoing, entered by a door from it, having a bench all round, this inner room is very dark, having no light but from the doorway,

depth,

29

Ditto, length, laterally,

36

Ditto, height,

11

SECOND STORY.

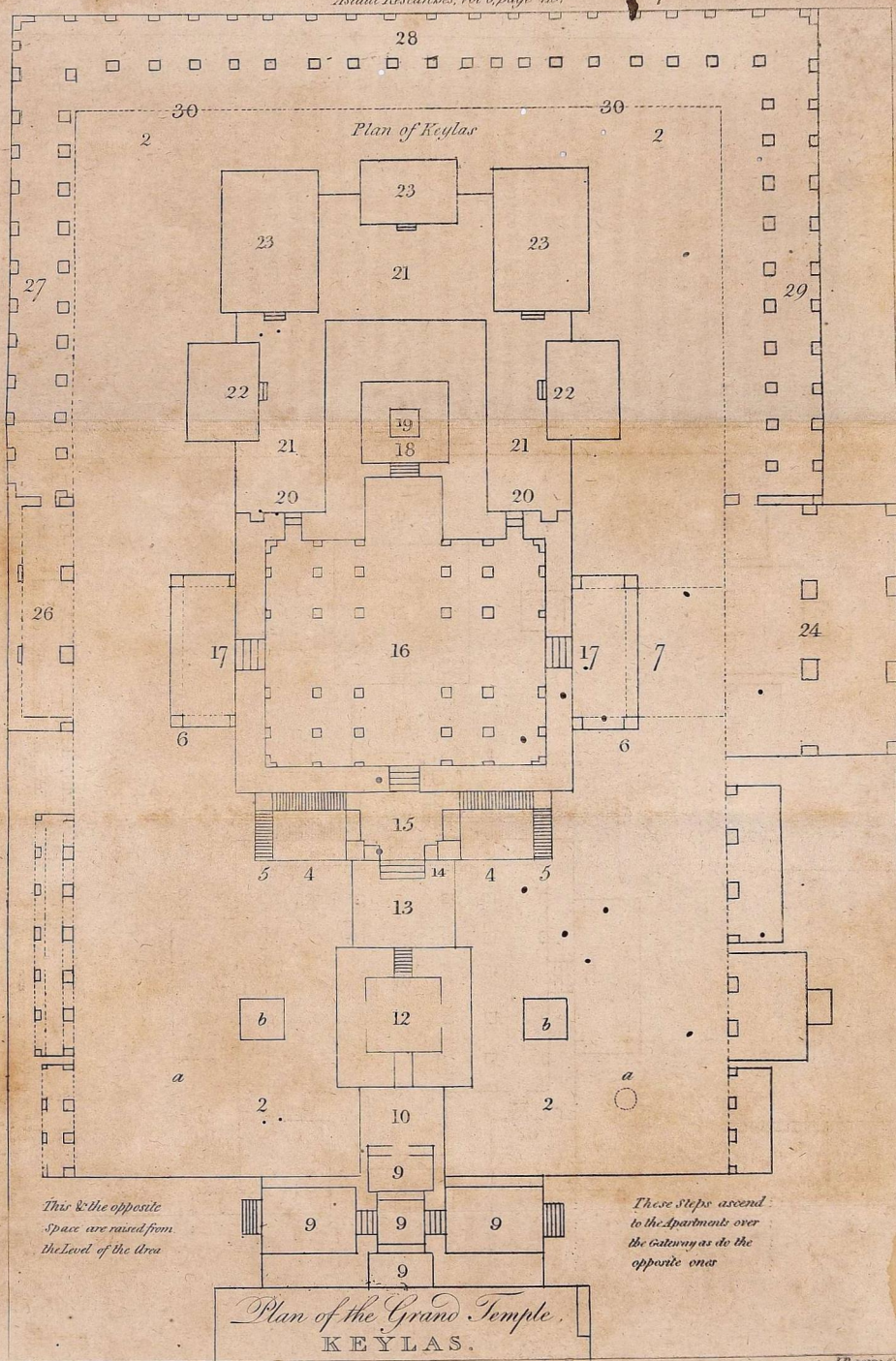
Entered by a stair case from the right side of the foregoing of twenty-four steps.

A large room of the same dimensions as a correspondent one below, except two feet less in the height

Another room within the foregoing, depth, 35

28

Plan of Keylas



*This & the opposite
Space are raised from
the Level of the Area*

*These Steps ascend
to the Apartments over
the Gateway as do the
opposite ones*

Plan of the Grand Temple
KEYLAS.

	Feet	Inches
Another room within the foregoing, length,	37	
Ditto, height,	14	

The rock seems to have given way in the centre of this room, and the rubbish has fallen in.

CENTRE.

Balcony over the gateway, fourteen feet by eight, and eight high. A room within it nine feet square, and about nine high. Another within it, same dimensions. One on each side from the centre, twenty-two by fifteen each. Bridge, twenty feet by eighteen, with a parapet three feet six inches high. Ascent by nine steps from the bridge into a distinct room, in which is the bull *Nundee*, sixteen feet three inches square. Another bridge, twenty-one feet by twenty-three broad, leading to the upper portico of the temple. This portico with the parapet wall is eighteen feet by fifteen feet two inches, and seventeen high: within a bench that is rounded of four high by three feet seven inches broad. You can enter this portico from the gateway by a passage that the filling up of the rubbish has afforded, but the proper passage is by flights of steps on each side, of thirty-six steps each, leading up on each side the body of the temple.

GRAND TEMPLE.

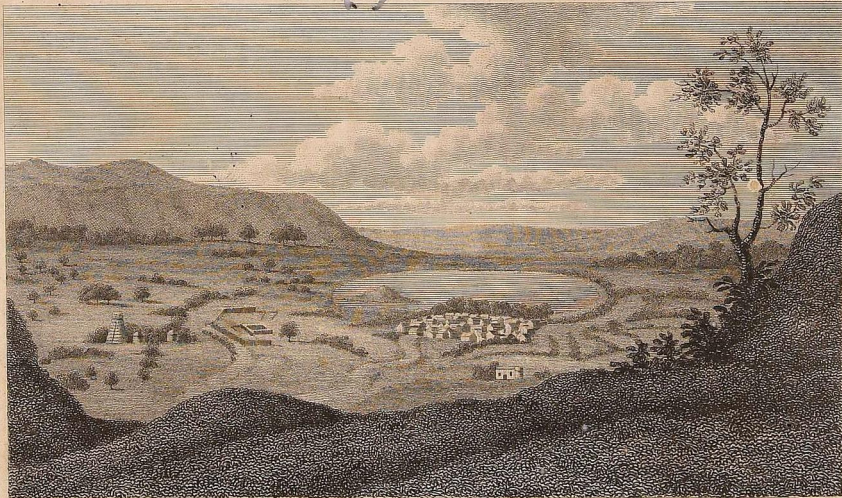
	Feet.	Inches.
Door of the portico, twelve feet high by six feet broad, length from the door of the portico entering the temple, to the back wall of the temple,	103	6
Length from the same place to the end of the raised platform behind the temple,	142	6
Greatest breadth of the inner part of the temple,	61	
Height of the ceiling,	17	10
Two porches on each side, measured without, thirty-four feet ten inches by fifteen feet four inches. The particulars of the intricate measurement		

surement of this fine temple will be best understood from the plan formed on the spot.

Height of the grand steeple or pyramid computed about ninety feet from the floor of the court and of the smaller ones about fifty. Height of the obelisks about thirty-eight feet. Base eleven feet square, being eleven feet distant from each side of the room in which is the bull *Nundee*. The shaft above the pedestal, is seven feet square. The two elephants on each side the court or entry are larger than life.

DUS OUTAR. *Aspect W.*

A very small distance from *Keylas*. The access to it is by very rough steps in the rock, and the original entry being built up, you enter over the wall on the right hand into an excavated square area, on the left hand side of which is a small excavation. The middle of the area is occupied by what has been a very handsome square apartment, the ascent to the veranda of which, fronting the gateway, was by a handsome flight of steps, forming a portico, the roof of which veranda was supported by two pillars, one of which having given way, the roof has fallen. The front of this square has a stone lattice in the centre, and figures in the compartments on each side. The top has been adorned with figures. The two corner ones seem to have been lions, but time has destroyed their form. On the right of this square apartment is a dry water cistern, but on the left there are cells with fine water and plenty, and I dare say a little care would supply the other. The front of the area is greatly filled up with earth from the surrounding hill, and no preventative now appears to its washing in with the rain. The entrance into the square apartment is from the main structure if, as I have before observed, I may so denominate what has been fabricated downwards which consists of two stories, having, both above and below, a front of six pillars and two pilasters. It appears to have been filling up fast, to



View of Ellora.

prevent which, by a very temporary remedy, a trench is cut in the area in front of the fabrick, and close to it. The lower story is quite plain, with two recesses or courts at each end, and all the pillars are devoid of ornament, being extremely square and maffy. The passage into the upper story having been stopped up, it was with great difficulty I ascended through a small hole on the left hand side. The room above is of great dimensions, supported by eight rows of pillars in depth, all of which are square and quite plain, except the front row. At the extremity of the centre aisle is a recess, containing the *Ling* of MAHDEW; and in the front of it, near the opposite end, is the bull *Nundee*, but without his head. The lateral walls, as well as that on each side the recess of MAHDEW at the end, are adorned with mythological figures in very high preservation, and amongst which the *Dus Outar* (or ten incarnations) are conspicuous, whence I presume the place is named. In the centre of each side of the lateral walls there is an altar.

Dimensions.

Lower story, having a front of six pillars and two pilasters.

					Feet.	Inches.
Length,	-	-	-	-	103	3
Depth,	-	-	-	-	46	4
Height,	-	-	-	-	14	9 $\frac{1}{2}$
Upper story,	the same front as below,					
greatest length	-	-	-	-	96	5
Ditto,	-	-	-	depth	101	10
Ditto, the same as below,	-	-	-	height,		
Recess,	-	-	depth,	-	14	0
Ditto, lateral,	-	-	length,	-	37	1
Square structure in the area,	-	-	length,	-	32	0
Ditto,	-	-	breadth,	-	26	3
Ditto,	-	-	height,	-	10	1 $\frac{1}{2}$

TEEN TAL. *Aspect W. 10 S.*

Proceeding a few yards to the southward of *Dus Outar*, you reach the excavation called *Teen Tal* (or three stories). The entrance to this structure is from a level surface, through a good gate, in a wall left as the rock was hewn, into a fine area, as yet but little choked with earth or fragments. The front of this excavation has a fine and simple appearance, being composed of eight square pillars and two pilasters in each story, all of which are unadorned, except the two centre ones of the ground story, the ornamenting of which, however, has not affected their quadrangular form. After entering the area a few paces, it widens, and in the left hand corner is a reservoir of fine water; indeed, all the water in these cisterns is uniformly fine and clear. In the side of the area, opposite the water cistern, is a raised excavation, but of no note. The lower story consists of six pillars in depth, and at the extremity of the middle aisle, is a recess containing a gigantic image of SEYS. Proceeding up the middle aisle, the excavation narrows at the fourth pillar, and continues so to the end, having on each side a small room, and in the next pannel on each side two very large sitting figures; that on the right of SUKUR ACHARY, and on the left of ADNUT. On each side the door there are also large figures. Ascending from the ground floor by a good stair case on the right hand side, the raised recess mentioned above fronts you, which has a large sitting figure of COVERE, and several others, that in any place would not be unworthy notice. Proceed to ascend by the same fine stairs, you enter a noble veranda of the second story, opposite the entrance of which is a recess with the figure of JUM seated in it. There is a door way at each end of the veranda leading to four rooms in each extreme side of the rock. From these doors, the wall of the rock is continued to the third pillar on each side, and to the second in depth, to give space for two rooms on each side, but without figures. This continuation of the wall narrows the opening

ing of the temple within the veranda to two pillars and two pilasters. At the extremity of the centre aisle is a recess, containing a very large sitting figure of LUCHMON, with two gigantic figures on each side of the door. But before you reach the recess, the room lessens again from the innermost row of pillars, to give space for two small rooms on each side. The greatest depth of this fine room has six pillars clear of wall, all of which are square and plain. Ascending from this story by a stair case at the opposite end of the veranda by which you enter it, but equally light and easy of ascent, you enter the third story, by a door, on the left of which in the landing place, is a small room, and opposite the entrance, at the end of the veranda, is a gigantic figure of SEY DEW; on his left, continuing by the lateral wall is, LUKKOO; next to him, BHEEM; then ARJUN; then DHURM raja; being the five sons of PUNDOO. Opposite to whom are, in similar niches, the figures of OODO, MADO, PENDA, and SUDAN, the space of the door occupying that of a fifth figure opposite to SEY DEW. Advancing through the middle aisle of this very fine temple, it is lessened at the six pillars to make room, on each side of the great recess, for fourteen sitting figures with curled hair. Advancing from hence, you enter a kind of vestibule, very richly decorated with figures standing and sitting. And in the centre is a door leading into a recess, into which you descend by three steps. In front of the door there is a gigantic figure of RAJA sitting on a throne or altar, and attended on each side by the usual deities employed in his service. SETA is placed on the left hand side of the door on the wall opposite to him. All the pillars of this very fine and capacious temple are square and plain, but the ceiling has the remains of painting.

Dimensions of *Teen Tal*.

LOWER STORY.

				Feet.	Inches.
Depth of room,	-	-	-	41	6
	E e 2				Length,

				<i>Feet.</i>	<i>Inches.</i>
Length of room,	-	-	-	117	6
Height ditto,	-	-	-	11	6
Recess deep,	-	-	-	43	5
Room in the recess, deep,	-	-	-	12	0
Ditto, - broad,	-	-	-	19	0
Ditto, - high,	-	-	-	14	0
Image sitting high,	-	-	-	11	3
Room in the first landing place going up stairs twenty-five by twenty feet. -					

Twenty-four steps ascending to the second story.

Length of veranda,	-	-	-	114	5
Depth from the wall of veranda to the recess	-	-	-	66	6
Height of ceiling,	-	-	-	12	$3\frac{1}{2}$
Recess, deep.	-	-	-	16	0

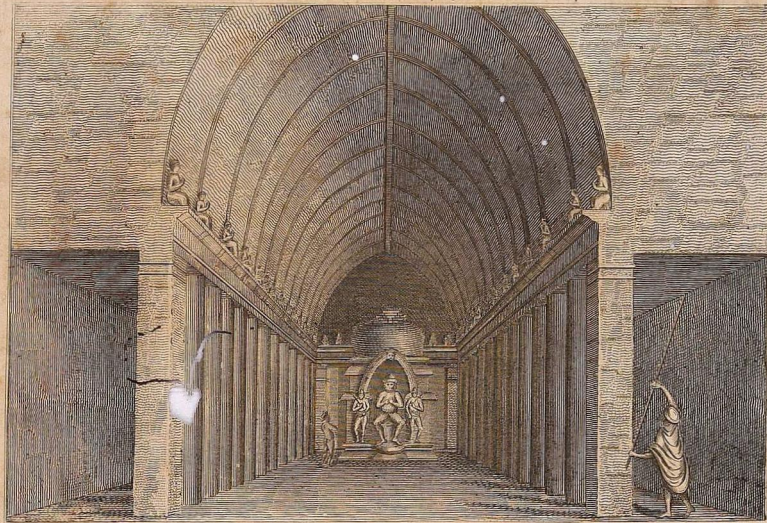
Twenty-four steps ascending to the third story.

Length of veranda,	-	-	-	110	5
Depth to recess,	-	-	-	66	9
Ditto of recess,	-	-	-	16	8
Height of ceiling,	-	-	-	12	0
Area, viz.					
Greatest depth,	-	-	-	79	0
Ditto breadth,	-	-	-	110	0

Gateway, eight feet broad by eleven high.

BHURT CHUTTURGHUN. *about* W. 10 S.

This is an excavation of two stories, or but of two remaining above ground, in good preservation, the stair case of which being choked up, you enter by the wall of the veranda. After the former descriptions, there is nothing in this worthy of being particularized. It seems



Inside View of BISKURMA or VISWAKURMA KA JOMPREE.

Printed by L. Scovell & Co. Feb. 1. 1801.

J. Baire sc.

to take its name from its dedication to BHURT and CHUTTURGHUN, two brothers of RAMCHUNDER, whose figures, by the *Brahmen's* account, are the chief ones in this place.

Dimensions.

				<i>Feet.</i>	<i>Inches.</i>
Area, length,	-	-	-	102	3
Ditto, depth,	-	-	-	25	0
Lower story—veranda the same length as the area. Breadth, within the pillars,	-	-	-	8	5
Sixteen steps to the upper story of veranda, length,	-	-	-	102	10
Depth from veranda to the recess,	-	-	-	44	4
Breadth of recess,	-	-	-	33	0
Depth of ditto,	-	-	-	10	6
Height of ceiling.	-	-	-	9	6

BISKURMA, or VISWAKURMA KA JOOMPREE, or BISKURMA,

The Carpenter's Hovel. Front, W. 5. S. (H. I.)

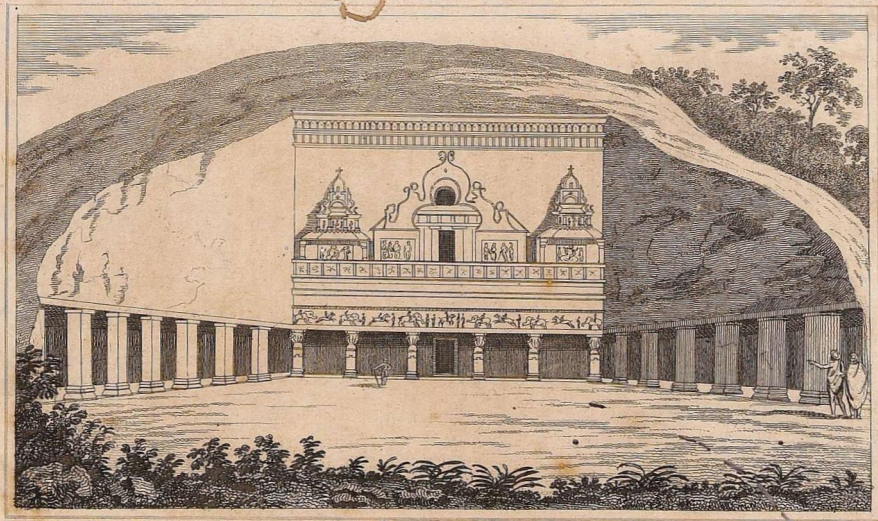
According to the legend, BISKURMA* was the artist, who fabricated the whole of these wonderful works in a night of six months; but the cock crowing before they were finished, they remained imperfect, and he retired, having wounded his finger, to this his hovel, in which state the figure in front (1) of the entrance of this beautiful excavation is said to be a representation of him holding the wounded finger; but I rather think, with all due respect to the legend, that the figure is in the act of devout meditation, as many fingers, with similar positions of the hands, occur. But quitting the fable for the fact, this excavation is, in beauty, inferior to none. In form it is unique, and in design elegant. The portico is light, and striking to the beholder. On the right hand, as you enter, is a fine cistern of water.

* Creator of the world, but allegorically, artificer of RAM.

Above the gate-way (H), which is richly sculptured on the out side, is a balcony, which seems well suited, if not intended, for a musick gallery, to the interior temple (I), which has the appearance of an elegant chapel, with an arched roof, and is exactly in the style of a similar excavation at *Kenara* on the island of *Salsette*, and another at *Ekvera*, near the top of *Bhore Ghaut*, first explored by Mr. WALES, the painter. At the upper end is the figure (1) above mentioned. From the ceiling are projected stone ribs, following the curvature of the arch to the capitals of the pillars on each side through the whole length of the excavation. Beside the grand aisle, or body, of the excavation, there is a small passage formed by the row of pillars on each side round the altar, but it is dark and narrow. This singular form of cave, wherever I have met with it, has conveyed the same impresson of its being a place of congregation and adoration, rather than of residence or habitation, and has given rise to an idea in my mind, from the orbicular ceiling, and the name and attitude of its inhabitant, that it may be meant to represent the Almighty, meditating the creation of the world, under the arch or canopy of unlimited space. It is necessary however, to accompany this idea, with an acknowledgement, that the similar caves of *Ekvera* and *Kenara*, are not inhabited by BISKURMA. They having only a very high altar, the top of which is circular, and situated as represented in the annexed drawing at the back of BISKURMA.

Dimensions. 7

			Feet.	Inches.
Area, square,	-	-	49	0
Veranda below, in front, and each side having twelve pillars and two pilasters, broad,	-	-	14	0
Ditto roof, high,	-	-	10	4
Door-way, four feet broad by eight feet four inches high, gallery above the door, square,	-	-	14	0
Length				



BISKURMA OR VISWAKURMA KA JOOMPREE ,
THE CARPENTERS HOVEL .

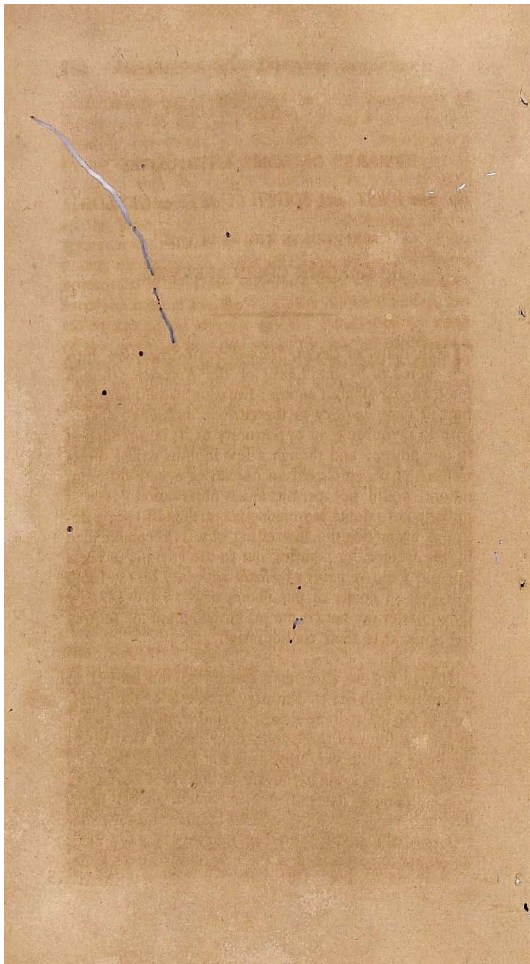
	Fect.	Inches.
Length of the temple from the entrance to the opposite wall behind the altar, -	79	0
Breadth of ditto from wall to wall, -	43	5
Height of ditto from the centre of the arch to the floor, - - -	35	0
N. B. The height between the pillars and the wall where the the ceiling is flat, is,	14	10
Breadth between the pillars and wall, -	7	8
Circumference of pillars (two square and twenty-eight octagon ones), -	8	1

Altar at the end about twenty-four feet high.

DEHR WARRA, or the HALLALCORE'S QUARTER.
Front, bearing from Jugnath Subba, distant about a mile, S. 25 E.

By this designation, have the *Brahmens*, who describe them, thought proper to discriminate this group of caves, which, though making no conspicuous figure here, would render any other place illustrious. They under this term of pollution, endeavour to deter visitors from entering it, though the large cave is a very fine one, over the front of which a little river must rush in the rainy season into the plain below, forming a sheet of water, that, in a beautiful cascade, must cover the front of the excavation as with a curtain of crystal. There are two stripes of stone that run parallel to each other along the floor, from the entrance, the whole depth of this cave (the prospect from which, of the great tank, town, and valley, of *Ellora*, &c. is beautiful) and seem intended as seats either for students, scribes, or the sellers of some commodities, a convenient passage lying between them up to the idol at the end of the cave. N. B. The annexed sketch (Plate K.) was taken from a station near (3) on the right, or northern, side of the excavated hill.

REMARKS



XI.

REMARKS ON SOME ANTIQUITIES

ON THE WEST AND SOUTH COASTS OF CEYLON;

WRITTEN IN THE YEAR 1796.

BY CAPTAIN COLIN MCKENZIE.

THE island of *Ceylon*, *Selan-dive*, or *Seram-diep*, supposed to be the *Lanka* of the *Ramayan* (though some *Hindus* assign it another situation) would naturally suggest some enquiry to the curious in *Indian* research with so favourable an opportunity as its late reduction to our power: and though a few months passed on its western coast, employed on objects of a very different nature, could not permit much observation (even if possessed of talents more adequate to the task) yet a desire of promoting the interesting objects recommended by the society, by pointing out to the curious in these pursuits some remains of *Hindu* antiquity on the south and western coasts of this island, which have casually fallen under my notice, tempts me to submit the following remarks to their consideration.

It may not be altogether foreign to this subject, as connected with the traditionary accounts of the recession of the sea at some remote period from these coasts, to remark some of those appearances which most forcibly strike an observer, travelling for near five hundred miles along the low flat country of the lower *Carnatick*; which in many places furnishes evident marks of its having been at one time covered by the sea, in the marine productions discovered in digging; the sea shells which are incorporated in the calcareous stones apparently

rently composed of these; and the level appearance of the surface of the land, devoid of wood of any long standing, except the groves which have been planted by the cultivators of the soil; and the several species of palm; with the jungle congenial to a sandy soil. One finds remarks, on the coast of *Marawar*, specimens of the same coralline or marine productions, that in greater quantities are dug up at *Delft*, and some of the islands on the north coast of *Ceylon*, which indicate a connexion of the same materials, and which probably form the basis of the shoals, called *ADAM's bridge*, between that island and the main. Parallel to the edge of the coast we also find along the margin of the sea a stratum of flat calcareous rocks, forming a kind of crust, probably a concretion of shells which abound here and on the coast of *Ceylon*, (as observed at *Manar*) and compose the greater part of the sand along the beach; and which probably also form the chain of low isles parallel to that part of the coast, called the *Flat-isles*, in the neighbourhood of the *Chanque* fishery.

• The isle of *Ramifur*, the utmost limit of the *Hindu* religion in modern times, and of the conquests of the *Dekan Mussulman* princes, according to *FERISHTA*, lies near this coast; and is only separated by a channel of about two miles, too shoal to admit vessels of burthen. This island is low, sandy, and uncultivated; it is about eight miles to the pagodas (the resort of immense crouds of pilgrims at certain seasons) which are built near the sea, having in front an embankment of stone, yet unfinished; the houses of the *Brahmens* are built as usual in squares and strait streets, close to it; their rows of houses having mud terraces (*Payals*) in front, on which their women and children are often seen reclining under the shade of the thatched roofs. It is remarkable that the same fair complexion, and cast of features distinguish this class through all the different provinces, from eight to twenty degrees north latitude (and by all accounts still further) among nations varying so much in both,

as the *Tamuls*, the *Tellingas*, the *Canarins*, *Mahrattas*, and *Orias*, the five families which appear to compose the body of the original inhabitants of the peninsula, are present distinguished by different dialects, as by different features.

The buildings of the *pagodas** are square and extensive, but have nothing remarkable, or superior in the style, to the generality of those on the coast; which they resemble in the same crowded minute ornaments, the same spire† of brick work, with long porches in front, at the entry of which we were only permitted to peep through a long vista of doors, terminating before the deity of the place, whose image was placed at the furthest end of the penetralia of the temple, in too obscure a situation (though surrounded by lamps burning in day light) and at too great a distance to ascertain its shape and figure. At night a number of small lamps illuminated the inner recesses with a good effect. The same reserve which distinguishes the southern *Brahmens* in their temples, at *Tanjore*, *Seringam*, &c. prevented any communication here. We were told that no labour or cultivation is carried on in this sacred isle: safe embosomed amidst the waves they live on the contributions of the devout: several of the rajahs and *Poli-gar* chiefs of the neighbouring provinces expend large sums on establishments here. The vestibule or building on the east front of the pagoda, into which we were permitted to enter, is decorated with the statues of one of these benefactors (a chief‡ of the *Tinivelly* country;) and his ministers and attendants, standing in a row on either side in their proper dress: these statues, though preserving the dress and ornaments with a minute attention, have little else to recommend them, being deficient in symmetry and proportion; and the superiority of rank is distinguished by the size, according to the rule

* *Coil*, in *Tamul*. *Dewul*, in *Tellinga*. The word *pagoda* is not known in these languages.

† *Coverum* in *Tamul* signifies a spire.

‡ The *Pulitawer*.
which

which seems observed in most of the sculptures on *Hindu* buildings. Among the figures carved on the outer walls the *Lingam* is frequently exhibited. On the west side of the square is another longer portico, having a number of statues, of another chief and his followers, placed on a raised stone terrace, on either side of the covered passage leading to the inner gate.

The guardianship of the sacred isle is in a family of *Byraagees* (devotees), the chief of which is doomed to perpetual celibacy; the succession being carried on by the sisters, or the collateral branch, who only are permitted to marry. This arrangement seems to have some affinity to that of the *Travancore* and *Nair* sovereigns. The present guardian is a child of six or seven years old; of a handsome mild aspect, and regular features; his dress and turban were of the *Byraagee*, tawny red colour, and decorated with the beads that this class of mendicants wear. This young pontiff received the *European* visitors, after landing, with great gravity and composure: his uncle, who was the efficient minister, attended and stood by his seat, to assist him in paying his compliments to his guests. From this pagoda a low tract of sandy ground stretches out towards the east to about twelve miles; terminating in a narrow spit of sand. Within a mile of the point is the choultry of *Tona-goody**, a square of low houses inclosing a court, built for the accommodation of the pilgrims who came to this furthest point to perform their ablutions in the waves of the ocean, this being held one of the most sacred and purest ablutions required by their religion. A *Brahmen* resides at this choultry. A pole is erected on the point, to which lights are affixed at night; whether for the direction of mariners, or a religious motive, we could not learn. The whole of this tract from *Ramiserum* has the appearance of being washed by the

* *Goody* also signifies a temple in the *Tamul* language; *Tony* signifies water. It is remarkable that good water is found on this point, though the spit of sand is so low.

sea, not a vestige of soil appearing. On entering our boat at seven A. M.* we were detained some moments to wait for our domesticks going through the necessary ceremonies and ablutions under the direction of the *Brahmen*; and hoisting sail for the land of demi-gods and *Devatas* (the last object seen being the signal pole,) we coasted in sight and to the south of ADAM'S bridge, which we could only distinguish by the breaking of a surf on it at detached intervals, and came in sight of *Talmanar*, the west point of *Manar*, at two P. M. the course being E. S. E. The coast of this island at *Talmanar* and along its coast appeared low and covered with cocoa and other trees, and bushes, extending to the sand bank near the water's-edge.

The island of *Manar* is not high, has no hills, and appears to be a bed of shelly sand, worked up by the waves, and clothed with trees, among which the cocoa predominates. This island is separated from the main of *Ceylon*, as *Ramiferum* is from the coast, by a channel about two miles over; but this only appears at full tide, as the real channel or river, winding close to the fort, is very narrow, and though deeper than the rest, at the bar not above two and half feet at low water. Whether this narrow passage, and that of *Pambam*, are worn out by the action of the current setting in different directions along the coast, as the monsoon varies; or whether the islands, and the ridge of ADAM'S bridge, are thrown up and formed by the periodical winds and currents, acting on the shifting sands accumulated in the narrowest part of the *Ceylon* channel, is a subject of curious investigation, which would require some time and experience to examine: the enquiry might be rendered useful however, in suggesting means of deepening the channels, or preventing their being filled up when deepened, by the sand thrown in by the S. W. and N. W. monsoons†.

It

* January 6, 1796.

† BALDEUS says, that the *Portuguese* fleet escaped through it; and that the *Tewwer*, or native governor, had a way of opening and filling up

It would be vain to look here for any traces of the earlier race: being naturally the thorough-fare passage into *Ceylon*, from the opposite coast, it would receive the impress of each successive race of invaders: accordingly we find its inhabitants now composed of a mixed race of *Portuguese*, *Malabars*, and *Cingalese*, with some *Lobbes*, the descendants of the *Arab* race, (the *Mopillees* of the *Malabar* coast,) who subsist here chiefly by fishing. I observed on this island some of those *Byragges*, so well known on the lower roads of the opposite coasts, constantly journeying from *Benares* to *Ramesur*, carrying pots of the water of the holy spring, or *Ganga* water, slung on cross bamboos, and distinguished by their tawny orange habit: these said that they were on their way to visit a famous pagoda in the interior parts of *Ceylon*, but I was not able to learn whether they had been usually permitted to cross over by permission of the *Dutch* government, or that they availed themselves of this opportunity of crossing in our boats: it shews at least that the connection of a similar religion has not been altogether lost.

Manar is memorable in *Cingalese* history, as giving refuge to the queen *DONNA MARGARET*, the last scion of the ancient royal race, whom the *Portuguese* thence carried into the heart of *Ceylon*, to cover their interference in the government, until they were driven out by the weight of accumulated crimes and degeneracy, to make way for the sordid monopolizing yoke of the *Dutch*, which locked up from mankind the natural treasures and valuable productions of this celebrated island. It was then divided into parishes with their churches. The fort is on a small scale, square and regular, nearly what *BALDEUS* and *VALENTYN* more lately describe it, but the city exists only in a few tiled houses of the officers of government, and some low huts covered and

up the passage at *Pambam*; this seems founded on mistake, and these *Portuguese* frigates must have been light shallops or sloops drawing little water.—Page 706.

enclosed

enclosed with *Cadjan* leaves, inhabited by boatmen and fishermen. At low water, a small river winds, and divides the island from the main: but when the tide flows, the whole intermediate space between the opposite shores appears like an arm of the sea from two to three miles over, in which we see men and cattle wading across from the isle to the main. A species of heron, and tall birds of the *Cyrus* kind, make an uncommon figure in this view; standing and picking up their food in the midst of the sea.

The opposite coast of *Ceylon* is low and woody; the appearance of the shores indicates some extraordinary change, such as to have laid it under water; which is however contradictory to the received traditions of the sea's receding from the opposite coasts. Are we then to suppose that in retiring from the peninsula, the waves inundated the lower coasts of this island? Or, that these contradictory changes happened at different periods? These might in some measure be explained by an enquiry into the soil and strata of the *Wannie*, or low woody country of the north of *Ceylon*, and comparing it with the low land of *Payen Ghaut*; as facts and experiments will ascertain their similitude. It may be remarked however that exclusive of the five northern islands, the greater part of what formed the north extremity of the island, distinguished by the name of the kingdom or government of *Jaffanapatam*, is low, and separated by shallow channels, which in the rainy season divide it into so many islands.

The whole of this low land, forming the north part of the island, is covered thick with woods and jungles; this tract is called *Wannie*, and is estimated to contain 900 square leagues. The forest extends quite across from west to east and to the south, to the chain of mountains which connects the bases of the land, and gradually terminates in lower hills, and swelling grounds,

grounds, in the neighbourhood of *Galle* and *Matura*. The remarkable peaks of these hills are well known to navigators on the east coast under the names of the *Friar's-hood*, the *Chimney*, the *Elephant*, &c. on the west coast; the most remarkable seen is *ADAM'S-peak*, which towers considerably above the rest to the east of *Colombo*.

From *Manar* none of these eminences are seen; the edge of the coast appears cultivated with rice; but the habitations are detached, and though divided into townships, are not collected together. This cultivation extends for about twenty-four miles and beyond *Aripo*; some churches are built in this tract. The forests and jungles now approach the coast, and for four days journey separate the northern more inhabited district from the southern at *Chillaw*, where the Cinnamon or *Cannel* land begins.

Some remains of antiquity being said to exist at *Mantotte* on the opposite side to *Manar*, I was conducted to the place, where a *Gentoo* city was said to have been built formerly; some mounds resembling the remains of the embankments of the *Carnatick* tanks, and some brick ruins, were the only vestiges to be seen, not far from the *Portuguese* church. Little information could be derived from the inhabitants, and curiosity here could find little gratification in the thick jungle, in which patches of paddy fields were interspersed. Of the palace or dwelling of the rajah, or place pointed out as such, nothing could be seen (and that with difficulty from the jungle) but a small square, of brick walls, now about four feet high, and subdivided into three apartments, appearing very like the gateway which generally forms the first entrance of the enclosure of a pagoda or great *Hindu* building: the approach of evening hindered any further attempt to explore this jungle. From some traditions of its former riches, searches have been recently made

among these ruins; VALENTYN mentions some gold * medals dug up, supposed to be *Roman* †.

FIGURE OF THE COUTT RAYA.

March 30, 1796.—Near *Belligam* or *Velli-gam*, ten miles N. from *Matura* near the road side, which passes among thick woods and plantations, is the figure of the *Coutta raja*, ‡ sculptured on a rude block of granite, about thirty feet high. Having previous notice of the place, from some *Dutch* gentleman at *Galle*, I was brought there at seven in the morning. On my way to *Matura*, and opposite to this stone, about twenty feet off, is another of nearly the same size, and the ground between both is worked away to a hollow, on which it is necessary to be placed, to have a full view of this figure, which is cut out of the stone in relievo, but the whole is sunk in a hollow scooped out, so that it is thus defended from injury on the sides. The figure may be about fourteen feet high; the countenance mild; a full round visage; the eyes long, and the nose round and long: it has no beard; nor the usual distinguished marks of the *Gentoo* casts. I have been more particular in describing the features; as those of the *Cingalese* race are very different from the *Malabars*, and seem well preserved in the statues, and figures in their temples.

* On my return from *Galle*, in March 1796, a silver coin was given me at *Caleture*, part of a number, upwards of three hundred, found twelve years ago, at *Passun*, a place nine hours journey from *Jaffanapatam* near the sea coast, on the road towards *Trinkomallee*; it accompanies this paper.

† If the accompanying *Lingam*, the only one of the kind within my observation, was really found here, as I am assured it was, there can be little doubt of its being a *Hindu* town. The inscriptions from which the medals were supposed to be *Roman* are doubtful, and it is not improbable but the letters might be mistaken, though at *Nellore* of late years some *Roman* coins were found; and it is not surprising to meet the coins of a nation which carried its commerce into *India*, on a coast whose productions always invited the settlement of foreigners. The date of this settlement seems yet involved in obscurity.

‡ Plate, No. 1.

He holds up both his hands, with the fore fingers and thumbs bent; the head dress is high, and seems ornamented with jewels; on the little finger of the left hand is a ring; on the arms bracelets; a belt high about the waist; the lower dress, or drapery, fixed with a girdle much lower than in the *Gentoo* dress, from which something like tassels depend; a collar and ornaments on the neck and shoulders; and rings seem to hang low from the ears: no appearance of any arms or weapons.

On the spot I was told that this was the figure of an ancient prince called *COUTTA* raja, from a cutaneous disorder he had been troubled with; that his figure was placed here in memory of his being the first who had taught the inhabitants the use of the cocoanut, which is a principal part of the food of the *Cingalese*, particularly the slaves and poorer people. At *Matura*, the tradition of the *COUTTA* raja was told much to the same purpose, but with more amplification of circumstances. They described him as the son of the sovereign of a foreign land, who labouring under a malignant cutaneous disorder or leprosy, was landed on the coast, and left to shift for himself; when he was cured by aid of a holy recluse, residing in these woods, and by the milk of the cocoa tree; returning home to his native land, he recounted his wonderful cure, and was sent back with rich presents to reward the holy man, whom they found no more. In memory of this the statue was set up. Whatever degree of credit we may give to this story, the name of the *COUTTA* raja seemed to be familiar to all ranks, and is no doubt connected with some historical event.

