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

CALCUTTA:
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M.DCC.XCV. (1795)
ADVERTISEMENT.

THE unfortunate Death of Sir William Jones, on the 27th April 1794, having deprived the Society of their Founder and President, a meeting of the Members was convened on the 1st May following, when it was unanimously agreed to appoint a Committee, consisting of Sir Robert Chambers, Mr. Justice Hyde, Colonel John Murray, John Bristow and Thomas Graham, Esqrs. to wait on Sir John Shore, and in the name of the Society, request his acceptance of the office of their President. With this request, he, in terms highly flattering to the Society, agreed to comply, and on the 22d May 1794, took his seat as President, and delivered the Discourse Number XII of this Volume.

EDMUND MORRIS, Secretary.
ADVERTISEMENT

THE subscription Dues of Mr. William Jones, on the
first day of last January, having expired, the Society of their
President and Secretary, in their respective letters, have receiv’d
a memorial of the Members who are anxious to support a Committee, consisting of Mr. Robert
Gordon and Mr. John Stuart, and in whose name the subscription to
be in a very high degree to complete and carry to a proper
completion of the Different Numbers of the

KINDRED MORALS Series.

Volume.
I.

THE TENTH ANNIVERSARY DISCOURSE,
Delivered 28 February 1793
BY THE PRESIDENT.

ON ASIATICK HISTORY, CIVIL AND NATURAL.

BEFORE our entrance, gentlemen, into the disquisition, promised at the close of my ninth annual discourse, on the particular advantages, which may be derived from our concurrent researches in Asia, it seems necessary to fix with precision the sense, in which we mean to speak of advantage or utility: now, as we have described the five Asiatick regions on their largest scale, and have expanded our conceptions in proportion to the magnitude of that wide field, we should use those words, which comprehend the fruit of all our inquiries, in their most extensive acceptation; including not only the solid conveniences and comforts of social life, but its elegances and innocent pleasures, and even the gratification of a natural and laudable curiosity; for, though labour be clearly the lot of man in this world, yet, in the midst of his most active exertions, he cannot but feel the substantial benefit of every liberal amusement, which may lull his passions to rest, and afford him a sort of re-
pose without the pain of total inaction, and the real usefulness of every pursuit, which may enlarge and diversify his ideas, without interfering with the principal objects of his civil station or economical duties; nor should we wholly exclude even the trivial and worldly sense of utility, which too many consider as merely synonymous with lucre, but should reckon among useful objects those practical, and by no means illiberal, arts, which may eventually conduce both to national and to private emolument. With a view then to advantages thus explained, let us examine every point in the whole circle of arts and sciences, according to the received order of their dependence on the faculties of the mind, their mutual connexion, and the different subjects, with which they are conversant: our inquiries indeed, of which Nature and Man are the primary objects, must of course be chiefly Historical; but, since we propose to investigate the actions of the several Asiatick nations, together with their respective progress in science and art, we may arrange our investigations under the same three heads, to which our European analysts have ingeniously reduced all the branches of human knowledge; and my present address to the society shall be confined to history, civil and natural; or the observation and remembrance of mere facts, independently of ratio- cination, which belongs to philosophy, or of imitations and substitutions, which are the province of art.

Were a superior created intelligence to delineate a map of general knowledge (exclusively of that sublime and stupendous theology, which himself could only hope humbly to know by an infinite approximation) he would probably, begin by tracing with Newton the system of the universe, in which he would assign the true place to our little globe; and, having enumerated its various inhabitants, contents, and productions, would proceed to man in his natural station among animals, exhibiting a detail of all the knowledge.
attained or attainable by the human race; and thus observing, perhaps, the
same order, in which he had before described other beings in other inhabi-
ted worlds: but, though Bacon seems to have had a similar reason for plac-
ing the history of Nature before that of Man, or the whole before one of its
parts, yet, consistently with our chief object already mentioned, we may pro-
perly begin with the civil history of the five Asiatic nations, which necessarily
comprises their Geography, or a description of the places, where they have
acted, and their Astronomy, which may enable us to fix with some accuracy
the time of their actions: we shall thence be led to the history of such other
animals, of such minerals, and of such vegetables, as they may be supposed to
have found in their several migrations and settlements, and shall end with the
uses, to which they have applied, or may apply, the rich assemblage of na-
tural substances.

I. In the first place, we cannot surely deem it an inconsiderable advan-
tage, that all our historical researches have confirmed the Mosaic accounts
of the primitive world; and our testimony on that subject ought to have the
greater weight, because, if the result of our observations had been totally
different, we should nevertheless have published them, not indeed with equal
pleasure, but with equal confidence; for Truth is mighty, and, whatever be its
consequences, must always prevail: but, independently of our interest in cor-
roborating the multiplied evidences of revealed religion, we could scarce gra-
tify our minds with a more useful and rational entertainment, than the con-
templation of those wonderful revolutions in kingdoms and states, which
have happened within little more than four thousand years; revolutions, al-
most as fully demonstrative of an all-ruling Providence, as the structure of
the universe: and the final causes, which are discernible in its whole extent
and even in its minutest parts. Figure to your imaginations a moving pic-

A 2
ture of that eventful period, or rather a succession of crowded scenes rapidly changed. Three families migrate in different courses from one region, and, in about four centuries, establish very distant governments and various modes of society: Egyptians, Indians, Goths, Phenicians, Celts, Greeks, Latians, Chinese, Peruvians, Mexicans, all sprung from the same immediate stem, appear to start nearly at one time, and occupy at length those countries, to which they have given, or from which they have derived, their names: in twelve or thirteen hundred years more the Greeks overrun the land of their forefathers, invade India, conquer Egypt, and aim at universal dominion; but the Romans appropriate to themselves the whole empire of Greece, and carry their arms into Britain, of which they speak with haughty contempt: the Goths, in the fulness of time, break to pieces the unwieldy Colossus of Roman power, and seize on the whole of Britain, except its wild mountains; but even those wilds become subject to other invaders of the same Gotbick lineage: during all those transactions, the Arabs possess both coasts of the Red Sea, subdue the old seat of their first progenitors, and extend their conquests on one side, through Africk, into Europe itself; on another, beyond the borders of India, part of which they annex to their flourishing empire: in the same interval the Tartars, widely diffused over the rest of the globe, swarm in the north-east, whence they rush to complete the reduction of Constantine's beautiful domains, to subjugate China, to raise in these Indian realms a dynasty splendid and powerful, and to ravage, like the two other families, the devoted regions of Iran: by this time the Mexicans and Peruvians, with many races of adventurers variously intermixed, have peopled the continent and isles of America, which the Spaniards, having restored their old government in Europe, discover and in part overcome: but a colony from Britain, of which Cicero ignorantly declared, that it contained nothing valuable, obtain the possession, and finally the sovereign dominion, of extensive
American districts; whilst other British subjects acquire a subordinate empire in the finest provinces of India, which the victorious troops of Alexander were unwilling to attack. This outline of human transactions, as far as it includes the limits of Asia, we can only hope to fill up, to strengthen, and to colour, by the help of Asiatic literature; for in history, as in law, we must not follow streams, when we may investigate fountains, nor admit any secondary proof, where primary evidence is attainable. I should, nevertheless, make a bad return for your indulgent attention, were I to repeat a dry list of all the Moslem historians, whose works are preserved in Arabic, Persian, and Turkish, or expatriate on the histories and medals of China and Japan, which may in time be accessible to members of our society, and from which alone we can expect information concerning the ancient state of the Tartars, but on the history of India, which we naturally consider as the centre of our inquiries, it may not be superfluous to present you with a few particular observations.

Our knowledge of civil Asiatic history (I always except that of the Hebrews) exhibits a short evening twilight in the venerable introduction to the first book of Moses, followed by a gloomy night, in which different watches are faintly discernible, and at length we see a dawn succeeded by a sunrise more or less early according to the diversity of regions. That no Hindu nation, but the Cashmirians, have left us regular histories in their ancient language, we must ever lament; but from Sanscrit literature, which our country has the honour of having unveiled, we may still collect some rays of historical truth, though time and a series of revolutions have obscured that light, which we might reasonably have expected from so diligent and ingenious a people. The numerous Purânas and Itihâsas, or poems mythological and heroic, are completely in our power; and from them we may recover
same disfigured, but valuable, pictures of ancient manners and governments; while the popular tales of the Hindus, in prose and in verse, contain fragments of history; and even in their dramas we may find as many real characters and events, as a future age might find in our own plays, if all histories of England were, like those of India, to be irrecoverably lost: for example, a most beautiful poem by Sóma Déva, comprising a very long chain of instructive and agreeable stories, begins with the famed revolution at Pátaliputra by the murder of King Nanda, with his eight sons, and the usurpation of Chandragupta; and the same revolution is the subject of a tragedy in Sanscrit, entitled the Coronation of Chandra, the abbreviated name of that able and adventurous usurper. From these, once concealed but now accessible, compositions, we are enabled to exhibit a more accurate sketch of old Indian history than the world has yet seen, especially with the aid of well-attested observations on the places of the colures. It is now clearly proved, that the first Purána contains an account of the deluge, between which and the Mobammedan conquests the history of genuine Hindu government must of course be comprehended; but we know from an arrangement of the seasons in the astronomical work of Paráśara, that the war of the Pándavas could not have happened earlier than the close of the twelfth century before Christ, and Seleucus must, therefore, have reigned about nine centuries after that war. Now the age of Vicrama-ditya is given; and, if we can fix on an Indian prince, contemporary with Seleucus, we shall have three given points in the line of time between Rama, or the first Indian colony, and Chandrabih established in Bébár; so that only eight hundred or a thousand years will remain almost wholly dark; and they must have been employed in raising empires or states, in framing laws, in improving languages and arts, and in observing the apparent motions of the celestial bodies. A Sanscrit history of the celebrated Vic-
CIVIL AND NATURAL.

Crama'ditya was inspected at Benares by a Pandit, who would not have deceived me, and could not himself have been deceived; but the owner of the book is dead and his family dispersed; nor have my friends in that city been able, with all their exertions, to procure a copy of it: as to the Mogul conquests, with which modern Indian history begins, we have ample accounts of them in Persian, from Ali of Yazd and the translations of Turkish books composed even by some of the conquerors, to Ghula'm Husain, whom many of us personally know, and whose impartiality deserves the highest applause, though his unrewarded merit will give no encouragement to other contemporary historians, who, to use his own phrase in a letter to myself, may, like him, consider plain truth as the beauty of historical composition. From all these materials, and from these alone, a perfect history of India (if a mere compilation, however elegant, could deserve such a title) might be collected by any studious man, who had a competent knowledge of Sanscrit, Persian, and Arabick; but, even in the work of a writer so qualified, we could only give absolute credence to the general outline; for, while the abstract sciences are all truth, and the fine arts all fiction, we cannot but own, that, in the details of history, truth and fiction are so blended as to be scarce distinguishable.

The practical use of history, in affording particular examples of civil and military wisdom, has been greatly exaggerated; but principles of action may certainly be collected from it; and even the narrative of wars and revolutions may serve as a lesson to nations and an admonition to sovereigns: a desire, indeed, of knowing past events, while the future cannot be known, and a view of the present gives often more pain than delight, seems natural to the human mind; and a happy propensity would it be, if every reader of history would open his eyes to some very important corollaries, which flow from the
whole extent of it. He could not but remark the constant effect of despotism in benumbing and debasing all those faculties, which distinguish men from the herd, that grazes; and to that cause he would impute the decided inferiority of most Asiatick nations, ancient and modern, to those in Europe, who are blest with happier governments; he would see the Arabs rising to glory, while they adhered to the free maxims of their bold ancestors, and sinking to misery from the moment, when those maxims were abandoned. On the other hand he would observe with regret, that such republican governments, as tend to produce virtue and happiness, cannot in their nature be permanent, but are generally succeeded by Oligarchies, which no good man would wish to be durable. He would then, like the king of Lydia, remember Solon, the wisest, bravest, and most accomplished of men, who asserts, in four nervous lines, that, "as hail and snow, which mar the labours of husbandmen, proceed from elevated clouds, and, as the destructive thunder-bolt follows the brilliant flash, thus is a free state ruined by men exalted in power and splendid in wealth, while the people, from gross ignorance, chase rather to become the slaves of one tyrant, that they may escape from the domination of many, than to preserve themselves from tyranny of any kind by their union and their virtues." Since, therefore, no unmixed form of government could both deserve permanence and enjoy it, and since changes even from the worst to the best are always attended with much temporary mischief, he would fix on our British constitution (I mean our publick law, not the actual state of things in any given period) as the best form ever established, though we can only make distant approaches to its theoretical perfection. In these Indian territories, which providence has thrown into the arms of Britain for their protection and welfare, the religion, manners, and laws of the natives preclude even the idea of political freedom; but their histories may possibly suggest hints for their prosperity, while our country
derives essential benefit from the diligence of a placid and submissive people, who multiply with such increase, even after the ravages of famine, that, in one collectorship out of twenty-four, and that by no means the largest or best cultivated (I mean Cripna-nagar) there have lately been found, by an actual enumeration, a million and three hundred thousand native inhabitants; whence it should seem, that in all India there cannot now be fewer than thirty millions of black British subjects.

Let us proceed to geography and chronology, without which history would be no certain guide, but would resemble a kindled vapour without either a settled place or a steady light. For a reason before intimated I shall not name the various cosmographical books, which are extant in Arabick and Persian, nor give an account of those, which the Turks have beautifully printed in their own improved language, but shall expatiate a little on the geography and astronomy of India; having first observed generally, that all the Asiatick nations must be far better acquainted with their several countries than mere European scholars and travellers; that, consequently, we must learn their geography from their own writings; and that, by collating many copies of the same work, we may correct the blunders of transcribers in tables, names, and descriptions.

Geography, astronomy, and chronology have, in this part of Asia, shared the fate of authentick history, and, like that, have been so masked and bedecked in the fantastic robes of mythology and metaphor, that the real system of Indian philosophers and mathematicians can scarce be distinguished: an accurate knowledge of Sanscrit and a confidential intercourse with learned Brâhmins, are the only means of separating truth from fable; and we may expect the most important discoveries from two of our mem-
bers; concerning whom it may be safely asserted, that, if our society should have produced no other advantage than the invitation given to them for the publick display of their talents, we should have a claim to the thanks of our country and of all Europe. Lieutenant Wilford has exhibited an interesting specimen of the geographical knowledge deducible from the Purānas, and will in time present you with a complete a treatise on the ancient world known to the Hindus, that the light acquired by the Greeks will appear but a glimmering in comparison of that, which He will diffuse; while Mr. Davis, who has given us a distinct idea of Indian computations and cycles, and ascertained the place of the colures at a time of great importance in history, will hereafter disclose the systems of Hindu astronomers from Naʿred and Parāśar to Maya, Varaḥamihir, and Bhaṣcar, and will soon, I trust, lay before you a perfect delineation of all the Indian asterisms in both hemispheres, where you will perceive so strong a general resemblance to the constellations of the Greeks, as to prove that the two systems were originally one and the same, yet with such a diversity in parts, as to show incontestably, that neither system was copied from the other; whence it will follow, that they must have had some common source.

The jurisprudence of the Hindus and Arabs being the field, which I have chosen for my peculiar toil, you cannot expect, that I should greatly enlarge your collection of historical knowledge; but I may be able to offer you some occasional tribute, and I cannot help mentioning a discovery, which accident threw in my way; though my proofs must be reserved for an essay, which I have destined for the fourth volume of your Transactions. To fix the situation of that Pālibothra, (for there may have been several of the name) which was visited and described by Megasthenes, had always appeared a very difficult problem; for, though it could not have been
Prayāga, where no ancient metropolis ever stood, nor Cānyācūrja, which has no epithet at all resembling the word used by the Greeks, nor Gaur, otherwise called Lacṣmanavatī, which all know to be a town comparatively modern, yet we could not confidently decide that it was Pātaliputra, though names and most circumstances nearly correspond, because that renowned capital extended from the confluence of the Sone and the Ganges to the site of Patna, while Polibothra stood at the junction of the Ganges and Haranobos, which the accurate M. D’Anville had pronounced to be the Yamunā: but this only difficulty was removed, when I found in a classical Sanskrit book near two thousand years old, that Hiranyabābu, or golden-armed, which the Greeks changed into Erannobos, or the river with a lovely murmur, was in fact another name for the Sona itself, though Megasthenes, from ignorance or inattention, has named them separately. This discovery led to another of greater moment: for Chandragupta, who, from a military adventurer, became, like Sandracottus, the sovereign of upper Hindustān, actually fixed the seat of his empire at Pataliputra, where he received ambassadors from foreign princes, and was no other than that very Sandracottus, who concluded a treaty with Seleucus Nicator; so that we have solved another problem, to which we before alluded, and may in round numbers consider the twelve and three hundredth years before Christ as two certain epochs between ᲍ṁa, who conquered Silān a few centuries after the flood, and Vicramaśīta, who died at Ujjainī fifty seven years before the beginning of our era.

II. Since these discussions would lead us too far, I proceed to the history of Nature distinguished, for our present purpose, from that of Man, and divided into that of other animals, who inhabit this globe, of the
ON ASIATICk HISTORY,

...mineral substances, which it contains, and of the vegetables, which so luxuriantly and so beautifully adorn it:

1. Could the figure, instincts, and qualities of birds, beasts, insects, reptiles, and fish be ascertained, either on the plan of Buffon, or on that of Linnaeus, without giving pain to the objects of our examination, few studies would afford us more solid instruction or more exquisite delight; but I never could learn by what right, nor conceive with what feelings, a naturalist can occasion the misery of an innocent bird and leave its young, perhaps, to perish in a cold nest, because it has gay plumage and has never been accurately delineated, or deprive even a butterfly of its natural enjoyments, because it has the misfortune to be rare or beautiful; nor shall I ever forget the couplet of Firdausi, for which Sadi, who cites it with applause, pours blessings on his departed spirit:

Ah! spare yon emmet rich in hoarded grain:
He lives with pleasure, and he dies with pain.

This may be only a confession of weakness, and it certainly is not meant as a boast of peculiar sensibility; but, whatever name may be given to my opinion, it has such an effect on my conduct, that I never would suffer the Cócila, whose wild native woodnotes announce the approach of spring, to be caught in my garden for the sake of comparing it with Buffon's description; though I have often examined the domestick and engaging Mayanà, which bids us good morrow at our windows, and expects, as its reward, little more than security; and when a fine young Manis or Pangolin was brought me, against my will, from the mountains, I solicited his restoration to his beloved rocks, because I found it impossible to preserve him in
comfort at a distance from them. There are several treatises on animals in
Arabick, and very particular accounts of them in Chinese with elegant out-
lines of their external appearance; but I have met with nothing valuable
concerning them in Persian, except what may be gleaned from the medical
dictionaries; nor have I yet seen a book in Sanscrit, that expressly treats of
them: on the whole, though rare animals may be found in all Asia, yet I
can only recommend an examination of them with this condition, that
they be left, as much as possible, in a state of natural freedom, or made as
happy as possible, if it be necessary to keep them confined.

2. The history of minerals, to which no such objection can be made,
is extremely simple and easy, if we merely consider their exterior look and
configuration, and their visible texture; but the analysis of their internal
properties belongs particularly to the sublime researches of Chymistry, on
which we may hope to find useful disquisitions in Sanscrit, since the old
Hindus unquestionably applied themselves to that enchanting study; and
even from their treatises on alchemy we may possibly collect the results of
actual experiment, as their ancient astrological works have preserved many
valuable facts relating to the Indian sphere and the precession of the equi-
nox: both in Persian and Sanscrit there are books on metals and minerals,
particularly on gems, which the Hindu philosophers considered (with an
exception of the diamond) as varieties of one crystalline substance either
simple or compound: but we must not expect from the chymists of Asia
those beautiful examples of analysis, which have but lately been displayed
in the laboratories of Europe.

3. We now come to Botany, the loveliest and most copious division in
the history of nature; and, all disputes on the comparative merit of syf-
tems being at length, I hope, condemned to one perpetual night of undisturbed slumber, we cannot employ our leisure more delightfully, than in describing all new Asiatick plants in the Linnean style and method, or in correcting the descriptions of those already known, but of which dry specimens only, or drawings, can have been seen by most European botanists; in this part of natural history we have an ample field yet unexplored; for, though many plants of Arabia have been made known by Garcias, Prosper Alpinus, and Forskoe'lı, of Persia, by Garcin, of Tartary, by Gmelin and Pallas, of China and Japan, by Koenig, Osbeck, and Thunberg, of India, by Rheedee and Rumphius, the two Burmans, and the much-lamented Koenig, yet none of those naturalists were deeply versed in the literature of the several countries, from which their vegetable treasures had been procured; and the numerous works in Sanscrit on medical substances, and chiefly on plants, have never been inspected, or never at least understood, by any European attached to the study of nature. Until the garden of the India Company shall be fully stored, (as it will be, no doubt, in due time) with Arabian, Persian, and Chinese plants, we may well be satisfied with examining the native flowers of our own provinces; but, unless we can discover the Sanscrit names of all celebrated vegetables, we shall neither comprehend the allusions, which Indian poets perpetually make to them, nor (what is far worse) be able to find accounts of their tried virtues in the writings of Indian physicians; and (what is worst of all) we shall miss an opportunity, which never again may present itself, for the Pandits themselves have almost wholly forgotten their ancient appellations of particular plants, and, with all my pains, I have not yet ascertained more than two hundred out of twice that number, which are named in their medical or poetical compositions. It is much to be deplored, that the illustrious Van Rheede had no acquaintance with Sanscrit, which even his three Brahmens, who composed the short preface
engraved in that language, appear to have understood very imperfectly, and certainly wrote with disgraceful inaccuracy: in all his twelve volumes I recollect only Punarnava, in which the Nāgari letters are tolerably right; the Hindu words in Arabian characters are shamefully incorrect; and the Malabar, I am credibly informed, is as bad as the rest. His delineations, indeed, are in general excellent; and, though Linnaeus himself could not extract from his written descriptions the natural character of every plant in the collection, yet we shall be able, I hope, to describe them all from the life, and to add a considerable number of new species, if not of new genera, which Rheede, with all his noble exertions, could never procure. Such of our learned members, as profess medicine, will, no doubt, cheerfully assist in these researches, either by their own observations, when they have leisure to make any, or by communications from other observers among their acquaintance, who may reside in different parts of the country; and the mention of their art leads me to the various uses of natural substances, in the three kingdoms or classes, to which they are generally reduced.

III. You cannot but have remarked, that almost all the sciences, as the French call them, which are distinguished by Greek names and arranged under the head of philosophy, belong for the most part to history; such are philology, chymistry, physicks, anatomy, and even metaphysicks, when we barely relate the phenomena of the human mind; for, in all branches of knowledge, we are only historians, when we announce facts, and philosophers, only when we reason on them: the same may be confidently said of law and of medicine, the first of which belongs principally to civil, and the second chiefly to natural, history. Here, therefore, I speak of medicine, as far only as it is grounded on experiment; and, without believing implicitly what Arabs, Persians, Chinese, or Hindus may have written on the virtues of medicinal sub-
stances, we may, surely, hope to find in their writings what our own experiments may confirm or disprove, and what might never have occurred to us without such intimations.

**Europeans** enumerate more than _two hundred and fifty_ mechanical arts, by which the productions of nature may be variously prepared for the convenience and ornament of life; and, though the _Silpaśāstra_ reduce them to _sixty-four_, yet _Abu'l Fazl_ had been assured, that the _Hindus_ reckoned _three hundred_ arts and sciences: now, their sciences being comparatively few, we may conclude, that they anciently practised at least as many useful arts as ourselves. Several _Pandits_ have informed me, that the treatises on art, which they call _Upāvedas_ and believe to have been inspired, are not so entirely lost, but that considerable fragments of them may be found at _Banares_; and they certainly possess many popular, but ancient, works on that interesting subject. The manufactures of _sugar_ and _indigo_ have been well known in these provinces for more than _two thousand_ years; and we cannot entertain a doubt, that their _Sanskrit_ books on dying and metallurgy contain very curious facts, which might, indeed, be discovered by accident in a long course of years, but which we may soon bring to light, by the help of _Indian_ literature, for the benefit of manufacturers and artists, and consequently of our nation, who are interested in their prosperity. Discoveries of the same kind might be collected from the writings of other _Asiatick_ nations, especially of the _Chinese_; but, though _Persian_, _Arabick_, _Turkish_, and _Sanskrit_ are languages now so accessible, that, in order to attain a sufficient knowledge of them, little more seems required than a strong inclination to learn them, yet the supposed number and intricacy of the _Chinese_ characters have deterred our most diligent students from attempting to find their way through so vast a labyrinth: it is certain, however, that the difficulty has been magnified beyond the truth; for the per-
spicuous grammar by M. Fourmont, together with a copious dictionary, which I possess, in Chinese and Latin, would enable any man, who pleased, to compare the original works of Confucius, which are easily procured, with the literal translation of them by Couplet; and, having made that first step with attention, he would probably find, that he had traversed at least half of his career. But I should be led beyond the limits assigned to me on this occasion, if I were to expatiate farther on the historical division of the knowledge comprised in the literature of Asia; and I must postpone till next year my remarks on Asiatick philosophy and on those arts, which depend on imagination; promising you with confidence, that, in the course of the present year, your inquiries into the civil and natural history of this eastern world will be greatly promoted by the learned labours of many among our associates and correspondents.
CIVIL AND NATURAL

...
ON THREE NATURAL PRODUCTIONS OF SUMATRA:

By JOHN MACDONALD, Esq.

ON THE CAMPHOR OF SUMATRA.

In answer to some questions put to me by the President of the Asiatick Society respecting camphor-oil, I have the pleasure of giving the solution contained in the following short account. Camphor-oil, one of the essential oils, is actually camphor, before the operations of nature on it have reduced it to the concrete form in which it is found in the tree. When Mr. Marsden composed his justly-admired history of Sumatra, the prevalent opinion on this subject, was, that the oil and the concereted camphor were never found in the same tree; I have the authority of a gentleman, Lieutenant Lewis, well informed on this subject, from a residence of many years in the country producing the camphor, to differ from that generally accurate author, by saying, that he has seen a tree three quarters of a mile from the sea, near Tappanoyl, from which three cattles (above three pounds) of camphor, and at the same time, near two gallons of oil, had been procured. If a tree be old, and yield oil plentifully, the natives esteem these two circumstances sure indications of its containing a considerable quantity of camphor. Mr. Macquer, in his chemical dictionary, has remarked, that the nitrous acid dissolves camphor without commotion, that the solution is clear and limpid, and that it is called camphor-oil. This affords a proof, that the formed camphor is produced from the oil, by a natural operation of composition, the decomposition by means of the above solvent
reducing the substance to its primary state previous to concretion. The
Achinese are reckoned the best judges of camphor; and the oil, they col-
lect, undergoes a process by distillation, leaving a residuum of inferior
camphor. Trees of a certain age only yield camphor. It would seem,
that a certain time is requisite for maturing the oil to that state, when its
contained camphor becomes fit for being concreted by the heat of the sun
acting on the tree and soil. The camphor-tree is one of the Enneandra
Monogynia of Linæus, and differs in a small variation in the form of the
leaf from the Arbor Camphorifera Japonica, foliis laurinis, fructu parvo,
calyce brevissimo. The tree very much resembles the Bay in leaves. The
trunk is thick; the bark of a brownish appearance; and the ramification
strong, close, and extended. It is fond of a rich red loam tending to a
blackish clay, mixed with a crumbling stone of the colour of marl. It
grows principally on the N. W. side of Sumatra, from the line 3° N.
early. The wood is useful for domestic purposes, being soft and easily
worked. It is by many imagined, that camphor is produced by a
chemical process. This is a mistaken idea, farther than regards the inferior
kind arising from the distillation of the oil. I shall give a brief account
of the mode of obtaining and preparing it, as practised by the natives of
Sumatra, from the time of the establishment of the English on the island.
The Sumatrans, previous to their setting out in quest of camphor, assem-
ble on the confines of the country they intend exploring, and discharge
a variety of religious duties and ceremonies, calculated, in their opinion,
to promote the future success of their undertaking. They enter the
woods, and, from experience, soon distinguish such trees as contain cam-
phor. They pierce them, and, if they yield oil plentifully, it is presumed
they contain concreted camphor, which is found in small whitish flakes,
situated, perpendicularly, in irregular veins, in and near the centres of
the trees. The tree is cut down, divided into junks, and carefully divested of its camphor. When the oil has been drawn off from young trees, the camphor, which they afterwards afford, is of a less valuable nature, and is termed belly or foot camphor, in proportion to the degree of affinity it bears to head, or the best sort. When brought for sale, it is repeatedly soaked and washed in soapy water to separate from it all heterogeneous and sandy particles, that may have adhered to it. When clean it will sink in water, and be of a white, glossy, smooth appearance, tending to transparence. After it has been washed, it is passed through three sieves of differing textures, so as to be divided into head, belly, and foot camphor; certain proportions of each compose the chests made up for the China market, where they are sold for £. 8 50 sterling, nearly. The capoor *(a word of Arabick origin) matee, or dead camphor, is carefully separated from the three divisions, by an acuteness of distinction, acquired by the eye and hand from habit and attention, and, being mixed with the imperfect kind mentioned above, is pounded in a mortar and distributed among proportional quantities of foot camphor. This capoor-matee is sometimes procured by boiling down the thickest part of the oil, or by taking the sediment of the best oil, after it has settled at least twenty-four hours. Camphor-oil is found to be a sovereign remedy for strains, bruises, and other external pains, from its penetrating quality in entering the pores, and gently agitating the affected parts, so as to quicken the stagnated circulation. The internal, anodyne and diaphoretic, and the external, antispasmodic and sedative virtues of camphor are well known. The oil is found to possess these in a certain degree, and to be useful in removing the painful spasms of the nerves and tendons, by dissipating the surrounding acrid humors. When the oil is used, it must be formed into a liniment, as it would alone occasion pain, from its strength. The oil, applied to sores on horses, has been found
very beneficial. In this case it ought to be mixed with the juice of tobacco. *Sumatra* affords annually from fifteen to twenty peculs (of 133½ pound each) of camphor, and more oil than there is at present a demand for. The Chinese purchase it; and it is not clearly ascertained, whether they use it all in China, or make a fictitious species of it, by admixture of Japanese camphor, for the Europe market: the latter is generally supposed. It is highly probable, that the price of camphor, will, in process of time, rise to an enormous degree, as one tree in three hundred is not found to contain camphor, and, when found, is immediately cut down; in consequence of which, the plant must soon become scarce, and the produce proportionably dear. It is to be hoped that the oil, will, in this event, be found by the faculty to possess all the useful qualities of this valuable medicine. I have the satisfaction of accompanying this paper with a specimen, though a small one, of the camphor-wood, with a small quantity of the substance in it, the rest having evaporated from length of time. If this account should afford any information to the President and Members of the Asiatick Society, my intention will be fully answered.
II. 2.

ON THE CORAL OF SUMATRA.

If this paper should be deemed worthy of a place in the transactions of the Asiatick Society, the insertion I must still consider as an indulgence, and my attempt, a proof, that I am more anxious, than able, to increase the general flock of Eastern natural knowledge recorded in the useful annals of the Society. Specimens of coral, for your acceptance, and for the illustration of this subject, are now forwarded.

The appearance of Sumatran coral does not altogether correspond with the descriptions of the plant hitherto given*. This induces me to describe such parts as are imperfectly represented. The plant, to which the various species of coral belong, is one of the Cryptogamiae of Linnaeus, and may be reckoned one of the Herbae Marínae of Tournefort, of the Herbae imperfectæ of Mr. Ray. It may be reduced to three colours, red, black, and whitish-yellow: the last is the most common in the Eastern seas. It is of a fungous texture, equally hard out of and in its natural element; and its pores are charged with a juice of a milky appearance, in some degree acid. The bark covers every part of the tree, and contains a number of perforated papille terminating in tubes, having two or more holes in each, intended, I imagine, for the admission of the matter affording nutriment to the plant. The internal projections of the papille adhere to the particles of sand and stone, on which the coral grows, and are the only appearance

* See the Remark at the end of this Paper.
of roots it exhibits. On examining the internal extremities of these *papillae*, by means of glasses, some very small ramifications are discovered. These are very easily observed in the *papillae*, which are attached to the bark of the root. The tree is said to grow to the height of two feet: I have seen some as high as ten feet. From these and other differences in appearance, I am apt to think, that some *European* and *Indian* corals are not the same, but species of the same genus. From the very rapid growth of coral on the west coast of Sumatra, and in the Eastern seas in general, as will be shown in this paper, there can subsist but little doubt, that it is a vegetable substance; though there have not been wanting some, who have supposed it a fossil formed like crytals and spars; and others, eminent naturalists, who have ranked it among the animal tribes. *Boccone* discovered, that this plant encloses a nutritious juice under its bark: and Count *Marsigli* remarked and observed its flowers and seeds. I shall here insert *Marsigli's* accurate experiment, which affords the decision of almost absolute demonstration in favour of coral being a vegetating plant.

"Having steeped some coral freshly-gathered in sea-water, he perceived, in a short time, that the little ruddy tubercles, which appeared on the surface of the bark, began gradually to unfold, and at length, opened into white flowers in the form of stars, with eight points which were sustained by a little calyx, divided, in like manner, into eight parts. Upon taking the coral out of the water, the flowers immediately closed, and returned into red tubercles as before; which tubercles, being closely squeezed, yielded a sort of milky juice: and, upon returning the coral into the water as before, the tubercles, in an hour's time, opened, or flowered afresh; and this was continued for six or eight days, when the buds, or tubercles, ceased to blow any more. In ten or twelve days they became detached from the coral, and sunk to the bottom, in form of little yellow balls."
These tubercles, then, according to the analogy of plants, should be the flowers of coral, and the milky, viscid juice, contained therein, the pollen: accordingly, it is held, that, when this juice falls on a properly-disposed-body, or nidus, a new coral arises therefrom; and the analysis of coral answers precisely to that of other sea-plants, all of them affording a volatile urinous salt, and a thick, blackish fetid oil—"Elementa Chemic of Boerhaave, page 135, Note. vol. 1. Mem. de l'Acad. An. 1708.