TEMPLE OF BOODHOO AT VILLIGĀAM.

March, 30,—Passing on from the figure of the *COUTTA* raja, we came to *Villigāam* or *Billigāam*, a place of some consideration, near a bay of the coasts; houses are scattered about, among the trees and cocoa woods, which

which obstruct all view and give the idea of a thick planted grove or garden rather than of a village. Being desirous of seeing a *Cingalese* temple here of some repute, I was conducted by a winding road of about half a mile, to a small eminence enclosed at top by a low stone wall, surmounted by a kind of balustrade in the midst of thick surrounding groves. At the gate, to which we ascended by some steps, the priests received and conducted me to the door of the temple; they were bare-headed, and their hair cut close; they had none of the distinguishing marks worn by the *Hindus*, on the forehead; their garment consisted of a cloth of a dusky snuff colour, which folded round the body and descended to the feet; their dark complexions, and inanimate features, exhibited no symptom of superior intelligence, of deep penetration, or of keen genius; nor did any of that mild cast of countenance, or chastened resigned features, which sometimes distinguish the recluse, or devotee of every nation, appear here; neither severe, nor shy, their looks rather indicated a kind of apathy, or indifference. The building had no decorations without; a close gallery ran round the body of it, to which only one door opened, that rendered it so close, for want of fresh air, with the strong fumes of the oil of several lamps burning, and the aromatic odour of yellow flowers, profusely scattered on a raised terrace before the idol, that it almost overcame me on entering the interior apartment. On our being introduced, a curtain which enclosed the shrine, was drawn back, and the figure of BOODHOO, of a gigantic size, reclining at full length on his side, was at once displayed. His head lay on a pillow supported by one hand, the other extended on his body; the habit was very simple, of a saffron colour, covering him from the neck to the heels, and the only decoration was a kind of plain belt across the body. This statue was about eighteen feet long, and well proportioned, but whether made of wood or of composition, I could not learn. The countenance was mild and full, and the top of the head painted to re-

present the hair in several small curls of a black colour. This was the grand idol of the place, but on approaching it, placed thus at full length on a raised terrace on which several lamps and a profusion of flowers were placed, no external signs of adoration or respect were shewn by the priests. In a corner of the room was a smaller figure represented sitting cross-legged on a coiled snake, the expanded head of which shaded him. From the same habit and the same rotund turn of feature, it was easy to see that BOODHOO was also here represented. A female figure, the natural size, decently, and not ungracefully, arrayed in the same garb, was represented standing in another corner, and holding a lamp in the extended hand. In a third corner stood a male figure said to represent VISTNHU: and in the fourth RAMA SWAMY, of a dark blue colour, and distinguished by his peculiar attributes of several hands and the correspondent *Hindu* ornaments of bracelets, rings, and chains. How a figure so totally different in its dress and ornaments came to be placed here, I was not, for want of an interpreter, able to learn. We may however conclude, that the votaries of BOODHOO do not exclude the worship of the other *Avatars*. The gallery which ran round the inner apartment was entirely covered with paintings, in compartments rudely finished, each apparently containing the history of some event of the life of BOODHOO: these, they told me, were also narrated in a great book always kept by the *Modelier* of the place: one of these paintings seemed to represent the birth of the divine child; others represented his youthful adventures; some of which seemed a kin to the sportive KISHEN's amusements on the plains of *Muttra*. In one, a youth held earnest converse with a nymph, among deep shades and woods, while a monkey, hid by the branches of a tree, seemed to listen with mischievous intent: in another, the God appeared as a youth slyly stealing and distributing handfuls of coin from a chest, towards which an aged man approached with cautious steps, holding a huge key in his hand:

on others processions appeared; feasts seemed prepared; food was distributed to the poor of various nations (as appeared by their various habits); and the different habits and manners of men in active life were portrayed. A large white elephant made a conspicuous figure in most of these assemblies. The style or *costume* of these paintings was entirely different from that of the *Hindus* on the peninsula, and plainly belonged to a different people, though they undoubtedly shewed those of the *Cingalese* and the followers of BOODHOO. On observing in these representations, chairs, tables, metal lamps, and raised seats, such as are used by the present race inhabiting the coast of the *European* part of *Ceylon*, which I had at first supposed they had borrowed from their present masters, I reflected that these indicated a connexion with the nations to the eastward which still use them, and that custom so widely different from that of the *Hindus*, who always seat themselves on carpets, or cloths spread on the ground, might have been imported from *China*, *Siam*, or *Pegu*, with their other customs and religion.

Without the temple, but within the enclosure, was a solid building, with a cupola figured roof: it had no opening whatever; within it they told us BOODHOO was interred, or rather the sacred elephant.

On my expressing a wish to be possessed of a book containing the history and drawings of the deeds of BOODHOO, the priests informed me, through a very indifferent interpreter, that it could not be copied off within a fortnight, but they promised to have a drawing of the principal figure ready on my return from *Matura*.

They were as good as their promise; for on my return on the evening of the 31st *March*, they had ready for me the outlines of the principal figure of BOODHOO, (Plate No. 2,) with some account of it, in the *Cingalese* character.

Near a mile from *Matura*, we were shewn another temple of BOODHOO, in the deep recesses of woods and shrubs, the whole country being covered with them, and the habitations dispersed among these enclosed by gardens and little plantations. This temple, or rather house, was decorated in front with flowering trees and shrubs; among which was a clump of bamboos, remarkable for being of a bright yellow colour, with small stripes of green branching from below the joints. The priests, with much complaisance, permitted us to cut one as a specimen, and presented us with flowers, among which was the yellow *Moogry*. Within was an image of BOODHOO, and several other figures illuminated by lamps and enclosed by curtains, as at the other temples. In like manner the terrace or raised altar, was covered with flowers, and the walls with paintings. The dress of the priests was the same as already described, an orange or tawny-coloured cloth enveloped the body; the colour decaying turned to a kind of snuff colour.

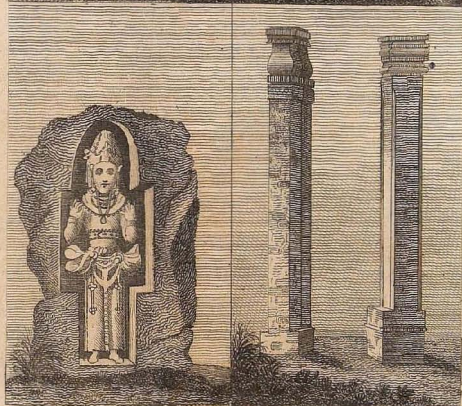
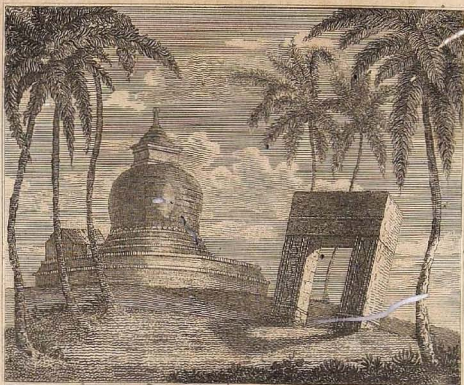
We were conducted by a narrow stair-case to an upper-room, wherein was placed a painting of one of the figures below, (a female,) but we could not get a distinct account of it from want of an interpreter.

The head priests of these temples, we understand, were called *Terrinanie*. The inferior orders *Ganinnanra*.

Ruins of a Hindu temple (or Dewullum) on Dewunder-head, or Divi-nóor, (called in the charts Dunder-head) the Southerly point of Ceylon.

About three miles from *Matura*, the road passing along the sea-beach of the bay formed by the promontory to the east, we ascended a gentle declivity cloathed with woods of various kinds of trees, but chiefly the cocoa, and in about a mile's walk came to a *Cingalese* temple*

* Plate, No. 1.



A Cingalese Temple &c.

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of a circular shape, of about 160 feet in circumference and twelve high, forming a terrace, from the center of which rose a bell-shaped spire, crowned with a smaller cone, on a square pedestal, the height of the whole supposed to be thirty feet; a parapet ran round this terrace, to which a door and stair-case led up; and here, exposed to the open air, as we approached soon after sun-rise, we observed some *Cingalese* men and women walking round, bending and inclined towards the spire, apparently praying: they retired before we ascended the steps. A small thatched hut disfigured a corner of the terrace, which seemed designed to lodge one of the priests who received us as usual with complaisance. No figures, inscriptions, nor any thing else remarkable, appeared, excepting a single granite pillar four feet high placed on end, perhaps intended to receive a lamp at night. This structure we were told was solid; it had no doors, windows, or any opening: they said one of the teeth of the sacred elephant was buried in it. It was, on a large scale, what the spire within the enclosure at *Billigaam* was in miniature, and seems to be the peculiar shape of a shrine or appendage of a temple of BOODHOO.

After a short view, we were conducted from thence to the sea-beach of *Dewunder-head*, scarcely 1400 yards distant, by a gradual descent along a walk or avenue in the woods; in walking over this ground, several remains of ancient buildings resembling the *Carnatick* temples struck us forcibly, and induced as narrow an inspection as could be made in a couple of hours.

Close to the beach we find the first avenue or building, probably designed for the use of the devotees, immediately before or after ablution in the sea, which is not above forty yards off; the descent over the bank is not difficult, though the coast below is lined with masses of granite washed by the waves. It consists of a colonnade of sixteen pillars of granite about nine feet high,
the

the four center ones of which only are cut to regular form with bases and capitals : it exactly fronts the line of the avenue to the temple on the height : on its north side are two pillars * also sculptured, forming an exact square with the two central ones of the colonade, in the center of which is a square opening of about two and a half feet on the sides faced with stone but nearly filled up with earth ; this seems to have been the situation of the interior recess where the object of worship was placed, of which and of the roof no vestige remains.

Proceeding thence by an easy ascent, we cross the ruins of a wall probably the enclosure of the grand temple, marked by several pillars and upright stones, but no sculptures are to be seen till we reach the *Cingalese* temple, nearly fronting which stands the inner portal of a *Hindu* temple, consisting of two upright stones supporting a cross one, all carved on one face, with ornaments similar to those of the interior parts of the pagodas on the coast ; the center of the cross stone occupied by a fierce fantastic head, the sides by a running border of foliage, and the basement supported by figures exactly in the same style and taste.

To the left of the *Cingalese* building are more ruins, evidently the remains of other temples : the steps leading up to the raised floors of these are decorated with the heads of elephants, carved out of stones placed on either side ; an ornament frequently to be observed in *Hindu* temples, as the entrances of *Egyptian* buildings were ornamented with those of the sphynx.

Near these we meet a deep well, across the mouth of which was placed a flat granite stone, with a perforation of six inches square through its center, between the figure of the prints of two feet raised on the stone : the fi-

gure occupying the rest of the stone is scooped out to the depth of two feet. It is probable this well was inclosed within some of the buildings now no longer existing; its use does not appear; the cross stone was too heavy to be easily moved, and occupies too much room to admit of water being drawn from it for any common use; the figures carved on it indicate some connexion with the *Lingam* and *Phallus*; and may furnish a key to the object of worship here.

On narrowly examining these remains, little doubt remained in my mind that this was the site of an ancient *Hindu* temple, on the ruins of which the *Cingalese* building was raised at a much later period. The revolutions of religion, in which the first was overturned and almost every vestige of its worship destroyed, to make room for the other, would, probably, be explained by the *Cingalese* history, an abstract of which is published in VALENTYN'S book, under the article *Ceylon*.

The name of the place *Divi-n-oor-Dewalla*, favours the opinion, and when we recollect the partiality of the *Hindus* to build their religious structures in places near the sea, to water, to the spring heads of rivers on the tops of remarkable hills, and mountains and situations favourable to retirement from the world, and to purer ablutions, according to their ideas; in places to which the extraordinary length and toil of the journey attached a superior degree of merit; as instanced in the pilgrimages to *Jagarnat* and *Ramifur*; to the wilds of *Purwutum*; to *Tripetty*; to the sources of the *Godavery* at *Trim-buck Nasser*, and of the *Kistna* at *Balifur*; we need not be surpris'd to find a fane of MAHADEO reared on the utmost bounds of *Lankadeep*, and their habitable world; and shall be ready to suppose that the ablutions at the furthest point of *Ramifur* became the greatest extent of their pilgrimages only, when revolutions, of which we have yet no distinct accounts, and the introduction
of

of a foreign religion and nation into *Ceylon*, rendered the pilgrimage to *Devinoor* no longer practicable.

We may then suppose that, previous to the introduction of the *Cingalese* language from the eastward, that of the *Hindus* in one of its dialects prevailed. Some of the *Dutch* now tell us, (as *BALDEUS* did long ago) that the inhabitants of *Ceylon* from *Chilaw* north, and round to *Batacaloa* on the east, speak the *Malabar* (or *Tamul*); while the *Cingalese* to the southward, and the *Candians*, speak the language said to be derived from *Siam*. In examining many of the names of places throughout the island, we find many apparently derived from the *Hindu* languages; and judging by analogy, may infer that this was prior to the other, from giving names descriptive of certain qualities peculiar to these places; a rule as applicable in *India*, where the names of all the remarkable rivers, towns, and hills, are thus derived from a language descriptive of their qualities or history, as to the north and west of *Europe* where the *Celtick* language is traced in the same manner; and particularly in our native islands of *Britain*, where the original inhabitants may be traced, from many of the names, after various revolutions and successive settlements of *Romans*, *Saxons*, *Danes*, *Normans* and *Germans*.

The head man of the village, a *Cingalese*, who could give no account of the origin of the ruins, proposed to conduct us to another to which we went by a path winding among the woods about three quarters of a mile distant, gradually ascending to the face of a rising ground, where we found a small pagoda or *dewul*, built of hewn stone, flat roofed, square, with one door and having no spire pillars or arches; it had no sculpture except some mouldings about the pediment cornices, and door; nor did any altar, image, or decoration appear to shew the object of worship; though from its exact likeness to the plain style of some of the small pagodas built of hewn stone in the *Carnatick*, there can be little doubt of its origin.

The

The villager could give no other account of it than "that it was built by one GALGAMI, who dealt with evil spirits, by whose aid he reared these structures." Thus we find the origin of all works, beyond the reach of recent time, and vulgar knowledge, in every country attributed to some supernatural agency, from the rude and laborious structure of Stonehenge to those of *Elora* (*Elloor*), and the more diminutive one of GALGAMI.

Though the figure of the *Lingam*, cow, and every object of *Hindu* veneration, seems purposely removed, enough remains, in the simplicity of the style of the architecture and its few decorations, to ascertain its claim to antiquity; and this shews the use of classing the objects of this kind we frequently meet dispersed over *India*. In the more modern religious structures of *India* (allude more particularly to those of the *Carnatick* upper and lower, the architecture of which is very different from that used in the north-west parts of the *Dekan**), we find a novel style more complicated and certainly more contrary to good taste. These buildings and their *coverums* or spires are crowded with an immense number of small pillars, pilasters, cornices; and the numerous and ill distributed compartments filled with monstrous, disproportioned, figures of the deities, or rather their attributes, which disfigure them and make a strange impression at first sight on *Europeans* accustomed to form their ideas of the beauties of architecture by classical rules drawn from the *Grecians*.

The more modern *Hindu* buildings are further distinguished by being generally built of brick, excepting some of the greatest, as *Canjeveram*, *Madura*, *Seringa*, *Ramisur*; which from their style are supposed not to be of the more ancient. The more ancient† temples are not covered

* A comparative view of the different styles of the architecture of these buildings in the *Carnatick* upper and lower, and in the north west parts of the *Dekan* would be curious.

† The gradations in their style may be traced from the small pyramidal structures of not above six feet high, to the first exhibitions of the figure

vered with the monstrous figures above alluded to; they are generally plain; or at most exhibit a few groups representing some remarkable parts of the history of the god worshipped; such as the adventures of KRISHNA, his escape when an infant, his sporting amusements among the *Gopia*, or the churning of the ocean by the *Devatas* and *Assoors*; which seem rather designed to convey some moral, than as immediate objects of worship: from whence we may suspect that as in latter times the ancient simplicity of their religion was debased and corrupted, the custom of covering their walls with these monstrous figures with many arms and heads was by degrees introduced: and this furnishes data for forming rules by which perhaps the antiquity of these buildings could be ascertained, by a comparison of the different styles: when written evidence (as found in the copper plates at *Conjeweram*, translated in the third volume of the *Asiatick Researches*, and may perhaps be found if the plates at *Purwuttum* were translated) is wanting.

These might assist, with the extensive knowledge obtained of late of *Hindu* literature, in illustrating the more ancient part of the history of this nation, and ascertaining the justice of their claim to a knowledge of the arts and sciences through a remote antiquity; at least their gradual advances in the arts might be traced from the first rude attempts; and new light thrown on the history of mankind in its early stages.

ANCIENT INSCRIPTION ON A ROCK AT DEO-GAMME, NEAR CALITURE.

On my way back from *Pointe du Galle* to *Colombo* I had intimation from the *Dutch* clergyman of *Caliture*,

figure of MAHADEO, under the semblance of a rough stone, not unfrequently seen under trees in the open air. The figure of HANAMUNT, the protector of travellers, the companion and assistant of RAMA in his famous expedition to *Lanka* may be seen, cut in relievo on upright stones placed on the roads, and near the villages, throughout the *Carnatick*.

a post twenty-five miles south of *Colombo*, of an inscription cut upon a rock within a few miles of that neighbourhood; and being desirous of seeing it, a party was made up to accompany me on the next morning to go by the river as far as a sugar plantation lately laid out by a society of gentlemen.

We embarked at day break in a small boat on the river *Caligonga*, which is wide and deep, and its banks on either side lined thick with woods and bushes close to the water's-edge, which renders the landing difficult: the stream was placid, the tide in our favour, and we were soon rowed about three miles to the landing place, whence we crossed the newly-cultivated ground, to the plantation house, and mill, about half a mile further. The country, where cleared, appeared through the openings of the woods beautifully swelling into small eminences, clothed with various kinds of timber, among which the jack tree of a great size, and cocoa trees of different kinds predominated: the air was perfumed by the betel and various trees in flower, and a variety of flowering shrubs, which diffused a grateful fragrance all round. After leaving the sandy coast, the soil was reddish, particularly of the rising grounds; excepting the sugar canes of the plantation and some rice cultivated in part of the lower ground, no other cultivation was observable; but the country, if once cleared in a greater measure, promises to be highly productive. A road appeared to have been recently made leading out to the eastward towards *Candia*, as we were informed, but no towns or collected groups of houses appeared, though from the number of inhabitants we met, their habitations could not be far distant. A small neat house is built on the plantation for the use of the overseer, and the mill built near it, where the operation of bruising the cane is performed by three cylinders of granite placed vertically on a platform, worked by oxen placed below.

From

From hence we were conducted through woods and cocoa plantations to a temple of BOODHOO. It was built on a flat space, cut out of the side of one of the swelling eminences, and had nothing remarkable in the style of building, being a square house, with a tiled sloping roof, and a gallery running round it, also covered with a sloping roof; but considerably lower than that in the centre, so that this double story of sloping roofs, gives it the air of those we meet with in *Chinese* paintings. In the interior apartment (the curtain which enclosed it being withdrawn) the image of BOODHOO was seen, reclining in the same attitude as at *Biligam*, but not of such a size; illuminated by lamps, and strongly perfumed with flowers and odours. The walls were covered with paintings, as usual, representing his history; and several commodious houses were built near it for the priests. I was disappointed in my hopes of obtaining here some further lights on the inscription, and an image reported to be sculptured on the rocks; and my companions being deterred by the increasing heat of the day, I proceeded in quest of the place, attended only by a countryman who undertook to shew me the way. After walking smartly for an hour and a half through the woods, but out of sight of the river, we came at nine o'clock to a huge block of stone in the channel about fifty yards from the banks, and surrounded by water, but nothing like an inscription appeared on the side next it. The villagers whose habitations were scattered in the woods, near the place, finding what I was in quest of, carried me back to a field, where was another large block of the same kind of stone of a black colour, probably from long exposure to the air, and rude without any appearance of art: the higher part of it was about fourteen feet high, and on a low projection of about twenty feet from this, the villagers shewed me the vestiges of characters, rudely carved of unequal sizes; they were however so corroded by time and the effects of the air, that I should have found considerable difficulty in making them out had

it not been suggested that some *chunam* or lime water, traced on the hollow characters indented in the rock, would render them legible on the dark ground of the stone; by tracing them in this manner, I was enabled to sketch off the appearance of the whole with, I think, tolerable exactness; and the annexed drawing copied exactly from the tracing taken on the spot, represents this inscription *. Of the causes of engraving it here, or the history of the place I could get no satisfactory account from the natives, except some incoherent traditions of its 'being formerly struck by lightning, whence it is called *Pelrucallu* or split stone. The place is also called *Deo Gamme*.

N O T E.

A FURTHER paper on the island of *Ceylon*, and the worship of BOODH or BUDDHA, has been communicated to the Society by Lieut. MAHONY, who was for some time resident on the island, and procured an extract from the *Maha Raja WALLIEH*, also called the *Raja WULLY PUTTER*, an historical work, which traces back the introduction of the religion of BUDDHA to the Prince VIJEERAJAH and his followers, who came to the island in a ship from the eastward, in the sixth century before the *Christian* era; about which period it is also to have been introduced in *Siam*. It is indeed the period at which GOUTAMA BUDDHA (the BUDDHA now worshipped) is supposed by the *Singalese* to have made his appearance on earth: the epoch of his disappearance, which constitutes their sacred era, being five hundred and forty-two years before the birth of CHRIST, corresponding, within two years, to the same era in *Siam*, as stated in Mr. MARSDEN's tract on *Hindu* chronology.

* Plate, No. 2.

- MR. MAHONY's paper, which could not be inserted in the present volume of the Society's researches, will appear in the next: accompanied by some remarks from Mr. HARRINGTON, who was at *Columbo* in the year 1797; and has subjoined the following hasty descriptions, written on the spot, of two temples of BUDDHA; one situated at *Calanee*, near *Columbo*; the other near *Caliture* and mentioned in the concluding paragraph of Captain MACKENZIE's paper.

TEMPLE AT CALANEE.

February 7, 1797.—Visited a temple of BUDDHA at *Calanee*, about six miles north east from *Columbo*. The images are of stone, nearly the same as that at *Boodh Gya**, viz. A man in a sitting posture, the right leg supporting the left, and the right hand supporting the left hand. The right arm and breast uncovered; the left side and the waist covered with a folding vest, the end of which hangs down before. The complexion fair, but no conclusion can be drawn from this, or from the features, as two images in the two temples at this place differ considerably in these respects; one is a fair round face, the other darker and more oval. Both agree in long pendent ear rings, and crisped hair; but instead of a knot of the latter, as apparently represented on the image at *Boodh Gya*, the heads of all the figures of BUDDHA at *Calanee* are crowned with a sort of *tiara*, somewhat resembling a hand; or rather five fingers joined to each other, (called *Seeraspooter*). In one of the temples three images of the above description were enclosed in a glass case, which the *Gonni*, or officiating priest, readily opened to satisfy my curiosity, and allowed me to approach as near as I wished, without even desiring me to take off my shoes as usually required in other parts of *India*. Before the case, which stood on the north side of the temple, and extended the whole length of it, was a

* A place near *Gya*, in the province of *Babar*, where there is a temple of BUDDHA; as there also has been at *Aud-castee* near *Benares*.

wooden table, on which oblations are made at noon. These usually consist of flowers, fruits, or money; no animals being here sacrificed. The lotos, from surrounding representations of devotees, appears to be the favourite flower of the god, and I also observed the *Keyora* and *Gool-acheen*, two of the most fragrant flowers in *India*. Images of BOODH, and other figures, among which HONEEMAN, BRAMA, and VISHNU were pointed out to me, are painted on the walls and roof of this temple, but chiefly BOODH, in different postures, sitting or sleeping, and his devotees bearing each a *Nagisur* flower; with sixteen representations of *Dagbopes* (hereafter mentioned) which are said to represent the sixteen temples or rather monuments of this description on the island of *Ceylon*. The idol temple I am now describing is called a *Veehar* (or college), and consists of one small apartment, of an oblong square, composed of common brick and mortar materials with a tiled roof. It is said to have been built time out of mind, but from its structure cannot be ancient. I saw nothing peculiar in its exterior, and have nothing further to remark on its interior, but that it contained a lamp said to be kept always burning, and a curtain occasionally drawn across the middle of the apartment to keep the sanctum from the eyes of the prophane. On each side of the door way, enclosed in recesses cut into the wall, are too large figures, the janitors of the god, and others are sculptured round bearing a club, and covered with a high *tiara*. In the passage which leads from the first temple (above described) to a second of the same construction are two other large figures cut in alto relief, representing two attendants on the local deity. The second temple contains a single figure of BOODH, resembling the figures in the other temple with the differences already noticed, and somewhat larger, being I suppose six feet high in the sitting posture, whereas the first could not be above five feet; or perhaps four and five feet may be nearer the exact height of the two. A large elephant's tooth, given by the king of *Candia*, is fixed in the ground near this image, and a small ele-

phant of brass, with a driver of the same metal, forms the ornament of a lampstand; the light of which was extinguished; nor was any other light burning in this temple.

Both the above *Veehars* stand on an eminence, surrounded by cocoa-nut and other trees, and by a low wall, which likewise encloses a third building to the north of the others, called *Daghope*, with the addition *wahunsee*. This building is a solid mass of earth and brick-work, of a considerable height, perhaps sixty feet, and shaped somewhat like a dome with a cupola above. This monumental temple is said to contain twenty images of BOODH buried below it. The inside is a mound of earth; the outside a covering of no great thickness of brick, which has been damaged and partly destroyed by the rain. At the foot of the eminence is the house of the priests, five in number, who have been appointed to officiate at the ceremonies performed at this place daily at noon, and annually at the principal festival in *By-saak*; when great numbers of pilgrims are said to assemble here. The priests are called *Gonni*, and if learned men, *Taranasbi*. RAKHITA BOODDHA, and GHOSE BOODDHA, who attended me, were neither of them *Brahmins*, nor, as far as I can understand, are there any *Brahmins* on the island*. They were both as civil and attentive to me as men could be, and after presenting me with cocoa-nut and plantains, would not allow me to pay for them, or to give them a present, although they had permitted me, without objection, to make a pecuniary offering to their god.

TEMPLE AT OOGULBODDA.

March 10th.—Visited *Oogulbodda Veehar*, two cofs east of *Caliture*. The temple is a tile-roof building,

* There probably are, however, at *Candia*, where there are *Hindu* temples: the present king, who came from *Tinevelly* in the *Carnatick*, being of the *Hindu* religion; whilst the bulk of his subjects are worshippers of BOODH.

an oblong square, with a veranda, supported by square brick pillars, and covered with leaves of the coconut tree. Situated on an eminence and surrounded by trees. Near it, on the east side, is a triple-roofed building, called *Beinamadoo*, in form like a pigeon-house and covered with *Cajans*, in which the precepts of BUDDHA are read to his votaries at festivals and other times of assemblage. No *Daghope**. The former *Veehar* at this place was destroyed by the *Portuguese*, and the present erected by DIGUMBER SIDDART BUDDHA, the old priest who now superintends it, about forty years ago. This *Veehar*, besides two large figures of *Janitors* at the entrance, and various paintings on the wall within the veranda, historical and mythological, contains a colossal image of BUDDHA, eighteen cubits in length, composed of earth and cement, in a sleeping posture; or rather reclining on his lotos throne; his head resting on a pillow, and supported by the right arm, whilst the left is extended on the thigh of the same side. He has the same *tiara*, ear-rings, and curled hair, as all the other images I have seen, and, with no unpleasing aspect, is painted of an azure brown complexion; whilst other images in the same temple are of a dusky yellow colour. His mantle, which nearly covers him (the right breast only excepted) is yellow, the general colour of the *Sewara*, though on one of the images in this temple it is a dark orange, approaching to red. Before this figure is the principal altar; and, besides flowers of several kinds, there were upon it above a dozen small brass figures of the god, (one of which the priest gave me†, at my particular desire, after having presented my offering; though not without an evident struggle with his feelings, which

* The solid monumental building before mentioned, and represented in the Plate, No. 1, accompanying Captain MACKENZIE's paper. Its deficiency at the temple of BUDDHA here described is singular; as it appears a general appendage to a *Veehar*. Whether it has any connexion with the pyramids of *Egypt* we yet want evidence to determine.

† The fitting figure in the accompanying Plate, No. 2.

were overcome by the persuasions of the other priests present) a brass inkstand, with some images on it; and a covered *Carandu*; (or miniature *Daghope*;) at least said to be such; though from whisperings, and the explanation given me that it was of brass, and therefore not proper to be exposed, lest it should lessen the veneration of the votaries, I suspect it was not exactly what it was pretended to be.

The above-described colossal image, lying in a north and south position, occupies the whole of the west side of the temple. At the north end is another image of BUDDHA, in a sitting posture, nearly the same as at *Calanee*, but surrounded with more ornaments; having on each side two tygers or leopards, with two alligators: and, over the head, a fabulous animal called *kimis*, with three large teeth in front and two on each side of the mouth. These ornamental figures, I was informed, have no connexion with the character or history of BUDDHA; and should have been placed on the outside of the temple, had there been room. Two figures on each side of this image, with chowries in their hands, were stated to be VISHNU, in attendance upon BUDDHA: but I have some doubt of the accuracy of this information, as at the south end of the temple, where there is a third image of BUDDHA in a standing posture, there is likewise an image, evidently of VISHNU, of black hue, and crowned with a high *tiara*, which bears no emblem of attendance or service; though the priests, whilst they acknowledged him to be a DEVYO, declared him to be inferior to BUDDHA, and placed in his temple as one of his attendant worshippers. There are several other images of BUDDHA in this temple, which, having no peculiar characteristic, do not call for distinct notice. It may be of use to observe, however, that on my pointing out the uniformity of the head-dress, in respect to the crisped hair; and asking whether it was meant to represent the hair of an *Abyssinian*; the priests, of whom four were present, answered

swered in the negative, with apparent abhorrence; and the priest who had before attended me, repeating his previous information of BUDDHA's being the son of SUDODHANA rajah, and born in *Muggud deish* (*Bahar*) added, in explanation of the hair being short and crisped, that BUDDHA had on a certain occasion cut his hair with a golden sword, and its appearance in consequence was meant to be represented on his images. I recollect nothing further of consequence observed by me (not an hour since) in this temple, except that several lamps were burning, which are said to be perpetually kept lighted (though of this I have some reason to doubt), and that the ceiling was covered with ill-executed paintings of the lotos; whilst on the walls, besides a flower resembling the *Nagisur* (if not the same,) the *Keyora*, of the species which contains the greatest quantity of fragrant dust, appeared the chief votary of the vegetable tribe.

After writing the foregoing, and conversing through an interpreter with the four priests on the difference between a *Gonniasby* and *Taranasby*; the manner of electing these *under-graduates* and *doctors*; and the mode of abdication when a desire of marriage, infirmity, or other cause requires it; the nature of BUDDHA's doctrines as to a future state, and the creation of the universe (on the former of which important subjects he has spoken with more certainty than on the latter); and lastly on the daily worship of BUDDHA and his festivals; to shew me the usual ceremonials, although it was now neither morning, noon, or evening, the three appointed times of daily devotion, they most cheerfully offered to conduct me again to the temple, and after a few preparations, to satisfy my curiosity on this head; apologizing at the same time they had not the means of doing so, as I could be gratified at *Candy*, where numerous musical instruments are used in the *Poojah*; and particularly on grand occasions, as the festival of the birth and death of BUDDHA on the 15th *Vysaak*; the KATICK

poojah

poojah on the 15th *Eel*; the harvest feast in the month *Doorootoo*; and other festivals, of which they stated the entire number to be forty-eight, viz. on the 8th, 15th, 23d, and 30th days of each lunar month, or rather on the new and full moon, and first and last quarters of each month.

XII.

ON MOUNT CAUCASUS.

BY CAPTAIN FRANCIS WILFORD.

THIS appellation, at least in its present state, is not *Sanfcrit*; and as it is not of *Grecian* origin, it is probable, that the *Greeks* received it through their intercourse with the *Persians*. In this supposition, the real name of this famous mountain should be *Casus* or *Cas*; for *Cau* or *Coh*, in *Persian*, signifies a mountain. Now, if we translate this appellation of *Coh-cas* into *Sanfcrit*, we shall have *Cas giri*; or according to the idiom of the spoken dialects, *Cas-ghar* or *Cas-car*; and, really, such is the present name of the mountainous region, in which *PROLEMY* asserts, that the *Caucasus*, properly so called, was situated. This country, which very much resembles the valleys of *Cashmir*, and *Népál*, is mentioned in the *Ayeen Akbery*; and was surveyed a few years ago by my friend *MIRZA-MOGUL BEG*. It must not, however, be confounded with the famous country of *Cash-ghar*, or *Cash-car* to the eastward of *Samarcand*; though the appellation and its etymological derivation be the same.

The true *Sanfcrit* name of this mountain is *C'hasa-giri*, or the mountain of the *C'hasas*, a most ancient and powerful tribe: who inhabited this immense range, from the eastern limits of *India* to the confines of *Persia*; and most probably as far as the *Euxine* and *Mediterranean* seas. They are often mentioned in the sacred books of the *Hindus*.

Their

• Their descendants still inhabit the same regions, and are called to this day *C'hasas*, and in some places, *C'hasyas* and *Cossais*. They belonged to the class of warriors, or *Cshettria*: but now they are considered as the lowest of the four classes; and were thus degraded, according to the institutes of MENU*, by their omission of the holy rites, and by seeing no *Bráhmens*. However, the vakeel of the rajah of *Comanh*, or *Almora*, who is a learned Pandit, informs me, that the greatest part of the zemindars of that country are *C'hasas*; and that they are not considered, or treated, as outcasts. They are certainly a very ancient tribe; for they are mentioned as such, in the institutes of MENU; and their great ancestor C'HASSA or C'HASYA is mentioned by SANCHONIATHON, under the name of CASSIUS. He is supposed to have lived before the flood, and to have given his name to the mountains he seized upon. The two countries of *Cashghar*, those of *Cash-mir*, *Cashwar*, and the famous peak of *C'has ghar*, are acknowledged in *India* to derive their names from the *C'hasas*. The country, called *Casia* by PTOLEMY, is still inhabited by *C'hasyas*; and PLINY informs us† that the inhabitants of the mountainous region, between the *Indus* and the *Jumna*, were called *Cesi*, a word obviously derived from *C'hasa*, or *Chésai*, as they are often denominated in the vulgar dialects.

The appellation of *Caucasus*, or *Cob-cas*, extended from *India* to the shores of the *Mediterranean* and *Euxine* seas; most probably, because this extensive range was inhabited by *C'hasas*. Certain it is, that the mountains of *Persia* were inhabited by a race of people called *Cossæi*, *Cussæi* and *Cissii*; there was mount *Casius* on the borders of *Egypt*, and another in *Syria*; the *Caspian* sea, and the adjacent mountains, were most probably denominated from them. JUPITER CASSIUS, like JUPITER PENINUS in the *Alps*, was worshipped in the mountains of *Syria*, and on the borders of *Egypt*: in the

* P. 294.

† PLINY B. 6, c. 20. *Cesi montani*, &c.

Epirus we find, that the titles of *Cassius* and *Cassiopæus*, given to JUPITER, were synonymous, or nearly so. In *Sanscrit* the words *C'hasapa*, *C'hasyapa* and *C'hasyapati*, signify the lord and sovereign ruler of the *C'hasyas*: *C'hasyapéya* or *C'hasapéya*, in a derivative form, implies the country of *C'hasapa*.

The original country of the *C'hasas* seems to have been the present country of *Cash-gar*, to the north-east of *Cabul*; for in *C'hasas*, in the institutes of *MENU*, are mentioned with the *Daradas*, who are obviously the *Dardæ* of *PTOLEMY*, whose country, now called *Darad* by the natives, and *Dawurd* by *Persian* authors, is to the north-west of *Cashmir*; and extends towards the *Indus*: hence *PTOLEMY*, with great propriety, asserts, that the mountains to the north-east of *Cabul* are the real *Caucasus*.

The country of *Cashcar* is situated in a beautiful valley, watered by a large river, which, after passing close to *Chágá-Seray*, *Cooner* and *Noorgul**, joins the *Landi-Sindh*, or little *Sindh*, below *Jalálábád*, in the small district of *Cameh* (for there is no town of that name), and from this circumstance the little *Sindh* is often called the river *Cameh*.

The capital city of *Cashcar* is called *Chatraul*, or *Chatraul*, and is the place of residence of a petty *Mahomedan* prince, who is in great measure tributary to the emperor of *China*; for the *Chinese* are now in possession of *Badacshán* as far as *Baglán* to the north-west of *Anderráb*. The *Badacshanát*, or districts composing the province of *Badacshán* (for *Badacshanát* is the plural form) are separated from *Cashcar* to the south-east by a high range of mountains, always covered with snow; and the road from the new capital of *Badacshán*, called *Faiázábád*, and *Faiziya-ábád*, near the site of the old one, is through

* *Cooner* and *Noorgul* are called *Guznoorgul* in the *Ayeen Akbery*.

Zebawe. *Cashcar* is also called *Cashtwar*, which denomination is generally distorted into *Ketwer* and *Cuttore* by *Persian* authors and travellers. The town and district of *Ketwer*, mentioned in the life of *Amir-TIMUR*, is different from this, and lies about fifteen miles to the north-west of *Chágá-Serai*, on a pretty large river, which comes from *Váhi-gálamb*: it is generally pronounced *Catowr*. *PLINY* informs us* that mount *Caucasus* was also called *Graucasus*; this appellation is obviously *Sanscrit*; for *Gráva*, which in conversation, as well as in the spoken dialects, is invariably pronounced *Grau*, signifies a mountain, and being a monosyllable (the final being furd) according to the rules of grammar, it is to be prefixed thus, *Gráva-C'hasa*, or *Grau-C'hasa*.