Whether, after all, the striated papilles, which are of a stellar figure, and the two or more apertures of which are divided, generally, into twelve parts, contain an animal, whose labour produces the growth of the coral, or who inhabits the coral for its own immediate satisfaction, is a question that has been much agitated, without affording any certain conclusions. Monsieur de Peyssonnel, after having inquired into and discussed the various arguments for and against coral's being a petrification or a congelation, concludes that it is the work of an insect, which he designates as Urtica, Purpura, or Polype, that contracts in air, expands in water, and is sensible to touch, or the action of an acid. From Mari-sigli's experiment, as recited above, I think we may safely conclude, that Peyssonnel mistook the matter, and supposed a flower an insect; for it is well known, that many flowers, on being plunged into an acid, will exhibit signs of contraction and movement. We observe many growing substances, which are inhabited by animals, or insects, merely for their convenience, and not to promote the growth of such substances, which they very frequently, on the contrary, retard. If an animal can be supposed to produce such immense bodies of this substance, as I shall have occasion to mention, whence does it derive the prodigious degree of nutriment requisite for the purpose, as it is not found that it quits the centre of its
striated habitation? why do not these *vermiculi marini* leave cells behind them, as they advance the growth of the coral? We find none, but, on the contrary, the surface uniformly smooth and even. As for the external cells, they are the channels that convey nourishment, and correspond to the fibres of plants. It must remain, however, in some degree a doubt, whether these marine productions are zoophytes, produced by the labour of animals, or whether they are produced on a vegetating principle. It will be difficult to bring this matter to the test of modern natural philosophy, *viz.* experiment: but till such can be made, opinions must be various, though the majority, and apparently (from Marsigli’s experiment) the best founded, incline to the belief of corals being produced by vegetation. Having slightly reviewed both sides of this curious question, and having hazarded my own opinion, which can be of little weight, I come now to the intention of troubling the Asiatick Society with these remarks, imperfect as they must appear.

The production of islands, on the west coast of Sumatra, by the very rapid increase of this wonderful plant, is a remarkable effect of the operations of nature, hitherto unrecorded in the annals of natural philosophy. Mr. Dalrymple, alone has alluded a fact, to which this account will add the weight of convincing testimony. In the year 1784, I was directed to survey the coast of the Dutch districts on the west side of the island of Sumatra. During the course of this survey, I had occasion to lay down on my charts, several shoals, consisting of branched coral, sand, and such heterogenous matter, as they will resist and incorporate with themselves, when impelled against them by the action of the seas, winds, tide or currents. The surfaces of these shoals were at various depths, from one foot to three or more fathoms. They are of a conical
form, the base, in proportion to the axis, being small. This shape gives them, in general, the appearance of trees of that figure, such as the popular, &c. One of the shoals I visited, to the southwest of Pooles Pinang near Padang, was at that time covered by two feet and an half of water, and could not be distinguished by vessels passing at some distance, but at such times as the winds produced a swell or agitation on it. I passed along this part of the coast in February 1789, very close to this shoal, just four years and seven months after the period at which the survey had been taken; and was not a little astonished to observe a small sandy island, about ten yards in diameter, having a few bushes growing on it, formed on the top of the shoal, which lies nearly in thirty-seven fathoms of water. I could not mistake this shoal, as there was no other contiguous to it, and as my chart, by which I suggested the safest course to run in, then lay before me. In May and September 1789, I had an opportunity, in going to and returning from Tappanooy-harbour (which I had been directed to survey), to be again on several of the shoals included in my chart of the coasts of the Dutch-districts, and, according to my expectations, found the depth of the water on them considerably diminished since the survey had been taken. In March 1790, I was sent for by a gentleman at Fort Marlborough, whose house commanded a view of the sea, to observe the water breaking on two shoals in the roads. This gentleman had resided on the coast near fifteen years and frequently in this house, without having observed these shoals, which, had they appeared at any former period, must have been remarked. Their situation being clearly and distinctly exposed to the daily and immediate observation of the settlement. At the distance of seven miles from Fort Marlborough, nearly in a south-west direction, there is a small island, having a few cocoa-nut trees on it. Thirty miles (or it may be twenty-five) distant from this island, one of the northern pepper set-
tlements is situated on a rising ground. The gentleman residing there has informed me, that he has always been able to distinguish the masts of vessels lying at anchor near this island, and that he lately twice distinctly, in the proper bearing, observed the trees of the island: but that, afterwards, from hazy weather, or some other affection of the atmosphere, he could not perceive the island, or rather the trees on it. Former residents of Layé, the place of observation, have, in vain, when using the best glasses, looked for this island, invisible till lately. Such are the stubborn facts, which may be adduced in proof, not only of the very rapid growth of coral, but also, of the formation of islands from it, as a necessary, and observed, consequence. The growth of coral alone may not produce this effect: other aiding circumstances may intervene. Boccone and Marsigli have remarked, that, when coral meets with stones, coarse sand, or any other substances, it seizes them firmly, and speedily includes them within a strong extension of its close ramifications. These collections in seas, subject to frequent storms and agitations, must be considerable, and promote, in no small degree, the elevation of islands. Earthquakes are very frequently felt on this island, and on the contiguous ones. Several shocks are sometimes experienced during the course of a month. It is observable that this tremendous phenomenon, in its progress, undulates the space it moves, or travels, under, and that the concave parts of these undulations, open into fissures, when the motion is violent. It is not improbable, but that such openings take place under shoals, or immediately contiguous to them. In this case, to preserve the equilibrium, it seems reasonable to suppose, that the surrounding sand and substances will rush in, hurried along by the general movement, in a greater quantity, from the degree of momentum impelling them, than what occupied the space of the fissure, when at rest. These hiatus take place only on the
side of the undulation, from which the earthquake proceeds; and the land on that side, now inclining to rest, after having experienced the shock, but still possessing a tendency to move in the direction of the earthquake, will naturally fall into the hiatus opened for its reception, before the undulation can reverberate into its original position. Hence the shoal, or island, will be in some degree raised, by an effect similar to that of a lever, though by different means. These islands and shoals, being further removed, than other parts exposed to the shock, from the subterraneous or submarine crannies or channels, in which the earthquake acts, will, of course, resist its action more, than parts possessing less incumbent weight. The undulations will, therefore, meet with more resistance, and deposit a greater quantity of sand than in situations resisting less. In the formation of islands, from coral and sand, as soon as the sand appears above the surface of the water, birds carry roots and various seeds attached to them, for the construction of nests: hence the speedy appearance of bushes and trees. Instead of supposing with some, that the numerous islands on this coast have been formed by the violent commotions of nature occasioned by earthquakes, which separated them from the continent, it is more reasonable to suppose their formation on the above principles, and chiefly by coral: more especially, when we consider that the depth of water between many of these islands and Sumatra, is unfathomable. The numerous clusters of islands in the eastern seas, from 36° to 16° degrees of east longitude, are all supported by bases of coral, and surrounded by shoals emerging from the surface, or pushing their conical frustums into a new element. Experience has ascertained the formation of islands from coral; it is not altogether conjecture to suppose, that various groups of islands, in the great eastern archipelago, will, in process of time, become continents or insular tracts or spaces of land. On the coast of Coromandel, in
the immediate front of Madras, exposed anchorage has produced, and produces annually, lamentable accidents, attended with much publick detriment. The position of a sheltering island in that situation would be an object of national benefit and private safety and advantage. To attempt to effect this, a considerable quantity of coral might be transported from this coast, at no great expense, and sunk, with stones and other substances, in seven, eight, or eleven fathoms of water. In the course, probably, of forty or fifty years, an island might be formed by the growth of this substance. This is a long period to look forward to for the benefit of futurity, but from what I have, from my own observation, inferred in this paper, I am convinced of the practicability and success of a scheme, which many will treat as chimerical and visionary, while others, more thinking, will see the utility of the design and probability of success, but will be deterred by the difficulty and tediousness, which would attend the execution.

REMARK by the PRESIDENT.

It seems at length to be settled among naturalists, that corals and corallines are the cretaceous habitations of animals, and one of the links in the great chain of nature. The idea of making islands, for the protection of ships at anchor, is very sublime; but it might be feared, that very dangerous reefs of coral would be formed, before an isle could appear above the water: an artificial embankment of coral might, perhaps, on some coasts be a powerful barrier against an encroachment of the sea.
ON THE COPPER OF SUMATRA.

I HAVE the satisfaction of laying before the Asiatick Society a specimen of copper-ore, the production of the island of Sumatra. It is found on and in the hills of Mucoby, near the sea, between Annalaboo and Soosfoo, to the north of our extreme English settlement of Tappanooey. The soil, which generates the ore, is a mixed loam, consisting of clay, small stones and red sand, founded on an under-foil of soft rock, intersected with veins of this useful substance. The space affording the ore is considerable, extending above a degree in length, and further east, or into the country, than has been yet ascertained. A considerable quantity of ore is annually collected on the surface of the hills, to which the indulgence or ignorance of the inhabitants, at present, confines their search. Its being found on the surface, may probably be ascribed to the efforts of earthquakes, which are very prevalent on this coast, and over the island in general. The natives, from inexperience, are incapable of conducting a mine, and pursuing a metallic vein. They are content with excavating the ore; till their labour is interrupted by the flowing of the water, which soon takes place in a country subject to heavy rains throughout the year. As many of these veins widen as far as they have yet been traced, it is more than probable, that these hills contain inexhaustible mines of this metal. The ore, by repeated smeltings, and other operations to free it from its sulphur, has been reduced to a metal, and then found to include a considerable proportion of gold. As no part of the world contains a greater
quantity of this latter metal than Sumatra, in proportion to the area it occupies on the globe, it is probable that the discovery of gold mines would attend the establishment of copper ones in the hills of Annalaboo. This is so much the more probable, as metalline stones of various kinds, and which the Malay regard as sure indications of a soil affording gold, are found on these hills; independently of the consideration, that gold-dust is collected in the immediate neighbourhood, and in the interior country, contiguous to the hills yielding the copper ore. It is singular, that the same method of rough-smelting, which is practised at Goslar in Germany, should be in use among the uncivilized inhabitants of Sumatra. The Sumatran method possesses more ingenuity, and is, at the same time, more simple. An undemonstrated knowledge of the plainest and most obvious principles of science, is congenial to the most rude as well as to the most civilized conceptions, and the advantages, which the talents of born genius have conferred on Europe, are, by no means, a conclusive proof of the inferiority of intellect, which the fortunate inhabitants of Europe liberally bestow on their less enlightened brethren of the East and West. That "time and chance happen unto all things "under the sun," is a truth that amounts to a voluminous disquisition on this subject. But to return: the ore-gatherers choose a level spot of hard clay, which they divide into equidistant points, by lines intersecting each other, and laid off equally on two sides of a square. These points, included in the square space, they surround with circles, of which the points are the centres. The circles are inverted bases of cones, excavated to receive the fused metal. The smelting space is now covered with wood, charcoal, and other combustible matters, and the ore is distributed among these admixtures. The melted ore is received into the formed holes, leaving the scoriae or incremen above. The metal, still requiring many smeltings to render it fit for use, or perfectly malleable and ductile, is taken out in the form of pointed
cakes, and sold for twenty Spanish dollars per pecul, or five pounds sterling for pounds 133½ averdupois weight. The natives are particularly careful in preventing accidents; for, previously to fusling the ore, they heat the ground to a great degree, in order that all the water near the surface may be absorbed, or made to exhale, having experienced, I imagine, that copper, when in a state of fusion, meeting the smallest quantity of water, will fly in all directions with a force destructive of every vulnerable substance within the sphere of its action. I have been informed, that the metal has been eliquated at Madras lately, and found to contain very little appearance of any other but of gold. The usual solvents, aqua fortis, aqua regia, and spirit of salts readily dissolve the Sumatran copper. A deep green solution is produced, in a very short time, by the action of the weaker acids on the rough ore. The above method of smelting will separate all coarse, mineral, and heterogeneous substances from the metal, but will still leave it strongly impregnated with its peculiar mineral earth. The detaching of this mineral earth is the most difficult and expensive operation attending the refinement and purification of copper: it being frequently necessary to add a proportion of another metal to effect it. This consideration will, probably, prevent a private company from applying for publick permission to work these mines; and, therefore, they must remain in their present state, unless the East India Company will order the experiment to be made, from the reports and opinions of such, as may be qualified to give them on so interesting a subject. By submitting this short account to the gentlemen of our society, whose useful researches, will, I hope, produce permanent national benefit, by advancing the knowledge of nature, of science, and of literature, opinions, properly weighed, will be diffused among the publick, of the advantages, that may result from an establishment for working copper-mines on the west coast of Sumatra.
On the Plant Morinda and its Uses.

By William Hunter, Esq.

Although the plant, which is the subject of this essay, be not a new species, yet, as it is cultivated to a great extent in Mâlava, and forms an important branch of the commerce of that province, I hope a particular description of it, with some account of its culture and use, will not be unacceptable to the Asiatick Society.

It is the Morinda of Linnaeus: it belongs to the order Pentandria Monogynia in his system, and is referred by him to the natural order of Aggregata. Here, (though it may seem a digression from the subject) I cannot help observing, that Linnaeus is not altogether consistent in the distinction, which he endeavours to establish, between the aggregate, (properly so called) and the compound, flowers. In his Philosophia Botanica, § 116. he defines a compound flower, to be "that, which has a broad entire receptacle, and sessile florets;" and an aggregate flower, "that which has a broad receptacle, and florets supported on peduncles." According to these definitions, the Morinda ought to be placed among the compound flowers; but in the following section, Linnaeus makes the essential character of the compound flowers to consist in having all the anthers united; thus restricting it to his class of Syngenesia. This not only excludes the Morinda, but ought, perhaps, to have, strictly speaking, excluded the Kubitia, Iva and Ambrosia.
and even, allowing the approximated anthers, in these genera, to come within the meaning of the definition, it seems unaccountable, that the *Nauclea* (a), which appears so well entitled to a place in one of these orders, should be excluded from both.

The *Aal* is a tree of a middling size; the *Root* branchy; the *Trunk* columnar, erect, covered with a scabrous bark.

**Branches** from the upper part of the trunk, scattered; of the structure of the trunk.

**Leaves** (seminal) oval, obtuse, entire.

(mature) opposite, decussated, ovate, pointed at both ends, smooth, with very short petioles.

**Stipules**, lanced, very small, withering.

**Peduncles**, from the axils of the leaves, solitary, bearing an aggregate flower.

**Calyx**: common receptacle roundish, collecting the sessile flowers into an irregular head.

**Perianth** most entire, scarce observable; above.

**Coroll** one-petaled, funnell-form; **Tube** cylindrick; **Bourder** five cleft; the **divisions** lanced.

**Stamen**: **Filaments** five, thread-form, arising from the tube, and adhering to it through two thirds of their length, a little shorter than the tube. **Anthers** linear, erect.

**Pistil**: Germ beneath (b). **Style** thread-form, longer than the stamens.

**Stigma** two-cleft, thickish.

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(a) The *Cadm* of the *Hindoos*.

(b) The Germ is four-celled, and contains the rudiments of four seeds.
Pepicarp: common, irregular, divided on the surface into irregular angular spaces; composed of berries, pyramidal, compressed on all sides by the adjacent ones, and concreted with them, lopped, containing, towards the base, a fleshy pulp.

Seeds, in each berry, four, towards the point, oblong, externally convex, internally angular.

The species here described is called by Linnaeus, Morinda arborea, pedunculis foliariis; and he gives it the trivial name of citrifolia: but the form of the leaves, in all the specimens I have seen, does not exhibit this similitude, as will appear by the inspection of the accompanying figure, which was drawn from nature. There are figures of it given by Rumphius (Herb. Amboin. vol. 3. tab. 99) who calls it Bancudus latifolia, and by Rheede (Hort. Malab. vol. 1. tab. 52) who calls it Cāda-pilava. In Mālava it is called Aal, and in Oude it has the name of Atchy.

The plant grows best in a black rich soil, free from stones, in situations moderately moist, not too high, yet sufficiently elevated to prevent the water of the rains from stagnating; and where there is, near at hand, a supply of water for the dry months. It is sown about the middle, or end, of June, after the rain has begun to fall. The ground requires no manure; it is ploughed twice, or, if tough and hard, three times. The seed is sown, either broad-cast, or in drills, according to the fancy of the cultivator. The ground is then ploughed over again, and harrowed. In one beegah (c) of ground are sown, from 1½ to 2½ muns (d) of seed. In fifteen or twenty days,

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(c) A measure of one hundred cubits square,
(d) The muns of this country is sixteen Sears of eighty rupees weight each.
the young plants spring up. The field is then carefully weeded, and the ground stirred with an iron instrument. This operation is repeated, at proper intervals, during the first year; and, in the dry months of that year (that is, from January till June) the ground is three or four times laid under water. After the first year, it requires no farther care. In a year, the plant grows to the height of one or two feet, according to the quality of the soil. In the third year, sometimes in the second, it bears flowers and fruit. The flowers appear in June, and the fruit ripens in September or October: but the fruit of those young trees is not used for seed, as it is said not to produce vigorous plants. In the months of February and March following the third year, the plants are dug up. They dig, to the depth of three or four feet; the root, which is the only valuable part, extending so far into the ground. The wood of the plant is only used for fuel. Sometimes the necessities of the husbandman oblige him to dig the crop in the second, or even at the end of the first, year; but the root is obtained in much smaller quantity, and less rich in colouring matter, than if it had remained the regular time. The crop is not much affected by the excess or defect of the periodical rains. When it is dug at the end of the third year, one beegab yields from four to six maunies (e) of the root in a wet state. These are spread on cloths, and dried in the sun, for three or four days; at the end of which time, there remains, of dried root, one third, or one fourth, part of the original weight.

As the colouring matter resides chiefly in the bark of the root, the small twigs, which contain little wood, bear a higher price than the larger pieces. Therefore, the roots, when dug up, are separated into three kinds, coarse, medium, and fine. The coarse sells for one rupee per mun, the medium two.

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(e) The mauny contains twelve mun of this country weight.
or three rupees; and the fine four rupees per mun, or four seers for a rupee.

In particular fields they leave trees for seed, at the distance of four, five, or six cubits. In six years, they yield fertile and vigorous seeds. The trees, when of that age, are about six inches in diameter, and twelve feet high, (branches included) ; but they continue fruitful for many years, and are said to grow to a size not much inferior to that of a Mango-tree. When the fruit is ripe, it is gathered, laid in heaps on the ground, and covered up, with straw, or other rubbish, for fifteen or twenty days, in which time the pulp rots, and is consumed. It is then put into a basket, and washed, by repeated affusions of water, to separate the seeds, and free them from the remains of the pulpy matter. The husbandman, who cultivates this plant, generally takes care to have on his ground a sufficient number of trees for seed. If he is unprovided with these, he may purchase the seed, immediately after it is prepared, for four or five rupees the mun; but if he neglects to purchase till the season of sowing arrives, he may be obliged to pay at the rate of two seers per rupee.

In the ground, on which Aal has grown, they sow wheat, or other grain for five or six years; and, it is observed, that the grain, sown on this ground, thrives remarkably: and, while the trees, left for seed, continue small, grain of any kind may be sown in their interstices, but Aal would not thrive there.

The expense to the cultivator varies considerably in different villages. In one, where the plant is cultivated to a considerable extent (f), the Pateil, or

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(f) Kherava, 7½ miles from Oojain.
Zemindar, gave me the following account of the expense attending the cultivation of one beegab.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>To the Collector of the District</td>
<td>Rs. 10</td>
</tr>
<tr>
<td>To the Pateil,</td>
<td>1</td>
</tr>
<tr>
<td>To Writers, &amp;c. servants of the Pateil,</td>
<td>0 10</td>
</tr>
<tr>
<td>To digging up the Root (g)</td>
<td>15</td>
</tr>
</tbody>
</table>

Total, 26 10

Now supposing, agreeably to the foregoing account, that a good crop is fix, and a bad one four, maunies; that each mauny yields, when dried, 3 1/2 muns, and that in this dried root, the coarse at one rupee, the medium at two, and the fine at four, are in equal quantities; then, the value of the good crop will be forty-nine rupees, and that of the bad one 32, 10, 8. The first of these leaves Rupees 22, 6, the other Rs. 6, 0, 8, from each beegab. The medium, Rupees 14, 3, 4, we may estimate as the profit of the husbandman, out of which he is to maintain himself and his cattle for three years. In this account, I have not included the expense of seed, as the cultivator is generally supplied with it from his own trees. Had he been obliged to purchase it, we must have added eight rupees to the expense of cultivation: but, as the crop sustains no damage by remaining in the ground, the cultivator can dig it up at his leisure; and, therefore, he generally saves, by his own labour, great part of the expense above stated for digging.

In another village (k), the cultivator has the land on much easier terms, only paying three rupees for the crop, or one rupee yearly, to the collector.

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(k) For digging a space sixteen cubits long, and 3 1/2 cubits broad, the labourers are paid 4 1/4 pice, at 50 to the rupee.

(6) Rinduwa, about the same distance from Onjein as the former.
Therefore, the other expenses being supposed the same, the crop only costs him Rs. 19, 10, besides his own maintenance, and that of his cattle.

Besides the consumption of the root in the manufactures of this province, large quantities of it are exported to Guzerat, and the northern parts of Hindostan. I have not been able to learn the exact value of this exportation, but have reason to believe that it amounts, annually, to some lacs of rupees. The dealers, who come from those places (especially Guzerat) to purchase, advance money to the cultivator, and, when the crop is ready, buy it, either on the ground, or after it is dug up. In the first case, they dig a small portion of the field, and, according to the quantity it yields, form a judgement on the value of the whole.

The method of dying with this root is as follows: The cloth to be dyed is thoroughly washed and scoured, with an extemporaneous kind of soap-lique, made by mixing the oil of sesamum with the soot of alkali. Then, supposing the cloth (which is generally of a thin texture) to be twenty-six cubits long, and one cubit broad, the quantities of ingredients will be as follow.

Take of large Her (i) in powder, three ounces. Mix it well, with four pounds of water. In this the cloth is to be thoroughly wetted, so that the absorption of Her may be as equal as possible. It is then to be squeezed, and spread in the sun, for about forty-eight minutes, to dry, taking care that no drop of water fall upon it. The cloth, when dried, is of a cream colour. It is kept, in this state, for four or five days, that the particles of the Myrobalan may be more firmly attached.

(i) The Chebule; Myrobolani maxima, oblonga, anguifolia. C. B.
ON THE PLANT MORINDA

Then take of powdered alum, two ounces; dissolve it in lb ij of water. Wet the cloth, thoroughly and equally, in this solution. Wring it and strike it gently on a smooth stone, then spread it, for twenty-four minutes, in the sun, to dry. When dried, it is of a pea-green colour. When perfectly dry, it is kept for four days, and then washed in cold water. To the manner and degree of washing, we are told, great attention is to be paid; as an error, either in excess or defect, would spoil the colour. When washed, it is dried in the sun.

The cloth, thus prepared, is ready to receive the colour, which is prepared in the following manner. Put 3½ gallons of water into an uncovered copper vessel, and set it on a gentle fire. When it is something more than lukewarm, put in the cloth, along with the colouring ingredients, which have previously been thus prepared. Take of Aal, from one to two seers, according to its quality, powder it, and rub it with two ounces of oil of Selenium to each seer. Add, of the flowers of D.bawry, (k) one-eighth of a

(k) A shrub, which grows wild on the hills, and on the banks of the rivulets, where they are formed of a grassy sod. The flowers are of a beautiful red colour, and are gathered, both for the use of the dyers, and of the apothecaries, who give an infusion of them, as a cooling medicine. They lose their colour in drying, and only yield a slight brownish tincture to water; so that the benefit derived from them, in dyeing with Aal, seems to depend merely on their action as an astringent, which is confirmed by the subdivision of Purpureum, a strong astringent, as an equivalent to D.bawry. The Natural Character of the D.bawry is as follows:

Cal. Perianth one-leaved, persistent; Tube bellied; Border, six-cleft; the divisions lanceolate, erect.
Cor. Petals six, lanced, acute, erect; a little longer than the calyx, arising from the edge of the tube, between the divisions of the calyx.
Stam. Filaments twelve (in some ten or eleven) awltd, erect, longer than the calyx, and arising from it. Anthers kidney form, incumbent.
Pist. Gyno oblong, two-furrowed. Style awltd, ascending, the length of the stigma. Stigma obtuse.
Peric. Capsule ovate, acute, two-furrowed, two-celled, four-valved.
Seeds Numerous, very small; Receptacle oblong, Leaved, opposite, lanced.
Here the oblong shape of the capsule and its two cells agree with the Lythrum; the divisions of the calyx, with the Gignora. Linnæus (Ph. Bot. 177, 182, 183) alleges that the calyx is more to be depended on, than the Pericarpium in ascertaining the genera of plants. Therefore, agreeably to these Aphorisms, I should be inclined to refer the D.bawry to the genus Gignora; but it may, perhaps, be considered as a new genus to be placed in the system between the Lythrum and Gignora.
feer, to each feer of Aal; or, instead of D. bawry, one ounce and an half of Purwâs; (1) in powder.

The cloth and colouring ingredients are continued on the fire, with a gentle heat, gradually increased, for about three hours. Towards the end, the water is made to boil strongly. By taking up a little of the water, and examining its colour, as it is dropped in the vessel, they judge of the success of the process. It ought to be of a clay-colour, or a little deeper. If it proves very red, the colour would be spoiled, and the remedy is, to add a larger proportion of D. bawry. During this process, the cloth is continually moved, by lifting part of it with a fitch out of the vessel, beginning at one end and proceeding to the other. It is now taken out, wrung, and dried. After which, being washed in river-water, the red colour is complete. No. 1 is a specimen of this colour, which is valued more for its durability than its beauty.

To make a dark purple, or chocolate colour.

Take of martial vitriol one ounce, dissolve it in two pounds of water, and clear the solution by decantation. Mix, with a quantity of the above-described colouring decoction, sufficient to wet the cloth, such a proportion of this martial solution, as will give the tint required. This is judged of by inspection, as the cloth will be of the same colour with the mixture. The cloth, being taken out of the colouring decoction, and wrung, is to be dipped into this mixture, and thoroughly wetted, so as to absorb the colour, equally and

(1) A kind of gail-nut, containing the exuvia of a small insect, found on a species of the Mimosa. In Malaya it is called Purwâs, in Marsear, Succor, and in the country about Mangbeer, Puravân. This being a stronger astringent, we are told, that an exact attention to the proportion of it is more necessary than to that of the D. bawry.
completely. Then being dried and washed, its appearance resembles that of the specimens N. 2 and 3; but the tints admit of a great variety, according to the proportions of the martial solution. Both these colours are very durable, being little affected by washing. One of the quarters of Oujein, named Jeyingpoorab, is inhabited by dyers, who consume great quantities of this root. Their printed and stained cloths, besides supplying the domestic consumption, are exported to Guzerat, and other provinces.
IV.

On the Inhabitants of the Hills near Ra'jamahall,

By Lieutenant Thomas Shaw.

A slight knowledge of the language of the natives of the hills, in the districts of Bhagalpur and Ra'jamahall, having brought to my observation, that their customs and manners, as well as their language, differed from those of the inhabitants of the neighbouring plains; I have, for some time, endeavoured to acquire a good account of them, from the belief that, notwithstanding their connexion with, and dependance on our government, they have been little known beyond the limits of the hills. The following description does not contain much more than a bare translation of what was written by the best informed mountaineer, whom I have met with: I have spared no pains to render it faithful, for there alone it can have any merit. My information has been derived through a Soubadar of the Rangers, (whom the late Mr. Cleveland had instructed in writing Nagree) as far as relates to the inhabitants of the hills in the three Tuppabs of Mudjeway, Gburry, and Munnuary. The first is to the south-west of Ra'jamahall, extending as far as Sierigully; the second is thence in a westerly direction, as far as Shawbabad; and the third lies to the south of Gburry, from whose people those on the borders of Bbeerboom, and southeast of Ra'jamahall, differ in many respects. Whatever was material in these latter Tuppabs, was related by a Soubadar from that quarter to the one who can write; and both attended me in translating them. The tuppabs of Mudbun, Pyer, Chitoleah, Barcope, Putsundaw, Jamnee, Hurnab Par, Dumsai, Kuneecallah, and others, have customs also peculiar to themselves. These I shall endeavour to ascertain.
The following relates immediately to the Tuppabs of Mudgeaway, Ghurry, and Munnuary, from which may be collected, what ideas the inhabitants have of one Supreme Being, of a future state, and of transmigration: it is true they worship many gods, but these are considered inferior to, and the medium of adoration of, one all powerful and omniscient Being; whom they call Bedo Gossaik, or the Great God: their opinions on the metempsychosis, it is probable, have been borrowed from the Hindus, though they profess no particular veneration for the cow, or any other animal; for they believe it a punishment, when God ordains a human soul to transmigrate into any of the brute creation; and it is also a received opinion, that, for certain crimes in this life, souls are condemned to the vegetable world.

The natives of the hills in these Tuppabs, having no knowledge of letters, or of any character, have a traditional story, brought down from father to son, (but in what age it was received, is now not known) that the Bedo Gossaik made heaven and earth, and all that is therein. To people the latter, seven brothers were sent from heaven: at first they remained together; when the eldest brother was sick, the six younger collected all manner of eatables, which they agreed to divide, and to separate, to go into different countries; one, a Hindu, got fish and goat’s flesh in a new dish, for his share; a second, a Mussulman, was allotted fish, fowl, and every sort of flesh, except hogs, for his portion in a new dish also; a third, Kirwary; a fourth, Keerrateer, got hog’s flesh also on a new dish; a fifth, Kazodeer, got all sorts of flesh, fish and fowl, in a new dish; a sixth, who was destined for a foreign country, got some of every sort of food, in a new dish, and after his departure, it was not known, what had become of him, till Europeans made their appearance, when, from their manner of living, it was concluded
that they were the descendentst of the sixth brother; the seventh, Mullare, who was the eldest, and sick brother, got some of every kind of food, but put them in an old dish, for which he was considered an outcast, and ordered to inhabit these hills, where finding neither clothes, nor subsistence, he and his descendants necessarily became thieves, in which practice they continued, till such time as Mr. Cleveland wisely conciliated their attachment to the English government, by a liberal generosity and munificence, while he entered their hills unattended, putting the utmost confidence in their faith, and made engagements to settle on their chiefs an inconsiderable monthly sum, in consideration of their good and peaceable behaviour and obedience, to which they have rigidly adhered; and this, it is related, put an end to their predatory incursions and marauding. The Kirwary cast crossed the Ganges and lived in tents, having no settled habitation. The Hindu and Mussulman remained in this country. The Kawdeer went to the south, and this remained doubtful, till a party of them came to dig a tank for Mr. Cleveland. The Kirrateer, went to the hills north of the Ganges. I cannot learn what names the brothers had, nor how they were provided with wives, to increase and multiply; the creation of women does not bear any part in this defective account, which proceeds to relate, that God the creator directed certain wombs to be fruitful. His commandments are, that men should give to such as will receive, and that in like manner others would give to them. By labour men must live; for this their hands were made: eyes were given to see with, the mouth to speak good and bad, as well as to eat sweet and sour, and the feet to walk. Abuse nobody without cause: neither kill, nor punish, without a crime, or God will destroy you. These commands being sent, certain wombs were fruitful. But some men forgetting these divine ordinances, abused, beat, and oppressed each other without cause; when, the measure of their crimes being full, he summons
them to his presence, the messenger carries sickness and death: on the sinner's appearing before God, being charged with forgetting his commandments, he is bound and cast into pits of maggots, or pits of fire, where he is to remain eternally.

Whoever keeps God's commandments, behaves well in all respects. He will neither injure, abuse, beat, nor kill, any person, nor seize their effects, nor plunder them, nor waste their grain, nor their money, nor their clothes, nor quarrel with any one; but praises God morning and evening; which last the women also do. He will be charitable, clothe and feed the poor, and observe the festivals in God's name, with the proper expense of grain, money, and clothes. God, for the just disposal of the goods he had granted, for keeping his commandments, and praying, summons the righteous person into his presence, on his having enjoyed this world long enough. On his appearance, he is asked, how he dealt with men, and how they behaved to him. Having rendered his account, as well of what he bestowed and received, as of what he ate; that he injured nobody, but praised God morning and evening; God answers, I saw that you behaved well, and kept my commandments; I will exalt you; in the mean time remain with me. After a short sojourn, he is sent to earth, to be born of woman again, and to be a Raja, Dewan, or Cutwall, with abundance of worldly goods and territory. Should he forget to praise God in his exaltation, and give not meat to the hungry, but oppress the poor, God, in his wrath, will destroy him, snatch him away, and accuse him of neglecting his commandments, and forgetting to praise him. He will then cast him into a pit of fire, where, should not his punishment be eternal, he will not allow him to be born again of woman, but to be regenerated in the shape of a dog or a cat.
Whoever offends in the presence of God, is dismissed to this earth, to be born of women, either blind, lame, or in poverty, never to have house, clothes, or victuals, nor any thing but what is begged from door to door. Should a person possessed of rank, grain, clothes, land, and every thing he could want, forget God's commandments, seize and plunder from others; God, in his wrath for the abuse of the good things which he had bestowed, will make him poor and a beggar, and having decreed, that he shall remain a certain time on earth, for his punishment, this being fulfilled, death snatches him away, and he appears in the presence of God. God orders a man to kill another, and he kills him, yet lives happily and content, but no one must, from his own will and pleasure, destroy a fellow creature, or God will destroy him. God orders a man to beat another, and he beats him; but whoever punishes a fellow-creature, without divine commands, the Supreme Being will direct a third person to punish the offender. No person shall abuse another without God's commands, whoever disobeys, will in like manner be abused by a third person.