ISIDORUS† says, that *Caucasus*, in the eastern languages, signifies *white*; and that a mountain, close to it, is called *Casis* by the *Scythians*, in whose language it signifies snow and whiteness. The *Casis* of *ISIDORUS* is obviously the *Casian* ridge of *PTOLEMY*; where the genuine appellation appears stript of its adjunct. In the language of the *Calmack Tartars*, *Jásu* and *C'hásu* signify *snow*; and in some dialects of the same tongue, towards *Badacshán*, they say *Jushá* and *Chushá*, *Tushá* and *Tuchá* or *Tuca*. These words, in the opinion of my learned friends here, are obviously derived from the *Sanscrit* *Tushára*, by dropping the final *ra*: this is often done in the vulgar dialects: in the same manner we say *whale*, *leg*, *calf*, &c. for *whalur*, *legr*, and *calfr*, which prevailed, it seems, in the ancient *Gothic* language. The words *Chasu* or *C'husa* are pronounced *C'hasa* or *Cas*; *Chusa* or *Cusa*, by the inhabitants of the countries between *Bablae* and the *Indus*; for they invariably substitute *ch* or *c* in the room of *sh*. Thus they say *C'hebr* for *Shebr*, which in *Persian* signifies a *town*, &c. but the words *C'hasu* or *Cas* never signified *white*, or *whiteness*, unless by implication: and this is in some measure confirmed by *PLINY*, who seems to hint,

* *PLINY*, B. 6. C. 20.

† *ISIDOR*. Orig. B. 14. C. 28.

that the word *Graucasus* signified snow-white. *PTOLEMY* places mount *Casius*, or *Casis*, in a country called *A'chásá*, which was situated between *Ládác* and *Yarc'band*. The word *Ac* signifies white, and *Cárá* black, in the *Turkish* language, which is used in the country about *Samarcand*, and both are obviously derived from the *Sanscrit* *Ach'h* and *Cálá*. The word *Ac'hasa* is corrupted from *Ach'h-C'hasa*, and in the vulgar dialect of that country *A'c-c'hása*, the white *C'hasas*; because the inhabitants of that country are *C'hasas*, and are remarkably fair; whilst the southern *C'hasas* are of a darker complexion. According to the report of respectable merchants, who constantly travel from *Cashmir*, *Nurpoor*, &c. to *Yarc'band*, the inhabitants of the countries, situated between *Ládác* and *Yarc'band* use the words *A'c* and *Cárá*, till within a few days of *Yarc'band*, where the *Cálmáck* dialect prevails.

The general rendezvous of these merchants, since the time of *SHA'H-JE'HA'N*, is at *Ládác*; from which they proceed in a body to the place of their destination, travelling, the greatest part of the way, along the *Indus*: for this famous river has its source in the mountains to the north-west of *Yarc'band*, at the distance of about four or five days journey. Then taking a southerly direction, it comes within two days of *Ládác*, where suddenly turning to the west, it takes an immense sweep towards *Saighur*, probably the *Sheker* of the maps; and thence alters its course toward the confines of *India*.

The denomination of *C'hasa-giri* or *C'hasa-ghar* is now confined to a few spots; and is never used in any *Sanscrit* book, at least that ever came to my knowledge. This immense range is constantly called in *Sanscrit* *Himáchel*, or snowy mountain; and *Himálaya*, or the abode of snow. From *Hima*, the *Greeks* made *Imaus*; *Emodus* seems to be derived from *Himoda*, or snowy: *Himána*, *Haimána* and *Haimánas*, which are appellations of the same import, are also found in the *Puránas*: from these is probably deriv-
ed

ed *Amanus*, which is the name of a famous mountain in the lesser *Asia*, and is certainly part of the *Himá-laya* mountains; which, according to the *Puránas*, extend from sea to sea. The western part of this range was called *Taurus*; and STRABO * says, that mount *Imaus* was called also *Taurus*. The etymology of this last appellation is rather obscure; but since the *Bráhmens* insist that *Toc'hárestán* is corrupted from *Tushára-sthán*, by which appellation that country is distinguished in the *Puránas*; and that *Turán* is derived from *Tusharán*, its *Sansemit* name, the *sth* being quiescent; may we not equally suppose, that *Taurus* is derived from *Tushára* or *Tusháras*: for this last form is used also, but only in declensions for the sake of derivation. *Tushára* signifies snow; *Tushára-sthán* or *Tuc'háras-sthán*, the place or abode of snow, and *Tusharán* in a derivative form, the country of snow.

STRABO and ARRIAN were certainly mistaken, when they supposed, that the followers of ALEXANDER, in order to flatter his vanity, had given out, that the mountains to the north and north-west of *Cabul*, were the real *Caucasus*. The information the *Greeks* received about it was true and accurate: they were undoubtedly careless in their inquiries; but I can aver, that all the names of places in ALEXANDER's march, from *Báblac* or *Bálk* to *Multan*, (where my friend MOGUL BEG's survey ended), are either pure *Sansemit*, or analogous to the idiom of the dialects used in the countries he conquered. The most questionable names, according to the learned, are *Nicæa* and *Dædala*: the first is a true and accurate translation of the *Sansemit* *Jayinidévi-sthán*, or the place of the goddess of victory, who is worshipped under that name at *Cabul* to this day. Numerous are the legends in the *Puránas*, relating to this place; which is called *Aśa-vana*, and in the spoken dialects *A'sháná*. There are two places of that name;

* STRABO, B. xi. p. 519.

one called the lower; and the other *Urdh-A'sbáná*, or *A'sbáná* the upper: from this last the Greeks made *Orthospana*.

As to *Dædala*, it is no uncommon appellation in India, several places are called *Daidayel*, *Dudhowla* or *Dudhawli*, and *Dundhyáli*: the town of *Dædala*, with the adjacent mountains, are called to this day *Dundhyáli*; but more commonly *Tauk-dundh* or *Dundh* the cold, being situated on a high mountain.

An extensive branch of the *Caucasus* was called by the Greeks *Parapamisus*: it is a part of the mountainous region called *Dévanica* in the *Puránas*. I believe, there is no general name at present for the whole range: but that part, which lies between *Cabul*, *Bámíyan*, and *Anderáb*, is called *Hindu-cash* and *Hindu kesh*; which last denomination has been distorted by *Persian* authors, and travellers into *Hindu-Coh*; at least in the opinion of the natives. Whether the appellation of *Hindu-Cash* has any affinity with the *C'hasus*, I cannot determine: but the inhabitants say, that this name was given to them, from a certain giant, who used to lie there in wait, to catch (*cash*), or to kill (*kesh*), all the *Hindus*, who passed that way. We find it called also *Sheybar-Tág*, or *Sheybar-Tau*, or the mountains of *Sheybar* or *Shabar*, under which appellation *PROMETHEUS* is generally known in the sacred books of the *Hindus*. Be this as it may, the Greeks called it also *Parapanisus*, in the same manner. I suppose, that they called the river *Pamisus*, (in the *Peloponesus*) *Panisus*.

The name of this famous mountain is variously written in different authors and manuscripts—

Parapamisus,
Paropamisus,
Parpamisus,

Parapanisus,
Paropanifus,
Parpanifus,

Paro Famifus,
Parpameus,

Paro Fanifus,
Parpameus.

Parapamifus or *Parapameus* appears to be a compound; the first part, I conceived at first, to be the word *Pahár*, which, in the spoken dialects of *India*, signifies a mountain. In this supposition, the whole compound, stripped of its *Greek* termination, would signify the mountains of *Vámí*, or *Bámí*, commonly called *Bámíyan*, a famous city situated in the centre of this hilly country. Unfortunately the word *Pahár*, which is not of *Sanfcript* origin, is a dissyllable; and moreover the second syllable being long, and marked with a strong accent, it cannot of course be prefixed. Besides, the word *Pahár* is never used in that country; but they say *Ghar* above *Déra-Ismaíl*; and *Rob* below it, amongst the *Baloches*. *Rob* is a *Tartarian* word, and indeed the *Baloches* seem to be the remains of some colony of *Tartarian* origin; it was originally the same with *Oros* in *Greek*.

The word *Pahár* is sometimes prefixed: but then it is in another sense; as for instance, *Pahár-pur* (literally *Hill-burgh*) signifies a town situated on, or near, a mountain.

The word *Parapamifus*, or *Para Famifus*, is obviously derived from the *Sanfcript Para-Vámí*, or the pure and excellent city of *Vámí*, commonly called *Bámíyan*. It is called in *Sanfcript Vámí-nagari*, *Vámí-grám*, and in a derivative form *Vámíyan*, or the most beautiful and excellent city. It is a place of great antiquity; and was considered at a very early period, as the metropolis of the sect of *Buddha*; hence it was called emphatically *Buddha-Bámíyan*; but the *Musulmans* have maliciously distorted this venerable title, into *Bút-Bámíyan* or *Bámíyan* of the evil spirit, or of the idols. *Para*, which signifies *pure* and *holy*, is also one of the thousand names of *Vishnu*. *Para* or *Paras* is obviously the same with the *Latin purus*; for the letter *a* here sounds exactly like *u* in *murmur* in *English*. *Para* or *Paras* is for the masculine,

masculine, *Pará* for the feminine, and *Param* for the neuter genders.

Bámíyan is represented in the books of the *Bauddhists*, as the source of holiness and purity. It is also called *Sharma-Bámíyan* or *Sham-Bámíyan*; for in *Sanscrit*, *Sharma* and *Shama* are synonymous. This is also one of the thousand names of *VISHNU*, and of the famous patriarch *SHEM*; by whom, according to the *Bauddhists*, *Bámíyan* was built. They say, that he was an incarnation of *JINA* or *VISHNU*, and the *Bráhmens* in general are of that opinion.

This famous city, the *Thebes* of the east, being hardly known in *Europe*, I beg leave to lay before the Society a short description of it, with an abstract of its history.

It is situated on the road between *Báhlac* and *Cábul*, and they reckon eight *manzils* or days' journey from *Cabul* to *Bámíyan*. From *Cabul* to *Carabaug*, there are four *manzils* N. N. W: from *Carabaug* to the pass of *Sheybar*, two *manzils*, inclining a little more to the west; hence to the fort of *Zohauk* one *manzil*, course north-west from *Zohauk* to *Bámíyan* one *manzil*. Like *Thebes* in *Egypt*, it is entirely cut out of an insulated mountain: the valley round it is called, in the language of the country, the *Tágávi* of *Bámíyan*. In this mountainous country, where the valleys alone are inhabited, the word *Tágávi* is become synonymous with *Purganah* or district. To the south of it, or nearly so, at the distance of about two miles are the ruins of an ancient city, called *Ghulghuleh*, which, according to tradition, was destroyed at a very early period by the *Musulmans*. There are the ruins of several buildings of masonry round a small conical hill, on the summit of which are the remains of the palace of its ancient kings. A rivulet, rising in the adjacent hills, goes through the ruins of *Ghulghuleh* and the *Tágávi* of *Bámíyan*, and falls into

into a small lake, from which issue four rivers, the *Hirmend*, the *Landhi-Sindh*, the rivers of *Báblac*, and of *Conduz*.

The city of *Bámíyan* consists of a vast number of apartments, and recesses, cut out of the rock; some of which, on account of their extraordinary dimensions, are supposed to have been temples. They are called *Samach'h**, in the language of the country, and *Samaj* in *Persian*. There are no pillars to be seen in any of them, according to the information I have received from travellers, who had visited them. Some of them are adorned with niches and carved work; and there are to be seen the remains of some figures in relievo, which were destroyed or miserably disfigured by *Musulmans*. Some remains of paintings on the walls are still to be seen in some of them: but the smoke, from the fires made there by the inhabitants, has almost obliterated them. It is said in the *Ayeen-Akbery*, that there are about 12,000 of these recesses, in the *Tumán* or *Tá-gávi* of *Bámíyan*; this is also confirmed, from general report, by travellers. The country of the *Afghans*, as far as *Báblac* and *Badacshán*, abounds with *Samach'hes* or *Samajes*: some of them are very rude, whilst others are highly finished and ornamented. The most perfect are at a place called *Móhi*, on the road between *Bámíyan* and *Báblac*: as they are situated amongst precipices, the *Musulmans* have never thought of living in them, and the paintings, with which they are adorned, look quite fresh.

But what never fails to attract the notice of travellers, are two colossal statues, which are seen at a great distance. They are erect, and adhere to the mountain, from which they were cut out. They are in a sort of niches, the depth of which, is equal to the thickness of the statues. It is said,

* This word is spelt *Samachch'h* by the natives.

in the *Ayeen-Akbery*, that the largest is eighty ells high,* and the other only fifty. These dimensions are greatly exaggerated, according to the opinion of all the travellers I have seen, and the disproportion is not so great between the two. According to the author of the *Pharangh-Jehanghiri* cited by TH. HYDE* they are said to be only fifty cubits high; which appears to be the true dimensions. At some distance from these two statues, is another of a smaller size, being about fifteen cubits high. Natives and *Persian* authors, who have mentioned them, agree neither about their sex nor their names. The few *Hindus*, who live in these countries, say, that they represent BHI'M and his consort: the followers of BUDDHA, that they are the statues of SHA'-HA'MA', and his disciple SA'LSA'LA'. The *Musulmans* insist, that they are the statues of KEY-UMURSH and his consort, that is to say, ADAM and EVE; and that the third is intended for SEISH or SETH their son; whose tomb, or at least the place where it stood formerly, is shewn near *Báblac*. This is in some measure confirmed by the author of the *Pharangh-Jehanghiri*, who says, that these statues existed in the time of NOAH; though he gives them different names, and supposes the third to represent an old woman, called NESR, more generally represented with the countenance of a vulture. These statues are so much defaced, through the injury of all-devouring time, and the intolerant zeal of the *Musulmans*, that I believe it is difficult to ascertain their sex. Travellers do, however, agree that one of them at least is a beardless youth; some more particularly insist that the swelling of the breasts is remarkably obvious, and that both look towards the east, so that, when the sun rises, they seem to smile, but look gloomy in the evening. Their dress, as described to me, is much the same with that of the two figures, half buried at *Tuét-Rustum* near *Istacar* in *Persia*; with this difference, that the female figure has no head-dress; but the male has such a *tiara* as is worn by the supposed female figure at *Tuét Rustum*.

* P. 132.

• These statues were visited, at least ten or twelve different times, by a famous traveller, called ME'YAN-ASOD-SHAH, who is a man highly respected, both on account of his descent from MOHAMMED, and his personal character. He is well informed, in affluent circumstances, through the piety of the faithful, and keeps company with the princes of the country and persons of the first rank. He informed me lately, that these two statues are in two different niches, and about forty paces distant from each other. That the drapery is covered with embroidery and figured work; which formerly was painted of different colours; traces of which are still visible. That one seems to have been painted of a red colour: and the other, either retains the original colour of the stone, or was painted grey. That one certainly represents a female, from the beauty and smoothness of her features, and the swelling of her breasts: the head being so much elevated is secure from insult below, and is also protected from the weather by the projection above. The statue of their supposed son is nearly half a mile distant, and about twenty feet high. One of the legs of the male figure is much broken: for the *Musulmans* never march that way with cannon without firing two or three shots at them: but from their want of skill, they seldom do much mischief. AURANGZEBE, it is said, in his expedition to *Báblac*, in the year 1646, passed that way and ordered as usual a few shots to be fired; one of them took place, and almost broke its leg, which bled copiously. This, and some frightful dreams, made him desist, and the clotted blood it is said adheres to the wound, to this day. The miracle is equally believed by the *Hindus*, and *Musulmans*: the former attribute it to the superior power of the deity; and the latter to witchcraft. According to Dr. HYDE, one of these statues is called *Surkh-But*, or the red idol; the other *Khink-But*, or the grey idol. As to their being hollow, I believe, it is an idle tale: at least the travellers, I have consulted, knew nothing of it. Between the legs of the male figure, is a door leading into a most spacious temple,

ple, the dimensions of which, they could not describe otherwise, than by saying, that it could easily hold the camp equipage and baggage of ZEMAN-SHAH, and of his whole army. It is remarkable only for its extraordinary dimensions: it is dark and gloomy; and there are a few niches, with the remains of some figures in *alto-relievo*. At the entrance are stationed a few wretched *Banyans*, who sell provision to travellers. The greatest part of the *Samajes* in *Tágávi Bámíyan* are still inhabited by *Musulmans*, who live promiscuously with their cattle. I have been informed, that there are no other statues, than these three; but, from the numerous fragments, which are seen through the *Tágávis*, there must have been several hundreds of them. They shew to this day the *Samach'h*, in which the famous *VYA'SA* composed the *Védas*; and others, where divers holy men gave themselves up to meditation, and the contemplation of the Supreme Being.

Persian authors are constantly confounding *Bámíyan* and *Báblac* together; the first they call *Bálkh-Bámíyan*, and the second *Bálkh-Bokhárá*; when they speak of the metropolis of the fire worshippers, it is to be understood of *Bámíyan* alone, according to the followers of *BUDDHA*, and the author of the *Buddha-dharmachárya Sindhu*. According to *Persian* authors, *Bámíyan* must have existed before the flood; but the followers of *BUDDHA* insist, that it was built by a most religious man called *SHAMA*, who appears from particular circumstances to be the same with the famous patriarch *SHEM*; and that his posterity lived there for several generations. Hence *Bálkh-Bámíyan* is said to have been originally the place of abode of *ABRAHAM**, who, according to scripture, and the *Hindu* sacred books, removed with his father to distant countries to the westward.

* TH. HYDE, p. 29 and 494.

According to DIODORUS the *Sicilian*, *Bámíyan* existed before NINUS: for this historian, like the *Persian* authors we have mentioned, has mistaken *Báblac* for *Bámíyan*; which he describes as situated among steep hills: whilst *Báblac* is situated in a low, flat country, and at a great distance from the mountains.

The natives look upon *Bámíyan*, and the adjacent countries, as the place of abode of the progenitors of mankind, both before and after the flood. By *Bámíyan* and the adjacent countries, they understand all the country from *Sístán* to *Samarcand*, reaching towards the east as far as the *Ganges*. This tradition is of great antiquity, for it is countenanced equally by *Persian* authors, and the sacred books of the *Hindus*. The first heroes of *Persian* history lived, and performed there, innumerable achievements. Their sacred history places also, in that country, their holy instructors, and the first temples that were ever erected. In the prefatory discourses, prefixed to the *Puránas*, and which appear to have been added by a more modern hand, a general description of the whole world is inserted, which one would naturally suppose to be extracted from that *Purána*, to which it is annexed: but the reverse is actually the case: for it has no affinity whatever with such geographical notions as are to be found, occasionally, in that *Purána*. In these prefaces, if we may call them so; it is said, that SWAYAMBHUVÁ or ADAM lived in the *dwíp* of PUSCARA, at the furthest extremities of the west. There seven sons were born unto him, who divided the world or *seven islands* among themselves.

This notion seems also to be admitted in the *Trelodierpana*, by the *Bauddhists*, who give the name of *Jambu* to PUSCARA: for by *Jambu* is understood the *continent*. PLUTARCH also says that the inhabitants of *Egygia*, which is probably the *dwíp* of PUSCARA, considered their own country as the continent. Be this as it may, I have never

never found in the *Puránas* any passage, except one; that could in the least countenance such an idea. The passage alluded to, I discovered some days ago, in a legend in which it is said, that the father of SATYAVRATA or NOAH, was born on the banks of the river *Chandra-bhága* in the *dwíp* of CHANDRA, which is one of the *sacred isles* in the west. There is certainly a river of that name in *Chandra-dwíp*, even more famous in the *Puránas*, than another of that name in the *Panjáb*, and which is now called the *Chináb*. It is highly probable, that the words *Chandra-dwíp* are an interpolation by some of the ignorant compilers of the *Puránas*, who have arranged this heterogeneous mass without method, and still less judgment: for in this same legend from the *Scanda purána*, SATYAVRATA or NOAH, is said to have left the banks of the *Chandra-bhága*, at the head of a numerous army, in order to invade the country of *Dra-vira*, or the peninsula of *India*, which he conquered and annexed to his dominions.

Bhálac or *Bámíyan* are both situated in the country of *Vábrica* or *Váhlaca*; and as *Bámíyan* was once the capital, it is possible, it might have been called also *Vábrica* or *Bhálac*. The origin of this appellation is rather obscure: it is however the general opinion, that it is derived from the plant, which produces *Assa-fetida*, called in *San scrit* *Vábrica*, and is the *Silphium* of the historians of ALEXANDER. It grows there in great abundance, and is reckoned superior to that of other countries. Others insist, that this plant was thus denominated from its growing in the country of *Válica*, which, they say, was thus called from a certain sage of that name, who lived there: this is countenanced by CEDRENIUS, who says that PELEG, whom he calls PHALEC, dwelled in the country of *Bactra*, which seems to be derived from the *San scrit* *Vábric-ter* or *Balc-ter*, which signifies the country about *Vábrica*, or *Balk*. Thus the country of the *Byltæ*, called *Baltistæ*, is generally called by natives *Bahut-ter*. Derivatives of this sort, though not pure *San scrit*, are however

ever very common all over *India*: thus they say *Jungul-tery*, or country about woods and foreells. *Shivauter*, *Brabmauter*, *Vishnauter*, &c. imply a piece of ground, or a district belonging to SHIVA, &c. or set apart for his worship. In *Sanscrit*, the compound *Váblica-tiram* or *Váblic-tir*, would signify the country on the banks of the river *Váblica*. *Bámyán*, as well as *Cabul* and *Bálikh*, were at an early period in the hands of the *Musulmans*. There were even kings of *Bámyán*: but this dynasty lasted but a few years and ended in 1215. The kings and governors resided at *Gbulghuleh*, called at that time, the fort or palace of *Bámyán*. It was destroyed by GENGHIZ-KHAN, in the year 1221; and because the inhabitants had presumed to resist him, he ordered them to be butchered, without distinction, either of age or sex: in his rage, he spared neither animals, nor even trees. He ordered it to be called in his own language *Mau-balig*, or the city of grief and sorrow: but the inhabitants of that country, called it in their own dialect *Gbulghuleh*, which word, used also in *Persian*, signifies *the cries of woe*. To have rebuilt it, would have been ominous: for this reason, they erected a fort on a hill to the north of *Bámyán*, which is called to this day, the imperial fort. This fort also was destroyed by ZINGIS the *Usbeck*, in the year 1628; and has not been rebuilt since.

According to the *Puránas*, SWAYAMBHUYA, or ADIMA, SATYAVRATA or NOAH, lived in the north-west parts of *India* about *Cashmir*. There BRAHMA' assumed a mortal shape according to the *Matsya-Purána*; and one half of his body springing out, without his experiencing any diminution whatsoever, he framed out of it SATARUPA'. She was so beautiful, that he fell in love with her. As he considered her as his daughter, being sprung from his body, he was ashamed. During this conflict between shame and love, he remained motionless, with his eyes fixed on her. SATARUPA perceiving his situation,

situation, and in order to avoid his looks stepped aside. BRAHMA' unable to move, but still desirous to see her, a face sprang out upon him, toward her. Thus she shifted her place four times round him, according to the four corners of the world; and four faces grew up to his head. Having recovered his intellects, the other half of his body sprang from him and became SWAYAMBHUVA OR ADIMA. SWAYAMBHUVA literally SWAYAMBHU-like signifies, that BRAHMA' or SWAYAMBHU appeared in an assumed form, called from that circumstance SWYAMBHUVA. The possessions of CARDAMES'WARA were in the hills along the banks of the *Ganges*, to the eastward of the rest of mankind. His son CAPILA, a most religious man, performed for a long time religious austerities near *Hardwar*, where they shew to this day the place where he lived, under the name of *Capila-sthán*: hence the pass of *Hardwar* is sometimes called the passes of CAPILA OR KUPELEH.

CARDAME'S'WARA is the destructive power united to a form of clay: ISWARA attempted to kill his brother BRAHMA', who being immortal, was only maimed: but IS'WARA finding him afterwards in a mortal shape in the character of DASHA, killed him, as he was performing a sacrifice. CARDAME'SWARA is then obviously the CAIN of scripture, and of course CAPAIL is his son ENOCH, and *Capila-sthán* is probably the city *Enochia* thus called after him. The *Musulmans* seem to have borrowed from the *Hindus* the appellation of CAPILA OR CA'BIL, which they give to CAIN, who is sometimes called CAPILE'SWARA in the *Puránas*; being an incarnation of MAHA'-DEVA; ENOCH was an incarnation of VISHNU, and is always called CAPILA-MUNI. CAPILE'SWARA was a *Muni* also; hence he is sometimes called, though improperly, CAPILA-MUNI; which inaccuracy has occasioned some confusion in the *Puránas*. CAPILA-MUNI, is represented as a most religious penitent, though somewhat cholerick, and HENOC or C'HANOC,

NOCH, for such is his name in *Hebrew*, implies that he was consecrated to God, and for ever devoted to his service.

CAPILA OF CAPILA-MUNI, that is to say, CAPILA the silent contemplator, is generally found making *tapasya* at the mouths of rivers. Though found at several places at the same time, he is but one. Near *Hardwar* is *Capila-sthán*, where he made his first appearance. His father and mother were exceedingly happy when he was born; as they conceived him to be a gift, and also an incarnation of VISHNU, the preserving power; and they hoped, that he would preserve and comfort them. There at *Capila-sthán*, he was consulted by his mother the devout DEVAHUTI, daughter of SWAYAMBHUYA, about the surest and best method to obtain *Mocsha* or reunion to the Supreme Being. The exhortations of CAPILA, and his wife admonitions, are related in the *Bhagavat* and other *Puránas*. DEVAHUTI withdrew afterwards to the forests on the banks of the *Bindu-Sarovara* lake, from which issues the *Ganges*; and is improperly called *Man Sarovara*. There she performed *tapasyas* for a long time, and was ultimately reunited to the Supreme Being, never to be born again.

In that country, on the banks of the *Chinab*, in the hills, was performed that famous sacrifice, which occasioned the death of ABEL, according to the *Scanda-purána*: an account of which, from the *Hindu* sacred books, I beg leave to lay before the Society, as, most probably, I shall not have an opportunity to resume this subject hereafter.

There had subsisted, for a long time, some animosity between BRAHMA and MAHA'-DE'VA in their mortal shapes; and the latter on account of his bad conduct, which is fully described in the *Puránas*, had, it appears, given much uneasiness to SWAYAMBHUYA and SATARUPA'. For he was libidinous, going about stark naked,
with

with a large club in his hand. Be this as it may, MAHA'-DE'VA, who was the eldest, saw his claim as such, totally disregarded, and BRAHMA' set up in his room: this intrusion the latter wanted to support; but made use of such lies as provoked MAHA'-DE'VA to such a point, that he cut off one of his heads in his divine form. In his human shape we find likewise DACSHA boasting, that he ruled over mankind. One day in the assembly of the Gods, DACSHA coming in, they all rose to pay their respects to him: but MAHA'-DE'VA kept his seat, and looked gloomy. DACSHA resented the affront, and after having reviled MAHA'-DE'VA, in his human shape, cursed him; wishing he might remain always a vagabond, on the face of the earth, and ordered he should be carefully avoided, and deprived of his share of the sacrifices and offerings. MAHA'-DE'VA irritated, in his turn cursed DACSHA, and wished he might die; a dreadful conflict took place between them, the three worlds trembled, and the Gods were alarmed. BRAHMA', VISHNU, and the whole assembly interfered and separated the combatants, who returned to their respective homes. They even effected a reconciliation, in consequence of which DACSHA gave one of his daughters, called SITA' in marriage to MAHA'-DE'VA. SITA' was an incarnation of DEVI': for SRI'-DE'VI' the wife of DACSHA, and daughter of ADIMA and IVA, entreated the Goddess, to give her one daughter exactly like herself: her request was granted, and DEVI' was incarnated in her womb. She was blessed also with an hundred daughters more. One day, as DACSHA was sitting with his wife, they both lamented that they had no male offspring. I command over the world, says DACSHA, great is my power and my wealth: but I have no son. They agreed to make a solemn sacrifice, in order to obtain one; on this occasion DACSHA convened gods and men; but he could not be persuaded to invite MAHA'-DE'VA: who took little notice of this neglect; for he is represented in all his *Avatáras*, as perfectly indifferent either to praise or abuse. But his wife

was enraged; and insisted on her going. MAHA'-DE'VA did what he could to dissuade her from it, but in vain. She was treated with such contempt by her father, that, in a rage, she flung herself into the sacred fire, and thereby spoiled the sacrifice. MAHA'-DE'VA hearing of this, blamed her for her rash conduct, in thus spoiling the religious performance, and cursed her. In consequence of this curse, and for her improper behaviour, she was doomed to be born again, and to transmigrate for a thousand years into an inferior being. Thus she became a *Picá*: but MAHA'-DE'VA to please her, assumed the shape of a *Pica* or *Picas* under the title of PICE'SWARA or PICE'SA-MAHA'-DE'VA. He is more generally known by the name of COCILE'S'WARA-MAHA'-DE'VA: *Cocila* (*Cuculus*) being another name for the bird *Pica* or *Picas**.

MAHA'-DE'VA afterwards went up to BRAHMA', in the character of DACSHA; and after a great deal of abuse, began to beat him; the confusion became general in the whole assembly, who all took the part of DACSHA: but SIVA striking the ground with the locks of his *Jata*, produced two heroes, and a whole army of demons came to his assistance; the battle raged, and during this general conflict MAHA'-DE'VA cut off DACSHA's head: several of the Gods were wounded, particularly the Sun and Moon; Heaven, Hell, and the Earth trembled.

The Gods at last humbled themselves before MAHA'-DE'VA, who was appeased; and order was re-established through the whole assembly. The Gods requested MAHA'-DE'VA to restore DACSHA to life, which he promised to do; but the head could not be found, for dur-

* *Pica* in *Sanferit* is the name of the *Cuckoo*: but it was once taken in a more extensive sense; for we read in glossaries, that *Pica* is the name of such birds as *pick* their food out of holes. In this sense the bird *Picus* is certainly a *Pica*. The root of the word *Picus* is lost in *Latin*, but it is preserved in *Gothick* and most of its dialects.

ing the fray, it fell into the fire, and was burnt. They brought a he-goat, whose head they cut off, and placed upon the lifeless corpse of DACSHA, who instantly revived: but he remained weak and without power till he was born again a son of NOAH.

MAHA'-DE'VA then took up the body of his beloved SITA' on his shoulders, and went seven times round the world, bewailing his misfortune. Here I shall remark that, when any accident happens to the Gods, they generally set off at full speed, going seven times round the world, howling all the way most woefully.

The gods, whom SITA' contained in her womb, burst out, her limbs were scattered all over the world; and the places, where they fell, are become sacred. Her breasts fell near *Jalánder* in the *Panjab*; the *yoní* into *A'sam*, and the *gubya** into *Nepál*, where they are most devoutly worshipped to this day. The latter is a small cleft in a rock, with an intermitting spring: it is called *Gubya-sthán*.

Puja, with offerings, are directed to be made to *Pice'sa*, whenever there happens to be in the year two months of '*Asha'd'ha*, the second of which, is embolismic. The first '*Asha'd'ha*, is reckoned impure, and the religious rites are to begin on the day of the full moon, if possible: if not on the third or seventh day. For this purpose an image of the *Picas* is to be made; the body of gold, the wings of precious stones, the beak of red coral, and the eyes also of a precious stone of a red colour, called *manica*. Women particularly ought to be cautious not to omit this religious performance, on any account whatever; should any woman fail in this, she will be born a *Vyali* (a snake) in the forests. Whatever woman performs it duly, will have many

* Podex.

children, and her husband shall not die before her: for PA'RVATI is highly delighted with prayers and offerings in that intercalary month. PICE'SA MAHA'-DE'VA is probably the JUPITER PICUS of the *Latians*: some pretend that this metamorphosis happened in *Syria*, others in *Italy*: but the *Hindus* insist that it happened in the mountains to the north of the *Pánjáb*. Though PICUS be said to have appeared in the time of ADIMA; yet as, according to the *Puránas*, the same concatenation of events reappears in every *Manwantara*, the same story must have happened of course in the time of SATYAVRATA, or NOAH.

In the *Puránas*, the *Ganges* is represented as remaining concealed for a long time in the hills; at the prayers of a certain holy man it entered the plains of *Hindustan* till it reached *Benares*: then gradually advancing, it found at last its way into *Fengal*. As the whole country from *Hardwar* to the sea was annually overflowed in such manner as to render the greatest part of it unfit for cultivation, *Bhagirat'ha* restrained the inundation between certain limits. The *Chinese* relate the same story of FOHI, who surveyed the course of the *yellow river* to its source, and by proper inbankments, restrained its destructive overflowings. CAPILA, always fond of the sea shore, followed the *Ganges*: we find him afterwards meditating near a place called *Mooragatcha* in Major RENNELL'S Atlas, to the south of *Calcutta*, not far from *Fulta*, and at that time close to the sea. Here he was insulted by the children of SATGARA, whom he reduced to ashes by a single look: this place is called the *old Ságar*, and is probably the place called *Oceanis* by DIODORUS the *Sicilian*, for *Ságar* and *Oceanis* are synonymous words. There the *Ganges* seeing *Samudr* or *Oceanus* was frightened, and fled back through a thousand channels: thus the *Pauránics* account for the retrograde motion of the waters of the *Ganges* twice a day.

CAPILA is now performing *Tapasya* at *Ságar* island, where his *sthán* or place, is about five miles from the sea; the *Delta* of the *Ganges* having thus far encroached upon the sea, since the erection of this last *sthán*. CARDAME'SWARA is thus called, when considered as a divine emanation from ISWARA, but he seems to be PRIYAVRATA, when considered as a mortal. For whenever the deity condescends to be born of woman; the person is one, but there are two natures. To this distinction we must carefully attend, in order to reconcile many seeming contradictions in the *Puránas*; and more particularly so, with respect to VAIVASWATA and SATYAVRATA; who are acknowledged to be but one person: the divine nature is an emanation of VISHNU in his character of the Sun; and SATYAVRATA is the human nature; these two natures often act independently of each other, and may exist at the same time in different places.

From particular circumstances it appears, that SATYAVRATA before the flood lived generally in the countries about the *Indus*, between *Cabul* and *Cashmir*; and if we find him in *Dravira* or the southern parts of the peninsula, it seems that it was accidentally, and that he went there only for some religious purposes. Even after the flood, he resided for some time on the banks of the *Indus*. According to tradition, which my learned friends here inform me is countenanced by the *Puránas*, he lived and reigned a long time at *Bettoor*, on the banks of the *Ganges* and to the south of *Canoge*. In the *Varaha-purána*, VASU, the father of VIVASWATA, is declared to have been king of *Cashmir*, and the adjacent countries. They shew to this day the tomb of his father LAMECH, as mentioned in the *Ayeen Akbery*, at a place called *Naulakhi*, between *Alishung* and *Munderar*; about twelve or thirteen miles to the north-west of *Jalálábád* in the country of *Cabul*. The *Musulmans* called him PEER MAITLAM; and in the dialect of *Samarcand*, *Maiter* or *Maitri BUR-KHA'N*. The *Bauddhists* say, that it is BUDD'HA-NARA'YANA, or BUDDHA dwelling in

- in the waters: but the *Hindus*, who live in that country, call him MACH'HODAR-NATH* or the sovereign prince in the belly of the fish. All these denominations are by no means applicable to LAMECH; but to NOAH alone. The tomb is about forty cubits in length: which was actually the statue of LAMECH according to tradition: under it is a vault of the same dimensions, with a small door which is never opened, out of respect for the remains of this illustrious personage. They say, that his body is in high preservation, and that he is sitting in a corner of the vault on his heels, with his arms crossed over his knees, and his head reclining upon his hands; a favourite posture among the inhabitants of *India*.

VĀIVASWATA, both in his divine and human character, or nature, is certainly, MAITLA, *Maiter*-BURKHA'N and BUDDH'A-NARA'YANA. MAITLA or MAITLA'M is a derivative form from the *Sansemit* *Mait*, which implies the consort of LACSHMI', and the owner of her wealth, an epithet often applied to rich men; and may be translated *mighty*: but it properly belongs to VISHNU, and his various incarnations. PRĪTHU, according to the *Purānas*, was an incarnation of VISHNU, and the consort of LACSHMI'; as I have shewn in a former essay on the chronology of the *Hindus*.

It is probable, that when the *Musulmans* conquered that country, they pronounced the word MAITLA'M *Maiter*-LA'M; and concluded that he was the same with LAMECH the father of NUH. The *Afghans* always use the word *Maiter* instead of *Hazeret*, and thus say *Maiter* MOHAMMED, *Maiter* ISA, *Maiter* SOLEIMAN, for *Hazeret* ISA, *Hazeret* MOHAMMED, *Hazeret* SOLEIMAN. *Hazeret* in *Persian* is a title, by which kings are addressed, and holy men mentioned; it implies dignity and excellence. *Maiter* from the *Persian* *Mektur*, signifies also a lord,

* This word is spelt *Machck'hodara* in *Sansemit*.

prince, or chief. The *Musulmans*, and *Hindus* of that country, I had an opportunity to consult, informed me, that according to tradition, the famous Sultan MAHMOOD, of *Ghazni*, hearing of the tomb of MAITLA'M; and of the miracles daily performed there, conceived that the whole was done through magick; and accordingly resolved to destroy it: but, being disturbed by frightful dreams, he desisted, and having made particular inquiries about MAITLA'M, he was fully satisfied, as well as the learned about his person, that he was LAMECH, the father of NUH. Since that period MAITLA'M is revered as a *Peer*, or saint, by the *Musulmans* of that country. *Maiter* BURKHA'N, or BURGHA'N, in the dialect of *Samarcand*, as I am informed, signifies, literally, *the lord and master*. In several *Tartarian* dialects, GOD is called BURKHA'N, or the lord.

The title of MACH'HODAR-NA'T'HA is by no means applicable to LAMECH; but properly belongs to NOAH; for by the *belly* of the *fish* they understand the *cavity*, or *inside* of the ark. There is a place under ground at *Banares*, which they call *Mach'hodara*. The central and most elevated part of *Banares*, is also called *Mach'hodara*, because, when the lower parts of the city are laid under water by some unusual overflowing of the *Ganges*, this part remains free from water like the belly of a fish. The city also is some times thus called, because, during the general floods, the waters rise like a circular wall round the holy city. In short, any place in the middle of waters, either natural or artificial, which can afford shelter to living beings, is called *Mach'hodara*.

The place, where LAMECH is supposed to lie entombed, is called *Naulakhi*, a word, which signifies nine lakhs; because, it is said, Sultan MAHMOOD granted to this holy place a yearly revenue of nine lakhs of rupees. Be this as it may, this foundation no longer exists: and I believe it never did. The real name is probably

Nau-Laca, or *Nub-Laca*, which in the language of that country, implies the place of NUH or NOAH: at least there are many places in that country, the names of which end in *Laca* or *Laki*, such as *Ebau-lac*, *Gauza-lac*, &c.

Close to *Ayudhya* or *Oude*, on the banks of the *Gagra*, they shew the tomb of NOAH and those of AYUB, and SHIS or SISH (JOB and SETH). According to the account of the venerable *Derveish*, who watches over the tomb of NUH, it was built by ALEXANDER the Great, or SECUNDER RUMI. I sent lately a learned *Hindu*, to make enquiries about this holy place: from the *Musulmans*, he could obtain no further light: but the *Bráhmens* informed him that where NUH's tomb stands now, there was formerly a place of worship dedicated to GANESA, and close to it are the remains of a *Bowly*, or walled well, which is called in the *Puranas* *Gana-put cunda*. The tombs of JOB and SHIS are near to each other; and about one bow shot and a half from NUH's tomb; between them are two small hillocks, called *Soma-giri*, or the mountains of the moon. According to them these tombs are not above four hundred years old; and owe their origin to three men, called NUH, AYUB, and SHIS, who fell there, fighting against the *Hindus*; these were of course considered as *Shéhids* or martyrs: but the priests, who officiate there, in order to encrease the veneration of the superstitious and unthinking crowd, gave out that these tombs were really those of NOAH, JOB, and SETH of old. The tomb of NUH is not noticed in the *Ayeen-Akbery*, only those of AYUB and SHIS.

MACH'HO'DARA-NA'T'HA is not unknown in *China*; at least there is an idol near *Pechin* (*Pekin*), which is supposed by pilgrims from *India* and *Tibet*, to represent MACH'HO'DARA or *Maitre-BURGHAN*. This account I received from a famous traveller called ARCE'SWARA, who was introduced to my acquaintance by Mr. DUN-

CAN * three years ago. He said, that the *Myau* or temple, is at a small distance from the north-west corner of the wall of *Pechin*, and is called *Mahá-Cála-Myau*, from its chief deity MAHA'-CA'LA, who is worshipped there, and whose statue is on one side of the river, and the *Myau* on the other. That in one part of the *Myau*, is a gilt statue of MACH'-HO'DARA-NÁ'TH, about eighteen feet high: in another part is the *Cháran pad*, or the impression of the feet of DATTA'TRÉ'YA or DATTA, called TOTU by the *Egyptians*. There is a convent and a *Lama*. What are the *Chinese* names of these deities, he could not tell. This astonishing traveller first visited the most famous places of worship in the northern parts of *India*, as far as *Báblk*, and the borders of *Persia*. Though a *Bráhmen*, he had a regard for the worship of JINA, and renouncing his tribe, he resolved to visit the living FOHS. I shall here exhibit the outlines of his peregrinations, which are as accurate as can reasonably be expected from a man who declares, that he did not travel for the purpose of geographical information, and who never imagined he should be requested to give an account of his travels.

According to ARCE'SWARAS account.

According to the maps of the *Jesuits*.

From *Benares* to *Nepál* - -

Nepál

Lassa - - -

Lassa

Chéri, south-east of *Lassa* - -

Dsiri

Country of *Letanh* - -

Laton

Then turning toward the west, he entered the country of *Combo*, where he adorned the LAMA'-COMBO -

See Alphab.

Tibet.p.423.

to *Sámá-Jerbu* - - -

Bridge of *Sáma*.

* JONATHAN DUNCAN, Esq. now governor of *Bombay*:

to <i>Caucásu</i>	- - -	<i>Cocofay</i> custom- house.
Country of <i>Jéshrám</i>		
<i>Silin</i>	- - -	<i>Sinin</i> .
Crossed the <i>Hará-Moren</i> and entered the country of <i>Urdusu</i> , which he describes as flat and abounding with lakes and marshes,		<i>Urtous</i> .
Crossed again the <i>Hara-Moren</i> , and entered the country of <i>Urát</i> ,		<i>Urat</i> .
Then turning to the north-west, he entered the country of a famous <i>Kalka</i> chief, called <i>BHA'GA'-GU</i> . Thence into the country of the <i>Tolen-cásu-Kalkas</i> ; thus called from the river on the banks, of which they live,		<i>Tola-pira</i> or river <i>Tolá</i> .

He went afterwards to pay his adorations to the *TA'-RA'NA'TH*, the place of whose residence is marked in the maps between the rivers *Selingbei* and *Orgun*. This living *Foh* is well known in the northern parts of *India*, under the name of *TA'RA'NA'TH*, and is mentioned in *BELL's* travels.

In three months he went into the country of *Chitcár-Naymánn-cásu*, in the maps *Teitcicár* and *Naymann*. Thence to *Tálá-Nor*, the *Taal-Nor* of the maps. He then entered *China*, through the breach made in the great wall, for the conveyance of the remains of the emperors to their place of burial, which he says is called *Ekkor* by the *Tartars*, and *Séchin* by the *Chinese*: thence to *Pekin* called by the *Chinese* *Péchin*. He returned from his expedition about three years ago, and shewed to Mr. *DUNCAN* and to me the numerous *Rahdáres* or passports he obtained from the various chiefs and *Lamas* he had visited. They are written in the characters of the countries he went through, namely of *Tibet*, the *Mungul Tartars*, and

and of *China*. He is now gone to visit the places of worship in the southern parts of *India*; after which he intends to come and die at *Benares*. A near relation of his is in my service as a pandit.

It may appear strange, that the posterity of *CAIN* should be so much noticed in the *Puránas*, whilst that of the pious and benevolent *RUCHI* is in great measure neglected: but it is even so, in the *Mosaical* account of the antediluvian history: where little is said of the posterity of *SETH*; whilst the inspired penman takes particular notice of the ingenuity of the descendants of *CAIN*, and to what high degree of perfection they carried the arts of civil life. The charms and accomplishments of the women are particularly mentioned. *The same became mighty men, which were of old, men of renown.* The antediluvian history of *SANCHONIATHON* is obviously that of the posterity of *CAIN*. We have been taught to consider the descendants of *CAIN*, as a most profligate and abominable race: this opinion, however, is not countenanced, either by sacred or profane history. That they were not intrusted with the sacred deposit of religious truths to transmit to future ages, is sufficiently certain: they might in consequence of this, have deviated gradually from the original belief; and at last fallen into a superstitious system of religion, which seems also a natural consequence of the fearful disposition of *CAIN*, and the horrors he must have felt, when he recollected the atrocious murder of his brother. Be this as it may, their worldly achievements passed to posterity, whilst the peaceful and domestick virtues of the descendants of *SETH* sunk into oblivion. Out of five *MENUS*, who ruled as lords paramount between *ADIMA* and the flood, according to the *Puránas*, four were of the posterity of *CAIN*.

Thus, according to an uniform tradition, of a very long standing, as it is countenanced by the *Hindu* sacred books, and *Persian* authors, the progenitors of mankind lived

lived in that mountainous tract, which extends from *Bálkh* and *Candáhar* to the *Ganges*; we may then reasonably look for the terrestrial paradise in that country; for it is not probable, that ADIMA and ADIMA' or IVA should have retired to any great distance from it. Accordingly we find there such a spot, as answers minutely to the *Mosaical* account; a circumstance, I believe, not to be met with any where else on the surface of the globe. A small brook winds through the *Tágávis* of *Bámíyan*, and falling into a small lake, divides itself into four heads, forming so many navigable rivers. The first called *Phison* compasses the whole country of *Chávilá*, where gold is found: and the gold of that country is good: there is also *Bdellium* and *Sardonix*. The country of *Chávilá* is probably that of *Cabul*: it is a very ancient denomination; for *PTOLEMY* calls its inhabitants *Cabolitæ*, and the town itself *Cabura*, which is obviously a corruption from *Cabul*; for the *Persian* name for a *shed* or *pent-house* is indifferently pronounced *Cabul* and *Cabur*. Tradition says, that *Cabul* was built by an ancient king of that name; and the place where he lived, is still shewn near *Cabul*: they generally call him *SHAH CABUL*. Gold is found in the sands of the *Indus*, above *Derbend*, but in greater quantity about *Cabul-grám*, to the north of *Derbend*, and in the rivers, which fall into the *Indus* from the west. It is found also near the surface of the earth in these parts, but the natives are too indolent to dig for it. The gold found in the sands, I am told, is not so pure as that found by digging the earth to a considerable depth. This country abounds with divers sorts of precious stones, such as the *Lapis Lazuli*, the *Yacuth* or hyacinth, crystal, marble of various colours, and razor stones of a superior quality. The *Phison* appears then to be the *Landi-Sindh*, or lesser *Sindh*, called also *Niláb* from the colour of its waters, which are deep and limpid. This river is also denominated the *Nilá-Gangá*, or simply *Gangá* by *Hindus*; and it is called *Ganges* by *ISTODORUS*, when he says that the best *Affa-fatida* grows on the mountains of *Oscobagi*, at the source of the *Ganges*.

Oscobagi

Ostobagi is obviously derived from JESHU-BEG, the lord JESHU, another name for the famous RASA'LA or BRONGUS, who dwelt at *Bámíyan*, whose colossal statue is to be seen there to this day, and of whom I shall speak more fully hereafter. The true name of that place commonly called, *Ybaug* and *Jybuck* by Major RENNELL, between *Cabul* and *Bálkh*, is AI BE'G *Dominus Lunus*, our Lord the Moon. There are in its vicinity, in the mountains, several curious remains of antiquity. JEROME says also that the *Phison* was called *Ganges* in his time. They were both perfectly right, though it is almost certain, that they understood by it the great *Ganges*. HESYCHIUS says, that the *Phison* was thus called, because it flowed from a *fissure*, *gap*, or *mouth*. If so, this appellation is synonymous with *Cophes*, the ancient name of the *Landi-Sindh*, as will appear hereafter.

The second river was the *Gihon*, which compassed the land of *Cush*: this is the *Hir-Mend*; and the country is the original land of *Cusha* of the *Puránas*, which begins near *Candahar*, and includes part of *Iran* or *Persia*. In a former essay on *Egypt*, I had carried too far the eastern limits of that country.

The third river is the *Hiddekel*, which runs toward, or through the eastern parts of the land of *Assur*. This appears to be the river of *Báhlac*, which runs through the eastern parts, and seems to have been once the eastern boundary of the land of *Hassarah* or *Házárah*. This country extends from *Herát* to *Báhlac* and *Bámíyan*: from the unsettled disposition of its inhabitants, its boundaries cannot well be defined. They consider themselves as the *aborigines* of that country; and like the *Arabs*, were never thoroughly subdued. They are very numerous, brave, but incapable of discipline. They are *Musulmans*; but retain still many heathenish, and superstitious customs, at least in the opinion of their neighbours. The principal tribes are the *Daicándi*, *Taimáni*, &c. the first live between *Herát* and *Dawer*: and the

the others toward *Máru-Shájéban*. This is probably the country of *Arfareth* of the apocryphal book of *Esdra*s. The fourth is the *Frát*, of which no particulars are recorded; it is the river of *Cunduz*. *Musulmans*, as well as *Christians*, have assigned various situations to the garden of *Eden**: and there is hardly a country on earth, or a region in heaven, but has been ransacked in search of it: whilst some of the fathers have denied even its existence. The *Hindus* are equally extravagant: they place it on the elevated plains of *Bukhara* the lesser, where there is a river which goes round *Brahmapuri*, or the town of BRAHMA'; then through a lake called *Manfarowara* (the existence of which is very doubtful), and is erroneously supposed by travelling Vackeers to be the same with that, from which the *Ganges* issues, which is called in *Sanseerit* *Bindu Sarowara*. From the *Manfarowara* lake, come four rivers running towards the four corners of the world, through four rocks cut in the shape of the heads of four animals; thus taking literally the corresponding passage of scripture. The Cow's head is toward the south, and from it issues the *Gangá*; toward the west, is a Horse's head, from which springs the *Chocshu* or *Chocshus*: it is the *Oxus*. The *Sitá-gangá*, or *Hoang-ho*, issues from an Elephant's head; and lastly the *Bhadra-gangá* or *Jenisea* in *Siberia*, from a *Tyger's* head, or a *Lion's* head according to others.

The *Hindus* generally consider this spot, as the abode of the Gods, but, by no means, as the place, in which the primogenitors of mankind were created; at least I have not found any passage in the *Puránas*, that might countenance any such idea; but rather on the contrary. As it is written in the *Puránas*, that on mount *Méru*, there is an eternal day for the space of fourteen degrees round *Su-meru*; and of course an eternal night for the same space on the opposite side; the *Hindus* have been

* The word *Eden* is perhaps derived from the *Sanseerit* *Udyán*, which as well as *Váicá*, signifies a garden.

forced to suppose that *Su-meru* is exactly at the *apex*, or *summit* of the shadow of the earth; and that from the earth to this summit, there is an immense conical hill, solid like the rest of the globe, but invisible, impalpable, and pervious to mankind: on the sides of this mountain are various mansions, rising in eminence and pre-excellence, as you ascend, and destined for the place of residence of the blessed, according to their merits. GOD and the principal deities are supposed to be seated in the sides of the north, on the summit of this mountain, which is called also *Sabha*, or of the congregation. This opinion is of the greatest antiquity, as it is alluded to by *ISAIAH*, almost in the words of the *Pauranics*. This prophet describing the fall of the chief of the *Daityas*, introduces him, saying, "that he would exalt his throne above the stars of GOD, and would sit on the *mount of the congregation*, in the sides of the *north*." The mountain, or hill of GOD, is often alluded to in scripture.

Some *Hindu* astronomers, ashamed of this ridiculous superstructure, endeavour to reconcile the *Puranas* to nature, by supposing that the sun at some remote period, revolved in such parallel of altitude to *Su-meru*, as to afford constant light for the space of fourteen degrees round this point, and constant night for the same space round *Cu-meru*. Thus by placing the north pole on the elevated plains of the lesser *Buchára*, and forcing the sun out of the ecliptick, they explain the alteration, which is supposed to have taken place on the west and east points; whilst the north and south points, as they say, remain unmoveable. This alteration, they tell us, was not perceptible, at least very little, in the countries to the south of *Meru*, but in those to the north of it, the sun appeared to rise in the west and to set in the east. As long as the *Hindus* considered the earth as a *flat table* with the immense conical mountain of *Meru*, rising in the middle, and intercepting the rays of the sun, during part of its diurnal course; the points of east and west must of course have been entirely inverted beyond

Meru. In the first passage I met with, in the *Purānas*, relating to the *sacred isles* in the west, by which we are to understand the *British* islands, *Iceland* and *Fero*, it is positively declared, that they are situated to the east of *Scanda-dwīp*, which is *Scandia*, or *Scandinavia*; accordingly I looked for them in the seas, to the eastward of that famous peninsula, particularly as *PLINY* seems to place there the island of *Elixoia*, supposed by some, to be the abode of the blessed: but my chief pandit warned me, with much earnestness not to be too hasty: that this instance from the *Purānas* was deemed to be the only one, in which the *sacred isles* were asserted to be to the eastward of *Scandia*; and that he would produce numerous passages in which these islands were declared to be to the westward of *Scanda-dwīp*, or in a derivative form *Scandéya*: and that, from numberless particular circumstances, he would prove to my utmost satisfaction, that *Scandéya* was really to the eastward of *Samudrantaraca*, a name by which the *sacred isles* are sometimes called, because they are in the middle of the ocean. As the *Brāhmens* would rather suppose the whole economy of the universe disturbed, than question a single fact related in their sacred books, he then informed me, that this single passage alluded to a remote period, in which the pole of the globe, the course of the sun, were different from what they are now, in consequence of which there was a time, when the sun appeared to the inhabitants of *Scandia*, to rise above the *sacred isles*. But let us return to the terrestrial paradise.

The followers of *BUDDHA* in *Tibet* place the garden of *Eden* at the foot of mount *Meru* toward the south west, and at the source of the *Ganges*. The sacred rivers, according to them, are the *Ganges*, the *Indus*, the *Sampu*, and the *Sitá-gangá*; by which they understand the *Sirr* or *Jaxartes*, which is also called *Sitá-gangá* in the *Purānas*. They have the same number of *beads* of animals, which are disposed in the same manner: and the divines of *Tibet*, and of *India* consider these four animals

animals as the original guardians of the four quarters of the world. In the same manner commentators have considered the four sacred animals mentioned in scripture, namely, the *Man*, the *Bull*, the *Lion*, and the *Eagle*, as the guardians and messengers of the four corners of the world.

The few *Hindus*, who live toward the *Indus*, insist that the lake near *Bámíyan*, is the real and original *Man-sarovara*: and near *Cabul* a little to the north west of *Sá-cárdará*, is a small lake, which they call the lesser *Man-sarovara*, and which corresponds to a similar lake to the south of *Bindu-sarovara*, called in the *Puránas*, the eyes of *Man-sarovara*.

Bráhmens in general understand by *Meru* or *Sū-meru* the north pole, in opposition to numerous passages in the *Puránas*. Their system of geography has reference, in general, to the spot in which they suppose the terrestrial paradise to be, or rather the abode of the Gods, called *Su-meru*, hence we read of countries to the W. N. W. of *Meru*, &c. The immense country of *Curu* is repeatedly declared in the *Puránas*, and by *Bráhmens*, in conversation, to be situated to the north of *Su-meru*. Even in their maps of the *seven dwíps*, *Su-meru* is placed a great way to the south of *Siddhá-puri*, which they uniformly acknowledge to be exactly under the north pole.

Curu, which includes *Russia* and *Siberia*, is divided into two parts, *Uttara-Curu*, or north *Curu*, and south *Curu*. In the *Puránas*, particular notice is taken of the extraordinary length of the days in *Uttara-Curu*: and it is added, that in the island of *Puscara*, which is asserted there to be situated at the furthestmost extremities of the western world, the length of the days is the same as in *Uttara-Curu*. This places *Puscara* under the polar circle, at least under the sensible one: this island will appear, in a future essay, to be *Iceland*. It is further added, in the *Puránas*, that the shores of that immense country,

country, which encompasses what we call the old continent, and the *Atlantick* sea, &c. passes between the islands of *Puscara*, and *Uttara-meru*, or the north pole: indeed the shores, or *Greenland*, tending towards the north east, may have given rise to such an idea. However, this shews plainly, *Uttara-meru*, or north *Meru*, to be different from *Su-meru*. *Meru* signifies an *axis*, and the two extremities of the terrestrial *axis* are called *Uttara-Meru* and *Dacshin-meru*, the northern and southern *Meru*, or pole. The line passing through the centre of the earth and the supposed terrestrial paradise, to which they generally refer in the *Purānas* with respect to bearings, is also *Meru*; and its two extremities, called *Su meru* and *Cu meru*, are only the zenith and nadir points of that abode of the Gods.

The *Musulmans* in the countries adjacent to *Bāmíyan*, insist that ADAM, (whom they call also KEYUMURSH) and EVE, having been driven out of paradise, wandered separately for some time, till they met accidentally at a certain place, where saluting each other with mutual embrace, the place was accordingly called *Bábla*, or, in derivative form, *Báblaca*, or the place of embrace. This is the general opinion of the natives: whilst others, considering that the termination *ac*, or *ach*, signifies *brother*, will have it to imply the place where he embraced his brother; and of course suppose that KEYUMURSH had one. The first etymology is, I believe, countenanced by ABULFIDA.

When *Satan* was ejected, or *kicked*, as they say, out of the garden of *Eden*, where he first lived, he leaped over the mountains, and fell on that spot, where *Cabul* now stands: hence the origin of the well known proverb, that the inhabitants of *Cabul* are truly the offspring of this prince of darkness. Those of *Cabul* do not deny his having been at *Cabul*; but say, he had no offspring, was soon conjured away, and withdrew into the district of *Lamgan*.

It appears from scripture, that ADAM and EVE lived afterwards in the countries to the eastward of *Eden*; for at the eastern entrance of it, GOD placed the angel with the flaming sword. This is also confirmed by the *Purânics*, who place the progenitors of mankind on the mountainous regions, between *Cabul* and the *Ganges*, on the banks of which, in the hills, they shew a place, where he resorted occasionally, for religious purposes. It is frequented by pilgrims, and is called *Swayambhuva-sthân*: I have not been able yet to ascertain its situation, being but lately acquainted with it: but I believe it is situated to the north west of *Sri-Nagar*.

At the entrance of the passes, leading to the place, where I suppose was the garden of *Eden*, and to the eastward of it, the *Hindus* have placed a destroying angel, who generally appears, and is represented like a *Cherub*; I mean GARUD'A, or the *Eagle*, upon whom VISHNU and JUPITER are represented riding. GARUD'A is represented generally like an eagle; but in his compound character, somewhat like the *Cherub*, he is represented like a young man, with the countenance, wings, and talons of the eagle. In scripture, the deity is represented riding upon a *Cherub*, and flying upon the wings of the wind. This is the *Simurgh* of *Persian* romances, who carries the heroes from one extremity of the world to the other. GARUD'A is called the *Vahân** (literally the vehicle) of VISHNU or JUPITER, and he thus answers to the *Cherub* of scripture; for many commentators derive this word from the obsolete root *C'harab* in the *Chaldean* language, a word implicitly synonymous with the *Sanscrit Vahân*.

An accurate translation of the legends relating to GARUD'A, PROMETHEUS, and the building of *Bâmîyan*,

* Hence the *Latin* words *Vebo*, &c. In the southern dialects of *India*, they generally pronounce the letter *b* hard like *g*; thus for *vahân*, they say *vagân*, a waggon: for *mahâ*, great, they say *megâ*, hence the *Greek* word *mega*.

- shall be given separately at the end of this dissertation. The city of *Bámíyan* being represented as the fountain of purity and holiness, it was called with propriety *Pará-Bámíyan* or *Bámíyan*, the pure and holy; for the same reason the district of *Bámíyan* might be called *Pará-dé-sa*, or *Pará-dé-sa*, the pure and holy country. This district is now barren, and without a single tree. The sacred books of the *Hindus*, and of the *Bauddhists*, do, however, declare most positively, that it was otherwise formerly. Tradition informs us also, that the number of inhabitants was at one period so prodigious, that the trees, underwood, grass and plants were destroyed. The vegetable soil being no longer protected, was in the course of ages washed away by the rains: certain it is, that the soil in the valleys is most fertile, and the whole district, such as it is now, is still a most enchanting and delightful spot. The country to the eastward of *Bámíyan*, as far as the *Indus*, is the native country of the vine, and of almost all the fruit trees we have in *Europe*: there they grow spontaneously, and to a great degree of perfection. When the natives find a vine, an apple tree, &c. in the forests, they clear all the wood about it, dig the ground, and by these means, the fruit comes to perfect maturity. When we are told in scripture of *NOAH* cultivating the vine, we may be sure, that it was in its native country, or at least very near it.

Bámíyan, though not mentioned by name in *NONNUS's Dionysiaes**, is well described by him as the abode of the benevolent *BRONGUS*, who lived in *Samach'hes*, or recesses artfully excavated in the mountains. *BRONGUS* is obviously the *BHRĀNGA*, or *BHRĀNGAS* of the *Purānas*, called also *SARASA'LA*, and of whom I shall speak more fully hereafter. *BRONGUS* had two sons, who were highly respected by *DORIADEN*, perhaps the *DIRYODAN* of the *Purānas*. *BHRĀNGA*, or *SARASA'LA*, had also several children, who ascended the throne of

* B. 17, v. 40, &c.

Calingá, after their father had forsaken the world, and withdrawn to *Bámíyan*, to give herself up to contemplation.

Bámíyan appears also to be the town called *Drashtaca* by PTOLEMY; which is derived from the *San scrit* *Drashtaca*, and implies the *stone city*: towns before being only an assemblage of huts. Its distance and bearing from *Cabura*, or *Orthospána*, the present city of *Cabul*, puts it beyond doubt. One of the *San scrit* names of *Cabul*, is *Asa-vana*, and sometimes, by contradistinction, *Urd'h'-As-vana*, or, as it is always pronounced in the spoken dialects, *Urd'h'-A'sbán* or *A'sbána*. The upper *Naulibis*, or *Nilábi*, in PTOLEMY, falls in at *Ghor-bund*, or *Gorasba-van*, in *San scrit*, which appears to be the *Alexandria ad Paropamisum* of the historians of ALEXANDER. It was called *Nilábi*, from its being situated on the banks of the *Niláb*. The immense ridge between *Nilábi* and *Drashtaca*, or *Drashtata*, is properly delineated in PTOLEMY. *Alexandria ad Paropamisum* was near the cave of PROMETHEUS, which is to be seen to this day near the pass of *Sheibar*, between *Ghor-band* and *Bámíyan*. *Orthospána*, or simply *A'sbána*, is mentioned in the *Pentingerian* table. It is called also in *San scrit*, *JAYINI'-DE'VI'-shtán*, or the place of the goddess of victory, and is the *NICÆA* (a word of the same import) of the historians of ALEXANDER. The place where her temple stood, is close to *Cabul*, and is still secretly visited by *Hindu* pilgrims. *JAYINI'-DE'VI'* and *ASA-DE'VI'* are the same deity: the latter signifies the goddess, who grants the object of our *asa*, or *wishes*. She is called also *ASYA'CA* in a derivative form, and the place is called by the *Musulmans*, *A'shtán-árfán*, who have thus altered the old name into an *Arabick* denomination of the same import nearly; for it signifies, he who knows our *ashee*, or *wishes*. There is the tomb of a saint, who now officiates in the room of *ASA-DE'VI'*, and grants to devout *Musulmans* the object of their wishes.

The NICEA of the historians of ALEXANDER, is probably the NICEA of NONNUS*, which he calls also *Aszacia*, probably for *Asácia* or *Afzyácia*: for, according to the *Puránas*, JAYINI'-DE'VI', or the nymph NICEA, was also called *Afzyáca*; *Afzáca* would be as grammatical; and the town of *Afzáca* or *Afzyáca*, in a derivative form, would be *Afzyáceyá* or *Afzáceyá*, or, according to the idiom of the Greek language, *Afzyacia* and *Asacia*.

The *Parapomisean* hills, or at least part of them, are called also *Parnafus*, and *Parnessus*, by DIONYSIUS PERIEGETES, PRISCIAN, and F. AVIENUS: this last appellation has been supposed to be only a corruption, or contraction from the first. But the difference is so great, that, in my humble opinion, these are really two different denominations of the same mountainous tract, at least, of part of it. These mountains are in general called *Dévanica* in the *Hindu* sacred books, because they were full of *Dévas* or gods, and holy *Rishis* and *Bráhmens*, who are emphatically called the gods of the earth, or *Bhu-dévas*. They lived, according to the *Puránas*, in bowers or huts, called *Parháśálas* or *Parháśas*, because they were made of leaves, for such is the *Sanscrit* expression, whilst we should say, built with twigs and branches. Indeed the leaves are the most conspicuous part, because in *India*, when dry, they generally adhere still to the boughs they grew upon. The most celebrated amongst these *Parháśas* was that of the famous ATRI, whose history is closely connected with that of the *British* islands, and other western regions. It was situated on an insulated hill, called in the *Puránas*, *Meru*, and by the *Greeks*, *Meros*. It is supposed by the *Hindus* to be a splinter from the larger *Meru*; and that the Gods come and reside upon it occasionally. Its situation was ascertained by the late Mr. FOSTER, by my friend MIRZA-MOGUL BEG, and by P. MONTSERRAT, who accompanied the emperor ACBAR in his expedition to *Cabul* in the year 1581. It

* B. 16 in fine.

is called to this day *Mer-cob* and *Mar-cob*, or the mountain of *Mer* or *Meru*; for in the spoken dialects, they often say *Mer* for *Meru*, and in the *Treloci-derpana*, we constantly read *Mer* for *Meru*. It is on the road between *Peishower* and *Jalálábád*; and about twenty-four miles from the latter, on the banks of the *Landi Sindh* or *Cameh* river. It is now a bare rock, the river which formerly ran to the south of it, having carried away all the earth from the lower parts; and the earth above being no longer supported, was also washed away by the rains. From its dismal appearance, it was called *Bé-dowlat* by the emperor HUMA'YUN. It looks like a single stone, without any fissure. It extends from the west to the east. It rises abruptly from the plain in which it stands; from the bottom to the top; P. MONSERRAT reckons about 2000 feet, and it is about six furlongs in length: its distance from the nearest hill is about three miles. The ground to the south and east is marshy, being the old bed of the river: to the west are seen several triangular entrances into caves. To the east at the distance of three miles, is a wretched village, called *Bissour* or *Bissowly* (*Bussowul* in Major RENNELL's map) which about two hundred years ago was a pretty large town. To the west are the villages of *Ambárcáná* and *Battercôte*, close to which NA'DIR-SHA'H encamped; and as there is no other encamping ground near this place for a numerous army, we may safely conclude this to be the very spot on which ALEXANDER encamped near the town of *Nysa*, which extended all round the mountain. Besides, his camp was near the sepulchres of the inhabitants, which were to the west of the mountain.

On this mountain, it is declared in the *Puránas*, was the *Parhásálá*, or *Parhása*, of ATRI: there they shewed formerly a cave, in which he used to retire occasionally.

- The word *Parhá* signifies the leaf of a tree, a feather, and a wing. Its derivative *Parhása*, signifies any thing made of leaves; such as baskets, hats, pennis, coops, huts, &c. it signifies also any thing that is radiant; hence the learned affirm, that the word *Parhá* was formerly synonymous with *Giráa*, or ray, though now never found in that sense. In the north-west parts of *India*, in the *Pastoo* language, it is pronounced *Panna* and *Pannai* in the plural: hence I conceive the word *Parna* or *Panna*, to be the root of the *Greek* and *Latin* words *Pinna*; and of the *Saxon* and *English* words *pen*, *fin*, *pin*, *penn*, and also of the name of that plant, with pinnated leaves, called fern in *English*, and in *Greek* *Pteris*, the pinnated or winged: *Parnica* is another regular derivative, some times used in composition, as well as *Parháca*; and, as in the first ages, mankind either lived in *Gopas*, caves, or in huts built of branches and leaves, which last were their summer habitations, these huts were *Parhásas*, or *Parhicas*, and *Parnacas*, *Fornaces* and *Fornices*. The *Greek* words *Πορνειον*, *Πορνεια*, and *Πορν*, seem to be derived from *Parhéniam*, a regular *Sanscrit* derivative, though never used. Prostitutes were thus called in *Greek* for the same reason that fornication is derived from *fornix*.

Mount *Parnassus* in *Greece* was probably thus denominated, from a *Parhása*, which constituted the ancient temple, according to *PAUSANIAS*: it was made of branches and leaves; but as the word *Parhása* signifies also any thing made of feathers or wings, others insisted, that formerly it consisted of the wings of certain bees cemented together with wax.

In the most secret recess of the temple of *VESTA* at *Rome*, there was a *Parhása* or *Parhása* fenced with leaves and branches, and it was called *Penus* according to *FESTUS*: as it was uncovered, it was really, what we call in *English*, a penn or fence: and, indeed, the word *Parhása*, properly pronounced, sounds very much like *Penus*.

In the same manner, the word *Pátrá* a leaf, or *Páttá*, as it is pronounced in the spoken dialects, has found its way into *Latin*, in the words *Patera*, *Patina*, *Patena*, and *Petafus*: this last being used to signify equally the covering of the head and of a house, which were originally made of leaves and branches, and to this day, in *India*, by the poorer sort of people. The *Pateras* called *Pátrá* in *Sanscrit*, or cups used in sacrifices, are often made of a large leaf, folded up, and kept together with four wooden pins; utensils made of leaves are still used by the *Hindus* at their meals, and the *Greek* word *Petalon* is obviously derived from it.

The word *Parhása*, or *Parháfas*, was not unknown in the west, at some early period: but as it belonged to the language of the gods, there was another word prevalent in the vulgar or profane languages, and used in its room. This word is *Larna* or *Lar*, which is found to this day in the *Galic* language, and that of the *Cymri*, as well as in *Greek*; in which last however it appears to be obsolete: but either in its original form, or through its derivatives, it is susceptible of the various acceptations of the word *Parnása*; and this accounts for *Larnassus* being also the name of mount *Parnassus*.

Larcos, *Larnax* signified a basket of twigs, and a chest: *Lariethos* any covering of bark. In *Greek* *Laura*, *Lauran*, signify, a house, an hermitage; also an assemblage of such houses. *Lar*, in *Latin*, is a house in *Galic*; and in the dialect of the *Cymri*, the ground floor. The original name seems to have been *Larna*, which was pronounced in different countries, *Lar* and *Lan*, like the *Sanscrit* word *Parna*, of which, by dropping either the *r* or the *n*, they make either *Para*, or *Pana*, in various dialects of *India*. Hence *Llan* in *Galic* signifies a house: *Llan* in the dialects of the *Cymri*, an inclosure. Thus, were the household gods called indifferently *LARES* and *PENATES*.

The words *Lar*, *Larna*, *Parná* and *Pátá* were once used indifferently in the west, to signify a pen or coop: and swine confined in them for the purpose of fattening, were called from that circumstance *Larioni*, and their flesh, *Laridum*, *Perna* and *Petafio*.

The word *Lar* or *Láura*, is still used in *Galic* (*Loar* or *Lombar*), and in the dialect of the *Cymri*, *Llueru* to signify resplendence, and probably from the last are derived the words *glare*, *clear*, &c. It is applied in *Greek* to resplendent metals, as gold and silver; also to the *Laurus*, or laurel tree, sacred to the author of resplendence. *Daphne*, another name for the *Laurus*, is derived from the *San scrit* *Tapana*, a name of the Sun, as the author of heat: for that place in *Egypt**, called *Tapana* in the *Puránas*, is called *Taphnai*; by the seventy interpreters; and *Daphana* or *Daphne*, by *Greek* and *Roman* authors.

Though these mountains were in general called *Parnassian*, yet the appellation of *Parnassus* or *Parhása*, belonged properly to that single mountain, on which stood the *Parháśila*, or *Parháśa*, of *ATRI* or *IDRIS*; this was, I suppose, his summer habitation, for he had below a *Samach'b*, in which, it is said, he lived occasionally.

It is declared in the *Puránas*, that when *DEVA-NAHUSHA*, always pronounced *DEO-NAUSH* in conversation, and in the vulgar dialects and obviously the *DIONYSIUS* of the *Greeks*, conquered the world, he visited the seat of his grand ancestor *ATRI* on the lesser *Meru*; and being uneasy to see it thus neglected; he sent for *VISVA-CARMA*, the chief engineer of the gods, and ordered him to build on the spot a superb city, which he called after his own name *Déva-Nabusha-nagari*, which is accurately rendered *Dionysopolis* in *Greek*.

* *Asiatick Researches*, vol. III. p. 383.

It is called also simply *Nabusham*, *Nabushá* and *Naushá*, from which the *Greeks* made *Nysa*: and, as the word *Nabushá* is pronounced *Nagush* in several dialects of *India*, particularly in the *Deekan*; we find it also called *Nagaz*, as in the life of *Amir TIMUR*: but it is not to be confounded with *Nughz* in the *Ayeen Akbery*; the true name of which, is *Bughz* or *Bughzán*, the capital city of the district of *Iryáb* near *Cabul*. *Nabushá* is better known in *Hindustan* by the emphatical appellation of *Déwá-Nagari*, or the divine city. It was called also, but within the limits of that country only, *Nagára* or the city.

Since the destruction of the original city, the capital of that district, whatever it was, went also by the name of *Nagara*, which was successively applied to *Adinagara* and to *Jellálábád*.

The district of *Nagara* is called, in the *Ayeen-Akbery* and by the natives to this day, *Nekier-hur*, for *Nagar-wára*, or the home district of *Nagara*.

Not a single vestige remains now of the ancient *Naushá* or *Nysa*; but the stony base of *Meru*, has resisted the ravages of time, and the corrosions of the river, which flowed formerly to the south of it.

The Sun and *DIONYSIUS* were worshipped there, and *DEVI*, or the Earth, had a cave sacred to her.

There is a striking similarity between the *Grecian Parnafus* and this mountain. The original temple at both places was an humble *Parháfa*: at both places the Sun, *DIONYSIUS*, and the Earth were worshipped. Mount *Parnafus* in *Greece* was full of *Samach'bes* also. It had two summits, one of which was called *Nysa*, as well as the adjacent city; and the other *Cyrrha* or

• *Cyrrban* in the oblique case: this was sacred to the Sun. The words *Cyrrba* and *Kirros* seem to be derived from the *Sanſcrit* *Ciraha*, which implies irradiation and reſplendence. The moſt ancient oracle, and place of worſhip at *Delphos*, was that of the earth, in a cave, which was called *Delphi*; an obſolete *Greek* word, ſynonymous with *yon*i in *Sanſcrit*: for it is the opinion of devout *Hindus*, that caves are the ſymbol of the ſacred *yon*i: this opinion prevailed alſo in the weſt; for perforations and clefts in ſtones and rocks were called *Cunni-Diaboli* by the firſt *Chriſtians*, who always beſtowed the appellation of devils on the deities of the heathens. Perforated ſtones are not uncommon in *India*; and devout people paſs through them, when the opening will admit of it, in order to be regenerated. If the hole be too ſmall, they put either the hand or foot through it, and with a ſufficient degree of faith, it answers nearly the ſame purpoſe. One of the ſeven wonders of the peak in *Derbyſhire*, is called by a coarſer name ſtill, but very improperly; for this wonderful cave, or at leaſt one very much like it, in the *Sacred-iſles*, and particularly noticed in the *Puránas*, is declared to be the ſacred *yon*i. The cleft called *Gubya-ſthán* in *Nepál*, answers fully and literally to the coarſe appellation beſtowed upon the other in *Derbyſhire* by the vulgar, and is moſt devoutly worſhipped by numerous pilgrims from all parts of *India*.

According to the opinion of my learned friends here, it is probable, that whenever *puja* was performed in honour of *PRĪTHVĪ*, or the *Earth*, the navel of *VISHNU*, or ſacred *umbilicus* of white marbles kept at *Delphos*, in the ſanctuary of the temple, and carefully wrapt up in cloth, was placed in the cave of *Delphi*. By the navel of *VISHNU* the *Hindus* underſtand the *Os Tinca**.

From the ſimilarity between the *Parháſa* of *India*,

and that of *Greece*, it is natural to suppose, that the rites and ceremonies, were carried from the more ancient, to the modern one: the *Indian Parhása* is evidently the more ancient: for when DEUCALION went into *Greece*, DIONYSIUS and APOLLO were not worshipped on mount *Parnafus*: he found there only the oracle of THEMIS. AS DEUCALION was sovereign of the country, in which the *Indian Parnafus* is situated, it is, in my humble opinion, highly probable, that he carried into *Greece*, the worship of the deities of his native country, and more particularly that of DIONYSIUS; though I must confess, that it is positively asserted in the *Puránas*, that DEVANAHUSHA visited the countries in the west; and there built cities called after his own name: he gave also his name to rivers, and particularly to the *Damibe* or *Ister*, which, according to the *Puránas*, should be spelled *Tyster*. His route is thus described in the *Puránas*: he first descended from the elevated plains of little *Bokhara* with a numerous army, and invaded the countries of *Samarcand*, *Báblac*, and *Cábul*, which were then inhabited by the *Sacas* and *Sacasenas*: he conquered afterwards *Iran*, *Egypt*, and *Ethiopia*; and proceeding afterwards through the *dwíp* of *Varáha*, or *Europe*; he conquered *Chandra-dwíp*, or the *British* islands: he went thence into *Curu*, which includes the northern parts of *Europe*, and the whole of *Siberia*: having conquered *China*, the countries to the south of it, and *India*, he returned to the plains of *Meru*, through the pass of *Hardwar*.

The *Greeks* supposed that mount *Parnassus* was the favourite abode of the *Muses*. The *Hindus* have not limited their residence to any particular spot: but as the *SUN* is their leader, they are supposed to accompany him.