Whoever without God's commands injures his neighbour, may expect divine retaliation. Should a man, seeing his neighbour's property, plunder or steal it, the Bedogossaith, will either order him to be punished, in like manner, or some of his family to die. Should you see a man lame, mock not at his misfortune, left God should make you lame, or punish you in some other manner. Laugh not at a man who has the misfortune to be blind, or God will afflict you in like manner, or some other way. It has pleased Providence that a man should have his back broken; whoever laughs at or mocks him, will be afflicted in like manner, God will make him blind, or lame, or poor; therefore mock not the unfortunate. If God had made the lame, the blind, the broken backed and poor, to be laughed at, he would have pardoned such as mocked them; but as their defects are punishments,
those who are perfect, should not deride their misfortunes. Those on whom God bestows grain, riches, land and power, ought to be charitable, and to cherish the unfortunate: should they, notwithstanding their wealth, be uncharitable, Providence will punish them, by rendering them poor, and reducing them to the necessity of working for their bread: when great men are charitable, God will protect them.

God directs the poor to the rich man’s door to beg: should the latter uncharitably refuse to relieve their wants, Providence will be displeased at the abuse of the good things which he had bestowed, and will render the rich man poor, helpless, and destroy his family. God can exalt the poor man: such are the dispensations and power of Providence. A man robs and kills another, and casts the body away to conceal the murder from the relations of the deceased, who conceive their kinsman to have been killed by a snake or a tiger; but God cannot be deceived: vengeance will fall on the murderer, or his relations; he, or some of them, will fall a sacrifice to a tiger or a snake; divine vengeance will surely await him. Whoever kills a tiger without divine orders, will either himself, or some of his relations fall a sacrifice to a tiger.

From such superstition, the natives of the hills are averse to killing a tiger, unless one of their relations has been carried off by one, when they go out for that purpose, and having succeeded, their bows and arrows are laid on the body of the animal; they invoke God, and declare that they killed it, to retaliate for the loss of a relation: vengeance thus satisfied, they vow not to attack a tiger, without the provocation of losing a kinsman.

God sends a messenger to summon a person to his presence: should the
messenger mistake his object, and carry off another, he is desired by the Deity to take him away; but as the earthly mansion of this soul must be decayed, it is destined to remain mid-way between heaven and earth, and never can return to the presence of God. Whoever commits homicide without divine orders, can never appear in the presence of the Deity, his soul is destined to remain mid-way between heaven and earth. Whoever is killed by a snake, as a punishment for some concealed crime, can never appear in the presence of the Deity; his soul is doomed to remain mid-way between heaven and earth; yet God will destroy the snake; but, if it acted by Divine orders, Providence spares it. Should a rich man call the poor with promises of giving them alms, and not perform them, and should the poor exhort God to make him poor too, for his uncharitable deceit, Providence will either punish him in this way, or some other; but by penance and prayer, he may be pardoned. As a man marries a woman at a great expense, should she be guilty of infidelity, and conceal the sin she had committed, which is the greatest aggravation of it, God will be incensed and punish her, by making her sick, lame, or blind. Whoever commits fornication and conceals it, may dread divine vengeance: to avert falling sick, or being otherwise punished for his crime; he must avow it, pray to be forgiven, and sacrifice a goat at Dewarry Nad, the shrine of their house-hold God, the blood of which is to be sprinkled over the linen, to purify him. If a man casts a luftful eye on his neighbour's wife, God will punish him: for it is forbidden. Whoever takes poison and dies, can never go to Heaven: his soul will be doomed to wander eternally; he will be convulsed and vomit; with no more than the daily allowance of as much rice as can be put on an auré-leaf (which is smaller than the tamarind-leaf), and as much water. Whoever hangs himself, shall never appear in the presence of God, his soul will have no place assigned it, but he will be doomed to wander eternally with a rope
about his neck. Whoever drowns himself, shall never appear in the presence of God; his soul shall remain mid-way between heaven and earth: and God has ordained, that whoever drowns himself, shall be doomed to work eternally, day and night, without intermission, to make the crooked banks of a river straight, where the stream ever undermines, as fast as the labourers incessantly work. Whoever, undirected by the Deity, has the misfortune of being killed by a fall from a tree, his soul is received into the kingdom of heaven: but not admitted into the presence of the Almighty: it is, however, served with such things as are provided for the righteous. Whoever receives favours, and is guilty of the ingratitude of abusing his benefactor, will not be well treated in other places; God will expose him to misery, for his ingratitude. Whoever falls in battle, is well received by God, and fairs sumptuously: for the Deity is pleased with his fate. Whoever is lost travelling by water, is well received in Heaven: the Deity will take him unto himself.

The Demaun, or Dewassy, seems to be more of an oracle, than a priest. Those, who wish to initiate themselves, represent, that by dreaming they can foretell what will happen; that the Bedo Goassaiah appears to them nightly, and braids their hair from which it grows remarkably long: they must never cut it; as it is believed, if such an act did not prove fatal to them, that, at least, their dreams would no longer be prophetick. This oracle foretells to one person, that he shall have a plentiful harvest; to another, that he shall become rich; a third is told, that he is to fall sick; a fourth, that he shall die; a fifth, that he shall be successful in hunting. A family is admonished to sacrifice and pray at a certain shrine, to appease an offended God; he prophesies when there will be a scarcity, and when it will rain. Thus, his predictions being verified, the people have faith in them; and
one, who is sick, attends him for advice, which is afforded the following
morning, when the Demauno has dreamt of the case, or God, having ap-
peared to him in his vision, informed him what will be the fate of the pa-
tient, and what he must do to get well. Another informs him, his crops
are not so good as usual, and desires to know which God is offended, and
what he must do to appease him. A sportsman informs him, that he is not
so fortunate as usual, and seeks to know what he must do to be so. Some
ask, at what shrine they must make their offerings. All, who consult this
oracle, must make a present, and return the following day for an answer.
On the first full-moon of January, after his inspiration, he falls out of his
house, runs about, and pretends to be frantick; but, neither injures nor
speaks to any one. He approaches the door of his chief, and make signs
to have a cock, and a hen’s egg, brought to him; the latter he immediate-
ly eats, and wringing off the head of the cock, sucks the reeking blood,
and throws away the body; whence he proceeds to unfrequented rivers and
jungles, where he remains seven, or nine days, and is supposed to be fed by
the Deity, whom he represents on his return, and when his reason is restor-
ed, to have treated him sumptuously; that God had sometimes feasted him
on a large snake, and, at others, made him put his hand into the mouth of
a large tiger; but without fear of any danger. On the Demauno’s emerg-
ing from his retreat, he brings with him a large plantain-tree, which he had
torn up by the roots, and places it on the roof of his house; then returns,
and brings in a large screw-tree; again, brings in a muckmum-tree; and
lastly, a sege-tree; all of which, to the astonishment of the people, he,
without human assistance, places, in like manner, on the roof of his house.
It is to be understood, that these trees are too large for one man to pluck
from their roots, and carry; and that the sege-tree is full of thorns, which
cannot be touched with impunity; but, by divine aid, he effects these won-
 ons. On the night of his return, he represents, that the Bedo Gossaih appears to him in a vision, and desires him to sacrifice a pigeon or a cock to him with prayers. Accordingly, in the morning, having recovered his senses, he takes some oil to besmear the trees he had deposited on the roof of his house, and some red paint to make streaks on them; over this he scatters some undressed rice, and, lastly, sacrifices the pigeon, so that the blood may fall on the trees; and, during this ceremony, he prays.

Henceforward he must never sit with, or touch, any woman but his wife; should any other woman even touch him by accident, it is supposed his predictions would fail; or, should he marry more than one wife at a time, the people would have no faith in him. Having thus passed his novitiate, and obtained the reputation of a good Demauno, he is invited by his chief to the buffalo festival, who puts round his neck a red silk thread, with five cowries strung on it, and binds a turban on his head, beseeching God, that he may have power of restoring health to the sick, exorcising such as are possessed of devils, and that all his predictions may prove true. In this manner he is ordained, and officiates at the festival. A Demauno drinks of the reeking blood of all offerings, sacrificed while he is present. He must never eat beef, or dbai, nor drink milk: for, in doing so, his prophecies would fail. There is no fixed number of Demauinos for the duty of a village: some have several, while others have none. The Maun- gy of every village sacrifices a buffalo, in either the month of Maug, or Phagun, annually: he fixes a day, and desires his vassals to attend, each of whom contributes a portion of grain, oil, or spirits for the festival: provisions being collected on the day appointed, the Maungy directs his followers what to do; some cook, others go and cut a large branch of the muckmun, (or fiewa) tree, which is brought, and planted
before the *Maungi's* door, one of whose family, carries out the *kundone* (a sacred stool, with four feet) and places it under the shade of the *muckmum* branch, washes it, rubs it with oil, spots it with (*fordra*) red paint, and binds it with a thread of red silk, the *Maungi*, having made his *jalám* to the stool, sits on it; the *Demauno*, or priest, sits on the ground to his left, and prays first, after which he gives the *Maungi* a handful of unboiled rice, which he scatters close to the *muckmum*-branch, addressing himself to God, to protect him and his dependents, and to be propitious to them, adding a vow to perform and hold this festival annually; during the time of praying, the *Maungi*’s drums are beating, that all within hearing, who are possessed of devils, may run, and pick up the rice to eat: having gathered it all, they are seized, bound, and taken to a small distance from the altar, when the buffalo, with ropes on all his legs well secured, is hamstring by the *Maungi* to entertain his barbarous followers, in order that they may be diverted by his struggles, and exertions in forcing him to the *muckmum*-branch, where his head is cut off, and the persons possessed of devils, who were bound, are set at liberty, and immediately rush forward to take up the buffalo’s blood, and lick it while reeking; when they are supposed to have enough, they are besprinkled with water, which renders them completely exorcised, and they retire to a stream to bathe, the adherents come forward with their offerings of rice, oil, and spirits, and receive a blessing from their chief, who has the buffalo’s head dressed, and eats it with the priest and musicians: the *kundone* being taken into the house, puts an end to the ceremony of the day; the next morning, the adherents assemble to feast on the buffalo and other things, which the *Maungi* furnishes, at the expiration of five days, a fowl is immolated, and the blood sprinkled on the *muckmum*-branch, which is taken up, and with the horns and some of the bones of the buffalo, is fastened on the roof of
the Maungy's house, where they are left to decay; in some places stages are erected for these sacred fragments, at the northeast angle of the Maungy's house. The chief Maungy of a tuppah, (which is a number of hills, that have villages on them) whose authority is acknowledged by the Maungys of the several villages in his limits, appoints a time annually to pray, that they may have rain enough for their crops: this festival may be held in any month in the year, except Poos, in which they neither marry, build a house, nor undertake any thing of consequence, considering it an unluckily month. The chief of the tuppah having determined on a day, sends an arra to the Maungy of each village, desiring him to attend with twenty or thirty of his men by the day fixed on: when assembled, they all repair to the place established without the village, for the ceremony of the Satane: having planted a small branch of the chagulno, (bale-tree) the head of a goat is severed with a sword, that the blood may fall on the leaves of the chagulno: the Satane is then resorted to, to ascertain what chief will be most acceptable to the God of Rain to pray on this occasion: this being settled, a day is named for prayer, upon which all the Maungys with their vassals assemble at their chiefs, before whose door, the Demauno, and Maungy, on whom the Satane election had fallen pray: after which a buffalo is sacrificed, and the same forms observed as described in the buffalo festival: it continues as long as the provisions, which were presented by the several Maungy's, last. The danger of a scarcity is thus supposed to be averted, and that their crops will flourish.

When a Maungy has established a village, should a tiger infest it, or the small-pox, or any plague prove fatal to its inhabitants, it is supposed that Ruxy Gosaith is disposing of having a shrine raised. The Satane is resorted to, to confirm the supposition, and the Demauno consulted. On both
agreeing, these steps are sufficient to stop the ravages of any beasts of prey, and to avert any further fatality from the small-pox. Thus relieved, the Maungy calls the Demauno to get ruxey (a sacred black stone) for him, in compliance with which, the Demauno has a vision, in which the Deity appears to him, and informs him where the god Ruxey is to be found, directs him to the spot, and desires him to raise him with his own hands, and to present him to the Maungy in the morning: the Demauno gets a branch of the Seelee (a tree peculiar to the hills); Benjamin is burned before the Maungy's door, which he smells, and proceeds, followed by some men, to the spot where Ruxey is to be found; having smelt the god-head, he directs the persons who were in attendance to dig for him; to facilitate their work, water is thrown to soften the earth; and when Ruxey is discovered, the Demauno takes him up, and carries him to the Maungy, who immediately sets out, with his divine present, in search of a large tree, about half a mile, or less, from the village, under the shade of which he places it, and encloses it by a fence of stones, and a hedge of Segee; a fowl and a goat are sacrificed to the god, whom the Maungy, or some other acceptable person (and it is the object of the Satane, to find out who is most virtuous and most worthy to address the god) worships, and retires.

At any other time when this god is worshipped, a fowl and goat are sacrificed; and the Maungy, or person who prays, is attended by two drummers and an old man, who has no wife, and from age has no connexion with women, to partake of the offerings with the preacher, of which others, who have forsworn all connexion with women, and drinking intoxicating liquors, may share: whoever violates this vow by drinking, or cohabiting with women, it is believed, will become foolish, yet he may recover his reason, by asking pardon of the god, and by offering a fowl and goat,
with prayer in sacrifice at the shrine, but he can never be a *Hook Moko*, or an elect eater, again.

*Idle* men and women must not approach or profane the place where *Ruxey* is deposited: by spitting towards him, or by doing any uncleanly act near it; should any person, through forgetfulness, or ignorance, be guilty of any such acts, by spitting, he will get a sore mouth; and other more offensive transgressions, are productive of a strangury, or flux, respectively; and these diseases are often considered as the effects of some heedless transgression of the above nature, which is discovered by the *Satane*, or such like proof: their remedy is to give a fowl to the *Mauny*, who makes an offering of it to the god, who is thus appeased. If the patient recovers, well; if not, the friends go to a neighbouring village, to find out by the *Satane* the cause of their relation’s illness: if he is not thus relieved, they go to a second; and on failing, they consider it as an affliction by the dispensation of the Supreme Being, who will either spare, shorten, or prolong the life of the offending patient, according to his will.

The *Chitaria*-festival is held but once in three years. The celebrations of it so seldom is probably from its being very expensive to the *Mauny*, who bears the charge. It is not every village that has a *Chalnad*, though he is considered as the God that presides over the welfare of villages; but, like *Ruxey Nad*, he is not supposed to be essential to their happiness, till the inhabitants are harassed by some plague, or pestilence; when the *Demauno*, on being consulted, informs the *Mauny*, that this Deity is desirous of having a *Nad* raised; that effecting this, and worshipping him, will put an end to their misfortunes. The *Demauno* then dreams of the place, where this shrine is to be found, in the shape of a black stone, he proceeds in the morn-
ing to discover it, observing the same forms, as are described in obtaining
RUXEY NAD: when found, the stone is placed under the shade of a muck-
mun-tree contiguous to the village, and undergoes no alteration in its
form from the chisell.

Among the preparations for the Chitaria-festival, the Mauny must pro-
vide a cow, and a piece of red-filk, previous to the day fixed for prayer.
The Satane, as usual, is performed, to find out what two of the Mauny’s
vassals will be most acceptable to the god-head, to pray. This point be-
ing settled, and every thing ready, a day is fixed; on the eve of this holi-
day, the piece of silk is cut in two, and one part given to one of the wives
of each of the preachers, with whom their husbands have not cohabited for
ten or fifteen days previously. The Demuuno, Mauny, Cutwal, Phoedar, Jem-
madars, and Bundareens, having been invited into one of the preachers’ hou-
es, the Demuuno gives water to two Kalewars, one Dolewar, one Mangeera,
and one Jelaum, to wash their hands; and these musicians are taken into the
house: a feast is served, of which all present partake, as soon as the chiefs
have thrown a little of each dish away, in the name of Chalnad. I must
here digress to observe, that it is a custom through all the hills, to throw a
little of their meat away, at every meal, previous to their eating, and the
same rule is observed in drinking, the intention of which, is to avert any bad
consequence from any devil, or evil spirit, having defiled it: the Bandareens,
whose particular province it is, at all festivals, to serve out the toddy, or spi-
rits, perform that office; and the chiefs, having spilled a little also in the
name of Chalnad for a libation, the party drink and sing all night, in
praise of Chitarah Gosaith, invoking his protection, the musicians, or
rather drummers, beating at the same time; should any person sing a differ-
ent song, he is fined a fowl, which is sacrificed, and the blood sprinkled over
the whole party; during the course of the night, they patrol the village five times, leading a cow with them; in the morning, the Demauo, the two preachers and drummers, proceed to Chalnad with the cow; having finished their prayers, the cow is sacrificed by one of the preachers, in such a manner, that the blood may fall on the shrine; a feast is immediately made of the flesh, and all the men who accompanied them from the village, except such as may be disqualified from domestick causes, partake of it. On their return to the village, they send notice of their approach, that the two wives of the preachers, between whom the piece of silk was divided, may take off their clothes and ornaments, and tie the silk round their middles, covering them from their waists to their knees; their hair is fastened in a knot on the crown of their heads, and every part of their body, which is exposed, is spotted with a mixture made of turmeric powdered, and the heart, or white part, of Indian-corn, which is finely ground for that purpose; part of this is also sent to the preachers, that they may be spotted in the same manner, and with it the halves of four mats thus prepared. The two women (the whole village, men, women, and children being assembled to see the procession) set out, one following the other, and taking care not to advance the foot which is up, beyond the toe of that on the ground, to meet the preachers, who observe the same pace as their wives; and the mats, as the parties pass over them, are always taken up and placed again before: having passed each other, the women take place behind the men, and follow them by the same step at which they at first set out, to the house of one of the preachers; when arrived, the men taking one side, and the women the other, they wash and change their clothes; here the ceremony ends; and the preachers, with their wives, are invited to a feast at the Maungy's.
The above is the only festival where women can assist, or bear any part, as a woman never prays in public on these hills: it has before been said, that they are to recommend themselves to the protection of the Supreme Being, morning and night. During the time of the above festival, the compliment of a salam is not paid to any person.