They are called *Rasa* in *Sanfcrít*, in which language this word signifies juice in general, but is more particularly understood of the honied juice of flowers: it implies also any thing which we particularly delight in.

There

There are nine of them, divided into three classes; and this accounts for the *Greeks* supposing that there were, originally, but three muses.

These three classes relate to love, war and religion.

First Class { 1 *Shringará* adorned with jewels: called also *Shuchí* neat; and *Ujwalá* shining white.
2 *Háśyá*, *Hásá*, *Hasá*; all implying laughter.
3 *Caraná*, *Carúnyá*, *Graná*, *Crapá*, *Anucampá*, *Anucrośhá*, all implying a merciful disposition, and tender pity.

Second Class { 4 *Raudrá* and *Ugrá*, grief and rage accompanied with tears: despair.
5 *Virá* or *Utswabá-vardaná*: heroick: inspiring with courage.
6 *Bhayánacá*, *Bhayancará*, *Pratibhayá*, *Bhairava*, *Bhíśhaná*, *Dáruhá*, *Bhíśhmá*, or *Bhimá*, *Ghorá*; all these names imply, fear, horror, hardness of heart, reciprocal dread, &c.

Third Class { 7 *Vibhatsá* or *Vicratá*; trembling with fear at the sight of scenes of cruelty, or at the recital of heavy misfortunes.
8 *Adbhutá* or *Viśmayá*, *Chitrá* *Aścharyá*: wonder and admiration.
9 *Shantá* is when we have effectually extinguished our senses.

Vibhatsá, and *Adbhutá* relate to that state, in which are virtuous people; who, without renouncing the world, enjoy its lawful pleasures; cautiously avoiding vice and guiltiness. *Shantá* is adapted to the state of a person, who, wishing to be reunited to the Supreme Being, considers virtue in the light

light of vice, because it implies attachment to the world. This is seldom used, hence it is, that many reckon only eight *Rasas* or Muses. Worldly, or common singers are forbidden the use of this, and even according to some, that of the seventh and eighth.

THE ancients, according to MACROBIUS, entertained nearly the same idea, with respect to the Muses. Divines, says he * reckon nine Muses, eight of which answer to the musical sounds of the eight sphaeres: the ninth, which is the most perfect and sublime, they consider as an harmonical concord resulting from the eight former. MACROBIUS insists that this idea is as ancient as HESIOD. The *Hindus* likewise consider *Shantá* as resulting from the simultaneous cadence and united powers of the others: and as *Shantá* is never used in worldly concerns, they often reckon eight *Rasas* or Muses only. The nine *Rasas* are represented as beautiful damsels, with peculiar attributes and dresses.

PIERUS the son of MAGNES, whose great-grandfather was DEUCALION, introduced into *Greece* the nine Muses: and the old uncouth music of the *Greeks*, which consisted only of four Muses, was laid aside, it seems; but not without violent struggles on the part of the adherents of the old RHYTHMICA.

DEUCALION is called CA'LA-YAVANA in the *Puranas*, but CA'LYU'N and CA'LJU'N in conversation, and in the vulgar dialects. Though acknowledged of divine extraction, and of course entitled to the epithet of DE'VA; it is never bestowed on him, because he presumed to oppose CRISHNA: and, indeed, he was very near overpowering him. But, as

* MACROB. in somn. scip. lib. 2º, c. 3º, p. 88.

his descendants gave him his right as to the title of DE'VA, and decreed divine honours to be paid to him, we shall henceforth call him DEVA-CA'LA-YAVANA, or, according to the vulgar mode of pronouncing this compound word, DE'o-CA'L'-YUN, which sounds exactly like DEUCALION in *Greek*.

His father was the famous GARGA, whose story is thus related in the *Bhavishya-puraná*. SADA'-SIVA-MAHA'-DE'VA, is a great penitent (*Yogi*): he continually walks in the path of knowledge: having dedicated himself to the service of VISNU (here is understood the supreme being in the character of VISHNU), he was constantly thinking on him. They, who devote themselves to the worship of VISHNU, have no occasion to worship the other gods: for there is no god like VISHNU, who is the original soul, and the ancient of days. Whoever devotes himself to him, obtains a seat at the most excellent feet*, he has no beginning, and he never dies: he is pure and incapable of decay: he bestows knowledge, and everlasting bliss: hence he is particularly to be worshipped. MAHA'-DE'VA well knowing that VAICANT'HA (Vishnu) was to be born of the *Vrishnis* and *Andhacas*, said, I shall be his *Purohita* (or officiating priest): and he was born of woman, in the character of GARGA: as soon as CRISHNA was born, GARGA acted as his *Purohita*: hence he is called GARGA'CHA'RYA: he gives *Urdha* (command over lust), and, though concealed under a mortal form, he is really MAHA'-DE'VA. GARGA is positively asserted here to be MAHA'-DE'VA himself, who is called also PRAMAT'HE'SA or the lord of the five senses or servants: because they are to be kept in due subjection to reason. Hence

* This expression is still used at the court of the great LAMA, who is an incarnation of VISHNU.

the western mythologists gave out some, that D'Eo-CALY'UN was the son of JUPITER, others of PROMETHEUS. GARGA was a famous astronomer, being MAHA'-DE'VA himself; and the same is asserted of PROMETHEUS, who generally lived in *Scythia*, in which is situated the peak of *Caliasa* the abode of MAHA'-DE'VA. Lastly, PROMETHEUS is said to be the son of JAPET, the JYA-PATI of the *Hindus*; and it is very probable, as we have seen in a former essay, that JYA-PATI was an incarnation of MAHA'-DE'VA, or MAHA'-DEV'A himself. The *Greek* mythologists were little acquainted with the numberless incarnations found in the *Purānas*, but suppose the *Avātaras* and *Avantaras* to be the offspring of the parent deity, according to the usual course of nature.

THE history of DEO-CA'L-YU'N is thus related in a well-known poem called *Hari Vansa*. GARGA was the spiritual guide of the *Vrishnis* and *Andhacas*: at an early period he became *Brahmachāri*, and had such command over himself, that he never longed after woman. One day, before a numerous and respectable assembly, king SHALA reviled him, and asserted that his continence proceeded merely from incapacity. The sage irritated at this reflection, withdrew from the world, and performed religious austerities for twelve years, during which time he subsisted entirely on filings of iron. MAHA'-DE'VA being pleased granted his boon, that a son should be born unto him, who would reunite in himself all the energy of the *Vrishnis* and *Andhacas*; and that they should never prevail against him. The sovereign king of the *Yavanas*, having no children, and hearing of this boon, went to GARGA; and after many entreaties prevailed on the sage to accompany him into his kingdom: there he brought him into a *Gōsha*, or hut made of leaves and branches, and

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placed.

placed round him many shepherdesses; the holy man fixed his choice on one of them called *Gopālī-apsarasa*: she retained his seed against her will, and in due time was delivered of a boy at *Gazni*. Here I shall observe, that this *apsarasa*, or celestial nymph, having misbehaved at the court of *INDRA*, was doomed to live on earth, for a certain time, in the character of a *Gopālī* or shepherdess. This punishment is often inflicted on them: and whilst on earth they generally prostitute themselves to the handsomest men; but always destroy the embryo as soon as possible. In this however the *Gopālī-apsarasa* did not succeed, because *GARGA* was of a superior nature, being an incarnation of *MAHA'DE'VA*. The king of the *Yavanas* brought up the child in his own place, and adopted him for his son: after his death *CA'LA-YAVANAD* succeeded to the throne. He longed after the strife of war, and having asked the most respectable *Bráhmens*; which were the most powerful tribes in the country; *NA'RADA* pointed out to him the *Vṛṣhnis* and *Andhacus*, *CAL-YUN* being joined by the *Sácas*, *Daradas*, *Paradús*, *Tangáns*, *Chafas*, and all the petty tribes of robbers, inhabiting the skirts of the snowy mountains, advanced against *Mat'hurá*. *CRISHNA* having heard of *MAHA'-DEVA*'s boon, was greatly alarmed; and attempted to enter into a negociation with *CAL-YUN*, but his overtures were rejected. He then convened his friends and relations; and having declared to them in a few words, the critical situation they were in; represented to them that they had to time to lose, advised them to leave *Mat'hurá*, and retire with him to *Dwaraca* in *Gurjur-désa* (near point *Jigal*). He informed them also that *JARA'-SANDHA* (the most powerful prince in *India* at that time, and whose daughter had married (*CANSA*) at the head of the confederate kings, who had resolved to revenge the death of *CANSA*, was advancing with an immense

mense army. When CRISHNA had seen his friends and relations safe at *Dwaraca*; he returned alone to *Math'hurá*; and presented himself before CA'L-YUN, who rising from his seat in a great rage, attempted to seize him. CRISHNA fled, and CA'L-YUN pursued him as far as the cave in which slept the famous MUCHU-CUNDA. It is situated in the *Raivata* mountains, which extend from *Guzrát* toward *Ajmér*. MUCHU-CUNDA was the son of king MANDATA, who lived in the *Críta-yuga* or golden-age: having defeated and humbled the *Daityas*, the gods, out of gratitude, waited on him requesting him to ask a boon. The warrior, who was exhausted with fatigue, answered he wanted nothing but sleep, and wished he might sleep till the arrival of CRISHNA, and that, whosoever should presume to awake him, might be destroyed by the fire of his eye. CRISHNA, who knew that such a boon had been granted to MUCHU-CUNDA, boldly entered the gloomy cave, and placing himself toward the head of MUCHU-CUNDA, waited in silence the arrival of CA'L-YUN. He soon arrived, and seeing a man asleep, struck him several times to awake him. MUCHU-CUNDA opening his eyes, a flame darted from them, which reduced CA'LA-YAVANA to ashes. CRISHNA went immediately to *Dwaraca*, and gathering his forces fell upon the *Yavans*, put the greatest part of them to the sword, and the rest fled to their native country.

THE conclusion of the drama is certainly forced, ridiculous, and unnatural: it is more probable, that DEO-CAL-YUN seeing his army defeated, fled to his native country: and that, through shame and vexation, he withdrew with his family and adherents to *Greece*. This conjecture is supported by the testimony of *Greek* historians, who uniformly assert, that he reigned, and ultimately died in *Greece*. They

are not, however, agreed about his origin, some saying he was a *Scythian*, and others, that he was a *Syrian*.

ANY catastrophe, general or partial, either by fire, sword, or water, is called in *Sancrit Pralaya*: but this word in the spoken dialects is generally understood of destruction by water, and of course the *Greeks* understood it in that light; when speaking of the dreadful catastrophe, which befel the *Yavanas* and their leader DEO-CAL-YUN on the borders of *India*; and I cannot help observing, that *Greece* was a most unfavourable spot for a partial flood.

THE *Yavana*, originally worshipped the sacred YONI alone, which they considered as the sole author of their being; but learned pandits suppose, that, when we read in the above legend, that the king of the *Yavanas* adopted for his son an *Avántara* of MAHA-DEV'A; it implies also, that himself with his subjects admitted the worship of the *Linga* or *Phallus*. Be this as it may, PROMETHEUS, DEUCALION, and his mother JODAIMIA, had altars erected to them in *Greece*.

Garga-sthán or the place of GARGA, where he lived amongst cowherds, is fourteen coss from *Cabul* according to some pilgrims. I have not been able yet to ascertain its situation, with sufficient accuracy to insert it in the map. It is situated in the mountains, which, from this circumstance, are called *Garga-sthan*, and by *Persian* authors *Gherghistan*.

It was asserted in the *Cabirian* mysteries, that PROMETHEUS or PRAMATHESA had a son called ÆTNEUS.* PAUSANIAS mentions his name only;

* PAUSAN. *Bæotic. lib. 9. p. 300.*

and says he could not divulge, what he had heard concerning these deities in the sacred recesses of the temple, without being guilty of a sacrilege. The name of this inferior deity is derived from the *Sanscrit* AITNE'SWARA or AITNE'SA for AITNA-ISA. This god I do not find mentioned in the *Puránas*; but his consort AITNI'-DE'VI, or the goddess AITNI', is repeatedly noticed in these sacred books. She resided in an island, the dimensions of which are declared to be thirty *yojanas*, or about 150 miles, an expression rather obscure. There on a high mountain vomiting fire, was the *sthán*, or place of the goddess AITNI': indeed the whole island is called *Aitní-sthán*, and has no other name in the *Puránas*. This obviously is Mount *Ætna*, and the island of *Sicily*, which was uninhabited, according to the *Pauranics*, on account of the dreadful eruptions of the mountain; the crater of which was considered as sacred according to PAUSANIAS.* The island (or tract of islands) of LIPARA is mentioned also in the *Puránas* in which it is declared, that the appellation of LAYA-PARA is derived from PARA-LAYA; because they who threw themselves into the volcano, obtained *Laya*, or reunion to the supreme being. It is said to be ten *yojanas* or fifty miles distant from *Aitní-sthán* or *Sicily*.

AITNI'-DE'VI is obviously the nymph called *Ætna* by the *Sicilians*: she was the mother of the PALICI, whose father was JUPITER with the title of ADRAMUS, supposed with good reason by the learned to be the same with ther *Babylonian* ADHAM-MELECH, whom I mentioned in a former essay on *Semiramis*, ADRAMUS is obviously derived from the *Sanscrit* ADHARME'SWARA or ADHARME'SA: IS'A, IS'WARA in *Sanscrit*; MELECH in *Chaldean*, are synonymous; and the lord ADHARMA is an epithet of SIVA.

* PAUSAN LACON. p. 107.

HAVING discovered some years ago, that PROMETHEUS, as a title of SIVA, was not unknown to learned pandits, I immediately enquired after his cave or den, and related to my learned friends the legend of PROMETHEUS and the eagle. They shrunk back with horror at this horrid blasphemy, and declared that none but impious *Yavanas* could ever suppose, that the deity could be fastened to a rock, and have its entrails devoured by an eagle. I was forced to drop my enquiries on a subject so disagreeable: but on considering lately, that the den was improperly called the cave of PROMETHEUS; and that it should be rather called the place of the eagle; I enquired after *Garúda-sthán*, and was perfectly understood. They soon pointed it out to me in the *Puránas* and other sacred books, such as the *Hari-vansa*, the *Cásmir-mahatmya*, &c. and I immediately perceived that it was situated in the vicinity of *Cabul*, where the historians of ALEXANDER have placed it, and declare, that this hero had the curiosity to go and see it. I have discovered since a passage in a section of the *Scanda-purána*, called the *Himáchel-c'handa*; in which it is declared that the *sthán* or place of GARUD'A, is near *Vámiyan*. It is related in the *Hari-vansa*, that, when CHRISHNA had occasion for GARUD'A's assistance, to clear up the country round *Dwaraca*, which abounded with savages, ferocious animals, and noxious reptiles, GARUD'A had then his place or *sthán* on the summit of a high peak of difficult access, in the country of the *Yavanas*, to the westward of the *Indus*; where he used to carry men and animals he could lay hold of, in order to devour them at his leisure. Unfortunately no further particulars could be collected from the *Hindu* sacred books, when a learned pandit recollecting, that as from an early period that country had been in the possession of the followers of BUD'D'HA, some light on this subject might naturally be expected

expected from their books; after many entreaties, I prevailed on him to consult the learned of that sect: this he promised to do on condition that I would not make a practice of it. He found the *Bauddhists* equally averse to such communication. To be short, he produced at last a singular book called the *Budha-dhârmacharya Sindhu*; in which we found the legends relating to PROMETHEUS and the eagle, with many other interesting particulars. I beg leave here to retract what I said in a former essay on *Egypt* concerning the followers of BUDD'HA*. There are many learned men among them, and they have many valuable books: it appears also that they have *Vêdas* and *Purânas* of their own. A comparison of them with those of the *Brahmenical* tribes would prove very interesting, and of the greatest importance. It would prove at first a very arduous undertaking, as it would be very difficult to gain the confidence of both parties.

GARUD'A or the *Eagle*, called also GARUTMAT or the *winged*, lived in his own *Van* or forest, called from him *Garutmat-van* and *Garutman-van*. *Bâ-mîyan* and the *Mosaical Eden* were situated in the forest of GARUTMAN: and it is remarkable, that the *Parsis*, according to ANQUETIL DU PERRON, call the abode of the supreme being and of the blessed, GOROTMAN, which they represent as a terrestrial paradise. It is near *Goracsha-van* or *Gorucban*, as it is pronounced in the vulgar dialects; but by *Musulmans* it is called *Goor-ban* and *Goor-band*. There he flew over mountains, through forests, searching whom he might devour, tearing up their bodies, and devouring their entrails. For VISHNU had given him this boon, saying, you may devour my enemies, and those of SIVA; those who are guilty of constant uncleanness: the *Nasticas*, or unbelievers; those who deal in iniquity, the ungrate-

* Asiatic Researches, vol. iii, p. 412.

ful, those who speak ill of their spiritual guides, or otherwise behave ill to them, or defile their beds: all these you may devour: but do not touch a *Bráhmén*, whatever be his guilt; should you presume to devour him, he will prove a scorching flame in your throat; spare also my servants, and those of MAHA'-DE'VA, and the righteous in general: for if you should transgress, your strength and power will be thereby greatly diminished. VISHNU having thus spoken, disappeared. Long after GARUD'A spying a *Bráhmén* dressed like a *Shabara*, or mountaineer, laid hold of him, and attempted to devour him: but he soon felt a scorching flame in his throat, which forced him to disgorge the priest alive. Some time after he met with a servant of MAHA'-DE'VA, who was rambling stark naked through the woods, and looked like an idiot: GARUD'A sprung upon him; but found his body as hard as the thunder bolt. When GARUD'A saw this, he carried his prey to his den, where he bound him, that he might devour him at his leisure: but he never could make the least impression upon him. The unfortunate prisoner called on MAHA'-DE'VA, who sent HARAJA to rescue him. HARAJA or HARA-CULA requested GARUD'A to release him, saying, you are the chief of birds, this man is a favorite of MAHA'-DE'VA, you also are a favorite of his, set him at liberty, or come and fight me. For a whole month they fought, when GARUD'A's strength failed him: he saw then, that his prisoner was a servant of MAHA'-DE'VA, and recalled to his mind, the words of VISHNU. He then set him at liberty, observing to HARAJA, that in his life he never found so tough a subject.

THE situation of *Goracsha-van* is well known to the *Hindus*; and I have seen many pilgrims, who have visited this singular spot. Near it, in the mountains, according to the sacred books, is situated the forest and place of GARUD'A: there it was visited
by

by ALEXANDER and his *Macedonians*. I was not fortunate enough to meet with pilgrims, who had seen this place, which I understand, is seldom visited on account of its being difficult of access; and because few and trifling indulgences only are to be obtained there. They generally place it near the pass of *Shabara*, which was thus denominated from the *Shabars*, whom GARUD'A used to devour. The word *Shabara* is interpreted in glossaries, *Sháli-vastra*, and *Vastracára*, and signifies such uncivilized race of men, as make, and wear for garments, a sort of matting made of grass and roots. The *Shabara*, whom GARUD'A confined in his cave, was a servant of MAHA'-DE'VA: a synonymous term for which, is also PRAMATHAH or PRAMATHAS, whom the *Greeks* have confounded with PROMETHEUS, obviously derived from the two *Sanscrit* words PRAMAT'HA-IS'A, which coalescing according to the rules of grammar, form PRAMAT'HE'S'A. This supposed adventure is posterior to CRISHNA: for in his time GARUD'A was in the full enjoyment of his strength and power.

GARUD'A is often represented as a *Griffin*, and the native country of the *Griffins* is placed by western mythologists in *Bactria*: this is also countenanced in the *Puránas*, and we read in the *Himáchel-c'hand*, that GARUD'A and his brother ARUNA, who now drives the chariot of the SUN, went into *Bactria* and made *Tapasya*, at a place called *Vimalamhu*, close to *Vámíyan*, and near the oracle of UMA or UMASA, which is a name of the EARTH, considered as the *Magna-mater*, and, perhaps from it, is derived the *Latin* word *Humus*. There he married a beautiful woman; the snakes alarmed at his marriage, waged war against him: but they were defeated, one only escaping the general slaughter: who falling at the feet of GARUD'A, said, devour

me not, spare me, *ó!* *Nágántaca*, or destroyer of snakes. GARUD'A granted his request, and placed him by way of ornament round his neck.

Bactria was also the native country of the *Sacas* and *Sacasenas*; and it is remarkable, that wherever the *Sacas* went, there we find also the *Griffins*.

It appears, that at an early period some emigration took place from *Bactria* into *Colchis*, the inhabitants of which country were called *Indi* and *Sindi*. There was a powerful tribe called *Augoi*, *Augôn*, *Abasgoi* and *Abasgôn*, which appear to be the same with the present *Afghans* or *Augans*, called *Aspagonæ* by PLINY. These carried with them their original legends, such as the story of PROMETHEUS and the eagle; and in the course of time they even supposed, that the events they alluded to, did really happen in the country they were now inhabiting. According to the *Purânas*, the *Sacas* and *Sacasenas*, leaving *Bactria*, went into the *dwîp* of *Placsha*, or *Asia* the lesser, which was afterwards denominated from them the *dwîp* of *Sâca*. The appellation of *Placsha* or *Placya* in the vulgar dialects, was not entirely lost in the time of HERODOTUS, who takes particular notice of a place called *Placia*, the inhabitants of which, and of the adjacent country, still retained the old language. As the word *Placsha* is sometimes written *Lacsha*, I suspect that the *Legzi* or *Lesgi*, formerly a powerful nation in *Colchis*, were the remains of the ancient inhabitants of the *dwîp* of *Lacsha* or *Placsha*: for they lived formerly in the more southern parts of lesser *Asia*, toward *Syria*, and were the same with the *Leuco-Syri*, perhaps for *Lesgo-Syri*, or *Lachya-Syri*.

DEO-CAL-YUN, the adopted son of the lord paramount of the *Yavanas*, lived in the country of the
Cámboj,

Cámboj, to the westward of the *Indus*. This is the same country, which, according to the learned, is now called by contraction *Coj*. As the vowel is very short, and of course obscure, every one of the five vowels is indifferently used; thus we have *Caj*, *Kij*, or *Kidge*, &c. In the same manner the name of the country called *Camis*, *Camus*, and *Cambis*, to the south of the *Caspian* sea, is often written and pronounced *Caus*. It includes all that mountainous tract, which extends from *Gazni* to the sea, and comprehended the countries known to the *Greeks* by the names of *Arachosia* and *Gedrosia*, written also *Kedrosia*; indeed, these two denominations signify the same thing, the mountains of *Coj*: for *Roh* in the language of the *Balloches* signifies a mountain, and may be placed, either before or after, thus *Coj-Roh*, *Kej-Roh* or *Kedrosia*; *Roh-Coj* or *Arachosia*. When they speak of the country in general, they say *Coj* only: and when they use the word *Roh* it implies the mountains of *Coj*. The appellation of *Coj* is now restricted to that part which is included in the province of *Macrán* or *Mackrán*, called by the *Greeks* *Macarene*; the chief river of which, was the *Maxates*, now called *Macshid* (*). *Gazni*, the true name of which is *Sasni*, was once the capital city of that country; hence it is called with propriety *S'asni-Coj* by TAVERNIER, or *Chakeni-couze*: the *Pattans* generally use *k* for *sh*; and very often also for *s*; thus they say, *Pirkhowr* for *Pirshowr*, *Khehr* for *Shehr*, a city. *Gazni* is called *Sasni* by CHRYSOCCORAS; and *Shasni* or *Chassenee*, in THEVENOT's collection of voyages. The present name is *Gazni* or *Casni*; but in the time of TAVERNIER, they said also *Sacni* or *Jacni*.

Roh-Coj, according to the *Balluch* pronunciation, or *Row-Coz*, as softened by the *Pattans*, is the *Arachosia* of the *Greeks*; which includes the districts

* Step. Bizant advocem Alexandria.

of *Gazni* and *Candahar*. *Arachosia* is now called *Cawer* or *Cawerán* : but even this appellation is becoming obsolete. The river *Arachotus* called also *Choaspes*, and *Cophes* is now called *Abek-Tárníc*, or the river *Tárníc*. It rises in the hills to the north by east of *Gazni* ; and after having watered the whole valley of *Arachosia*, it loses itself in a marsh about four miles to the south of *Candahar* : and when the rains are abundant, part of its waters run into the *Arghand-ab*, which falls into the *Hir-mend*. One of the emperors of *Gazni* had its waters dammed up in the hills, above that city, which are let out occasionally to water the fields, in which it is lost : when the rains are copious, the superabundant waters form a small stream, which reaches as far as *Carabaug* ; and afterwards forms in some low grounds to the south east, a small marsh or lake. The present river *Arachotus*, is formed by a small stream, which rises a little above *Mucur* in the above marsh : hence it is often called the water of *Mucur*.

It was called *Choaspes*, or rather *Cho-Asp* from the following circumstances. Between the cities of *Zuffá* and *Kálá-át* (a plural form implying towers or forts), there is in the bed of the river *Tárníc* a deep hole, supposed unfathomable ; called in the language of that country *Sup*, in *Sanscrit* *Gopa*, and in some dialects *Gopha*, from which, probably, are derived the words *Γοπη* and *Κοπη*, *Coop*, *Cove*, *Cave*, and in *Latin* *Cavus* and *Cavea*, a *Cave*, a *Coop*, or *Cage*. An unwary traveller, riding upon a mare great with foal, stumbled into it and both were drowned. During the struggles the mare brought forth a foal, who was received by the fairies residing in this cave, and nursed by them. He is often seen grazing on the banks of the river, and at other

other times his head only is seen above the waters; from that circumstance the surrounding hills are called *Sereh-Asp*, or the horse's head. As the foal was grazing one day in the adjacent meadows, he was seen by a traveller, who admiring his shape, laid hold of him and rode him for a long time; when returning the same way, he did *Jelo-rez*, or relax the reins;* the horse ran away, and jumped into the cave, or hole. From the circumstance of his relaxing the reins, the surrounding hills are also called *Jelo-rez*. They might be called with propriety *Coh-Asp*, or the mountains of horse: and they were thus called once, or *Cho-aspa* as it appears from PROLEMY, who has applied this appellation to a city in the vicinity, but with greater propriety called *Cophes* by PLINY; a word obviously derived from *Gopa*, *Gopha* pronounced in different dialects, *Cup* and *Sup*, *Cuph* and *Suff*, or *Zuph*. It is called to this day *Zuffa* or *Shehr-zuffa*, the town of *Zuffa*. It is called *Zupha* in the *Peutingerian* table, in the road from *Fociana* (*Fusheng*), to *Asbána*, or *Cabul*. The marsh, to the south of *Candahar*, is obviously the *Arachosian marsh* of the ancient geographers†. The ancient kings of *Gor* were natives of *Zuffa*, or *Zuf*; and gave that appellation to *Gor*, the place of their residence, but now desolate: the place where it stood is called *Gor-moshcán*.

PROLEMY mentions a town called *Arachotus*: but surely *Roh-Coj* could not be the real name of a city, which probably was *Coj-vára*, or *Cojhar*, *Cojwar*, and *Cajhur*: it is the *Kodzar* and *Kozdar* of *Persian* authors; literally the habitation in the country of *Coj*, and, by implication the capital city of *Coj*. The kings of the *Yavanas*, and DEO-CA'L-YUN re-

* *Jelo-rez kerdun* in *Persian*, signifies to relax the reins.

† This marshy lake is mentioned by TAVERNIER.

sided at *Sasni*, (now *Ghazni*), which word in *Sanscrit* signifies *command*, and by implication, the seat of empire. They generally pronounce this word *Ghazni*; because, it is said to be derived from *Ghezz-ni*. *Ni* is *foundation*, and *Ghezz* is the *Tamarix*, which abounds in that country. For they say, that, when the *Musulmans* invaded that country, being surrounded by an immense host of *Cafirs*, or unbelievers, they made a tumultuary rampart of loose earth, and *tamarix*; from which circumstance the place was called ever after *Ghezz-ni*.

By a strange mistake, the country of *Arachosia*, and the river which flows through it, have been placed by the learned DANVILLE, to the south of *Candahar*; had this famous geographer recognised *Gazni*, in the *Shakeni-Couze* of TAVERNIER, this mistake, I believe, would not have happened. I have had the satisfaction to converse often with natives of *Candahar*, of *Kálá-át-Násir-Khan*, and *Coj-hur*, and other intermediate places; and have obtained sufficient local knowledge of that country, to rectify this error. *Kálá-át-Násir-Khan* is the *Ká-lát-Berlook* of the *Ayeen-Acbery*: it is also the *Al-Casr* of the *Nubian* geographer, a word of the same import with *Kálá-át* a plural form. It was surnamed *Násir-khán*, from its last governor, who died some years ago. In its vicinity is the town of *Sorra* mentioned by the *Nubian* geographer: it is better known by the name of *Sorra-Bac* or *Sorra-Beyck*. *Beyck* is a name common to several places in that country: they are situated among mountains denominated from them, by PTOLEMY. *Becii* or *Baicii montes*, as we read in MERCATOR's maps; or *Baitii* in the original: for in ancient manuscript, *t* and *c* are often mistaken the one for the other. In the *Purá-nas* they are called *Su-Bhacsha*. The real name of *Gazni* was originally *Sabul*, *Zabul*, or *Saul*, as it is written

written by *CHRYSOCCAS*: hence it appears to be the *Ozola* of *PTOLEMY*. It is probably the *Oscanidati* of the *Peutingerian* table, twenty-two *farsacks* from *Asbána* or *Cabul*; and thirty-five from *Zuyha Oscanidati* is perhaps corrupted from *Sacni-tut*, or the mulberry grove of *Sacni*. *Tut* in the *Pastoo*, as well as in the *Persian* and *Hindwi* languages, signifies a mulberry. In composition, it implies a mulberry grove. This tree grows spontaneously in that country, in the plains: and the *Pattans* generally pitch their tents, or erect their huts near groves of it. Its fruit is exquisitely delicious: and we often hear *Pattans* in *Hindustan* sighing after their mulberry groves, wishing to die under their shades.

THE famous peak of *C'haisá-ghar*, which we mentioned before, is situated on the road between *Gazni* and *Derá-Ismáhil*: the *Musulmans* call it *Tuct-Suleiman*, or the throne of *SOLOMON*; and to the adjacent mountains they have given the name of *Coh-Suleiman*. It is seen at the distance of one hundred coss, and begins to be visible near the extensive ruins of the famous city *Sángalá* about sixty miles west by north of *Lahore*. *Sángalá* is situated in a forest, and though desolate and uninhabited, it preserves still its ancient name. It was built by the famous *PURU* or *PURUS*, great grandson of *ATRI*. It is called *Sinkol* in *Persian* romances, and its king, *raja SINKOL*. It has been confounded by *ARRIAN* with *Sálgalá* or *Sálgadá*, which is now called *Calanore*; close to which is still an ancient place called *Salgédá* to this day, and its situation answers most minutely to *ARRIAN*'s description. *Sálgalá* and *Sálgadá*, are two derivative forms, the first is *Sanscrit*, and the second is conformable to the idiom of the dialects of the *Pánjáb*. The summit of *C'haisá-ghar* is always covered with snow; in the midst of which are seen several streaks of


a reddish hue, supposed by pilgrims, to be the mark, or impression made by the feet of the dove which NOAH let out of the ark. For it is the general and uniform tradition of that country, that NOAH built the ark on the summit of this mountain, and there embarked: that, when the flood assuaged, the summit of it first appeared above the waters, and was the resting place of the dove, which left the impression of her feet in the mud, which with time, was hardened into a rock. The ark itself rested about half way up the mountain, on a projecting plain of a very small extent. There a place of worship was erected, near which is a caldron of copper of such dimensions, that one hundred maunds of food may be dressed in it at the same time. Near it is an hermitage inhabited by several *Derveishes*, and a little above, is a flag. The inhabitants of the country resort there occasionally on *Fridays*. With respect to the foot-steps of the dove, they are known only by tradition, for the inhabitants of that country assert, that they have never heard of any body going up so high on account of the ruggedness of the mountain, and of the snow. The *Bhauddhists*, who were the first inhabitants of that country, are, I am told, of the same opinion as to the place where the ark rested; but hitherto I have been able to procure a single passage only, from the *Buddha-dharma-chárya-Sindhuh*, in which it is declared that SHAMA or SHEM, travelled first to the north east, and then turning to the north west, he arrived on the spot, where he built afterwards the town of *Bámíyan*. SHAMA they say, having descended from the mountain of *C'haisághar*, travelled north east, as far as the confluence of the *Attock* with the *Indus*; where he made *Tápasya*: he then proceeded north west to *Bámíyan*.

THE *Pauranics* insist, that, as it is declared in their sacred books, that SATYAVRATA made fast the

ark to the famous peak, called from that circumstance, *Nau-banda*, with a cable of a prodigious length, he must have built it in the adjacent country. *Nau* (a ship) and *bandha* (to make fast), is the name of a famous peak situated in *Cashmir*, three days journey to the north north east of the purgana of *Lar*. This famous place is resorted to by pilgrims, from all parts of *India*, who scramble up among the rocks to a cavern, beyond which they never go. A few doves frightened with the noise, fly from rock to rock: these the pilgrims fancy to be their guides to the holy place, and believe, that they are the genuine offspring of the dove, which NOAH let out of the ark, at all events in the numerous legends, which I have extracted from the *Purānas* relating to SATYAVRATA and the ark, no mention is made of his letting out the dove: the whole story I shall give in abstract. SATYAVRATA having built the ark, and the flood increasing, it was made fast to the peak of *Nau-bandha*, with a cable of prodigious length. During the flood, BRAHMA' or the creating power was asleep at the bottom of the abyss: the generative power of nature, both male and female, were reduced to their simplest elements, the *Linga* and the *Yoni*, assumed the shape of the hull of a ship since typified by the *Arghā*; whilst the *Linga* became the mast.* In this manner they were wafted over the deep, under the care and protection of VIŚHNU. When the waters had retired, the female power of nature appeared immediately in the character of *Capotés'wari* or the dove, and she was soon joined by her consort, in the shape of *Capotés'wara*.

THE mountains of *Coh-Suleiman* are sometimes called by the natives the mountains of the dove: the

* MAHA'-DE'VA is sometimes represented standing erect in the middle of the *Arghā* in the room of the mast.

whole range as far as *Gazni* is called by *PTOLEMY* the *Parueloi mountains*, probably from the *Pár'vata* or *Páravát*, which signifies a dove. The peak of *C'haisa-ghar* is called also *Cálá-Roh* or the black mountain : the summit alone being covered with snow, is not always seen at a great distance ; but the body of the mountain, which looks black, is by far more obvious to the sight. *Persian* romances say, that there were seventy or seventy-two rulers called *SULEIMAN*, before *ADAM* ; this has an obvious relation to the seventy-one *Manvantaras* of the *Hindus* : and of course *NOAH* or *SATYAVRATA* was a *SULEIMAN*. 

THE followers of *BUDDHA* acknowledge that the ark might have been fastened to *Nau-bandha* near *Cashmir* ; but surely they say, the ark could not have been riding perpendicularly above this peak, and such a vessel required a vast length of cable : in short though the cable was made fast at *Nau-bandha*, the ark was riding above *C'háisa-ghar*. According to the *Pauranics* and the followers of *BUDDHA*, the ark rested on the mountain of *Arya-varṇa*, *Aryawart* or *India*, an appellation which has no small affinity with the *Araraut* of scripture. These mountains were a great way to the eastward of the plains of *Shinar* or *Mesopotamia*, for it is said in *Genesis*, that, some time after the flood, they journeyed from the east, till they found a plain in the land of *Shinar*, in which they settled. This surely implies that they came from a very distant country to the eastward of *Shinar*. The region about *Tuckt-Suleiman* is the native country of the olive tree, and I believe the only one in the world. There are immense forests of it on the high grounds ; for it does not grow in plains. From the saplings, the inhabitants make walking sticks, and its wood is used for fuel all over the country ; and, as *PLINY* justly

justly observes, the olive tree in the western parts of *India*, is sterile, at least its fruit is useless, like that of the *Oleaster*. According to FENESTALLA, an ancient author cited by PLINY,* there were no olive trees in *Spain*, *Italy* or *Africa* in the time of TARQUIN the eldest. Before the time of HESIOD, it had been introduced into *Greece* : but it took a long time before it was reconciled to the climate, and its cultivation properly understood : for HESIOD says, that, whoever planted an olive tree, never lived to eat of its fruit. The olive tree never was a native of *Armenia* ; and the passage of STRABO, cited in support of this opinion, implies only, that it was cultivated with success in that country. But let us return to SHARMA and his disciple SARASALA, the legends concerning whom are to be found in the *Buddha-dharma-charya-Sindhuh*.

“ THE chief of the followers of BUDDHA is endowed with knowledge : great are his riches and power. “ He shewed mercy to the living creation ; and instructed them all in their respective duties : he was, “ deeply skilled in the *Sastras*. He is the abode of “ human and divine knowledge, which he imparts to “ all. He, whose name is SHAMA, is the chief of “ living beings : he gives an increase of pleasure to “ every body : he travels over the whole world, instructing every one in their respective duties. Once “ he went north east, then turning toward the north- “ west, he arrived at the *Himani* mountains. There “ he saw a variegated hill : it was beautiful : there “ were numerous springs : all sorts of animals and “ chirping birds. In this forest, he, whose name is “ SHAMA-MAHA'-MUNI, began to perform *Tapa-* “ *sya* : for he saw that the country was *Tapobhumi*, “ (land fit for the performance of religious rites.)

* PLINY B¹² C. 6.

“ Here, says he, I shall soon obtain the end of my
 “ *Tapasya*. JINE'SWARA, the god of gods, was
 “ pleased : he granted his boon : JINE'SWARA, who
 “ is BHAGAVAN, for the good of mankind, granted
 “ his boon : from *daya* (mercy) comes *ardra* (soft-
 “ ness of heart :) to do good to all men you were
 “ born ! Before this he was famed as a good
 “ man ; but when he had obtained his boon !* As
 “ he lived in an uninhabited forest, pilgrims
 “ suffered much : through the efficacy of his *Ta-*
 “ *pasya*, he built a town, which he called *Vámé-*
 “ *yan* : it was *vámá* (beautiful), hence it was call-
 “ ed *Váméyan*. Wood, grain, and grass, were in
 “ plenty. He placed beautiful flags on all the gates
 “ and posterns. He made also beautiful (*chetwara*)
 “ squares, where grain and wealth were displayed.
 “ He called in the four great tribes : gold and jewels
 “ abounded in their houses. In one house were of-
 “ ten seen an hundred women, shining with gold and
 “ precious stones : here the drum beat : there they
 “ danced : every body was pleased. From the noise
 “ in every street, in every house, it seemed as if the
 “ whole town spoke. In every house there were
 “ constantly feasts and rejoicings : it was like the
 “ town of the gods. SHAMA instructed them all in
 “ their respective duties. In this city men and wo-
 “ men follow the religion of BUDDHA, and nobody
 “ says there, why do you worship BUDDHA ? SHAMA
 “ having thus obtained the object of his wishes,
 “ withdrew to an adjacent hill, where he erected a
 “ beautiful and strong building for his residence. He
 “ kept his internal *indris*, or senses, under subjec-
 “ tion ; hence he was called SHAMA. He is con-
 “ stantly performing the *Yoga* : upon a hill fit for
 “ such performance, he seated himself : there re-
 “ sides the chief of the forms of BUDDHA.” This hill
 “ is now called *Ghulghuleh*.