Pow Gosaïh, or the God of the Road, or Highway, is the first worship young men perform, though it is not undertaken till some accident has induced the person to consult the Chereen, or Satane, whether his praying and making an offering will be acceptable. This trial is perhaps of itself sufficient to confirm the opinion, that Pow Gosaïh is offended: therefore the young suppliant vows to worship him. On the day of thanksgiving, on which the new Takallo is first eaten of, or on the day appointed for the new Kosarane-harvest, he proceeds to a high-road, and cleans and washes a small space, under the shade of a young bale-tree: in the centre of this, he plants a branch of the muckmun-tree; round it, he makes marks and spots, with red paint, and with a handful of rice, which he lays close to the branch, placing a hen's egg on it, on which three streaks of red paint were drawn, he invokes the Supreme Being, and God of the Road, to protect him while travelling, and sacrifices a cock, the blood of which is thrown on the muckmun-branch; the offering, being dressed with rice, is eaten by the suppliant, and such as may have attended him; the ceremony ends by breaking the hen's egg, and is never repeated by him, unless he should again meet with some accident while travelling, on which the Chereen, or Satane, is resorted to, for a confirmation of the apprehension, that it was caused by Pow Gosaïh's resentment, and his desire of being worshipped.
Dewary Gosaih, or the God, who is supposed to preside over the welfare of families, is the second worship which men perform; there is no fixed time for it: he who discovers by the Cherreen, or Satane, that the welfare of himself and family depends on his holding this festival, distils spirits, purchases a hog, rice, red paint, and oil, and, having fixed on a day, invites his Mauny and friends on the day appointed: a small space, before the threshold, is brushed and washed, and a branch of the muckmum planted in it: on this some red paint is put, as well as marks made round it. The Mauny and his officers are taken into the supplicant’s house, when pots of spirits and provisions are given to the former, as well as meat and drink to all the company: after a short repast, the supplicant, with a hen’s egg and a handful of rice, approaches the muckmum branch, close to which the former is deposited on the latter; during this ceremony, he implores the Supreme Being and Dewary Gosaih to be propitious to him and family: the hog is sacrificed by a relation, as an offering to Dewary Gosaih with professions of again observing the festival, whenever Dewary Gosaih may desire it: a feast is made with the oblation, and at the conclusion, the supplicant breaks the egg, and pulls up the muckmum-branch, which he places on the roof of his house.

Kull Gosaih, or the Ceres of the mountaineers, is worshipped annually by cultivators, in the season of sowing their fields: the proper time is ascertained by consulting the Demauno, and confirmed by either the Cherreen or Satane, and is attended with more or less expense, according to the means of the supplicant; if poor, it is deemed sufficient to make an offering of a cock; those who can afford it, purchase a cut hog, and a cut goat, distil spirits, buy rice, red paint, and oil, and invite the Demauno to assist them in praying, as well as their friends, chiefs, and neighbours, to a feast. On the day appointed, the Demauno goes early to aid in distilling spirits, and in other preparations for
the feast: the chiefs and others, having entered the suppliants house, are presented with meat, and spirituous liquors to drink: the Demauno is also introduced with two Kalewars, and one Dolewar: he, and the suppliant, and the Maungy, facing the middle supporter of the house, pray for the welfare of the master, making a libation, and throwing down some meat, in the name of Goomo Gosaih, and of Kull Gosaih: the Demauno and suppliant burn incense, while the Kalewars and Dolewar beat, and the Maungy and chiefs eat and drink: after this the suppliant proceeds, with the Demauno, musicians, and all who may be disposed to join in the procession, to his field, where at the stump of a tree, having cleaned a small space, and planted a branch of the muckmun, and prayed with the forms already described, burning incense, the goat and hog are sacrificed by a relation of the suppliants (who gets a rupee and a turban for this sacred office) so that some of the blood may fall on the muckmun branch, and of which the Demauno pretends to drink a considerable quantity: he gives out that the blood digests in his throat, and does not pass into his stomach.

Of each of these offerings, the Maungy is presented with a fore-quarter for his family, and of the remainder all, except such whose wives are in their separation, partake; at the conclusion, the Demauno gives water to the musicians, and the suppliant, to wash their hands, who return with the latter, and feast and drink at his house, as long as any fragment of the provisions, which had been prepared for the festival, remains.

The Demauno having desired any person to worship Goomo Gosaih, and the Cherreau or Satane having confirmed his ordinance, the suppliant must rear a cut kid, and cut pig, for that express purpose, about two years, more or less: having acquired property enough to perform his promise, for it is at-
tended with considerable expense, he sends invitations to his chief and vassals, to those also in the neighbourhood, and to his relations; and, to mark the time for the festival, a string with a number of knots, equal to the number of days, that will intervene, is sent to each; from these strings to avert mistakes, one knot is daily cut; in the interval the suppliant is employed in distilling spirits, and collecting materials, such as rice, oil, red paint, &c. when one knot remains, the guests assemble, and, on the morning of the day appointed, some of the suppliant’s neighbours, or relations, proceed to the jungles to cut three small muckmun-trees: before the first is hewn, a cock is sacrificed, that the blood may fall on it, and some spirits thrown on it, as a libation to Goomo; as soon as the branches and bark are stripped off, two men are sufficient to carry each tree, and lay them without the village, where it is their business to prevent men, goats, or fowls, from touching them; and the suppliant, informed of their arrival, sends them drink for their trouble; in the mean time, he takes the chiefs, and their officers, with the two men who had prayed at the Chittaria-festival, into his house, and presents the Maungy with two pots of spirits and a hog; the Derouno, two Kalewars, and a Dolewar also go in; at their entrance, the Derouno gives water to the musicians to wash their hands; he takes a small wicker basket, containing about a seer of rice, on which he puts red paint, and places it with two pans near the middle supporter; during this the Kalewars and Dolewar beat, and incense is burning; the Maungy having made a libation, thrown out some meat, and sacrificed the hog, in the name of their gods, he and the chiefs eat and drink.

The Derouno, suppliant, and musicians, repair to where the trees are; whence the trees are brought home, laid length-wise, east and west, cut the proper length, and the suppliant and his wife sprinkle turmeric-water on them: the Derouno mounting astride on the one which had been first cut, is carried five
times round the house, when they are taken in, and, some earth being dug, are united to the middle supporter, (which is called Goomo) being first spotted with red paint, and bound with a red silk thread. Incense is burned, and the Demauno, with a handful of rice, prays, laying the rice down, and placing a hen’s egg on it, which had been previously thrice streaked with red paint: the suppliant, receiving a handful of rice from the Demauno, also prays, throwing it on the egg, when one of his relations brings up the fat goat, and sacrifices it so that the blood may fall on the Goomo. For this sacred office, he gets a rupee and a turban. The Demauno, suppliant, and musicians, and all who may be disposed to be of the procession, proceed to a field, where, sweeping and washing near the stump of a tree, they plant the branch of a muckmum, and round it and on it make streaks of red paint; incense is then burned, and with a handful of rice and a hen’s egg, the Demauno and suppliant repeat the prayers and ceremony which had been observed in the house, when the fat hog, and another goat, are sacrificed by a relation; some of the blood of these animals must fall on the muckmum, and the Demauno drinks of it.

A fore quarter of each of the offerings being sent to the Maungy, they feast and return: previous to entering the suppliant’s house, the Demauno gives him and the musicians water to wash their hands. The relations of the suppliant attend him, present him with spirits, and a cock each, and anoint him, his wives, and children with oil: he sacrifices the cocks, makes a libation, and throws away some meat in the name of Goomo: they feast and drink for two or three days, and then repair to their homes: on the fifth day the ceremony concludes by the suppliant sacrificing a cock to Goomo Gosaih and another to Kull Gosaih.

Goomo Gosaih is also worshipped as above, with this difference that the
suppliant does not eat, drink, or smoke in his house, or partake of any thing that had been in his house, for several days before the festival, nor is he allowed to partake of the offerings, and this prohibition continues for five days after the festival, which is called Ọgọs Goomo Gosaiah.

The worship of Chumda Gosaiah is so expensive, that none but chiefs, or men of property, can ever afford it, and these not oftener than once in three years, and therefore the votaries to this shrine most frequently exceed that period for so expensive a ceremony. They first consult the Demauno, and have recourse to the Cherrenej, and Sattane, both of which must agree with what the Demauno prescribes, before this festival can be held: when thus ordained, the suppliant must provide about a dozen hogs, as many goats, about three score seers of rice, two of red paint, fifteen of oil; about twelve rupees must be expended in spirits, and some scores of cooking pots, dishes, and cups for drinking, laid in, as well as a few peacock’s tails, a fan, three bamboos, nine score nataria trees, and some red stones, which are ground for paint, and also some charcoal: thus prepared, the suppliant sings strings, with knots numbering the intervening days, with invitations to his relations, and neighbouring chiefs. On the day appointed, some thousands assemble and are variously employed: some grind the red stone for paint, others charcoal to mix with oil, while a great number are occupied in stripping the bark off the nataria, which is effected in one piece of four cubits long by bruising it; three bamboos are then made straight by oil and fire, and are of the same length with the nataria bark; a fat hog, grain, and several pots of spirits, are sent to the workers. The red stone and charcoal being ground, are mixed separately with oil, and a quantity of hog’s blood added to both: the barks of the nataria have about a cubit of the lower end of each blackened with the charcoal, another
cubit is left of the natural colour; and above it one cubit is painted red; caps of wood are fitted on the bamboos, and necks made in them; on one of these, four score and an half of barks are bound with twine dipped in oil, on the second, three score are bound, and on the third, one score and a half; the heads of these three are ornamented with a profusion of peacock's tail feathers, thus prepared, they are called Chundah Gosain, and carried to the suppliants' house, where for the workmen a hog is dressed with grain, that they may be feasted for their trouble: a hog, two pots of spirits, grain and salt, are presented to every chief, for himself and vassals, who honours the suppliants with his company; as much is also given to his own relations, and a like quantity to the relations of his wives, and meat and drink is distributed to all assembled: the women, who dress these provisions, exclusive of their daily hire, have a hog given to them that they may eat together, as they are not allowed to feast with the men.

The Chundah-bamboos having been brought about evening, and placed against the suppliants' house, he and the Demauno rub the ends on the ground with oil, and mark them with red paint, when the latter, with a hen's egg and a handful of rice, prays, observing the usual ceremony, that Chundah Gosain may be propitious to the suppliants, who follows his example, and also makes an offering of a cut hog, which he sacrifices so that the blood may fall on the bamboos, the largest of which, or one with the greatest number of barks pendant to it, he presents to one of his relations, the second in size to one of his wives' relations, and the third to any volunteer. The three persons, thus favoured, support the Chundabs by cloth tied round their waists, and balance them with their hands, dancing as long as they can: when fatigued, they are relieved indiscriminately, without any distinction; and this amusement, with music, continues all night.
the morning, the Demaulo and supplicant pray at the middle supporter of the latter's house, with the usual forms, when a cut goat is brought as an offering, and sacrificed by a relation: hence they repair to his field, taking with them the Chumdaab, and again pray near the stump of a tree, where a small space is brushed and washed for the purpose, and a branch of the muckmun planted, in addition to the egg and rice deposited here by the Demaulo and supplicant; a shrine for Kull Gosaih is washed, rubbed with oil, red paint put on it, and bound with a red silk thread, and placed close to the muckmun-branch, when a goat and two hogs are sacrificed by a relation, that the blood may fall or be sprinkled on the shrine Chumdaab and branch; for this office, he gets a rupee and a turban; the offerings being dressed are eaten with grain: the party having feasted return, bringing with them the Chumdabs, which are carried five times round the supplicant's house, and then placed against eaves, where they remain five days, at the expiration of which, a seer of takallone is served out to every person who applies for it at the supplicant's house; but four men are stationed at each of the four doors, that every person who goes out with the takallone, may receive a blow with the open hand, from each of the four men stationed at the door he passes out of: at the conclusion of this ceremony, the Chumdaab-bamboos are taken into the house, and suspended to the roof; the supplicant repairs to the field, and makes an offering of an hog and prays at the shrine of Kull Gosaih, whence he returns and sacrifices a goat at the middle supporter of his house, with prayer; these offerings are dressed, and, as is customary, they feast on them.

When the kosarane (a small grain like what the lowlanders call colly) is reaping in November, or the beginning of December, a festival is held as a thanksgiving before the new grain is eaten of. Materials for a feast being
prepared, a day is fixed by the Maungy, who invites the chiefs of the neighbouring villages: on the day appointed, the two men, who prayed at the Chitaria-festival, proceed to Chalnad to pray, and sacrifice a goat, which, with some kofarane, is an offering at the Nad to Chitaria Gosaih: on their return to the village, the Maungy has his kondone brought out, on which he prays, and immolates a fowl: during this, the dungareabar, or vassals, repair to their fields, offer thanksgiving, make an oblation to Kull Gosaih, and return to their houses to eat of the new kofarane: as soon as the inhabitants assemble at the Maungy's house, the men sitting on one side, and the women on the other, the Phojedar presents a hog, a measure of kofarane, and a pot of spirits, to the Maungy, in the name of his vassals, by whom these had been contributed; on receiving them, he blesses his vassals, and exhorts them to industry and good behaviour, after which, making a libation in the names of all their gods, and of their dead, he drinks, and also throws a little of the kofarane away, repeating the same pious exclamations, which ceremony is the commencement of the festivity and drinking, that lasts for several days.

On reaping the takalone (Indian-corn) in August or September, there is also a festival. Each man repairs to his field, with either a hog, goat, or fowl, to sacrifice to Kull Gosaih, to whom he prays, and, having feasted, returns home, where another repast is prepared; and on this day it is customary for every family in the village, to distribute a little of what they have prepared for their feast, to every house.

Should any person eat of new Kofarane or Takalone, before the festival, and publick thanksgiving at the reaping of these crops, the Maungy fines the offenders a cock, which is sacrificed by the two preachers at the shrine of Chittariab.
The mountaineers are represented to have, in general, an amorous disposition; their solicitude and attentions, when in love, are said to be unceasing; if separated but for an hour, the lovers are miserable; they conceal their meat to present to each other privately, the lady dresses whatever nice things she can secrete from her parents, to treat her lover with, and he presents her with rings, and beads, and treats her with toddy; they go to market and exchange paun and tobacco, and, on their return, should they perceive an acquaintance, they separate to avoid being seen in company, but by affligation soon meet again; they retire to sleep together, but seldom are guilty of that indiscretion, which is irreparable, though the fine for such imprudent conduct, which the parties are afraid to conceal, is a hog, and a goat, to the Maungy, who sacrifices them on the spot, where frailty made them transgress, and sprinkles some of the blood on them, to wash out the stain from his land, or rather to appease an incensed deity, who fails not to punish for such abominations: thus when a virgin is deflowered with her consent, the blood of the offering is supposed to atone for their sin. Should the couple agree to come together as man and wife, the Maungy proclaims it, and they are immediately considered to be married, without any further ceremony or expense: the man has the option of taking her for his wife; she however has the privilege of demanding a regular marriage, which implies the usual presents, and the time for the wedding is fixed.

Polygamy is allowed; a man may marry as many wives as his circumstances will admit of, that is, as often as he can defray the expenses of the nuptials. When he sees a girl whom he wishes to espouse, he sends a friend to her parents to ask her in marriage; they refer him to the lady; should he obtain her consent, he acquaints the parents, who desire him to return to the suitor to advise him of their acquiescence, and that
He may prepare the usual presents of poonate (beads) and tabacane (a ring for the neck), to present to the lady, which being accepted, she is considered betrothed to him, and he, as soon as he can procure money for the expense of the nuptials, must provide a turban for the lady’s father, with one rupee, also a rupee and a piece of cloth for her mother, and a rupee and a piece of cloth for several of the nearest relations; these and the materials for the marriage feast being provided, a day is fixed, on which the bridegroom, with his relations, proceed to the bride’s father’s house, where they are seated on cots and mats, and after a repast, the bride’s father taking his daughter’s hand, and giving it to the bridegroom, he publicly admonishes him to use her well and kindly, and not to murder her, threatening to retaliate: but if she should die a natural death, or by means of the devil, it cannot be helped; on the conclusion of this exhortation, the bridegroom, with the little finger of his right-hand, marks the bride’s forehead with red paint, and the same little finger being linked with the little finger of the bride’s right hand, he leads her out of the house to his own: at the expiration of five days, the bridegroom, with his bride, returns to her father’s, well stocked with provisions for feasting, and, having passed two or three days with their parents, they go home, and the ceremony concludes.

A man dying and leaving widows, his younger brothers, or younger cousins of the first and second degrees, or nephews, may receive the widows as wives: if the parties agree on these occasions, the children go with their mother; if the widow prefers returning to her relations, the children under ten years of age go with her, and she is entitled to a rupee and a piece of cloth annually, for bringing them up; when arrived at that period of life, they are sent to the relation of their father, who paid their mother for taking care of them. When a woman has ten children, her eldest brother may
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claim one; the right is acknowledged from custom, though it cannot be enforced; the child thus adopted by an uncle, is treated as, and has every privilege of, his own children: should this son by adoption arrive at manhood, die, and leave property, it is equally divided between the adopter and the father of the deceased.

A man desirous of marrying a widow, deputes a friend to ask her in marriage; should she consent, she refers him to her late husband's relations, the nearest of whom, for his acquiescence, is entitled to two rupees and a turban: the parents of the widow are next consulted; should they approve, they are entitled to some trifling presents, on which, the father gives his daughter's hand, exhorting the bridegroom, as related in the description of a marriage; the red paint is not used on a second marriage: a feast concludes the whole.

A man cannot marry a relation, though he may marry his wife’s sisters, except in the instance of younger brothers, cousins, and nephews, receiving one each, or more, of their senior kinsman’s widows, who are treated and considered as wives, though there is no expense, or ceremony, attending their union.

Should a girl be compelled by her parents to marry a man whom she dislikes, and should she be unhappy, and leave her husband, and in despair put an end to herself, the parents get a court appointed, to inquire how their son-in-law behaved to their daughter: if it should appear, that he treated her cruelly, he is considered guilty of murder, and fined, but not so heavily, as is common for the commutation of blood; if on the contrary it should appear, that he behaved well to her, it is deemed suicide.
SHOULD a married woman elope with a man, and the party be pursued, seized and brought back, judges are appointed to try the man, who is generally fined one or two score of rupees: the husband may may not receive his wife, and the seducer has to pay the fine.

A man, convicted of having committed adultery, is fined twenty or thirty rupees: he is also obliged to furnish a hog, the blood of which, being sprinkled on the adulterer and adulteress, washes away their sin, and, it is believed, will avert divine vengeance: the ceremony ends with a feast, and, the parties thus purified, the husband and friends are reconciled. The adulteress in general reveals the secret; as a superstitious idea is entertained, that, if concealed, the inhabitants of the village will be visited by a plague, or that a tiger or venomous animal will destroy them. When any of these happens, it is religiously believed to proceed from the immorality and evil doings of some individual, and as a punishment for some concealed sin, to discover which they have practices, in which they place implicit faith: one is called Satane, and is as follows. A place large enough for a man to sit in, is brushed and washed, in the middle of which a small branch of the Bale tree is planted, and a person sits opposite to it; another supplies him with a few grains of rice, on a Bale leaf, some of which he throws on the branch, the remainder he is to eat, the person who gave it to him, repeating that he is to swallow it, in the names of all the inhabitants of the village; in which should the sinner be, it is believed God will make him throw up the rice: should this happen, he is next to eat some in the names of families, and again in the name of all the individuals, who compose that, on which the Satane proof falls. Another is called Cherreen, and is thus: a stone is suspended to a string, which, it is believed, will be tō:
ed to and fro, on the name of the village, family, and offender; the third is called Gobereen, and is of a more serious nature, than the two former. A pot with some cow dung, oil, and water, is put on the fire; when boiling, a ring is thrown in; each person approaches to take out the ring, calling on God to protect him if innocent, and to burn him if guilty: on this trial, it is believed, the innocent will escape unhurt in taking out the ring, and that the guilty person will be severely burned, without being able to put his hand in the pot, as the mixture, it is said, will boil up to meet his hand.

When a married man has been detected in committing fornication, his wife or wives may insist on a hog or goat being sacrificed, to sprinkle the blood over him: being thus purified, it is believed this ceremony expiates divine vengeance, which would sooner or later alight on him or some of his family, for this sin.

Witchcraft and sorcery are most firmly believed, and accidents or diseases, which elude their little skill in medicine, are attributed to some person supposed to be skilled in these arts, who has bewitched them; when such a conviction is admitted, the Gberreen is consulted, and again the Satan, both repeatedly, till some person be named: to confirm this ideal proof, which is received as infallible, an ordeal is undertaken, and on the part of such person (supposed to be bewitched) five men are employed, who are qualified, and acquainted with this mode of trial; such as are born immaturity cannot be engaged in it: these five proceed to a retired place on the banks of a river, before day-light, taking with them wood of a particular kind, and make a fire to heat an iron: one of these is to touch the iron when red hot with his tongue, but is first to bathe: while he is performing his ablution, the others heat the iron: when red hot, a little rice is thrown on it, in the name of the
person accused of witchcraft, and Birmah, the God of Fire, exhorted to do justice: if it consumes, he is considered guilty, if not, not: the Tatoo, or person who touches the iron, keeping one foot in the water, puts the iron to his tongue, and must repeat it as often as nine times, if the first and second touch does not burn, which however cannot happen: on the Tatoo being burned, the party return before sun rise, and on their approach to their village, the friends of the sick person are called out to see the Tatoo's tongue; the person accused may object to the trial, and insist on its being held over again, that two persons may go on his part to witness it; on this proof, the unfortunate person is seized and punished, till he or she acknowledges the crime: it must also be told who instructed him, or her, in the practice of this evil art; the Chouraga, or warlock, is now brought to the sick person, to exorcise him from his spell: should he recover, the Chouraga is compelled to pay one rupee to him, one to the Maungy of the village, one to the four persons who witnessed the ordeal, and eight annas to the Tatoo: on the other hand, should he die, the Chouraga must either suffer death, or redeem his life (at the option of the friends of the deceased) at the price established for the commutation of blood: again the friends of the Chouraga may retaliate on the person, whom their relation accused of having instructed him in sorcery.

It is not uncommon for two neighbours to agree, when their respective wives are pregnant, that the offspring, in the event of there being a boy and a girl, shall be married to each other: on these occasions, the ceremony may be performed, when the parties are about eight or ten years old. Should the father of the girl violate the engagement, and give his daughter to another person, the father of the boy will obtain a fine equal to the expense of a marriage, which is rated according to their circumstances; whereas, should
the father of the boy, notwithstanding his contract, marry his son before he has performed his part; the father of the girl is entitled to a fine of a turban and one rupee; after which, it may still be performed, or not, as the parties mutually agree.

When a woman is in labour, four or five of her relations and neighbours assemble to attend her; amongst these, the most experienced does the duty of a mid-wife; the woman keeps her house for five days, and her husband attends her, during which he must not enter any person's house, or field, nor until he and his wife have washed their clothes and bathed; on this day, the child is named by the father; but if he be not present, the mother gives a name; however this name may be changed before the child is weaned; after this, they go out as usual; the women, who attended her in child-bed, are entitled to a feast, are anointed with oil, and their foreheads painted red; a piece of cloth is given to the one who performed the office of a mid-wife, and a little grain, or some other trifling acknowledgement, to the others, for their friendly assistance.

When a child dies that is not weaned, the father sends a friend to his Maungy, to solicit ground to bury the body, which being complied with, the corpse is carried to the grave, in a place allotted for public burial, and interred with its head to the north: for infants of this description, no further ceremony is observed; but, when a child dies that has been weaned, at the expiration of five days, the relations and neighbours are invited to a feast called Boge, which being prepared, the father, or nearest male relation, takes a little of every thing that may be dressed, and proceeds to the road leading to the burying-ground, where he throws them away in the name of God and the deceased, the intention of which is to avert the like misfortune in future, and re-
turning to his house, the company are feasted; all observing the same custom of throwing away a little in the name of God and the deceased, previous to eating. Another entertainment, similar to this, is given at the expiration of a year, and annually, at the thanksgiving for reaping the takalloo and kofarane: some of each of these grains are thrown away in the name of God and of the deceased.

When a child is still-born, the body is put into an earthen pot by the women who attend, and covered with leaves; the father carries the pot into the jungles, places it near the stem of a tree, and covers it with some brush wood, where he leaves it, and there is no further ceremony.

The corpse of a person dying of the small-pox, or measles, is taken with the bedstead into a jungle about a mile from the village, and placed under the shade of a tree, where the body, the bedstead, and clothes, are covered with leaves and branches, and left: those who attend the funeral, bathe before they return to their homes: at the expiration of a year, the relations, being prepared for a festival, proceed out of the village, on the road leading to where the body was placed, with all whom they invite; where one of the kinsmen having prayed, and thrown away a small portion of the feast, and made a libation in the name of the deceased, the party assembled partake of it, and return. The bodies of most others, dying a natural death, are buried, and the cause assigned for disposing of the bodies of those, who die of the small-pox as described above, is a superstitious idea, that such an act will avert any further fatality; whereas, if buried, it will continue to rage, and carry off every inhabitant of the village, which is reported to have happened formerly.

When a young man, or virgin, who is marriageable, dies, the father, or near-
est relation, sends a friend to solicit four cubits of ground, to bury the deceas-
ed, from the Maungy, who asks if the relations propose putting the bed-stead
into the grave with the body, in which case a rupee is paid to him for the
purchase of a hog. No time is lost in carrying the body to the burying-
ground, where a grave of a foot and a half or two feet deep being dug north
and south, the head is placed towards the former point; the body is covered
with pieces of green wood laid across it; after this some long grass, and then
the earth, which had been taken out, is thrown over the grass; to conclude,
small stones are laid to encompass the grave, and a few over the middle of the
body. No women or girls are allowed to go to funerals, nor are prayers said:
on the return of the party, it is customary for the whole to wash their legs and
arms previous to entering their houses.

The hog which the Maungy had purchased with the rupee, that was paid
for permission to deposit the bed-stead with the corpse, is sacrificed by him; the
liver being taken out and roasted, the Maungy takes a small bit, and casting it
away with some of the blood, in the name of God and of the deceased, the re-
mainder is divided among such men as may be present, who repeat what the
Maungy had said, throwing a little away before they eat; after this repast, the car-
case is divided; the Maungy separating a fore-quarter for his family, shares on the
remainder in proportion with every inhabitant of the village. At the expiration
of five days, the Boge is observed, and every family in the village, or as many as
the relations can entertain, are invited; when the father has performed the ce-
ramony of carrying a little of everything that is dressed, with some spirits, pro-
vided solely for the purpose of a libation, to the road leading to the burying-
ground, and there cast them away in the name of God and of the deceased, the
company assembled are all served, whether male or female, old or young, on se-
parate leaves, and each, previous to eating, observes the ceremony of throwing
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sorne away, as already related. Another Boge is held at the expiration of a year, differing only from the former in the free use of liquors: at the annual thanksgiving for the reaping of the takal and kistar, some of each is thrown away in the names of deceased kinsmen, for one or more years, according to the degree of propinquitv and estimation in which each was held; it however ceases at any time, that the survivors remove from the village in which their kinsmen died.

When a chief of opulence and high rank is dangerously ill, he orders his relations, male or female, and vassals, to be assembled; as soon as they attend him, he informs them of his situation, and, as they will observe he has not long to live, he desires them not to grieve, but to be comforted, and points out the son whom he wills to be his successor; here primogeniture has no preference: if he be a son he must succeed*, a daughter cannot; though an idiot, it is to be understood his right, and some near kinsman is named by the dying man to be his son's guardian: to him he bequeathes his territories and fortune (though certain sums or parts are to be distributed) and desires them to look to him for protection. On his death a drum is beat to announce it to such as are at a distance, that they may attend to see the body, which is not removed, before the vassals collect together to be witnesses of the fact; it is then carried without the village, close to which it is interred on the bedstead, in the same manner as related of a young man's or virgin's funeral. A piece of silk is spread over the grave, and stones placed so as to prevent the wind blowing it off: a hut is erected to shelter it, and, round the whole, a fence of bamboos or stones: the mourners, on their return, observe the usual oblation, and are feasted, but throw away some of whatever they have to eat or drink, in the name of God and of the deceased.

* In some of the tappads, a son may be set aside, and the succession may be bequeathed to a brother, as is now the case in Mannetarry; the present chief, brother to the late Maungy, who left a son a minor, succeeded by desire of the deceased, and received his brother's widows as wives.
previous to tasting it; all, who come, are thus treated in succession for five days, when the first Boge is kept, when the only difference between it, and that of a Dungarria, or vassal, is the greater expense from a conourse of relations, and adherents assembling, and that spirits are provided for them: at the festivals for reaping the Takál and Kofar, some of each is thrown away on the road leading to the grave as already described. At the expiration of a year, the chief's relations and vassals being invited for their second Boge, the Demauno and the heir pray at his door for the deceased, when all assembled partake of the feast, with the usual ceremony: at the conclusion of this the fortune and goods of the deceased are divided: the heir taking one half, the other is equally divided among the sons, brothers, and nephews by the brothers side; nephews by sisters do not share: the widows may, if the parties agree, go with any of their late husbands younger brothers, or nephews by the brothers side, as wives; if however the parties do not agree to come together, the mother of the heir has the option of remaining with her son, or of returning to her relations; the other widows must do the latter.

When a married woman dies, the widower observes the usual Boge at the two stated periods: he is not allowed to marry before the performance of the second, or at the expiration of a year, and it is customary to present the nearest kinsman of his deceased wife, with one rupee and a turban, after which he may espouse as many wives, as he pleases, or has a fortune to maintain.

The body of a person who dies of a dropy (Narat) is carried and thrown into a river: if buried, it is apprehended the same disorder would return, infect and carry off the other inhabitants: the funeral party, having cast the body into the water, proceed to another part of the river to bathe, and there,
Having brought a fowl and some Takal, or rice, some of each is thrown into the water in the name of God and of the deceased, by all who are present, before they eat: this is the only Boge which is observed for persons dying of a dropsy, though, at the thanksgiving for reaping, the Takalloo or Kefar, some of each is thrown away in their names.

When a person has been killed by a tiger, the body or any part of it, that is found, is covered with the branches of trees: on the fifth day the relations of the deceased, with a large party, proceed to the place where the remains of their kinsman lay, taking with them a new earthen vessel, a goat, and ten or fifteen seers of Takal or rice: being arrived at the spot, one of the nearest relations prays for the deceased, in which he is accompanied by the Demauno; at the end of their prayers, the former scatters some grains of rice, and cuts off the head of the goat, naming God and the deceased: the moment he severs the head, he rushes into the midst of the party, who surround him; the Demauno at the same time seizes the head of the goat, sucks the reeking blood, and is supposed to become frantic: he casts the head from him and springs after it, endeavouring to imitate the tiger, and making a hideous noise, as like that beast as he can; he looks about for the preacher, whom it is the business of the party to conceal, and prevent his touching; should he in his exertions accomplish this, a superstitious opinion is entertained, that the poor preacher will infallibly fall a sacrifice to a tiger: when the Demauno is well wearied by his pranks, the head of the goat is put under ground in the earthen vessel; this speedily restores his reason, and the preacher comes out in safety: the party thence retire to a small distance, have a feast and return to their homes: at the expiration of a year, the second Boge is held for the deceased, in the same manner as for any other relation, and the same attention is paid to his memory, on reaping the Takalloo and Kefar.
When any person dies of the *Moogdo, or Kory*, a disease in which the extremities decay and drop off, the body is buried with the usual ceremony, and the *Boge* is twice observed as usual, at which every sort of flesh, except goats, may be eaten; fish is also forbidden: in that disease, goats flesh and fish are not allowed to the patient, which is the cause of their being forbidden at the *Boge*.

Such as die of an epilepsy, are buried with the usual ceremonies; at their *Boge*, hog’s flesh is forbidden, because those, who are subject to the epilepsy, are not allowed to eat it.

Persons who are killed, and suicides, are buried with the usual ceremony above recited.

When a *Demauno* dies, his body is carried into the jungles, and placed under the shade of a tree, where it is covered with leaves and branches, and left on the bedstead on which he died; the objection to interring his remains is a superstitious idea, that he becomes a devil, and that, if buried, he would return and destroy the inhabitants of the village; whereas, by placing the body under a tree, he is thus compelled to play the devil in some other the usual *Boge* ceremonies are observed, but cow’s flesh forbidden to be eaten at them: should a *Demauno* eat of it, *God* in his wrath would cause all his functions to fail in their effect.

It sometimes happens, that very old men, when they are very dangerously ill, desire their descendants and relations to be assembled, to whom they give directions about the disposal of their body: that is, if they wish not to be buried, some direct their remains to be placed under the shade of a
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tree, while others order them to be thrown into a river; their will in this respect is strictly attended to, and the two Boge ceremonies are observed.