* So it is in the original : but it is understood, that, after he had ob-
 tained his boon, he was considered as a superior being.

“ THERE is another image-like resemblance of
 “ SHAMA-SHARMA in his disciple : he is constantly
 “ performing *Tapasya* : he studies *daya* (mercy),
 “ and observes most rigidly the dictates of justice.
 “ He waited with most scrupulous obedience on
 “ SHAMA, his spiritual guide. Lust had no power
 “ on him : in him were united human and divine
 “ knowledge : he became *Paranishtha* (he dwelled
 “ in god) and great were the powers of his under-
 “ standing. For ten years he made *Tapasya*, during
 “ which he left off eating and drinking : he felt no
 “ uneasiness on that account : he lived upon the
 “ winds : thus he kept up the efficacy of his religi-
 “ ous austerities. He is a great penitent ; con-
 “ stantly thinking on the deity. He did not make
 “ *Dambha*, that is to say, he did not perform religi-
 “ ous acts for the sake of worldly praise. Thus he
 “ made a most rigorous *Tapasya*. Then JINA-WA-
 “ RA (or the lord of the forms of *Jina*) was pleased :
 “ JINA-DE'VA said ; why are you making *Tapasya* ?
 “ What is your wish ? You have made a most rigo-
 “ rous *Tapasya*, even to the peril of your life : get
 “ up, get up : it shall be well with you : ask your
 “ boon ? RASALA, such was his name, said, to
 “ day have I obtained the fruit of my labours : I
 “ have seen you : I have seen you ! This is all I
 “ wanted : what is the rest to me ! This was my
 “ only object and desire. I was like a poor man,
 “ who is oppressed ; but on my complaining to you
 “ I have obtained redress : be merciful. JINA said
 “ your heart is like a beetle,* who constantly sticks
 “ to me : your name before was RASALA (he who
 “ delights in the honied juice (*Rasa* of flowers :
 “ now it shall be SA-RASALA (who delights much
 “ in it). All the world shall call you SA-RASALA :

* In Sanscrit *Bhranga* ; in Greek *Bruchos* and *Brucos* ; hence *Sa-rasala* is called *Bhranga* ; and *Brongus* by NONNUS.

“ask your boon. The *Muni* said he was *nispraha*
 “he wanted nothing : only give me the end of my
 “*Tapasya* : that I may go unmolested through the
 “three worlds, and see you every where ; let me
 “also retain the efficacy of my *Tapasya*. O chief
 “of the forms of JINA, this is my boon. JINA-VA-
 “RA who is ISWARA, granted it, and disappeared.
 “The son of the Raja kept up the efficacy of his
 “*Tapasya* ; and thus became *Avyáhataswairagati*
 “he went every where unmolested : he became *Sa-*
 “*madraca* ; friends or foes, men and women were
 “the same to him. Such was his *Tapasya*, that he
 “even surpassed his *Guru* SHAMA ; who, seemingly,
 “became *Sparśhá*, saying why do you wish to sur-
 “pass me. He endeavoured to spoil his *Tapasya*,
 “and to corrupt his heart : but in vain. Still he
 “waited on him with humility, without answering,
 “without complaining. When SHAMA saw this, he
 “said with astonishment : he is a good man (*Sád-*
 “*hu*) : his name then shall be *Sádhu*. Thus he
 “obtained a boon from his spiritual guide. SA-RA-
 “SA’LA is constantly making *Tapasya* thinking on
 “JINESWARA.

“Who is he, whom all the world call SA-RASA’-
 “LA ? You are the chief of the *Fates* : relate the
 “whole to me. Who was he before ? Why did
 “he come into this forest ? Why is he making *Ta-*
 “*pasya* ? Be exalted and relate the whole to me.
 “The chief of the *Yatis* said : he is the king of
 “the country of *Calinga*. He had forsaken the
 “paths of righteousness, and dwelt among women,
 “he was proud and his heart was fixed on them.
 “He was like the *Sarasa**, like the beetle, who de-
 “lights on the honied juice (*Rasa*) of flowers : hence
 “he was called RASA’LA. Once in a former state,

* A bird of the crane kind.

"he performed a most meritorious action ; which
 "proved afterwards of great service to him. Some
 "private business having brought him to *Mat'hurá* ;
 "his friends prevailed on him to perform the usual
 "ablutions : he gave alms also. His heart was puri-
 "fied from guilt, and his iniquity removed. At that
 "time the chief of the *Munis* of *JINA* (*SHAMA*) came
 "to *Mat'hurá*, and shewed to him the path to rec-
 "titude. He treasured up every word : acknow-
 "ledging the truth, he was irradiated. From that
 "moment he held for nothing his crown, his wife,
 "his children, and his wealth. He disposed of his
 "effects among the *Yatis*, and having resigned his
 "crown to his son, and recommended his wife to
 "him, he withdrew to the forests. There he made
 "*Tapasya*, thinking on *JINAVARA*. Thus I have
 "related the whole to you."

By *Calinga*, the *Pauranics* understand the sea
 coasts at the summit of the bay of *Bengal*, from point
Godaveri to cape *Negraïs*. It is divided into three
 parts. *Calinga* proper, which extends from point
Godaveri to the western branch of the *Ganges* ; the
 inhabitants of the country are called *Colingee* by
ÆLIAN and *PLINY*. *Madhya-Calinga* or middle
Calinga is in the *Delta* of the *Ganges*, and is cor-
 ruptly called *Modo-Galinca* by *PLINY*. *Moga-Ca-*
linga extends from the eastern branch of the *Ganges*
 to cape *Negraïs* in the country of the *Migas* or
Mugs : this is obviously the *Macco-Calingæ* of *PLI-*
NY. *Calinga* implies a country abounding with
 creeks and is equally applicable to the sea shore
 about the mouths of the *Inaus*.

SHAMA, and his disciple *SA-RASA'LA*, are perhaps
 the same, who are called *SAM* and *ZAL-ZER* or *SAL*
 the white in *Persian* romances : certain it is that
 they lived in that country. The father of *SAM* was
NERIMAN,

NERIMAN, which if a *Sanscrit* appellation, is very applicable to NOAH: *nere* signifies a wave in *Persian*, and *nara* water in *Sanscrit*. SAM may be the same with SIAMEC the son of KEY-UMURSH; for SHARMA and SHARMACA, SHAMA, and SHAMCA are various appellations of the patriarch SHEM. As to KEY-UMURSH or king UMURSH, it is a denomination given equally to ADAM and NOAH in *Persian* romances, and with great propriety, for UMARSHA in *Sanscrit* signifies the lord of UMA, the female power of nature and the earth. In that section of the *Scanda-purána* called the *Himáchel-c'handa*, it is said that BUDDHA the ninth *Avatára* of VISHNU appeared in the characters of SHAMA or SHEM; by which we must understand, according to the learned, that SHARMA an incarnation of VISHNU reappeared as BUDDHA. Indeed the character of SHARMA is well preserved throughout: for this famous patriarch is represented of a most benevolent and mild disposition, with a very weak constitution. When BUDDHA was seven years above eight old, he was invested with the sacerdotal cord. He went immediately to *Vámigram* or *Vámíyam* in order to defeat the schemes of the *Daityas*, who were assembled in its vicinity, to perform solemn sacrifices and the most rigid acts of devotion in order to obtain the dominion of the world. *Vámíyan* is declared to have been at that time a most magnificent city. There the gods and many holy men were assembled in order to pay their respects to VISHNU and implore his assistance against the *Daityas*. BUDDHA in the shape of a *Sannyási* presented himself to them, and was kindly received: he then told them, that every sacrifice of an animal was an abomination, and that even ablutions were wicked, because small insects might be killed by bathing. Such was his eloquence, that the *Daityas* wept bitterly, abandoned all thoughts of sacrifice and ablution, and thereby were frustrated in their

their scheme of attaining the dominion of the world. After this memorable victory, great rejoicings were made throughout the whole town of *Bámiyan*: for the *Bauddhists* insist that the religion of *BUDDHA* existed from the beginning.

I CANNOT better conclude this essay than by making a few remarks on the supposed prohibition, imposed on every good *Hindu* from crossing the *Indus*; in order to obviate some objections lately started, against the possibility of their being acquainted with the most ancient transactions in the western parts of the world. This prohibition is certainly very ancient: for it is mentioned by *DIODORUS* the *Sicilian*; who says, that king *STAUROBATES*, in *Sanscrit* *STHA'WARA-PATI* was prevented by the soothsayers, in consequence of certain prodigies, from crossing the *Indus*.

BEFORE we proceed, it is proper to ascertain, what part of the *Indus* is properly called *Attaca* or the forbidden. From the unanimous report of the natives of that country, either *Hindus* or *Musulmans*, learned as well as simple, I am fully satisfied that the *Landhi-Sindh*, which rises from a lake in the vicinity of *Bámiyan*, and falls into the *Sindh* above *Attaca-Varanesa* or *Attock-Benares* is the real *Attock* or forbidden river: this property however it communicates to the greater *Sindh* from the place of their confluence down to the sea. The *Indus* is called *Sindhuh* or *Sindhus* in *Sanscrit*, *Ab-Sind* or water of *Sind* by *Persian* authors: but in the *Pastoo* language it is called *Abai-Sin* or father *Sin*. The waters of the *Landhi-Sin*, or lesser *Sind*, are remarkable for their limpidity: and being very deep, it gives them a dark azure appearance; whilst the waters of the *Abai-Sin*, are turbid: and above *Tor-Bélah* or the black *Bélah* * toward *Der-bend* and

* *Tor-Bela* or *Tor-Belam*, thus called from the banks of black sand

Bawersa they are of a milk white colour, from the immense banks of chalk in its bed. *Bawersa* called also *Bawersa-da* and *Bawersa-di*, is the *Barisadis* of the historians of ALEXANDER*. Below *Tor-Bélah* or *Tor-bé-lam*, and its black sands, the waters of the *Sind* are blackish, between the high mountains about *Attock* and the fort of *Nilab*, the gloom encreases much their black appearance. The *Landi-Sin* from the dark azure appearance of its waters is with great propriety called the *Nil-ab*: the inhabitants know of no other river distinguished by that epithet. They seldom, however, make use of it. At *Goorband*, it is called the *Goor-band* river; near *Baran*, the *Baran* river. Near *Palānghur*, the *Pleygrium* of STRABO, in the district of *Cameh*, it is called *Cameh* river. *Gorydalis*, mentioned by STRABO near the pass of *Kheibar*, is called now *Gurdyáli*, and *Gurdeh*: and *Bando-Béna*, is the band or dam of *Béna* or *Béyanah*, or rather it implies *Béyanah* near the band or dam, which, I suppose to be the royal wall in the country of *Opianeh* mentioned by STEPHANUS of *Byzantium*: it is near *Peishour*.

ANCIENT geographers were as much perplexed as the moderns, with regard to the rivers, to the westward of the *Indus*. The *Choaspes*, and the *Cophes*, are represented as two distinct rivers: but I suspect that, like the river in *Arachosia*, the same river was

in its vicinity: there probably ALEXANDER crossed the *Indus*. *Ac-Belam* or *Ec-Bolina* was probably near *Hazru*, about half way between *Tor-Belam* and the fort of *Attock*, there are many banks of white chalk; from which, it was probably called *Ac-Belam*, or the white *Belam*.

* *Bawersadi* is a derivative form, from *Bawersa*, according to the idiom of the dialect of the *Panjab*, in which, as well as all over *India*, derivative forms are used in the room of the primitive: thus we say *Bengal* for *Banga*: thus the town of *Nahusha* or *Nysa*, is called *Nisha-dapuram* for *Nisha-puram* or *Nisha-pur*, in a fragment cited by Sig. BAYER.

called

called by two different names. The *Choaspes* has been also mistaken for the *Cous* of PTOLEMY, which last comes from the country of *Cash-ghar*.

THE appellation of *Cophes*, as we have seen before, is derived from the words *Gopa* or *Gopha*: and, though never used by the natives, yet, they assert, that this river passes, through an immense *Gap* in the mountains of *Bámíyan*, or in *Sanscrit* through a large *Gopa* or *Gopha*, from which the *English* words *Gap*, to *Gape*, and in *German* *Gaffen* are probably derived. Tradition is now silent with respect to the appellation of *Choaspes*: but we read in *Ctesias* of certain animals in this river, somewhat in the shape of river horses. This author calls it *Gaitas*; and it is the same with the *Geudis* or *Geuthis* of NONNUS; for BACCHUS crossed this river in his way from *Nicæa*, or *Cabul*, to the place of abode of the benevolent and hospitable BRONGUS among the *Samach'hes* of *Bámíyan*. On the bank of this river was the town of *Alybe* or *Alyben* in the oblique case* which is called to this day *Elben* and sometimes *Elybend*. It is at the foot of the mountains, near the entrance of a pass leading to *Bámíyan*.

THE *Gaitas* and *Geuthis* being the same river with the *Cophes*, I strongly suspected that the two former appellations are corrupted from the latter. Of this we have a remarkable instance in the *Greek* and *Latin* languages. The words *Cæpa* and *Cæpe* in *Latin* or *Gaipia*, *Gaiphu* or *Gephu*, in old *Greek*, are pronounced and written in the more modern *Géthua* and *Getia*. Thus the tree called *Tála* in *India* and also by ARRIAN, is written *Tala* by PLINY: thus the word *Paulus* is pronounced *Taulus* in the countries bordering on the *Nile*: and the materials from which

* NONN. *Dionys.* lib. 17. v. 33, &c.

NONNUS compiled his *Dionysiacs* were originally written in these countries; of which NONNUS himself was a native.

THE *Hir-mend* which has its source in the same lake with the *Landhi-Sin*, and flows toward *Persia*, is called also *Attock*, so that it seems, that the whole country between the *Hermend* and *Indus*, was equally *Attaca* or forbidden. I have not been able yet to discover the origin of this prohibition: but I believe it extended at first to civil purposes only. In this manner the *Hara-Modren* in *China* is called *Attock* by *Hindu* pilgrims, who do not consider it, in the least, as a religious prohibition: this civil prohibition is very ancient for it is recorded by PLINY*. The *Māha-nadi* near *Cuttack* is also called *Attock*, but this prohibition is very little regarded.

IN that dreadful war which we mentioned in our former essay† between the *Lingancitas* and *Yonijas* or *Yavanas*: the former stood their ground pretty well at first: but were in the end defeated and shamefully routed in the battle, through the efficacy of the sacred *Yoni*, MAHA'DE'VA enraged, was going to destroy them with the fire of his eye: but PA'R-VATI' interposed, and to appease him made use of the same artifice, the old woman called BAUBO, did to put CERES in good humour, and shewed him the prototype of the *Lotos*. MAHA'DE'VA smiled and relented; but on the condition only that they should instantly leave the country. Whether this legend allude to a real war between the worshippers of the *Linga* and *Yoni*, or be a mere physiological allegory I cannot determine: be this as it may, the *Yavanas* withdrew to the countries between the *Indus*, and the *Hirmend*, and the *Landhi-Sin* or *Nilab*: every

* Lib. 6, c. 22. † *Asiatick Researches*, vol. 3. p. 362.

intercourse was forbidden on all sides: thus in my humble opinion, these three rivers were denominated *Attaca* or forbidden. The *Yavans* it seems were expelled afterwards with their chief DE'O-CA'L-YUN by CRISHNA, and his brother BALA or BALAS, the *Indian HERCULES*, called also BELUS. This I suppose was the *Bactrian* war alluded to by NONNUS in his *Dionysiæcs*. It was then that, *Indian HERCULES* besieged in vain the famous fort of *Aornos* called also *Avernus* on the banks of the *Indus*. It has preserved its ancient name to this day being called *Varanas* or *Benares*: it is more generally known by the name of *Attock*. It was surveyed some years ago by my friend MIRZA MOGUL BEG, and his description of that famous place, answers minutely, to that given by the historians of ALEXANDER, of the fortified rock of *Aornos* *.

THERE are four rivers, which were once much dreaded by a religious people according to the following text:

*Carmanásá jala sparshát ; Caratoyá vagáhanát :
Gandaci báhutaranát : Sindho páregamattathá.
Evam carma Dwiija curvan punah Sanscáram arhati.*

By which it is forbidden even to touch the waters of the *Carmanásá*, to bathe in the *Caratoyá* (a river in *Bengal* called *Curratya* in the maps), to swim in the *Gandaci*, and to cross the *Indus*. The inhabitants of the countries on the banks of these rivers, claim however, an exemption, which is admitted by the rest of the *Hindus*: and on the banks of the *Carmanásá* live many *Bráhmens* who daily perform their ablutions in it, and drink of its waters; and to my knowledge they are not considered as defiled in the least: on the contrary they are in ge-

* To the north north east of *Attock-Benares*, about eighteen miles distant, is the town of *Bazar* near the western banks of the *Indus*: it is the *Bazira* of the historians of ALEXANDER.

neral highly respected at *Benares*. The prohibition with respect to the three other rivers, has never been much attended to; but their aversion to the *Carmanásá* is now as great as ever: by the contact alone of its baneful waters, pilgrims suppose that they lose the fruit and efficacy of all their religious austerities and pilgrimages: and they always cross it with the utmost caution. With respect to the *Indus*, my learned friends here agree, that the sin, if any, consists only in crossing the river: and that it by no means implies any prohibition to go and remain in the countries beyond it. Besides you may easily go to *Bámiyan* without crossing any of the forbidden rivers, by crossing the *Indus* above its confluence with the *Attaca*: for in all the prohibitory laws, you may safely adhere to the latter. They informed me also that in the time of *ACBAR*, who greatly favoured the *Hindus*, the numerous bands of *Rajpoots* in his service, having been ordered to cross the *Indus* to chastise some refractory *Pattan* tribes, they informed him, that they were forbidden to cross this river. The emperor wrote to them, that the earth and its rivers were the lord's, and that the prohibition was of course more *in their heads*, than consistent with reason: however if they conceived *in their hearts* that it was improper to cross, by all means to abstain from it. On the receipt of this letter, the *Rajpoots*, with the *Bráhmens* who accompanied them, crossed the *Attock* immediately.

THE numerous *Bráhmens* who live in *Iran*, cross it daily, without any scruple whatever, as well as those of *Multan*, and other adjacent countries. Those of *Multan* jocularly say, that, as the true bed of the river is not ascertained, they may cross it with impunity. The truth is that the *Indus* ran formerly a great way to the westward of its present channel, through the *Nulla-Sancár*, which branches out of the *Indus* below

low *Dérá-Ismáhil*. MIRZA-MOGUL-BEG surveyed it some years ago as far as the parallel of *Multan*, where his survey ended. But he was informed, that it ran a great way to the south in a direction almost parallel to the *Indus*, with which it communicates occasionally through the various branches. The *Nulla-Sáncára* being the old bed of the *Indus* is of course considered as the true boundary of *Indostan*, and was admitted as such in the treaty of peace between NADIR-SHA'H and the emperor of *India*. This dereliction happened before ALEXANDER's time, as it was recorded by ARISTOBULUS, according to STRABO.

I CANNOT help taking notice of a curious observation made by a learned *Bráhmén*, that whosoever prohibited the crossing of the *Attock*, meant only that no body making use of the usual modes known at that time, should presume to cross it: but if he could leap over it, or cross it in a balloon, or astride a wild goose, or any other bird, which may be effected through magick, there could be no harm whatever. This strange idea brought to my recollection a whimsical story of the *Musulmans* who inhabited the country of *Sind* or *Tata*: they fancy ALEXANDER by magical art conveyed his whole army over the *Indus*, every man of his riding astride a wild goose. ALEXANDER was pretty successful in *India*, they conceive that this would not have been the case if he had crossed the *Indus* either in boats or by swimming; and the most obvious method he could adopt, in their opinion, was to convey his soldiers in the above manner.

WHEN the unfortunate RAGHU-NA'TH-RA'YA or RAGOBA, sent two *Bráhméns* as ambassadors to *England*, they went by sea as far as *Suez*, but they came back by the way of *Persia*, and of course

crossed the *Indus*. On their return they were treated as outcasts; because they conceived it hardly possible for them to travel through countries inhabited by *Mlec'h'has* or impure tribes, and live according to the rules laid down in their sacred books: it was also alledged, that they had crossed the *Attaca*. Numerous meetings were held in consequence of this, and learned *Bráhmens* were convened from all parts. The influence and authority of RAGHU-NA'TH-RA'YA could not save his ambassadors. However the holy assembly decreed, that in consideration of their universal good character, and of the motive of their travelling to distant countries, which was solely to promote the good of their country, they might be regenerated and have the sacerdotal ordination renewed. For the purpose of regeneration, it is directed to make an image of pure gold of the female power of nature; in the shape either of a woman or of a cow. In this statue the person to be regenerated is enclosed and dragged through the usual channel. As a statue of pure gold and of proper dimensions would be too expensive, it is sufficient to make an image of the sacred *Poni*, through which the person to be regenerated is to pass. RAGHU-NA'TH-RA'YA had one made of pure gold and of proper dimensions: his ambassadors were regenerated, and the usual ceremonies of ordination having been performed, and immense presents bestowed on the *Bráhmens*, they were re-admitted into the communion of the faithful. The two culprits made a very able defence, and had it not been for some irregularities at *Jedda*, where water is brought from a place about ten or twelve miles distant: it is the general opinion, that they would have been acquitted: for they were men of unexceptionable character, and of course they were to be judged in great measure from their own deposition, and declaration of all circumstances. In vain they pleaded necessity, and referred to the conduct of

of

of VISVAMITRA and other holy men as a precedent in such circumstances. It was answered, that such cases were inadmissible as precedents in the present age.

No such prohibition however, is mentioned in the *Puránas*, or in any of their sacred books of great antiquity. On the contrary, we see in the *Puránas* many holy men constantly crossing the *Indus*, and going even as far as the sacred isles in the west. There are *Bráhmens* to this day, and *Hindus* of all denominations crossing the *Indus* to visit the holy places in the west: but these persons have renounced the world, and retain but few practices of their classes. Though highly respected, yet no body presumes to eat, or communicate with them; but they go in crowds to receive their blessing. We have mentioned before, that *Bráhmens*, and other *Hindus*, living in the countries, on either side of the *Hindus* claim an exemption from all ecclesiastical censure, on that account; and though in general they are not much respected at *Benares*; yet their claim is admitted as good, and valid.

XIII.

ON THE ANTIQUITY
OF
THE SURYA' SIDDHANTA,
AND

*The Formation of the Astronomical Cycles therein
contained.*

• BY MR. J. BENTLEY.

1. **T**HE *Surya Siddhanta* is generally believed to be the most ancient astronomical treatise the *Hindus* have, and according to their notions is supposed to have been received through divine revelation at the close of the *Satya yug*, of the 28th *Maha yug*, of the 7th *Manwantara*: that is about 2164899 years ago.

2. **T**HAT the *Hindus* are an ancient people is generally allowed, and proved beyond a doubt by historical evidence; but that they are possessed of astronomical works, of such stupendous antiquity, as the *Surya Siddhanta* is pretended to be, is a circumstance not warranted by the strictest investigation.

3. **S**EVERAL of the learned have written on the laws, manners, customs, &c. of the *Hindus*, but it is only within a few years past, I believe, that attempts have been made to investigate, through the medium of their astronomical works, &c. the truth or falsehood of their pretensions to the high and monstrous antiquity they assume to themselves above all
4 other

other nations. M. BAILLY, in the year 1787, published at *Paris*, a whole quarto volume on the subject of the *Indian* astronomy; and Mr. PLAYFAIR, in the year 1789: published a paper on the same subject in the *Edinburgh* transactions. The principles, however, of the *Hindu* systems of astronomy, being unknown to these gentlemen, and differing widely in many respects from that of the *Europeans*, the conclusions drawn by them respecting the antiquity of the several astronomical tables mentioned by Mr. BAILLY, appear now to be altogether unfounded. Indeed, the materials which Mr. BAILLY had collected*, were insufficient to enable him to form a just idea of the principles of the *Hindu* systems, which being mostly artificial, his method of investigation (from the *quantity* of the mean annual motions, &c. of the planets, though otherwise perfectly just) became altogether inapplicable; so much so, that the tables of *Trivalore*, which he had supposed were as old as the commencement of the present *Cali* *yug*, at least, were actually written and dated about the year 4383 of the *Cali* *yug*, or 516 years ago; and the mean annual motions of the planets given in that work, were *on the principles of the Hindu astronomy*, calculated to give the positions of the planets in the heavens at that time, as near at least, as the author could determine by observation. However, in order to do away these delusions, I shall, before I proceed to the investigation of the antiquity of the *Surya' Siadhanta*, explain, in as simple a manner as possible, the principles upon which the *Hindu* systems are founded, and the manner in which they are formed.

4. In the first place it is necessary to observe, that in most of the *Hindu* systems, certain points of time

* 1. Tables from *Trivalore*, dated in 1413 *Saka*. 2. Tables from *Chrisnaboram*. 3. Tables from *Narsipoor*, dated 1491 *Saka*. 4. Tables from *Siam*.

back, are fixed on as epochs, at which the planets are *assumed* to fall into a line of mean conjunction with the Sun, in the beginning of Aries. From the points of time, so assumed as epochs, the *Hindu* astronomer carries on his calculations, as if they had been settled so by actual observation; and determines the mean annual motions, which he must employ in his system, from thence, as will give the positions of the planets in his own time; as near as he is able to determine the same by observation.

5. IN fixing on these epochs, the first *Hindu* astronomer took the precaution to throw them so far back into antiquity, that the difference between the assumed, and real places of the planets, whatever they might be at that time, would, when divided by the number of years expired from thence, in a manner vanish; or at least become too inconsiderable, to affect the mean annual motions of the planets, deduced from thence for several years. For, it is easy to perceive, that a point of time, may be fixed on so far back, that the mean annual motions of the planets to be from thence deduced, (upon a supposition of their being then in a line of mean conjunction in the beginning of Aries) shall give the real positions of the planets at present, agreeing with observations: and yet, the mean annual motions, so deduced, shall not differ from the real mean annual motions, above any assignable quantity, however small.

6. FOR, let an epoch of mean conjunction, be assumed at only the distance of 648000 years ago; without troubling ourselves at all with the real positions of the planets at that time, (which it would be impossible to know) now since the greatest possible difference that can ever happen, at any proposed time between the assumed, and real place of a planet, cannot

cannot exceed six signs; if we divide this quantity, by the number of years supposed *now* expired, we shall have $\frac{68}{648000} = 0s\ 0^{\circ}\ 0'\ 0'',1$, or one tenth of a second, for the greatest possible difference that could arise between the real mean annual motions of the planets as determined by *European* astronomers, and those which it would be necessary to employ, reckoning from the epoch thus assumed, as would give the positions of the planets at present, with the same degree of accuracy, as the most modern of *European* tables.

7. It must therefore appear obvious, that the further back an epoch of mean conjunction is assumed, the nearer should the annual motions to be thence adduced, agree with the real mean annual motions, determined from actual observations: And on the contrary, the nearer such epoch is assumed to our own time, the greater the difference will be; unless a point of time is found by computation, at which the planets were either in a line of mean conjunction, or so near, that the difference, when divided among the years expired, would not sensibly affect the mean annual motions to be thence derived: but in this case, it is necessary that the Sun and Moon, should be in a line of mean conjunction at the assumed epoch: or at least very nearly so, in proportion to the distance of time back; for otherwise, the computed times of conjunctions, oppositions, and eclipses, of these luminaries, would not agree with observation, for any considerable number of years.

8. Upon this principle, the epoch now commonly called the commencement of the *Calī yug*, appears to have been fixed on, by VARAHA and some other *Hindu* astronomers since his time: for, though the planets were not then actually in a line of mean
 2 M 4 conjunction,

conjunction, yet, the differences between their respective positions, and that which was assumed, when divided among the years expired from that epoch, to the time of VARAHA, were considered as too small, to cause any considerable difference between the real mean annual motions, and those which it would be necessary to assume, so as to give the positions of the planets at that time, or even to cause any sensible error in their computed places deduced from thence for many years.

9. BUT, in order to make this still plainer, let us suppose, that a *Hindu* astronomer now starts up, possessed of instruments and other means, whereby he is able to determine the real positions of the planets at present; and that he is desirous of forming a complete new system, upon the principles of his predecessors; that is to say, assuming a mean conjunction of the planets, at the commencement of the *Cali yug*, what must be the mean annual motions, necessary to be given in such system, so as to bring out the longitudes of the planets agreeing with observations; or their positions in the heavens, as deduced from *European* tables.

10. LET the planets be supposed to have been in a line of mean conjunction, in the beginning of Aries, at the commencement of the *Cali yug*: that is to say, at the instant of midnight, between *Thursday* the 17th, and *Friday* the 18th *February* O. S. in the year of the *Julian* period 1612, on the meridian of *Lanka**: or about $75^{\circ} 50'$ east of *Greenwich*: and let the time at which the mean longitudes of the planets, are to be determined as from observation,

* The *Hindus* suppose that *Lanka* lies in the same meridian with *Ugein* in the *Mharatta* dominions, the longitude of which has been determined from a great number of observations made by Dr. HUNTER to be $75^{\circ} 50'$ east of *Greenwich*.

be the end of the year 4900 of the *Cali yug*, at the instant the Sun is supposed to be entering Aries, in the *Hindu* sphere according to mean motions.

11. Now from the commencement of the *Cali yug*, to the end of the year 4900, by the *Surya Siddhanta*, is 1789767 days $54^{\text{do.}} 24' 20''$; corresponding to the 12th *April* 1799, at $45' 44''$ past nine P. M. on the meridian of *Lanka*, or $51' 40''$ past four P. M. on the meridian of *Paris*. The mean longitude of the Sun, Moon, and planets, at that instant, according to M. DE LA LANDE's tables of 1792, will be as follows:

EUROPEAN SPHERE.									
Sun	-	-	-	-	-	Os.	20°	$52'$	$28'',5$
Moon	-	-	-	-	-	3	22	55	9,3
Mercury	-	-	-	-	-	3	22	42	42
Venus	-	-	-	-	-	2	24	6	14
Mars	-	-	-	-	-	3	4	50	40
Jupiter	-	-	-	-	-	1	29	58	2,1
Saturn	-	-	-	-	-	3	24	16	56,1

12. THE mean longitude of the Sun at that instant in the *Hindu* sphere is = Os. $0^{\circ} 0' 0''$, because he is supposed just entering Aries, according to mean motions; but his mean longitude is the *European* sphere, being then = Os. $20^{\circ} 52' 28'',5$, the difference between the spheres at that moment, becomes equal to that quantity; which must therefore be deducted from the mean longitudes above determined, and we have the relative positions of the Sun, Moon, and planets, in the *Hindu* sphere as follows:

HINDU SPHERE.

Sun's mean longitude,	- - -	Os.	0°	0'	0''
Moon's ditto,	- - -	3	2	2	40,8
Mercury's ditto,	- - -	3	1	50	13,5
Venus's ditto,	- - -	2	3	13	45,5
Mars's ditto,	- - -	2	13	58	11,5
Jupiter's ditto,	- - -	1	9	5	33,6
Saturn's ditto,	- - -	3	3	24	27,6

13. THE mean longitude of the Sun, Moon, and planets, in the *Hindu* sphere, at the end of the year 4900 of the *Cali yug*, being thus determined, we must now find the quantities of the mean annual motions, that will just give these positions, reckoning from the commencement of the *Cali yug*, as an epoch of assumed mean conjunction.

14. THE length of the *Hindu* year, according to the *Suryá Siddhánta*, is 365 days 15^h 31' 31" 24"', in which time the Sun is supposed to make one complete revolution in his orbit. The mean motions of the Sun, Moon, and planets, in that space of time by DE LA LANDE's tables, are as follows:

EUROPEAN SPHERE.

Sun	- - -	1r.	Os.	0°	0'	58"	40",26
Moon	- - -	13	4	12	47	39	17,03
Mercury	- - -	4	1	24	46	35	36,9
Venus	- - -	1	7	15	12	22	18,4
Mars	- - -	0	6	11	25	17	49,3
Jupiter	- - -	0	1	0	21	49	9,2
Saturn	- - -	0	0	12	14	8	0,9

15. THESE motions being reduced to the *Hindu* sphere, by deducting the difference between the spheres at the end of one complete *Hindu* year = 58" 40",26; we shall have their respective mean annual motions in the *Hindu* sphere, as follows:

HINDU

HINDU SPHERE.

Sun	-	-	-	1r.	Os.	0°	0'	0''	0'''
Moon	-	-	-	13	4	12	46	40	36,78
Mercury	-	-	-	4	1	24	45	36	56,6
Venus	-	-	-	1	7	15	11	23	38,1
Mars	-	-	-	0	6	11	24	19	9
Jupiter	-	-	-	0	1	0	20	50	29
Saturn	-	-	-	0	0	12	13	9	20,6

16. MULTIPLYING these by 4900, the number of years expired from the assumed epoch, we obtain the Number of revolutions, &c. of each planet in that space of Time; from which rejecting the fractional parts of a revolution, and substituting in their stead, the sign, degree, &c. the planet is in, (at the end of the year 4900 above determined from *European* tables) and then dividing the whole by 4900, we get the mean annual motions required, as follows:

HINDU SPHERE.

Sun	-	-	-	1r.	Os.	0°	0'	0''	0'''
Moon	-	-	-	18	4	12	46	40	41,153
Mercury	-	-	-	4	1	24	45	12	22,206
Venus	-	-	-	1	7	15	11	47	40,72
Mars	-	-	-	0	6	11	24	10	15,814
Jupiter	-	-	-	0	1	0	21	3	0,411
Saturn	-	-	-	0	0	12	12	53	55,93

From this example, a general idea may be formed of the principles of the *Hindu* astronomy, and the manner of determining the mean annual motions of the planets at different periods, from their positions in the heavens being then given by observation.

17. If we compare the mean annual motions thus determined, with those deduced from DE LA LANDE's tables, we shall find, that they differ considerably: and that the latter make the

• Moon's mean annual motion, -	0''	4''',4 less.
Mercury's ditto, - - - -	24	34,4 greater.
Venus's ditto, - - - -	24	2,5 less.
Mars's ditto, - - - -	8	53,2 great.
Jupiter's ditto, - - - -	12	31,4 less.
Saturn's ditto, - - - -	15	24,7 great.

18. FROM these circumstances, an *European* astronomer, unacquainted with the principles of the *Hindu* systems, on seeing such motions given in *Hindu* tables, would be apt to be deceived by appearances, and assign a degree of antiquity to the work it never possessed; thinking, that the author must have lived at that period, when according to his ideas, the quantities of the mean annual motions were the same as given in the book. This shews the absolute necessity of being acquainted with the principles of the *Hindu* systems of astronomy, before we can attempt to investigate their antiquity from the quantity of the mean annual motion of a planet. For the mean annual motion of Jupiter above deduced, is 1s. 0° 21' 3'', which quantity, according to the principles of the *European* astronomy, would refer the age of a book in which it was found, to a period some thousands of years back; though, in reality it is only calculated to give the position of that planet at the end of the year 4900 of the *Cali yug*, agreeing with *European* tables; and so of the motions of the rest of the planets above deduced. For, let the mean annual motions above deduced, be multiplied by 4900, and we shall have

Sun,	revolutions	4900	—	0s.	0°	0'	0''
Moon,	—	65507	—	3	2	2	40,8
Mercury,	—	20345	—	3	1	50	13,5
Venus,	—	7965	—	2	3	13	45,5
Mars,	—	2605	—	2	13	58	11,5
Jupiter,	—	413	—	1	9	5	33,6
Saturn,	—	166	—	3	3	24	27,6

w hich

which are precisely the same as those computed from De LA LANDE's tables for the same instant (§ 12).

19. HOWEVER, though the motions above assigned, give the mean Heliocentric longitudes of the planets perfectly correct at the end of the year 4900 of the *Cali yug*; yet, on account of the small differences between them, and the real mean annual motions, as well as on account of the inequalities observed by modern astronomers in the motions of some of the planets, they would every year after vary more and more from the truth, in proportion to the differences. This, in fact, is the case with all the *Hindu* systems of astronomy: and when the error becomes sensible, they either form a new system, or else introduce a correction to the old, which they term *beej*.

20. THE *Hindu* systems of astronomy now in use, may be divided into three distinct classes. First, such as assume a conjunction of the sun, moon, and planets, with the nodes and apsides of their orbits, in the first point of Aries at beginning and end of the *Calpa* of BROHMA*. Secondly, such as assume a conjunction at the beginning and end of the *Calpa* of VARAHA, with a mean conjunction at the end of certain cycles or periods of years. Thirdly, such as assume

* THE *Calpa* of BROHMA contains 4320000000 *Hindu* years, and commenced 1972944000 years before the beginning of the present *Cali Yug*: it may have derived its name from BROHMA GUPTA, who may probably have been the author of it. The *Calpa* of VARAHA consists of the same number of years, but commenced 17064000 years later, and derives its name from VARAHA MIHIR, author of the *Surya Siddhanta*, *Jat Karnob*, &c. The *Calpa* is divided into lesser periods of years, called *Manwantaras* and *Yugs*; the intention of which seems to be, to assist the memory in calculating the years expired of the system: at least they answer no other purpose at present. In a valuable fragment in my possession, the durations of the *Calpas*, *Manwantaras*, and *Yugs*, of the ancient *Hindus*, are stated totally different from those now in use.

- no conjunction at the beginning or end of either *Calpa*, or at any other period.—To the first class, belong the works of BROHMA GUPTA, the *Siddhanta*, *Serômoni* of BHASKER, &c. which make no conjunction of the planets at the commencement of the present *Cali yug*. To the second, belong the *Surya Siddhanta*, *Sôma Siddhanta*, *Vasishta-Siddhanta*, &c. and such as assume a mean conjunction at the beginning of the *Cali yug* only, as the *Jat Karnob* of VARAHA, the tables of *Trivalore*, &c. To the third, belong the *Brohma Siddhanta*, *Vishnu Siddhanta*, *Bhasvoti Drubo Rothono*, *Chondrika*, &c. These last are nearly on the principles of the *European* astronomy, the mean annual motions not being affected by any assumed epoch, and consequently make no conjunction of the planets either at the beginning of the present *Cali yug*, or at any other period.

21. THE revolutions of the planets, &c. in a *Calpa*, or 4320000000 years, according to BROHMA GUPTA and BHASKER ACHARYA, are as follows:

<i>Sun, Moon, and Planets</i>		<i>Apsides.</i>	<i>Nodes.</i>
Revolutions.			
Sun,	- 4320000000	480	
Moon	- 57753300000	488105858	232311168
Mercury	- 17936998984	332	511
Venus	- 7022389492	653	893
Mars	- 2296828522	292	267
Jupiter	364226455	855	63
Saturn	- 146567298	41	584

22. In the *Surya Siddhanta*, the least cycle of years in which the sun, moon, and planets, are supposed to return to a line of mean conjunction in the beginning of Aries, is 1080000 years: or the fourth
part

part of a *Maha yug**, and the revolutions of each planet, given in that cycle, are as follows:

Sun,	revolutions	1080000
Moon,	—	14438334
Mercury,	—	4484265
Venus,	—	1755594
Mars,	—	574208
Jupiter.	—	91055
Saturn,	—	36642

23. THESE revolutions were found by multiplying the mean annual motions by 1080000, the number of years assumed to the cycle: rejecting from the product all fractional parts of a revolution under six signs, and adding one revolution for those equal to or above that quantity. Thus let the mean annual motions which we have determined (§ 16) on the assumption of the planets, having been in a line of mean conjunction at the beginning of the *Cali yug*, be multiplied by 1080000, and we shall have,

Sun,	revolutions	1080000	0 s. 0° 0'
Moon,	—	14438333	10 25 0
Mercury,	—	4484260	3 20 0
Venus,	—	1755589	8 25 0
Mars,	—	574208	6 20 0
Jupiter,	—	91052	6 0 0
Saturn,	—	36644	11 10 0

From which rejecting all fractional parts of a revolution under six signs, and encreasing the rest to unity, we have,

Sun,	revolutions	1080000
Moon,	—	14438334
Mercury,	—	4484260

* THE revolutions given in the *Surya Siddhanta* are for a *Maha yug*, but they must be always divisible by four, otherwise a mean conjunction could not take place at the beginning of the *Cali yug*. They are here reduced accordingly.

Venus

Venus,	revolutions	1755590
Mars,	—	574209
Jupiter,	—	91053
Saturn;	—	36645

24. COMPARING these, with the numbers in the same period, by the *Surya Siddhanta* (§ 22), it will appear, that the number of revolutions of Mercury, according to that work, is

	-	5 greater,
Of Venus,	-	4 greater,
Of Mars,	-	1 less,
Of Jupiter,	-	2 greater,
Of Saturn,	-	3 less.

These differences, the *Hindu* astronomers call *beej*; or the corrections to be applied to the mean places of the planets, computed from the *Surya Siddhanta* *.

25. HAVING thus given the revolutions of the sun, moon, and planets, in the cycle of 1080000 years in imitation of the *Surya Siddhanta*, I shall now shew their use in determining the mean longitudes of each at any time proposed.

EXAMPLE.

LET the time be the end of the year 4900 of the *Cali yug*, or the 12 April, 1799, at 51' 40" past four P. M. on the meridian of *Paris*; to find the mean longitudes of the sun, moon, and planets, in the *Hindu* sphere, at that instant. Say, as 1080000 is to the number of revolutions in that cycle, so is the number of years expired of the *Cali yug*, to the planets mean longitude at the end of that time: Thus,

* IN the *Siddhanta Rahosyo*, dated in 1513 *Saka*, the *beej* or corrections are as follow: Mercury 4; Venus 3; Jupiter 2; revolutions in 1080000 years subtractive; and Saturn 3 additive; the *Groho Torongini* dated in 1530; *Siddhanta Munjevi* dated in 1531 *Saka*; *Bisukito* and tables of CHRISNABORAM (all of which have been deduced from the *Surya Siddhanta*) adopt the *beej* to correct the mean longitudes of the planets, as computed from the motions deduced from the *Surya Siddhanta*.

		Revolutions.				
Sun	$\frac{1080000 \times 4000}{1080000}$	=	4900	—	0 s. 0° 0' 0"	
Moon	$\frac{1443834 \times 4000}{1080000}$	=	65507	—	3 2 12 0	
Mercury	$\frac{449410 \times 4000}{1080000}$	=	20345	—	3 1 20 0	
Venus	$\frac{173500 \times 4000}{1080000}$	=	7965	—	2 3 40 0	
Mars	$\frac{574200 \times 4000}{1080000}$	=	2605	—	2 14 42 0	
Jupiter	$\frac{91033 \times 4000}{1080000}$	=	413	—	1 9 54 0	
Saturn	$\frac{35545 \times 4000}{1080000}$	=	166	—	3 3 30 0	

26. THE revolutions of the apsides and nodes in a *Calpa*, or 4320000000 years, according to the *Surya Siddhanta*, are as follow :

<i>Apsides.</i>		<i>Nodes retrograde.*</i>
Sun	387	
Moon	488203000	232238000
Mercury	368	488
Venus	535	903
Mars	204	214
Jupiter	900	174
Saturn	39	662

27. From what has been already said respecting the manner of determining the mean annual motions of the planets (§ 14, 15, & 16 and the number of revolutions of each, from thence (§ 23) in 1080000 years; no difficulty can occur in forming an idea of the mode by which those of the apsides and nodes were obtained.

28. The commencement of the *Calpa* of VARAHA, is fixed at the distance of 1955880000 years before the beginning of the present *Cali yug*, at the instant of midnight between *Saturday* and *Sunday* on the meridian of *Lanka*; at which instant, the sun moon

and planets, with the apsides and nodes of their orbits, are assumed to have been in a line of conjunction in the beginning of Aries.

29. THE longitudes of the aphelia and nodes, at the end of the year 4900 of the *Cali yug* ; or 12th April 1799, at 51' 40" past four P. M. on the meridian of *Paris*, by DE LA LANDE's tables will be as follow :

European Sphere.

	s.	°	'	"	Nodes---supplement.	s.	°	'	"
Sun's apogee	3	9	28	18,3					
Moon's ditto	0	16	10	30,3	10	12	49	2,3	
Mercury's aphel.	8	14	20	11	1	15	56	16	
Venus's ditto	10	8	35	37	2	14	51	46	
Mars's ditto	5	2	23	26	1	18	1	38	
Jupiter's ditto	6	11	7	40	3	8	23	41	
Saturn's ditto	8	29	3	23	3	21	56	17	

30. THEIR longitudes in the *Hindu* sphere, are had by deducting $0^{\circ} 20' 52'' 28,5$ (§ 12) from those of the aphelia, and adding it to those of the nodes, as follows :

Hindu Sphere.

	s.	°	'	"	Nodes--supplement.	s.	°	'	"
Sun's apogee	2	18	35	49,8					
Moon's ditto	11	25	18	1,8	11	3	41	31,3	
Mercury's aphel.	7	23	27	42,5	2	6	48	44,5	
Venus's ditto	9	17	43	8,5	3	5	44	14,5	
Mars's ditto	4	11	30	57,5	2	8	54	6,5	
Jupiter's ditto	5	20	15	11,5	3	29	16	9,5	
Saturn's ditto	8	8	10	55,5	4	12	48	45,5	

31. THE longitudes of the aphelia and nodes being given by assumption, at the commencement of the *Calpa* (§ 28) ; and their positions at the end of the year 4900 of the *Cali yug*, by *European* tables (§ 29 and 30) ; (which may be supposed to agree with observation) we obtain from thence, the following annual

nual motions; which when computed from the commencement of the *Calpa*, as an epoch of assumed conjunction, will give the longitudes of the aphelia and nodes, agreeing with *European* tables.

Annual motions of the apsides—*Hindu* sphere.

	S.	0	I	II	III	IV	V	VI	VII	VIII	
Sun	0	0	0	3	28	34	34	55	38	7	direct.
Moon	1	10	40	35	35	26	36	19	15	50	ditto.
Mercury		-		2	25	9	59	38	0	57	retro.
Venus		-		10	4	11	39	9	26	8	ditto.
Mars		-		8	19	50	19	37	3	21	direct.
Jupiter		-		1	56	23	23	4	5	50	retro.
Saturn		-		7	24	1	58	31	33	33	direct.

Annual motion of the nodes.

	S.	0	I	II	III	IV	V	VI	VII	VIII	
Moon's	0	19	21	31	5	15	30	51	45	46	retro.
Mercury's			1	41	58	19	20	7	2	2	ditto.
Venus's			1	29	40	19	2	29	29	57	ditto.
Mars's			1	26	40	17	41	53	0	52	ditto.
Jupiter			1	34	22	18	57	22	36	31	ditto.
Saturn			1	30	13	19	10	58	13	44	ditto.

32. THE motions of the aphelia of Mercury, Venus and Jupiter, are retrograde in the *Hindu* sphere; though direct in that of the *Europeans*: the reason of this, is owing to the difference between the motions of the two spheres, with respect to each other: for, if we conceive the first point of Aries in the *Hindu* sphere to coincide with the vernal equinox then at the expiration of $365^{\text{d.}} 6^{\text{h.}} 12' 36'' 33''' 36''$ (the length of the *Hindu* year according to the *Surya Siddhanta*), the Sun would again enter Aries in the *Hindu* sphere: but his distance at that very moment from the vernal equinox would be $= 58'' 40''' 15'' 36''$, the true quantity by which the *European* and *Hindu* spheres, recede from each other annually;

nually ; and not $54''$, as found in some *Hindu* books. Hence it follows, that if the motion of the aphelion of a planet, was exactly $58'' 40''' 15^{\text{iv}} 36^{\text{v}}$, in the *European* sphere, it would have none in that of the *Hindus* ; but would be considered as fixed. And, if the motion was less, then it would be retrograde ; as is the case with the aphelia of Mercury, Venus, and Jupiter.

33. FROM the motions above determined (§ 31), we obtain the following revolutions of the aphelia and nodes in a *Calpa*, requisite to give their positions by direct computation.

Apsides.		Notes—retrograde.
Sun •	10366 direct.	
Moon	488122956 ditto.	232308774
Mercury	7961 retro.	334893
Venus	33023 ditto.	293303
Mars	29030 direct.	289950
Jupiter	6698 retro.	319207
Saturn	23023 direct.	300592

These numbers differ widely from those given in the *Suryá Siddhánta* (§ 26), owing to the slow motions assigned to the apsides and nodes, in that work.

34. THE revolutions of the apsides and nodes in a *Calpa*, being thus ascertained, the following examples will shew their applications and use.

EXAMPLE. Let it be required to determine by computation, the longitudes of the Sun's apogee, Moon's apogee, and the aphelion of Jupiter, in the *Hindu* sphere, at the end of the 4900 of the *Cali* *yug*. From the commencement of the *Calpa* of VARAHA, to the beginning of the *Cali*

yug, (§ 28) = 1955880000 years
 Add - - - - - 4900
 Total years expired of the *Calpa*, 1955884900

Then

Then say, as 4320000000 years to the number of revolutions in that cycle, so is the time expired to the longitude.

Thus, longitude of the

$$\text{Sun's apogee,} = \frac{10365 \times 1955884900}{4320000000} = 4693^{\text{Rev.}} - 2^{\circ} 80' 34'' 22'' \&c.$$

$$\text{Moon's apogee,} = \frac{4881122956 \times 1955884900}{4320000000} = 220998221 - 11^{\circ} 25' 18'' 49'' \&c.$$

$$\text{Jupiter's aphel.} = \frac{6698519 \times 5884900}{4320000000} = 3032 - 6^{\circ} 9' 45'' 18'' \&c.$$

but the motion of Jupiter's aphelion being retrograde we must deduct this longitude from twelve signs; and we shall have, 5s. 20° 14' 41" &c. the longitude required.

Again, let the longitude of the Moon's ascending node, at the end of the year 4900 of the *Cali yug* be required.

Longitude of the Moon's ascending node in antecedentia.

$$= \frac{232308774 \times 1955884900}{4320000000} = (105178060) 11s 3^{\circ} 40' 33'' \&c.$$

which deducted from twelve signs, leaves 0s. 268 19' 26" &c. for the longitude of the node, according to the order of the signs.

LENGTH OF THE HINDU YEAR.

35. HITHERTO I have supposed the length of the *Hindu* year to be 365^{ds.} 15^{do.} 31' 31" 24^{'''}, the same as in the *Sarya Siddhanta*; and all the preceding calculations respecting the motions of the planets, &c. are made on that supposition. It is, however, to be observed, that when a *Hindu* astronomer forms a new system conformably to the positions of the planets, &c. in his time, he must likewise deter-

mine the length of the year, to be given in that system.

36. IN order to ascertain the length of the *Hindu* year, two things are necessary to be first known. 1st. The instant of the commencement of the year. 2d. The time expired from the beginning of the cycle, to that instant. The first, is supposed to be found by observation by determining that instant of time, when the difference of longitude between the Sun and a known fixed Star, is equal to the longitude assigned to the Star in the *Hindu* sphere. The longitudes of the twenty-seven *Yoga* Stars, may be found in many *Hindu* books of astronomy; but all that have hitherto come into my hands, appear silent as to the manner in which the observation is conducted, or the particular Star by which it is made: *Chitra* or the virgin spike, (perhaps from its situation) is generally supposed to be the Star observed on such occasions; and its longitude, according to BROHMA GUPTA and some others, is $6^{\circ} 3' 0''$ in the *Hindu* sphere.

37. ACCORDING to VARAHA, the year 3601 of the *Cali.yug*, began precisely at the instant of the vernal equinox; that is, the Sun had then entered Aries according to the true motions: consequently, the *Hindu* and *European* spheres had then (A.D. 499) coincided.

The longitude of Spica, in A. D.

1750, was $= 6^{\circ} 20' 21'' 18''$

Deduct precession for 1251 years,

at $50'' 1$ per a., $= 17 \quad 24 \quad 35$

Longitude of Spica, in A. D. 499, $= 6 \quad 2 \quad 56 \quad 43$

BROHMA GUPTA makes it - $= 6 \quad 3 \quad 0 \quad 0$

Difference, about - - $3 \quad 17$

However, from the most accurate comparisons I have been able to make, respecting the length of the year, as given in different books, whose ages are known,

either

either from dates or computations; it would appear, that the longitude assigned to *Chitra*, by BROHMA GUPTA, &c. is too great by upwards of fifty minutes.

38. THE Sun's true longitude, when he enters Aries, according to mean motions, is stated by *Hindu* tables at about Os. $2^{\circ} 7' 24''$; now if we suppose the longitude of *Chitra*, to be 6 s. $2^{\circ} 7' 24''$, (to avoid trouble in calculation) the difference of longitude between the Sun and Star, when the former enters Aries according to mean motions, will be exactly six signs.

39. The distance, or difference of longitude between the Sun and Star, (at the commencement of the year according to mean motions), being thus supposed six signs; we can easily ascertain the instant they are in that position, and from thence the length of the year, as follows: Sun's mean longitude in the *European* sphere on the 12th *April*, 1799, at $45^{\circ} 44'$ past 9 P. M. on the meridian of

<i>Lanka</i> (§ 11).	=	Os.	$20^{\circ} 52' 28''$	5
Equation of his center,	-	+ 0	1	52 45
Sun's true longitude,	-	0	22	45 13,5
Longitude of Spica same time,	=	6	21	2 32,5
Difference of longitudes between				
0 & *	-	-	5	28 17 19
Which deduct from	-	6	0	0 0
Remain	-	0	1	42 41
Which reduced to time make,		1 ^{day}	44 ^{do}	46' 44"
Now the time expired from the commencement of the <i>Caliyug</i> , to the above instant, is (§ 11),		1789767 ^{days}	54 ^{do}	24' 20"
Deduct	-	1	44	46 44
Remain	-	1789766	9	37 36
or the instant at which the Sun and Star would be axactly six signs distant from each other, being the commencement of the year, according to mean motions; and which being divided by 4900, the				

number of years then expired of the *Cali yug*, we shall have $\frac{1789766 \text{ } 9 \text{ } 37 \text{ } 36}{4900} = 365^{\text{days}} 15^{\text{do.}} 30' 14'' 25'''$, the length of the *Hindu* year in A. D. 1799, upon the supposition that *Chitra* is exactly six signs distant from the Sun the moment he enters Aries according mean motions.

40. THE Sun is found to revolve from any fixed Star to the same again in $365^{\text{days}} 6^{\text{h}} 9' 11'' 36'''$, which is the length of the sidereal year, as determined, by *European* astronomers. Hence, after the expiration of one compleat sidereal year, from the time above determined, the Sun would again return to the same position with respect to Spica: it may therefore be asked, why is the *Hindu* year longer than the sidereal year of the *European* astronomers? To understand the reason of this, it must be observed that at the time above determined, at which the Sun and Star would be exactly six signs distant from each other the number of days expired of the *Cali yug*, would be precisely - - - = 1789766 9 37 36
But 4900 sidereal years, make only 1789756 16 58 0
Difference, - - - 9 52 39 16
Hence it follows, that as the number of days expired of the *Cali yug* at the time, exceeds the number in 4900 sidereal years, by nearly ten days; that difference, when divided amongst the years expired, must evidently cause an excess in the length of the *Hindu* year, above the sidereal.

41. HENCE also, the length of the *Hindu* year, may be commodiously obtained, at any proposed period, by the following formula:

Let $d = 9^{\text{days}} 52^{\text{do.}} 39' 16''$
 $s = 365 \quad 15 \quad 22 \quad 59 =$ the sidereal year,
 $h =$ length of the *Hindu* year,
 $n =$ number of years expired of the *Cali yug*,
 • Then

$$\text{Then } s + \frac{d}{n} = h$$

$$\text{And } \frac{d}{h-s} = n.$$

42. FROM the formula $s + \frac{d}{n} = h$, the following table has been computed, shewing the length of the *Hindu* year, at different periods by inspection.

1st Bysack	3601	A. D. 499	365 ^{dys}	15 ^{do.}	32'	51''	39'''
	3701	599	—	15	32	35	38
	3801	699	—	15	32	20	28
	3901	799	—	15	32	6	4
	4001	899	—	15	31	52	24
	4101	999	—	15	31	39	23
	4201	1099	—	15	31	26	59
	4301	1199	—	15	31	15	11
	4401	1299	—	15	31	3	54
	4501	1399	—	15	30	53	7
	4601	1499	—	15	30	42	49
	4701	1599	—	15	30	32	57
	4801	1699	—	15	30	23	29
	4901	1799	—	15	30	14	25

THIS much may serve to explain the principles on which the length of the *Hindu* year depends. There is however another method for determining the length of the year, from the precession of the equinoxes, which I shall now explain.

43. I HAVE already observed (§ 37), that according to VARAHA, the year 3601 of the *Cali yug*, began at the instant of the vernal equinox (in A. D. 499), The same astronomer fixed also the rate of precession at 54'' annually. Hence by knowing the time of coincidence of the *Hindu* and *European* spheres, and the rate of precession, we can easily determine from thence, the instant at which the *Hindu* year

year ought to commence. For, then the distance of the first point of Aries in the *Hindu* sphere, from the vernal equinoxial point, must be always equal to the whole precession. For example, at the end of the year 4900 of the *Calì yug*, the precession at 54" annually, will amount to 19° 30'; which on the principles above stated should the Sun's true longitude in the *European* sphere, at the instant of the commencement of the *Hindu* year according to true motions.

The Sun's true longitude on the 12th April 1799, at 51' 40" past 4 P. M. on the meridian of *Paris* in the *European* sphere (§ 39) = 0s. 22° 45' 13,5"

Deduct the precession - 0 19 30 0
Remain - - - 3 15 13,5

Which reduced to time according to true motions make - 3^h 19^m 21' 02"

From the time then expired of the

Calì yug (§ 11) - = 1789767 54 24 20
Deduct - - - 3 19 21 02

Remain commencement of the *Hindu* year - 1789764 35 3 18

Add *Hindu* equation of the Sun's center reduced to time = 2 10 12 40

Sun enters Aries according to mean motions at - 1789766 45 15 58

which being divided by 4900, the number of years expired of the cycle, we shall have $\frac{1789766 \text{ days } 45 \text{ do. } 15' 58''}{4900} =$

365° 15' 30" 40" 36"', the length of the *Hindu* year in A. D. 1799, from the precession of the equinoxes as settled by VARAHA. In this operation the length of the *Hindu* year, comes out somewhat greater than that deduced from the position of *Chitra*. Both methods, however, agree in giving the same length to the year, between 7 and 800 years ago; about which time, according to the testimony of some *Hindu* books, as well as from computation, VARAHA must have lived and made his observations.

44. THE length of the year being determined either from the position of *Chitra*, or the precession of the equinoxes as above explained (§ 39, 43), the next thing a *Hindu* astronomer has to do (if he means to form a compleat system in imitation of the *Surya Siddhanta*), is to ascertain the number of days to be assigned to the cycle of 1080000 years. This is done by multiplying the length of the year by that number. For example let the length of the year A. D. 1799 deduced from the position of *Chitra* = $365^{\text{dys}} 15^{\text{do}} 30' 14'' 25'''$, be multiplied by 1080000, and we shall have 394479072, for the nearest number of days in that cycle.

45. In the *Surya Siddhanta* the *Calpa* is made to commence with *Sunday* as the first day of the week, and the present *Cali yug*, is made to begin with *Friday*. Therefore, in reckoning from the commencement of the *Calpa*, the number of days to be assigned to the above cycle, must be so regulated that the first day of the cycle which we now are in, may fall on *Friday*. The number of cycles expired at the commencement of the *Cali yug*, was 1811; which divided by 7, leaves a remainder of 5: hence, every cycle must contain a compleat number of weeks and one day over, to make the present begin with *Friday*.

46. THE number of revolutions of the Moon in the cycle of 1080000 years, and the number of mean solar days in the same period should be so adjusted with each other, as to give the relative positions of the Sun and Moon agreeing with observation. This is effected by encreasing or diminishing the number of days, or the Moon's revolutions, or both; until the relative positions of the luminaries are obtained sufficiently correct. The adjustment in the days, must be made by

by compleat weeks, to preserve the order of the days of the week from the commencement of the *Calpa*.

47. THE revolutions of the Moon in the cycle of 1080000 years corresponding to the number of days above deduced = 14438321; but this number does not give the relative positions of the Sun and Moon in A. D. 1799, nearer than $3' 20'', 5$ of the truth, which might be deemed sufficiently accurate by a *Hindu* astronomer; but to render this still more correct, I find by computation that two revolutions must be added; and that the number of days in the cycle, must be encreased by sixty-three, or nine weeks; so that the adjusted number of revolutions will then be 14438323, and the days corresponding = 394479135: from which, we obtain the relative positions of the Sun and Moon with respect to each other, within $6''$ of what the *European* tables make them; a degree of accuracy more than necessary in a *Hindu* system.

48. THE number of mean solar days in the cycle of 1080000 years, being thus finally adjusted, we get the length of the year = $\frac{394479135}{1080000} = 365^{\text{ds.}} 15^{\text{do.}} 30' 27''$; and the instant at which the Sun enters Aries in the *Hindu* sphere in A. D. 1799, according to mean motions = $\frac{394479135 \times 4000}{1080000} = 1789766^{\text{ds.}} 26^{\text{do.}} 45'$ from the commencement of the *Cali* yug. The corrections introduced above (§ 47), make the year come out a little longer, and the time of its commencement somewhat later than we deduced from the position of *Chitra* (§ 39); but this is of no consequence whatever, the principal object in the *Hindu* astronomy being to obtain the relative positions and motions of the Sun and Moon sufficiently correct, for calculating the times of their conjunctions, oppositions, and eclipses.

49. THE

49. THE mean longitudes of the planets, being determined as by observation at the instant of the commencement of the year, and their mean annual motions, &c. thence deduced, as already explained (§ 12, 13, 14, 15, 16,) we obtain from thence the following revolutions in the cycle of 1080000 years.

Sun	- - - - -	1080000
Moon	- - - - -	14438323
Mercury	- - - - -	4484258
Venus	- - - - -	1755589
Mars	- - - - -	574209
Jupiter	- - - - -	91053
Saturn	- - - - -	36646
Days	- - - - -	394479135

And, the revolutions of the apsides and nodes in a *Calpa*, or 4320000000 years, will be as follows:—

Apsides.		Nodes—retrograde.
Sun	- - 11985 direct	
Moon	- 488114797 ditto	232308827
Mercury	- 8014 retro.	340671
Venus	- - 33076 ditto	299081
Mars	- - 28977 direct	286659
Jupiter	- 6751 retro.	315916
Saturn	- - 24642 direct	297301

50. THE revolutions of the Sun in the cycle = 1080000 subtracted from the revolutions of the Moon in the same period = 14438323 leave the number of mean lunations = 13358323, which being multiplied by 30, gives the number of tithis or lunar days = 400749690: and 400749690—394479135 = 6270555, the intercalary lunar days in the cycle. The number of sidereal days, or apparent revolutions of the fixed Stars = 394479135 + 1080000 = 395559135. The Moon's periodical revolution, or the time in which she goes from the first

first point of Aries to the same again $= \frac{36470134}{1443821} = 27^{\text{ds}} 19^{\circ} 18' 1'' 17''' \&c.$ and her synodical revolution or lunation $= \frac{304470174}{1238424} = 29^{\text{ds}} 31^{\text{do}} 50' 7'' 02''' \&c.$ or according to the *European* expression $29^{\text{ds}} 12^{\text{h}} 44' 2'' 49''' \&c.$ which does not differ the ninetieth part of a second from the length of a lunation by DE LA LANDE's tables. The periodical revolutions of the planets may be had exactly in the same manner, by dividing the number of days in the cycle by the revolutions of each.

51. THE system being now compleated, the mean longitudes of the Sun, Moon, and planets, are obtained from the revolutions above given (§ 49) in the manner already explained (§ 25); and their true longitudes, &c. are determined from thence by means of equations.

52. THE equations of the orbits of the planets to be met with in *Hindu* books, differ considerably from those of *Europeans*, arising partly from the manner in which they are computed, partly from the inaccuracy of *Hindu* observation, and partly from their antiquity. For most of the *Hindu* astronomers for some ages back, appear to rest satisfied with merely copying the equations given in the books of those who preceded them. The equations now in general use appear to have been given by VARA'HA several centuries ago, and it is probable he copied them from the works of some still earlier astronomer.

53. VARA'HA has stated the obliquity of the ecliptic at twenty-four degrees, and the *Hindu* astronomers since his time, appear to adopt that quantity. But VARA'HA was not the first who gave the obliquity of the ecliptic at twenty-four degrees; for, it would appear that BROHMA GUPTA, between five and six centuries before him, states it precisely the same. We are not, however, to conclude from hence, that
the

the *Hindu* astronomer who first observed the obliquity of the ecliptic, and settled it at twenty-four degrees, must have lived so far back as the point of time when it was really so: for it is well known, that independent of errors in observations for want of proper instruments, the *Hindu* astronomers make it a rule in all cases, where extraordinary accuracy is not required, to reject fractional quantities, and take the nearest whole number; so that if the first *Hindu* astronomers found the obliquity to exceed $23^{\circ} 30'$. they would state it at 24° , as being sufficiently near for their purpose.

54. THEREFORE, in investigating the antiquity of any *Hindu* astronomical work, the *quantities* of the equations of the orbits of the planets, and that of the obliquity of the ecliptic must be rejected, as not only too incorrect for the purpose, but altogether fallacious; for, being as I have above stated (§ 52—53) copied from the works of the earlier astronomers, they cannot in the smallest degree add to the antiquity of the works into which they are so transcribed, except in delusive appearance only.

55. THE aphelia and nodes of the planets being invisible points in the heavens, their positions and motions for want of proper instruments, have been but ill determined by the *Hindu* astronomers; and therefore, are to be rejected also: unless, where they are found to agree with the general result, deduced from the motions and positions of the Sun, Moon, and planets.

56. HAVING thus given a full and comprehensive view of the principles of the *Hindu* systems, with their formation, and pointed out all those delusive appearances which are apt to mislead; I shall now proceed to the investigation of the antiquity of the *Surya Siddhanta*

57. THE most correct and certain mode of investigating the antiquity of *Hindu* astronomical works, is by comparing the positions and motions of the planets computed from thence, with those deduced from accurate *European* tables. For, it must be obvious that every astronomer, let the principle of his system be what it will, whether real or artificial, must endeavour to give the true positions of the planets in his own time; or at least as near as he can, or the nature of his system will permit: otherwise his labour would be totally useless. Therefore, having the positions and motions of the Sun, Moon, and planets, at any proposed instant of time, given by computation from any original *Hindu* system; and having also their positions and motions deduced from correct *European* tables for the same instant; we can from thence, determine the point or points of time back, when their respective positions were precisely the same by both.

58. ACCORDING to the *Surya Siddhanta*, the motion of the Moon's apogee in 100 years of 365^{ds.} 15^{do.}

$$31' 31'' 24''' \text{ each} = \frac{488203 \times 100}{4520000} = 11 \text{ rev. } 3' 18'' 21' 30''$$

By DE LA LANDE's tables for

the same space of time,

in the *Hindu* sphere, = 11 rev. 3 17 39 19,1

Difference, the former greater by 42 10,9

Now, supposing the author of the *Surya Siddhanta*, to have accurately determined the position of the Moon's apogee, when he wrote that work; it must follow, that at the expiration of one hundred *Hindu* years from that time, the computed place of the apogee, would exceed the true by 42' 10,9; and at the end of two centuries, it would be double that quantity: so that the difference between the true, and computed places, has been ever since encreasing in that proportion. Therefore, in order to ascertain the age of the *Surya Siddhanta*, we must find what

the

the difference amounts to at present; which being divided by the above difference, gives the time expired, since the *Surya Siddhanta* is supposed to have been written.

Thus, the longitude of the Moon's apogee at the end of the year 4900 of the *Cali yug*—

$$\text{By the } \textit{Surya Siddhanta} = \frac{1955884900 \times 438203}{4320000} =$$

$$221034461 \text{ rev. } 11^{\circ} 29' 33'' 30''$$

By DE LA LANDE's tables, *Hindu*

$$\text{sphere (§ 30)} \quad 11 \ 25 \ 18 \ 1,8$$

$$\text{Difference in A. D. 1799} \quad 4 \ 15 \ 28,2$$

which being multiplied by 100, and divided by the difference in motion per century, we have $\frac{4^{\circ} 15' 28,2 \times 100}{42 \ 10,9}$

= 605 years, for the age of the *Surya Siddhanta* from this operation.

59. THE motion of the Moon's ascending node for a century :—

$$\text{By the } \textit{Surya Siddhanta} = \frac{232238 \times 100}{4320000}$$

$$= 5 \text{ revolutions } 4^{\circ} 15' 19'' 0''$$

By DE LA LANDE's tables, *Hindu*

$$\text{sphere,} \quad = 4 \ 15 \ 51 \ 48,7^{\circ}$$

$$\text{Difference, the former less by} \quad 32 \ 48,7$$

Longitude of the Moon's ascending node at the end of the year 4900 of the *Cali yug*, in antecedentia :—

$$\text{By the } \textit{Surya Siddhanta} = \frac{1955884900 \times 232238}{4320000}$$

$$= 105146017 \text{ rev. } 11^{\circ} 0' 13'' 0''$$

By DE LA LANDE's tables, *Hindu*

$$\text{sphere (§ 30)} \quad = 11 \ 3 \ 41 \ 31,3$$

$$\text{Difference, the former less by} \quad 3 \ 10 \ 31,3$$

Hence, $\frac{3^{\circ} 10' 31'',3 \times 100}{32 \ 48,7} = 580$ years, for the age of the *Surya Siddhanta* from this operation: differing but twenty-five years from the former.

• 60. THE motion of the Sun's apogee in a century of *Hindu* years :

By the *Surya Siddhanta* $= \frac{387 \times 100}{4320000000} = 0^{\circ} 0' 0'' 11'',6$

By DE LA LANDE's tables, *Hindu* sphere, $= 0 \ 0 \ 5 \ 47,6$

Difference, the former too slow by $5 \ 36,0$

Longitude of the Sun's apogee at the end of the year 4900 of the *Cali yug* :—

By the *Surya Siddhanta* $= \frac{1955884000 \times 387}{4320000000}$
 $= 175 \text{ rev. } 2^{\circ} 17' 17'' 16'',4$

By DE LA LANDE's tables, *Hindu* sphere (§ 30) $= 2 \ 18 \ 35 \ 49,8$

Difference, the former less by $1 \ 18 \ 33,4$

Hence, $\frac{1^{\circ} 18' 33'',4 \times 100}{5 \ 36} = 1105 \text{ years, for the age of the } \dot{S} \text{urya Siddhanta from this operation.}$

61. THE position of Mercury has been ill determined by the author of the *Surya Siddhanta*, probably from that planet being too near the Sun ; for it will require about 1454 years yet to come, before the *European* tables and the *Surya Siddhanta* agree in giving it the same position ; unless there are some inequalities in its motion not yet observed by *European* astronomers.

The motion of this planet for a century .—

By the *Surya Siddhanta*, $= \frac{4484265 \times 100}{1080000}$
 $= 415 \text{ revolutions } 2^{\circ} 15' 30'' 0''$

By DE LA LANDE's tables, *Hindu* sphere $2 \ 16 \ 1 \ 34,3$

Difference, the former too slow by $31 \ 34,3$

Mercury's mean longitude at the end of the year 4900 *Cali yug* :—

By the *Surya Siddhanta* $= \frac{4484265 \times 4900}{1080000}$
 $= 20345 \text{ revol. } 3^{\circ} 9' 30'' 0''$

By

By DE LA LANDE's tables, *Hindu*
 sphere, (§ 12) - - - 3^s. 1^o 50' 13,5"
 Difference, the former more advanced
 by - - - - - 7.39 46,5
 which is contrary to what it ought to be, had the
 observation been correct.

62. THE mean motions of Venus for a century
 of *Hindu* years:—

By the *Surya Siddhanta* = $\frac{1755594 \times 100}{1080000}$
 = 162 revol. - - - 6^s. 19^o 48' 0"

By DE LA LANDE's tables, *Hindu*
 sphere, - - - - - 6 18 59 23,5
 Difference, the former quicker by 48 36,5

Mean heliocentrick longitude at the end of the year
 4900 of the *Cali yug*:

By the *Surya Siddhanta* = $\frac{1755594 \times 4900}{1080000}$
 = 7965 revol. - - - 2^s. 10^o 12' 0"

By DE LA LANDE's tables, *Hindu*
 sphere, (§ 12) - - - 2 3 13 45,5

Difference, the former more advanced by 6 58 14,5

Hence, $\frac{6^{\circ} 58' 14'',5 \times 100}{48 36,5} = 860$ years, for the age of the
Surya Siddhanta from this operation.

63. THE mean motions of Mars for a century of
Hindu years:—

By the *Surya Siddhanta* = $\frac{574208 \times 100}{1080000}$
 = 53 revol. - - - 2^s. 0^o 16' 0"

By DE LA LANDE's tables, *Hindu*
 sphere, - - - - - 2 0 31 55

Difference, the former slow by 15 55

Mean longitude at the end of the year 4900 of the
Cali yug:

By the *Surya Siddhanta* = $\frac{574208 \times 4900}{1080000}$
 = 2605 revol. - - - 2^s. 13^o 4' 0"

By DE LA LANDE'S tables, *Hindu*

sphere (§ 12) - - - - - $2^s\ 13. 58' 11,5''$

Difference, the former less advanced by $54\ 11,5$

Hence, $\frac{54' 11'',5 \times 100}{15\ 55} = 340$ years, for the age of the *Surya Siddhanta* from this operation.

64. The mean motions of the Sun, Moon, Jupiter, and Saturn, are found by modern astronomers to be subject to inequalities, on account of the mutual attractions of the planets to each other; therefore, before we proceed farther, it will be proper to state here the formulæ which have been given by M. DE LA GRANGE, DE LA PLACE, &c. for computing these inequalities.

FOR THE SUN.

Let n , = the number of years before A. D. 1750, then $n.^2 \times .00018408'' =$ the inequality according to the quantities given in DE LA LANDE'S tables, and is additive.

FOR THE MOON.

Let n , = the number of years before A. D. 1700, then $n.^2 \times .001111355'' - n.^3 \times .000000044''$ express the inequality which is additive in this case.

FOR JUPITER.

Let n , = the number of years before A. D. 1750; J , = Jupiter's mean longitude; S , = Saturn's mean longitude; then, $+(20' 49'',5 - n. 0'',042733) \cdot \sin (5 S - 2 J. + 5^\circ 34' 8'' - n. 58'',88)$ express the inequality.

FOR SATURN.

Let n , J , S , be as in the last; then, $-(48' 44'' - n. 0'',1) \cdot \sin (5 S - 2 J. + 5^\circ 34' 8'' - n. 58'',88)$ will express the inequality.

65. FROM the position and motion of the Moon, we obtain 759 years, for the age of the *Surya Siddhanta*: as in the following operation:

$$4900 - 759 = 4141 \text{ } \textit{Cali} \text{ } \textit{yug}. \quad \bullet$$

Moon's mean longitude at the end of the year 4141 of the *Cali yug*:

$$\text{By the } \textit{Surya} \text{ } \textit{Siddhanta} = \frac{14438334 \times 4141}{1080000}$$

$$= 55360 \text{ revs.} \quad - \quad - \quad 3^s. 23. 41' 52'' 48'''$$

By DE LA LANDE's tables at the end of the year 4900 of the *Ca-*

$$\textit{li} \text{ } \textit{yug}, \textit{Hindu} \text{ } \textit{sphere}, (\S 12) = 3^s. 2. 2' 40'' 48'''$$

Deduct motion for 759 *Hindu* years and sphere

$$- \quad = 11. 8 27. 45 16$$

Mean longitude at the end of

$$4141 \text{ of the } \textit{Cali} \text{ } \textit{yug} \quad = 3 \ 23 \ 34 \ 55 \ 32$$

Add inequality in Moon's motion,

$$\text{per formula for 660 years} \quad = \quad 7 \ 52 \ 24,7$$

Correct mean longitude

$$= 3 \ 23 \ 42 \ 47 \ 56,7$$

Deduct inequality in Sun's mo-

$$\text{tion per formula, for 710 yrs} \quad = \quad 54 \ 38,7$$

Moon's correct mean longitude,

$$\textit{Hindu} \text{ } \textit{sphere} \quad - \quad - \quad = 3 \ 23 \ 41 \ 53 \ 17,9 \bullet$$

agreeing with the *Surya Siddhanta* within half a second, or

$$20,9$$

Or the operation may be as follows, in the *European* sphere.

Moon's mean longitude at the end of the year 4900 of the *Cali yug*:—

By DE LA LANDE's tables, *Eur.* sphere, (§ 11)

$$- \quad - \quad = 3^s. 22. 55' \ 9'' 18'''$$

Deduct motion for 759 *Hindu*

$$\text{years, but } \textit{European} \text{ } \textit{sphere} = 11 \ 20 \ 49 \ 56 \ 25,77$$

Mean longitude at the end of

$$\text{the year 4141 of the } \textit{Cali} \text{ } \textit{yug} \quad 4 \ 2 \ 5 \ 12 \ 52,2$$

Add inequality per formula for

$$660 \text{ years} \quad - \quad = \quad 7 \ 52 \ 24,7$$

$$\bullet \quad 203$$

Correct

Correct mean longitude, end of

4141 *Cali yug*, in *Eur.* sphere $4^{\circ} 2^{\circ} 13' 5'' 16,9''$

Now, in order to reduce this to the *Hindu* sphere, we must find what the Sun's mean longitude was at that time, as follows:

Sun's mean longitude at the end of the year 4900

Cali yug : —

By DE LA LANDE's tables, *Eur.*

sphere, (§ 11) — = $0^{\circ} 20^{\circ} 52' 28'' 30'''$

Deduct motion for 759 *Hindu*

years — = $0 \ 12 \ 22 \ 11 \ 9,7$

Sun's mean longitude at the end

of the year 4141 — = $0 \ 8 \ 30 \ 17 \ 20,2$

Add inequality per formula for

710 years — = $54 \ 38,8$

Correct mean longitude, *Euro-*

pean sphere — = $0 \ 8 \ 31 \ 11 \ 59,0$

But the Sun's mean longitude in

the *Hindu* sphere at that in-

stant was — = $0 \ 0 \ 0 \ 0 \ 0$

Consequently the difference of

the spheres — = $0 \ 8 \ 31 \ 11 \ 59,0$

Now, from the Moon's correct

mean longitude — = $4 \ 2 \ 13 \ 5 \ 16,9$

Subtract diff. of the spheres = $0 \ 8 \ 31 \ 11 \ 59,0$

Remain Moon's mean longitude

Hindu sphere — = $3 \ 23 \ 41 \ 53 \ 17,9$

the same as before.

66. FROM Jupiter's position and motions, we obtain 875 years, for the age of the *Surya Siddhanta* :
 $4900 - 875 = 4025$ of the *Cali yug*.

Jupiter's mean longitude at the end of the year 4025
 of the *Cali yug* : —

By the *Surya Siddhanta* = $\frac{91055 \times 4025}{1080000}$

= 339 rev. — = $4^{\circ} \ 5^{\circ} \ 27' \ 30'' \ 00'''$

• Jupiter's

Jupiter's mean longitude at the end of the year 4900 of the *Cali yug* :—

By DE LA LANDE's tables, *Hindu* sphere, (§ 12)
= 1° 9' 5.33" 36"

—Deduct motion for 875 *Hindu*
years and sphere = 9 3 56 12 37

Mean longitude end of the year
4025 *Cali yug*, = 4 5 9 20 59

Add inequality in Jupiter's motion
per DE LA LANDE's tables = 19 22 36

Sum, = 4 5 28 43 35

Deduct inequality in the Sun's
motion, for 826 years = 1 14 0

Jupiter's correct mean longitude,
Hindu sphere = 4 5 27 29 35

being the same with the *Surya Siddhanta* within less
than half a second.

67. FROM Saturn we get 805 years.

4900—805 = 4095 of the *Cali yug*.

Saturn's mean longitude at the end of the year 4095
of the *Cali yug* :—

By the *Surya Siddhanta* = $\frac{36642 + 4095}{1030000} = 138 \text{ rev.} =$
11° 6' 19' 48" 00"

Saturn's mean longitude at the end of the year 4900
of the *Cali yug* :—

By DE LA LANDE's tables, *Hindu*
sphere (§ 12) = 3° 3' 24' 27" 36"

Deduct motion for 805 *Hindu*
years and sphere = 3 26 30 21 23

Remain Saturn's mean longitude = 11 6 54 6 13

Deduct inequality in motion per
DE LA LANDE's tables = 33 9 0

Remain = 11 6 20 57 13

Deduct inequality in Sun's mo-
tion per formula = 1 1 57

Saturn's correct mean longitude,
end of 4095 of the *Cali yug* = 11 6 19 55 16

204

agreeing

agreeing with the *Surya Siddhānta* within seven seconds.

68. FROM the aphelion of Mars we get 641 years for the age of the *Surya Siddhānta* :

Thus, the longitude of the aphelion of Mars at the end of the year 4900 of the *Cali yug* :

$$\text{By the } \textit{Surya Siddhānta} = \frac{1955884900 + 204}{432000000} \quad 92 \text{ rev.} \\ 4^s \ 10^o \ 2' \ 35'' \ 54'''$$

By DE LA LANDE's tables *Hindu*

$$\text{sphere (§12)} \quad 4 \ 11 \ 30 \ 57 \ 50$$

Difference; the former less advanced

$$\text{by} \quad 1 \ 28 \ 21 \ 6$$

Mean motion per century of *Hindu* years.

$$\text{By the } \textit{Surya Siddhānta} = 0 \ 0 \ 0 \ 6 \ 7$$

By DE LA LANDE's tables, *Hindu*

$$\text{sphere} = 0 \ 0 \ 13 \ 53 \ 3$$

$$\text{Difference, the former slow by} \quad 0 \ 0 \ 13 \ 46 \ 56$$

$$\text{Hence, } \frac{1^o \ 28' \ 21'' \ 36''' + 100}{13 \ 46 \ 56} = 641 \text{ years.}$$

69. FROM the length of the year = $365^{\text{Ds.}} \ 15^{\text{do.}} \ 31' \ 31'' \cdot 24'''$, we get 736 years, for the age of the *Surya Siddhānta* :

Thus, in the formula $\frac{d}{h-1} = n$, (§ 41) we have $d = 9^{\text{Ds.}} \ 52^{\text{do.}} \ 39' \ 16''$; $h = 365^{\text{Ds.}} \ 15^{\text{do.}} \ 31' \ 32'' \ 24'''$; and $s = 365^{\text{Ds.}} \ 15^{\text{do.}} \ 22' \ 59''$. Hence $\frac{d}{h-1} = n = \frac{9 \ 52 \ 39 \ 16}{8 \ 32 \ 24} = 4164$ of the *Cali yug*, when the year was of the given length. Therefore $4900 - 4164 = 736$ years, the age of the *Surya Siddhānta*.

70. LET the results of the foregoing operations be now collected together, in order to obtain a mean of the whole : and we shall have

• From

From the Moon's apogee	(§ 58)	-	605 years.
———— node	(§ 59)	-	580
Sun's apogee	(§ 60)	- -	1105
Venus	(§ 62)	-	860
Mars	(§ 63)	- -	340
Moon	(§ 65)	-	759
Jupiter	(§ 66)	- -	875
Saturn	(§ 67)	-	805
Mars's aphel.	(§ 68)	- -	641
Length of the year	(§ 69)	-	736

Sum = 7306

which being divided by 10, the number of results, we get 730,6—or 731 years nearly for the age of the *Surya Siddhānta*: which differs but about five years from the age deduced from the length of the year only.

71. BUT independent of all calculations we know from *Hindu* books, the age in which the *Surya Siddhānta* was written; and by whom. In the commentary on the *Bhasvoti*, it is declared, that VARA'HA was the author of the *Surya Siddhānta*. The *Bhasvoti* was written in the year 1021 of Śaka, by one SOTANUND, who, according to *Hindu* accounts, was a pupil of VARA'HA, and under whose directions he himself acknowledges he wrote that work. Consequently, VARA'HA must have been then alive, or else a very short time before it: which agrees as near as possibly can be, with the age above deduced; for, the *Bhasvoti* in A. D, 1799, will be exactly 700 years old.

72. THAT VARA'HA, was the real author of the *Surya Siddhānta*, is still further confirmed by one of his works in my possession, entitled *Jatok Arnob*; the mean age of which comes out by computation 739 years. In this work, as in the *Surya Siddhānta*,
the

the Sun, Moon, and planets, are assumed to have been in a line of mean conjunction, in the first point of Aries at the commencement of the *Cali yug*, on the meridian of *Lanca*, and the mean annual motions, by both, are as follows :

	<i>Jatok Arnob.</i>					<i>Surya Siddhanta.</i>				
Sun	-	0 ^s	0 ^o	0'	0''	0 ^s	0 ^o	0'	0''	0'''
Moon		4	12	46	40 47	$\frac{672032}{3703279}$	4	12	46	40 48
Mercury		1	24	45	18 1	$\frac{3754421}{6937321}$	1	24	45	18 0
Venus		7	15	11	52 48	$\frac{6734016}{214069503}$	7	15	11	52 48
Mars	-	6	11	24	9 36	$\frac{15048405}{79822029}$	6	11	24	9 36
Jupiter		1	0	21	6 0	$\frac{13501151880}{34900069237}$	1	0	21	6 0
Saturn		0	12	12	50 20	$\frac{161507340}{295005253}$	0	12	12	50 24

Annual motion of the Moon's apogee.

By the <i>Jatok Arnob</i>	-	1 ^s	10 ^o	41'	0'' 54'''	$\frac{52373608}{77795647}$
By the <i>Surya Siddhanta</i>		1	10	41	0 54	

Annual motion of the Moon's node.

By the <i>Jatok Arnob</i>	-	0	19	21	11 24	$\frac{2583705}{39990091}$
By the <i>Surya Siddhanta</i>		0	19	21	11 24	

Length of the year.

		Ds.	do.	I	II	III	IV	
By the <i>Jatok Arnob</i>	-	365	15	31	31	24	25	$\frac{540}{2407}$
By the <i>Surya Siddhanta</i>		365	15	31	31	24		

73. Now comparing the quantities of the motions, &c. deduced from these works with each other, it will evidently appear, that one person must have been the author of both: for, though the quantities are not exactly the same, yet the differences are too small to admit of a supposition of their being the works of two different persons. In fact, the small difference between the *Jatok Arnob* and *Surya Siddhanta*, appears to be owing to the system being completed in the one, and not in the other. For, if we

multiply the mean motions, &c. given in the *Jatok Arnob* by 1080000 (the least cycle of years in which the Sun, Moon, and planets are assumed to return to a line of mean conjunction by the *Surya Siddhānta*) we shall have (rejecting the fractions and taking the nearest whole number) the same revolutions precisely as are given in the *Surya Siddhānta* (§ 22). This much may serve to shew who the real author of the *Surya Siddhānta* was: but, if any further documents should be deemed requisite, a reference to almost any of the principal astronomical works, written since the time of VARĀHA, must be sufficient. For, in the *Brohma Siddhānta*, *Vishnu Siddhānta*, *Siddhānta Munjeri*, and many others, that system or *Calpa* which is contained in the *Surya Siddhānta*, is expressly called the *Calpa* of VARĀHA: or, as some express it, “the *Calpa* of VARĀHA the fair.” Therefore, any *Hindu* work in which the name of VARĀHA or his system is mentioned, must evidently be modern; and this circumstance alone totally destroys the pretended antiquity of many of the *Purans* and other books, which through the artifices of the *Brahminical* tribe, have been hitherto deemed the most ancient in existence.

74. FROM what has been said above, it appears extremely probable, that the name of VARĀHA, must have been to the *Surya Siddhānta* when it was first written, and the author well known; but that after his death, priestcraft found means to alter it, and to introduce the ridiculous story of MEYA' or MOYA, having received it through divine revelation at the close of the *Satya yug*: upon which petty fiction its present pretended antiquity is founded. But this it seems was not the only pious fraud committed by the crafty sons of BRAHMA; for it appears that a number of other astronomical works were then framed, calculated also for the purpose of deception among

among these, some were pretended to be delivered from the mouth of one or other of their deities, as the *Brohma Siddhánta*, *Vishnu Siddhánta*, and the works of SIVA, commonly called *Tontros*. Others, were pretended to have been received through revelation, as the *Sóma Siddhánta*, while others were fathered on sages, who were supposed to have lived in the remotest periods of antiquity, as the *Vasishta Siddhánta*, *Parásar Siddhánta*, *Rudra Siddhánta*, *Gorgá Siddhánta*, *Bhargob Siddhánta*, &c. to the number of about eighteen altogether, including the *Surya Siddhánta*. These eighteen are now called by way of pre-eminence, the eighteen original *Shasters* of astronomy, though amongst the whole I am informed, there are not above three or four real original works; the rest being compiled for one or other of these, with the diction or style a little altered, to answer the purposes of priestcraft; but the revolutions, motions, &c. of the planets, remaining the same as in the original.

75. THESE books, are however, become now very scarce; at least in this part of *India*; so much so, that it was with a great deal of difficulty I procured the following out of the number, viz. the *Sómá Siddhánta*, *Brohma Siddhánta*, *Vishnu Siddhánta*, *Vasishta Siddhánta*, and the *Groho Jamul*, one of the works pretended to have been written by SIVA: but even from these few, a general idea may be formed of the antiquity of the rest.

THE *Sómá Siddhánta*, *Vasishta Siddhánta*, and *Groho Jamul*, adopt the system given in the *Surya Siddhánta* by VARÁHA. The *Brohma Siddhánta* appears to have been deduced from the *Bhasvoti*, by calculating from that work the positions of the Sun, Moon and planets, at the commencement of the *Calpa* of *Brohma*, and making the calculations to commence from that epoch

epoch instead of the year 1021 of *Saka*, the date of the *Bhasvoti*. The *Vishnu Siddhānta* differs in nothing from the *Broma Siddhānta* except in the epoch from which the calculations are directed to be made; being the commencement of the *Calpa* of VARĀHA. Hence, these books are evidently modern forgeries. The *Parásar Siddhānta*, I am informed, has been taken from the *Brahma Siddhānta*, in the same manner, as that of *Vasishta* has been taken from the *Surya Siddhānta*.—Indeed, there is reason to suspect that the whole of the works attributed to PARĀSAR, are forgeries of a very modern date: I have now in my possession a work pretended to be his, entitled “*Krist Parásar*” (i. e. PARĀSAR on agriculture) which is a most palpable forgery. This insignificant little work contains more of astrological nonsense and predictions, than of real husbandry: nothing of any moment can be undertaken; the ground cannot be ploughed; nor the corn sown; without first examining the state of the heavens, to know if the time be lucky or not; but what discovers the imposition, are certain astrological rules given in the body of the work.—Thus, to calculate the governing planet or Raja for the year; the author says, “multiply the year of *Saka* by 3, to the product add 2, divide the sum by 7, and the remainder will shew the governing planet or Raja for the year, to which if you add 3 (deducting 7 if the sum admit), you will have its prime minister.”* The name “*Saka*” shews the forgery, for PARĀSAR is supposed to have lived several centuries before the era of *Saka* or *Saliban*.

76. THE *Bhasvoti*, I believe, was originally calculated for the meridian of *Siam*, and was introduced

* THE governing planets are 1. Sun. 2. Moon. 3. Mars. 4. Mercury. 5. Jupiter. 6. Venus. 7. Saturn in their order.

into this part of *India*, as appears from the formula for calculating the *Sonkranti*, about the year 1190 of *Saka*; or 167 years after its date—The formula given in the *Brohma Siddhanta* for calculating the *Sonkranti* for *Bysack*, (i. e. the instant the Sun enters aries according to true motions) makes the time come out later by one *Hindu* minute, than the *Bhasvoti*. Hence, supposing that the formula of each when written, was regulated or made to agree with the *Surya Siddhanta*, which was then the standard work; the *Brohma Siddhanta* must have been deduced from the *Bhasvoti*, about 43 years after its introduction into this part of *India*: or about the year 1233 of *Saka*. This conjecture, if true, may be of use in pointing out the epoch of the forgeries of their eighteen *Siddhantas*, &c. as it is probable, the whole may have been done nearly about the same time, to answer some particular purpose the *Brahmins* might have then in view.

77. The mean annual motions of the Sun, Moon and planets, according to the *Bhasvoti*, *Bromha Siddhanta*, *Vishnu Siddhanta*, and some others, are as follow :

		<i>Hindu Sphere.</i>			
Sun,	-	0°	0°	0'	0''
Moon,	-	4	12	46	40
Mercury	-	1	24	46	57 $\frac{2}{23}$
Venus,	-	7	15	11	10 $\frac{19}{161}$
Mars,	-	6	11	24	20
Jupiter,	-	1	0	20	54
Saturn,	-	0	12	12	51 $\frac{2}{7}$
Moon's Apogee,	-	1	10	41	5 $\frac{2}{43}$
—— Node,	-	0	19	21	32 $\frac{13}{31}$

78. THE length of the year, according to the above-mentioned works, is 365^{ds.} 15^{ds.} 31' 30''; hence we get the following mean motions of the Sun,
Moon

Moon and planets, in that space of time, from DE LA LANDE's tables :

		European sphere.				reduced to Hindusthere.			
Sun	-	0'	0"	0'	58",648	0'	0"	0'	0"
~ Moon	-	4	12	47	38,9765	4	12	46	40,3285
Mercury	-	1	24	46	35,51	1	24	45	36,8620
Venus	-	7	15	12	22,2097	7	15	11	23,5617
Mars	-	6	11	25	17,8082	6	11	24	19,1602
Jupiter	-	1	0	21	47,1505	1	0	20	48,5025
Saturn	-	0	12	14	8,0193	0	12	13	9,3713
Moon's Apogee		1	10	41	34,25	1	10	40	35,6020
——— Node		0	19	20	52,41	0	19	21	51,0580

By comparing these motions with those in § 77, some idea may be formed of the antiquity of the works; but as the *Brohma Siddhanta* and *Vishnu Siddhanta*, take notice of the *Calpa* of VARAHA, it is clear that neither of them can possibly be older than the time of that astronomer.

79. THE Sun's apogee, and the aphelia of the planets have no motion according to these works; nor do they make a conjunction of the planets at the commencement of the *Cali yug*; beginning of either *Calpa*; or at any other period.

80. THE next astronomer of any considerable note we meet with after VARAHA and SOTANUND, is BHASKER ACHARYA. This man according to the *Totvachintamani* was born in the year 1036 of *Saka*, and in the year 1072, wrote or compiled his astronomical work called the *Siddhanta Siromoni*, in which he adopted the numbers of BROHMA GUPTA. He also wrote or compiled several other works,

works, some of which are yet extant, as the *Lila Voti* and *Beej Gonita*; the former on mensuration, the latter on algebra.

81. From the revolutions of the Sun, Moon, and planets, &c. in a *Calpa* according to *Brohma Gupta*, (§ 21), we obtain the following mean annual motions:

	s.	o	i	ii	iii	iv	v	vi
Sun - - -	0	0	0	0	0	0	0	0
Moon - - -	4	12	46	30	0	0	0	0
Mercury - -	1	24	44	59	41	42	43	12
Venus - - -	7	15	11	56	50	51	21	36
Mars - - -	6	11	24	8	33	23	45	36
Jupiter - -	1	0	21	7	56	11	24	0
Saturn - - -	0	12	12	50	11	21	50	24
Moon's Apogæ	1	10	40	31	45	26	38	24
——— Node	0	19	21	33	21	1	26	24
Sun's Apogæ					8	38	24	0

which motions being reckoned from the commencement of the *Calpa* of *Brohma*, gave the positions of Sun, Moon and planets, with those of the Moon's apogæe and node in the time of the author of the system, as near as he could determine them by observation. This *Calpa* of BROHMA GUPTA, is made to commence with *Sunday* at the instant of Sun-rise on the meridian of *Lanka*.

82. The number of mean solar days assigned to this *Calpa*, is 1577916450000: And the length of the year therefore $= \frac{1577916450000}{4320000000} = 395^{\text{D}^{\circ}} 15^{\text{d}^{\circ}} 30' 22'' 30'''$; hence we have the following mean motions of the Sun, Moon and planets, &c. from DE LA LANDE's tables, in that space of time.

Sun

	European sphere.	Hindu sphere.
Sun	0 ^s . 0 ^o 0' 57", 539	0 ^s . 0 ^o 0' 0'
Moon	4 12 47 24, 15	4 12 46 26, 611
Mercury	1 24 46 30, 91	1 24 45 33, 371
Venus	7 15 12 20, 46	7 15 11 22, 921
Mars	6 11 25 17, 22	6 11 24 19, 681
Jupiter	1 0 21 49, 052	1 0 20 51, 513
Saturn	0 12 14 7, 976	0 12 13 10, 437
Moon's Apogee	1 10 41 34, 13	1 10 40 36, 591
—— Node	0 19 20 32, 36	0 19 21 29, 899
Sun's Apogee	1 2, 152	4, 613

83. THE mean motions of the Sun, Moon and planets, &c. for 100 *Hindu* years;

By the System of BROHMA GUPTA. <i>Hindu sphere.</i>					DE LA LANDE'S Tables. <i>Hindu sphere.</i>				Difference, the former + or —	
Sun	0 ^s .	0 ^o	0'	0''	0 ^s .	0 ^o	0'	0''	0'	0''
Moon	10	17	30	0	10	17	24	21,1	+	5 38,9
Mercury	2	14	59	29,5	2	15	55	37,1	—	56 7,6
Venus	6	19	54	44,8	6	18	58	12,1	+	56 32,7
Mars	2	0	14	15,7	2	0	32	48,1	—	18 32,4
Jupiter	5	5	13	13,6	5	4	45	51,3	+	27 22,3
Saturn	4	21	23	38,9	4	21	57	23,7	—	33 44,8
Moon's } Apogee }	3	17	32	55,7	3	17	40	59,1	—	8 3,4
— Node	4	15	55	35	4	15	49	49,9	+	5 45,1
Sun's Apogee			14,4				7	41,3	—	7 26,9

84. THE year 4900 of the *Cali yug*, according to this system will end on the 11th *April* 1799, at 15' past two P. M. on the meridian of *Lanka*: at which instant the mean longitudes of the Sun, Moon and planets, &c. will be

According to BROHMA GUPTA. <i>Hindu Sphere.</i>				DE LA LANDE <i>Hindu Sphere.</i>				Difference the for- mer + or —			Age deduced. Years.
s.	o	'	"	s.	o	'	"	o	'	"	
Sun's mean Longitude	0	0	0	0	0	0	0	0	0	0	
Moon's ditto	2	17	30	2	16	2	17,6	+	1	27	42,4
Mercury's ditto	2	11	59	2	27	45	28,9	—	15	45	53,6
Venus's ditto	2	14	24	2	2	25	11,4	+	11	59	36,2
Mars's ditto	2	10	42	2	14	34	33,4	—	3	51	57,7
Jupiter's ditto	1	15	15	1	10	16	40,4	+	4	59	4,4
Saturn's ditto	2	27	5	3	4	39	28,5	—	7	34	6,8
Moon's apogee	11	25	23	11	26	28	51,5	—	1	5	34,6
node sup.	11	3	36	11	2	20	37,3	+	1	15	57,3
Sun's apogee	2	17	57	2	19	53	28,5	—	1	56	6,9
Sum of the several ages deduced											= 11373
Mean age of the system of BROHMA GUPTA											= 1263 $\frac{2}{3}$ yrs.

85. THE revolutions of the equinoxes in a *Calpa* according to this system are 199669. Hence the annual precession, $= \frac{199669}{4320000000} =$ - 59",9007

DE LA LANDE's tables make it (§ 82) 57, 539

Difference - - - - 2,3617

IN the *Groho Laghob*, written in the year 1442 of *Saka*, by GONESH son of KESORO, the annual precession is stated at one minute; and at the end of the year 444 *Saka*, or 3623 of the *Cali yug*, the first point of aries in the *Hindu* sphere was supposed to have coincided with the vernal equinox. I mention these circumstances merely to shew that the quantity of the annual precession, and the point from whence it is computed, are not the same in all *Hindu* books of astronomy.

HAVING thus given a general outline of the *Hindu* systems of astronomy at present in use, with their formation, and the principles on which they are founded;

founded ; I shall now close the subject with the following tables and precepts for calculating the commencement of the *Hindu* years and months, according to astronomical and civil reckonings, and the corresponding times in the *European* calendar.

THE instant the Sun enters a sign, is called by the *Hindus* *Sonkranti* ; and at that moment the astronomical month begins. If the Sun enters a sign between Sun-rise and midnight, the civil month will begin at the following Sun-rise. But if the Sun enters a sign between midnight and Sun-rise it is then called *Kôt Sonkranti*, and the whole of the following day and night belong to the preceding civil month.

THE astronomical day, in this part of *India*, is reckoned from midnight to midnight, and begins at the equator six hours earlier than the civil day of the same name : the civil, begins at Sun-rise, and continues to the Sun-rise following.

THE following tables are constructed to shew the time elapsed of the day according to civil reckoning ; (or rather from six A. M.)—so that if you add fifteen *dondos*, you have the time expired from midnight :—the *Hindu* parts of a day, are converted into *European* hours, minutes, &c. by multiplying by 2 and dividing the product by 5, and *vice versa*.

TABLE III.

Month. Days.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	323	354	17	48	78	109	139	170	201	231	262	292
2	324	355	18	49	79	110	140	171	202	232	263	293
3	325	356	19	50	80	111	141	172	203	233	264	294
4	326	357	20	51	81	112	142	173	204	234	265	295
5	327	358	21	52	82	113	143	174	205	235	266	296
6	328	359	22	53	83	114	144	175	206	236	267	297
7	329	360	23	54	84	115	145	176	207	237	268	298
8	330	361	24	55	85	116	146	177	208	238	269	299
9	331	362	25	56	86	117	147	178	209	239	270	300
10	332	363	26	57	87	118	148	179	210	240	271	301
11	333	364	27	58	88	119	149	180	211	241	272	302
12	334	365	28	59	89	120	150	181	212	242	273	303
13	335	1	29	60	90	121	151	182	213	243	274	304
14	336	2	30	61	91	122	152	183	214	244	275	305
15	337	3	31	62	92	123	153	184	215	245	276	306
16	338	4	32	63	93	124	154	185	216	246	277	307
17	339	5	33	64	94	125	155	186	217	247	278	308
18	340	6	34	65	95	126	156	187	218	248	279	309
19	341	7	35	66	96	127	157	188	219	249	280	310
20	342	8	36	67	97	128	158	189	220	250	281	311
21	343	9	37	68	98	129	159	190	221	251	282	312
22	344	10	38	69	99	130	160	191	222	252	283	313
23	345	11	39	70	100	131	161	192	223	253	284	314
24	346	12	40	71	101	132	162	193	224	254	285	315
25	347	13	41	72	102	133	163	194	225	255	286	316
26	348	14	42	73	103	134	164	195	226	256	287	317
27	349	15	43	74	104	135	165	196	227	257	288	318
28	350	16	44	75	105	136	166	197	228	258	289	319
29	351	17	45	76	106	137	167	198	229	259	290	320
30	352		46	77	107	138	168	199	230	260	291	321
31	353		47		108		169	200		261		322
In leap years after <i>February</i> take out one day less.												

REMARKS. If the number of days given exceed 365, take the difference, and with that find the

month and day: 2d. If the number given, falls in the table before the day on which *Bysack* begins,—the month and day of the month corresponding will belong to the year following; and must be dated accordingly.

I. To find the instant the Sun enters a sign or the *Sonkranti*.

Precept. With the years expired of the *Cali yug* enter Table I, and take out the days, &c. corresponding: take from Table II, the days, &c. opposite the given month, and add them to the former: divide the days thus found by 7, the remainder will shew the day of the week, and the fraction the time elapsed from 6 A. M. when the Sun enters the sign according to true motions.

II. To find the day on which the civil month begins.

Precept. If the Sun enters the sign between sun rise and midnight, add 1 to the day of the week on which the *Sonkranti* falls; but if between midnight and sun rise add 2, and the sum will be the day of the week on which the civil month begins at sunrise.

III. To find the corresponding time, according to the *European* calendar.

Precept. 1. To the number of days found from Tables I, and II, add 1 or 2, according as the *Sonkranti* happens to fall before or after midnight as in the last, and reserve the sum. 2. To the years expired of the *Cali yug* add 3, and divide the sum by 4: add to the quotient the years expired of the *Cali yug*, and subtract the sum from that which you
°reserved.

reserved. 3. With the remainder enter Table III, and take out the month and day corresponding, which will be the month and day of the month of the *European* calendar, on which the *Hindu* civil month begins at Sun rise according to Old Style.

IV. To find the year before or after the *Christian* era, corresponding to any year of the *Cali yug*.

Precept. The *Cali yug* began 3102 years before the commencement of the *Christian* era, or 3101 before the year of CHRIST's birth: therefore, if the years expired of the *Cali yug* exceed 3102, the excess + 1, will be the current year of the *Christian* era in which the first month *Bysack* of the current *Hindu* year begins. 2. If the years fall short of 3102, the difference will be the years before the *Christian* era: or the difference — 1, will be the years before the year of CHRIST's birth.

EXAMPLE I.

REQUIRED the day of the week and day of the month of the *European* calendar, corresponding to the first of *Bysack* in the year 4901 of the *Cali yug*?

Years expired = 4900, and $4900 + 1 - 3102 =$ A. D. 1799.

Table I. For 4000 =	5035	0	0	Sum	6171 + 1	-	= 6172
900 =	1132	52	30		$\frac{4900+3}{4}$		= 1225

Table II. <i>Bysack</i> =	3	39	42	Add	4900		
Sum,	= 6171	32	12	Sum	-	-	6125
<i>Sonkranti, Wednesday,</i>	4	32	12	Difference =	31st March O.S.	47	
Add per precept,	1			Add diff. between O.&N.S =	11		
<i>Bysack</i> begins on <i>Thursday</i>	5	0	0	Sum =	11th April, 1799, N.S.	= 58	

The days of the week are always expressed by figures, as, 1 for *Sunday*, 2 for *Monday*, &c.

EXAMPLE II.

REQUIRED the day of the week and day of the month of the *European* calendar, corresponding to the 1st of *Cartick*, in the year 4901 of the *Cali yug*?

Years expired as in the last.

Table I. For 4000=5035	0	0	Sum 6358+1	-	-	=6359
900=1132	52	30	$\frac{4900+3}{4}$	=1225		

Table II. <i>Cartick</i>	=	190	34	54	Add	4900		
Sum	-	6358	27	24	Sum,	-	-	6125
<i>Sonkranti, Monday,</i>		2	27	24	Difference=	4th October, O.S.	234	
Add	-	-	1		Difference of style add		11	
1st <i>Cartick</i> , on <i>Tuesday</i> ,	3				Sum,=	15th October. N. S.	=245	

EXAMPLE III.

REQUIRED the day of the month, &c. on which the 1st of *Choitro* in the year 4901 falls?

Table I. For 4900=6167	52	30	Sum,	-	6507		
Table II. <i>Choitro</i> = 338	32	57	Deduct as above	-	6125		
Sum,	-	6506	25	27	Remainder,	-	382
Add	-	1			Deduct 1 year	-	=365
Sum,	-	6507			Remainder,	-	17
1st <i>Choitro</i> , on <i>Wednesday</i> ,=4					which per Table III=1st <i>March</i>		
					O. S. or 12th <i>March</i> , N. S.		
					A. D. 1800.		

EXAMPLE IV.

REQUIRED the day of the week and day of the month of the *European* calendar, corresponding to the 10th of *Cartick* in the year 1711 of the *Cali yug*?

Years expired=1710, and $3102-1710+1=B. C. 1391.$

Table I. For 1000=1258	45	0	The 10th <i>Cartick</i>	-	=2353			
700=	881	7	30	$\frac{1710+3}{4}$	= 428			
10=	12	35	15	Add	- 1710			
Table II. <i>Cartick</i>	=	190	34	54	Sum	-	-	=2138
Sum	-	2343	2	39	Difference	-	= 215	
Add	-	1			Which per Table =	15th <i>Sept.</i>		
1st <i>Cartick</i>	-	=2344			O. S. diff. between O. & N. S.			
Add	-	9			was then	= - 12		
10th <i>Cartick</i>	-	=2353			Therefore	215 - 12	= 203	
Which falls on					Which per Table =	3d <i>Sept.</i>	N. S.	
<i>Sunday</i>	-	=	1					

WHEN

WHEN the *Sonkranti* happens to fall at or near midnight, the *Hindu* astronomers (or rather calculators of almanacks) not unfrequently differ amongst themselves with respect to the day on which the civil month begins: some making it later or earlier than others by a day, according to the works or tables from which each makes his computation. But independent of this irregularity, there is another which probably arises from local custom: in some of the *Nuddea* calendars, the civil month is invariably made to begin at the Sun-rise immediately following the instant of the *Sonkranti*, whether the same happens before or after midnight:—On the other hand, most of the calendars calculated in and about *Calcutta*, and at *Balia*, make the month begin a day later when the Sun enters the sign after midnight, agreeable to the rules above laid down.

APPENDIX.

RULES OF THE ASIATICK SOCIETY.

SIR WILLIAM JONES, the revered founder of the Society, in his Discourse, delivered on the 15th *February*, 1784, and published in the first volume of these Researches, recommended that in the infancy of the Society, there should be no formal rules. Accordingly none were passed, but the suggestions in the above discourse were unanimously adopted, and having been since uniformly acted upon, they may be considered the original rules of the institution. They were, in substance, as follow :

I. THAT the Institution be denominated the *Asiatick Society* ; that the bounds of its investigations be the geographical limits of Asia ; and that within these limits, its inquiries be extended to whatever is performed by man or produced by nature.

II. THAT weekly meetings be held for the purpose of hearing Original Papers read, on such subjects as fall within the circle of the Society's inquiries.

• III.

III. THAT all curious and learned men be invited to send their tracts to the Secretary; for which they shall immediately receive the thanks of the Society.

IV. THAT the Society's Researches be published annually, if a sufficiency of valuable materials be received.

V. THAT mere translations of considerable length be not admitted, except of such unpublished essays or treatises as may be transmitted to the society, by native authors.

VI. THAT all questions be decided on a ballot, by a majority of two-thirds, and that nine members be required to constitute a board for such decisions.

VII. THAT no new member be admitted who has not expressed a voluntary desire to become so; and in that case, that no other qualification be required, than a love of knowledge, and a zeal for the promotion of it.

The foregoing are the only general points noticed in the Founder's Discourse, but an additional rule was introduced by him, and has been since continued, in proposing and electing new members, viz. That the proposition having been made and seconded, the election take place by ballot, at the next meeting. This rule has also been considered applicable to all questions of importance.

On the 19th of *August*, 1796, a meeting of the Society was held, for the special purpose of considering the best means of rendering the Institution permanent, and for determining whether a House should be provided for the future meetings of the Society, when it was

RESOLVED,

RESOLVED,

1st. THAT application be made to his Majesty, for a Charter of Incorporation for this Society.

2d. THAT a House be provided, for the use of the Society.

3d. THAT a Committee be appointed to consider the best mode of carrying into execution the objects of the two foregoing resolutions, and to report their opinion at the next meeting of the Society.

4th. THAT the Committee be requested to consider any rules and regulations for advancing and promoting the objects of the Institution of the Society, and lay them before the Society for their determination at a future meeting.

ON the 29th of *September* 1796, the Committee elected on the 19th of *August* submitted the following propositions which were unanimously adopted by the Society.

1st. THAT the intended application to his Majesty to obtain a Charter of Incorporation for the Society, be made through the Governor General in Council and the Court of Directors.

2d. THAT the best mode of carrying into execution the second resolution of the Society on the 19th *August*, will be, by building a commodious house, as soon as the funds requisite shall be provided.

3d. THAT, in order gradually to establish funds for that purpose, and for defraying the necessary current expences of the Society, an admission fee be established; and that, as none of the present Members of the Society, have hitherto paid any fees, those
resident

resident in *India* contribute two gold mohurs in lieu thereof.

4th. THAT a like sum of two gold mohurs be paid in future by every new Member as an admission fee on his election.

5th. THAT every Member of the Society, resident in *India*, (honorary Members excepted) pay four gold mohurs per annum, quarterly, in the first week of *January, April, July, and October*, and any Member neglecting to pay his subscription for half a year after it becomes due, be considered as no longer belonging to the Society.

6th. THAT as admission fees and quarterly contributions would not, under a long course of time, afford funds sufficient to build a house, a subscription for voluntary contributions be opened, and application made to Government for a convenient spot of ground, as a site for the proposed Building.

7th. THAT a Treasurer be elected.

8th. THAT as frequent meetings would tend to promote the general objects of the Society, weekly meetings be established, as soon as the building intended for the purpose shall be finished; and that, in the mean time, a meeting of the Society be held at least once in a month.

9th. THAT, as it may not always be convenient for the President to attend on such occasions, it is advisable to elect first and second Vice Presidents annually.

10th. THAT the Society appoint a Committee of Papers, consisting of the President, Vice Presidents, and Secretary, for the time being, together with five other Members, to be elected annually; and that this
Com-

Committee shall select the papers for publication, and superintend the printing of the Transactions of the Society.

11th. THAT the Society make it publickly known, that it is their intention to establish a Museum and Library, and that donations of books, manuscripts, and curiosities, will be thankfully received and acknowledged.

THE five first volumes of the Society's Researches were published by the Superintendents of the Honourable Company's Press, for the produce of their sale; but on the 3d of *May* 1798, the Society resolved as follows

1st. THAT the Transactions be hereafter published at the expence, and on account of the Society; both, as the Society has now a fund which may be applied to that purpose, and as by this means the Society will be enabled to publish any number of engravings that may be thought necessary to illustrate the Papers, as well as to regulate the price, and thereby extend the circulation of them.

2d. THAT the Transactions be published in *India*, as more convenient for the superintendence of the Press, as well as being more suitable to an *Asiatick* Society; and that the mode of publication, with all other details, be left, as heretofore, to the Committee of Papers.

3d. THAT the Committee of Papers be authorized to draw upon the Treasurer for any sums requisite to defray the expence of publishing the Transactions; and that an order, signed by a majority of the Committee, be a sufficient warrant to the Treasurer for paying the same.

23d AUGUST,

23d AUGUST, 1798.

RESOLVED, that any Member of the Society may have the privilege of introducing, as a visitor, any Gentleman who is not usually resident in *Calcutta*.

11th OCTOBER, 1798.

ON a question, proposed at a meeting held on the 27th of *September*, "Whether absent Members, resident in *Calcutta*, shall be allowed to vote by proxy on the election of Vice Presidents and Committee of Papers." THE Society determined in the negative.

10th JANUARY, 1799.

RESOLVED.

1st. THAT it will be proper to publish, with each volume of the *Researches*, a list of such Oriental subjects as may be considered in the light of *DESIDERATA*; to be prepared, by the Committee, from lists, submitted to the Society, by the Members or others.

2d. THAT, as a testimonial to the merit of the best Papers, communicated to the Society, on the subjects proposed as *DESIDERATA*, the author be presented with the volume of *Researches*, wherein such Paper is contained, accompanied with a complimentary letter, from the Secretary, in the name of the Society.

3d. THAT the rules of the Society, not already published, be inserted in an Appendix to the next volume.

4th. THAT four additional Members of the Committee of Papers be elected; and that the Committee do hereafter consist of thirteen Members, including the President, Vice Presidents, and Secretary; of whom, any Member, not less than five, may be competent to form a Committee.

FEB.

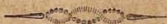
FEBRUARY, 7th, 1799.

"THE Committee of Papers were authorized by a resolution of the Society to defray any small contingent expences on account of the Society, which they might deem indispensable.

JULY 4th, 1799.

RESOLVED,

THAT, in case, at any future meeting of the Society, the President and both Vice Presidents should be absent, a quarter of an hour after the fixed time of meeting; the senior Member of the Society present, shall take the chair for the evening.



THE meetings of the Society are now held on the first Thursday of every month, at eight o'clock from the autumnal to the vernal equinox, and at nine during the other six months of the year.



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OF THE

ASIATICK SOCIETY,

1799.

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