Before the chiefs of the hills put themselves under the protection of the English government, wrongs and injuries committed by the inhabitants of one village on that of another, were in general decided by the sword; but disputes and differences, whether with regard to property or otherwise, between inhabitants of the same town, were always settled by the Mauny and his officers; the first of them in rank is the Cutwal, who is the chief's deputy, next the Pbojedar, and lastly the jemmadars, who have a certain number of men under their authority, to inspect the conduct of the inhabitants, and report it to the Pbojedar; to these, old and experienced men were added, and usually called in to assist, when the subject of litigation was of importance; at present, none but trifling disputes are settled by those officers: for murder and all capital crimes, the delinquents are brought to Bhagalgapore or Rajamahall, to be tried by an assembly of the chiefs, agreeably to the engagements entered into by Mr. Cleveland with the head Maungs. Though the Maungs of all the villages also assemble on these occasions, none but the Sirdar Maungs, or chiefs of tuppahs, and their Naibs, or deputies, fit in judgment: on passing sentence, it is customary for them to ask the inferior Maungs, if the decree be not just; should these question it, another examination takes place, when the decision may be the same or amended.

I have been present at several of these trials: the forms observed, were first to swear in the judges according to their faith; this being peculiar, their various ways of taking an oath, may not be thought unworthy of description. The hill word Deebeen is an oath; there is no particular officer
for administering oaths; any person may do it: the form in general use at these trials, is, for a mountaineer to put a little salt on the blade of a Tuckear or scimitar, when he says, "if you decide contrary to your judgment and falsly, may this salt be your death;" the person swearing having repeated this imprecation and applied it to himself, the part of the blade where the salt is, is held above his mouth, which he opens, and it is washed off into his mouth with some water, that he may swallow it. Those who, from indisposition or infirmity, do not like to swallow the salt, repeat the oath, putting their hand on two arrows fixed transversely in the ground, at about a cubit's distance, with some salt between them. On some occasions a man swearing repeats the oath, with his hand on a sword, while others repeat it, laying hold of any person's hand; and all these forms are considered equally binding. Next, the commitment and charge are read and explained by the collector's officer, in his, the collector's presence; then the delinquent must state his defence or confess his crime, sitting on his hams, after which the Maungy and Phojedar of the village, where it was committed, declare what they know of it; here the criminal is apparently his own accuser by never deviating from truth; the vice of lying being considered an aggravation of any crime; but I have known the accused refuse to speak; for lying has not obtained much among these Highlanders.) A man convicted of falsehood, or who violates a promise, is called paftiary, the meaning of which is, a person to whom no credit is due, though he should even speak truth, and whose professions or promises are not to be depended on; such a person is not admitted on any arbitration, or on any committee to settle trivial differences.

Formerly when a man of one village had a claim upon an inhabitant of another, it was not uncommon, if the latter denied it, and refused to have
the matter brought to trial, for the complainant to apply to the chief of his village, to unite with the heads of one or two others, to whom presents were made in proportion to the nature of the dispute, to form a junction with all their vassals, to plunder the village where justice was denied, and to carry off the offender: the division of the booty was according to the rates allowed the Maungys, their officers, and vassals; in such troublesome times much was not taken, as all property, not of immediate use for domestic purposes, was usually concealed; the chiefs could therefore only have the first choice of the utensils and apparel, which fell into their hands. The relations and chief of the village, from which the captive was taken, after some time were wont to send a present to the complainant, acknowledging the demand, and promising to abide by the award, which arbitrators should give, on his being released; these conditions were complied with, the prisoner was enlarged, and he and his relations had to make good the losses sustained by the inhabitants of the plundered village, as well as to pay the costs of the arbitration.

It sometimes happened on such occasions as the above, that the inhabitants of the village, intended to be plundered, got intelligence of the design, and the cause of it; on which it was usual for the Maungy to call on his vassal, to answer to the accusation: if he acknowledged it, an ambassador was dispatched to the complainant, desiring him to desist from his intention, and to name arbitrators that justice might be done; on the other hand, if the charge was denied, and the accused exorted his chief to stand on the defensive, with an assurance that he would either prove his innocence, after the invasion, or make good the losses sustained on both sides, the vassals were assembled and stationed to guard every avenue leading to the village: night attacks were most common; but these precautions were in
general sufficient to induce the assailants to defer a scheme, which was merely to plunder, and, as long as the defendants were alert, nothing was attempted; the invaders therefore kept in their neighbourhood, and, when they were harassed by watching, the party advanced, and a man was sent forward to scatter a soporific dust to wind-ward of the village, which, it was believed, would put every inhabitant in it to sleep in less than an hour after dark: in this persuasion they rushed on to plunder, and, carrying off all that was valuable, retreated; soon after which a deputation was sent from the despoiled village, desiring an arbitration to be appointed, to try whether the accusation was just, which was alleged against the inhabitant of it; if proved, he was bound to make good the loss sustained, as well as to commute the lives that might have been lost on both sides; on the other hand, if acquitted, all this fell on the accusers.

When a man by accident killed one of his brother sportsmen in hunting, it was customary for the party to carry the body to the village, where the relations of the deceased, having declared the party had no right to slay their kinsman, set out and implored the assistance of a neighbouring Maungy with his adherents to obtain justice: having succeeded, they returned in force to plunder the homicide’s houses, and took cattals from every house in the village: at the conclusion of this violence, the Ferdars of the village assembled to sit in judgment on the part of the hunters, whilst those of the assailants met them on the part of the kinsmen of the deceased: the sentences on such occasions were seldom less than ten or twelve scores of rupees, as a commutation for the blood of the man slayer, two thirds of which ransom he had to pay, and the remainder was recovered from the party of hunters; when the above fine was realized, another complaint was made by the relations of the deceased to the Maungy of the village, to
which he belonged, claiming some consideration for the children which he might have begotten had he lived; judges being appointed to examine the second demand, the fine was about two or three scores of rupees, from the homicide.

When a woman had poisoned her husband, and confessed the fact, judges were appointed to settle a just retribution, ten or twelve scores of rupees were commonly adjudged, and the sum was recovered from the woman and her relations, to whom she was returned.

A person convicted of stealing cloth, was not fined more than five or six rupees, and a turban; yet the thief, by praying for an abatement of this, was in general let off, on paying one rupee, and producing one hog, and a turban.

When an orphan, who had no relations or property, was convicted of stealing money, grain or cloth, he was compelled to restore the stolen goods, and flogged and discharged: judges were not appointed for such a trial, as the accused was supposed neither to have property, nor friends to pay the fine for him.

When grain had been stolen, and the thief unknown, the Cherreen was first resorted to; whether this was successful or not, the Sattane was next tried to confirm the discovery, which might have been made by the Cherreen, or to find the thief by it, if the Cherreen had been unsuccessful. In the event of both failing, or on their being firmly denied by the accused, he was compelled to attempt the Gobereen, which was deemed unerring: on
sufficient proof the accused was seized and punished, till he acknowledged the theft, and declared whether any person advised him, or was an accomplice: he was then set at liberty, and judges were appointed by the Maungy of the village to inquire what damage had been sustained, which the accused was obliged to make good, and to fine him according to the nature and extent of his crime: on these occasions the fines were heavy, to deter others from committing similar offences.

When a chief had killed a poor man, the officers of his own village, and those of a neighbouring village, were assembled, with some sage old men for the trial: should the fact be established, the relations of the deceased might refuse a commutation for the blood of the murderer, in which case he was delivered up to them to be put to death, and his kinsmen had to pay the expenses of the trial. The ransom was in general ten or twelve score of rupees, but the relations of the deceased had the option of remitting the fine, and of pardoning the murderer.

All applications to a chief, to apprehend any person in a civil cause, and to appoint judges for a trial, are accompanied with a fee; and any person, borrowing money for that purpose, is compelled to pay two rupees for every one so borrowed, at the issue of the suit, whether he gains it or not.

A chief has no more right to strike a poor man than the latter has to strike him: the crime and punishment in either case is equal. Should a chief without provocation strike a poor man and draw blood, the latter complains to the Cultwal, who with the Phojedar, and some old men, being assembled, and having heard the complainant, they depute an agent to their chief to require him to answer the charge, which being acknowledged, the
agent returns, and informs the court that the offender confesses his crime: the complainant then demands a certain sum for reparation, and the agent sets out to the offender, who, on begging a remission of the fine, in general gets off by furnishing a hog, which being killed, the blood is sprinkled on the wounded person; a similar misfortune is thus supposed to be averted, and, the parties reconciled, the aggressor paying the expenses of the trial.

Should a man borrow some Kosarane for seed from another, and refuse to repay for eight or ten years, and till he is compelled, the lender, on establishing the loan before judges, will receive three rupees for each seer, that is due to him.

The same penalty is levied from those, who refuse to repay a loan of Takallo.

Whoever accuses a man of committing incest with his mother, on proof of such abuse before a jury, will be fined a rupee for the complainant, and a hog for a feast to his judges.

Should a man, who is sober and walking about, touch another who is asleep, or sitting, with his foot, the aggressor will be fined a rupee, for the complainant and a hog for a feast.

A person committing the same offence while drunk, is let off on giving a fowl to the complainant.

Should a man who is intoxicated, by day light and willingly vomit on another, on conviction before judges, he will be fined a turban and one
rupee: Should he however, from its being dark or otherwise, not see the person, he is forgiven.

Should a man seize and cultivate a field, which his neighbour had begun to clear, this offence not being cognizable before judges, the latter imprecates divine wrath, that nothing may grow on it: it is believed that his prayers will be attended to, and that the produce will be small, comparatively with former years.

If two men quarrel in their cups, and blood be shed, when sober, judges are appointed, and the person, who cut his antagonist, is fined a hog or a fowl, the blood of which is sprinkled over the wounded person, to purify him, and to prevent his being possessed by a devil: the flesh of whatever has been sacrificed is eaten, and a feast reconciles the combatants; but if the men quarrel while sober, and one be wounded, judges are appointed, and, exclusive of a hog or a fowl for the purpose above described, the person who drew blood from his antagonist is fined one rupee, and a hog for the Mawngy of the village, and at the discretion of the judges, is compelled to pay a fine to his wounded antagonist.

Should a man by design, or accident (in carrying fire) set fire to a jungle, whatever loss is sustained by the flames spreading, and burning grain, or mens property, he must make it good. If a town should be set on fire by accident, and the whole be burned, the person, who accidentally caused the loss, is not fined, because the loss sustained would be too great for one person or family to defray; but if only one or two houses should be burned, the offender and family are obliged to make entire restitution.
If a man be detected by a woman sitting on her cot, and she complains of the impropriety, and demands a fowl as a forfeit, he complies, but she returns it; on the other hand, if a man detects a woman sitting on his cot, and he complains and demands a fowl, she must produce it, and he kill the fowl, sprinkling the blood on the cot to purify it: the woman is then pardoned.

Women at certain times are considered impure, should one in such a condition touch a man by accident, even with her garment, he is defiled; and for this offence she is fined a fowl, which is sacrificed, and the blood sprinkled on the man to purify him. Women at such times may talk to men, but not touch them: a man, whose wife has that impurity, must not himself during that period sit on a chief's cot; for so doing the fine is a fowl, and the blood is sprinkled on the cot to purify it. He must not even eat or partake of any thing at a festival, during such period of separation, and any person detected in this offence must pay the expense of purification from this pollution, by another festival to be held for that purpose at his expense.

When a party are assembled to go a hunting, and have arrived at their ground, the Cherreen is held to ascertain, which of the party will be most acceptable to the God of Hunting, to return thanks for the success they may have; two hens eggs are given to the person named: this ceremony over, some are stationed at the skirts of the wood, while others scour it to drive the game to them; on their killing either a hog or a deer, the preacher breaks one of the eggs on the tooth of the animal, and throws the contents on its head, at the same time returning thanks to Autha, the God of Hunting; this is observed on the death of all large game: on their return
home with their game, the heads, the tails, and flesh on the inside of the loins, being separated, are considered sacred, and women are not allowed to taste of those parts, but the hunters feast on them, and the rest, (one hind quarter being first given to the fortunate sportsman for his share), is equally divided among the party for their families: when the hunters have finished their repast, the one who killed the game, sacrifices a fowl to Autgha, the blood of which is shed on the fore teeth of the game, with thanksgivings to the God, and the preacher, having cut up the heart, that the blood of it may fall on his bow and arrow, breaks an egg on it, praying again to Autgha.

Should a woman privately eat of those parts, of which they are forbidden to taste, the mountaineers believe that Autgha will be offended, and prevent their having any success in hunting on any future excursion, and, if they do not happen to kill some game, the failure is attributed to the above cause, and the Cherreen, or suspending a stone to a string, is resorted to, to discover the offender, who, on such doubtful proof, is fined a fowl, which being sacrificed to Autgha, the God is thus supposed to be appeased, and will be propitious to them on the next hunting party.

If a hunter goes out alone, and wounds some game, and returns for assistance to find and bring it home, those who go with him are entitled to one half.

When it is found, that wild boars or other game have been in a cultivated field, the owner leaves a road for the beasts to return, and erects a stage to watch their coming at night: should he wound any, he repairs to his village, to announce his success, and to beat up for volunteers to assist him in af
certaining which way the game went, that they may know where to find it in the morning: they are directed in this by the groaning of the animal, which cannot run far, the poison, which they use on their arrows, being of a most subtle nature; yet its being of so fatal and noxious a quality does not prevent their eating the game, after cutting out a large piece of the flesh round the arrow, which is thrown away: I heard an instance of a man eating that part and dying soon after. A sportsman, who goes out alone, keeps half of whatever game he kills, the remainder (after the maundy has taken several joints of the chine) is divided among the inhabitants of the village.

A skilful and fortunate sportsman, who gives up all his time to hunting, daily kills more or less: when ten or twelve score heads of game have fallen by his skill, it is customary for him to take all the teeth and horns to a convenient place for prayer, and to sacrifice a hog over them to Autcha, the God of Hunting, who sometimes favours the huntsman, by drawing some game within view of the festival, that he may sally forth to kill it, and whatever his success may be on this occasion, it is considered as an addition to his offering, and accordingly eaten on the same altar: it is to be observed, that every sacrifice to their Gods is eaten.

When a hunter wounds game which he cannot find, he returns home to collect his friends to go in search of it: in the interim, should any person or persons pick it up, carry it off and eat it, on detection, they will be fined by the judges five rupees, and as many hogs, though the complainants in general let such offenders off, on their delivering one rupee and one hog.

Dogs, that will hunt, are held in estimation by the mountaineers, and any person killing one is fined ten or twelve rupees.
The penalty for killing a cat is whimsical: a person guilty of it must collect all the children of the village, and distribute salt among them, that he may avert divine vengeance.

It is related that a man, sitting with another, observed his companion’s clothes on fire, and that, for informing him of it, the latter demanded a fowl, to shed the blood of it on his burned clothes for his friend’s officious kindness, observing also that the clothes were his, and that he had no business to say any thing about them: this practice is now obsolete as far as regards the exaction of a fowl, but the circumstance is related to this day.

HOSPITALITY is considered a virtue; and, when a relation, or a man of rank, comes to see his friend, he is kindly received, and treated as sumptuously as the ability of the host will admit of: strangers travelling are well received, a house and bedding is allotted them, and the inhabitants contribute to furnish them with as much provisions as they can eat.

When a peasant waists on his chief, to represent any grievance, having made his salam, he is not of himself to enter on the subject of it; unless he is desired, as his chief may be thinking of business of importance, when it would be improper, and disrespectful to interrupt him; but due attention is always paid to the complainant.

A PEASANT does not sit in the presence of his chief, without being desired to do so, and respect requires that he should decline it two or three times before he obeys, taking care to sit at a good distance: when business leads them to their chief, it is customary to have him previously advised of it: a man who has business, if he has any penetration, will observe at a dis
tance what humour his chief is in, before he approaches him: if he should seem pleased, they think it right to embrace the moment, keeping at a respectful distance and advancing but a step or two as desired, but, if he is in an ill humour, the complainant generally defers his suit. It is considered disrespectful in an inferior, even to enter a chief's house without being invited. When a chief visits another chief, the guest is always desired to seat himself first.

In addition to the foregoing account, a few general remarks may neither be deemed superfluous nor unnecessary. The natives of these hills are mostly very low in stature, but stout and well-proportioned: to find a man six feet high, would I believe be a phenomenon; there are many less than four feet ten inches, and perhaps more under five feet three inches, than above that standard; it may not however be far from the truth to consider, that as the medium size of their men: a flat nose seems the most characteristic feature, but it is not so flat as the Coffres of Africa, nor are their lips so thick, though they are in general thicker than the inhabitants of the neighbouring plains. I shall not pretend to say whether they ought to be considered the aborigines or not: as they have no letter, figure, or hieroglyphick, all accounts of their ancestors are oral; it will however be remembered, that they consider themselves descended from the eldest of the seven brothers, who, according to their tradition, peopled this earth, and who was an outcast for receiving his portion of every thing eatable on an old dish, that the hills in the districts of Bhagalpore and Rájémabal were allotted for him and his descendants; these being rather unproductive, and their wealthy neighbours refusing to associate with them, they had no alternative but that of plundering;
these causes are assigned for their remaining in barbarous ignorance. In numbers the hill language has only words for one and two, which are variously expressed as applied to different subjects: they however use the Hindi words in counting from two to twenty, and, when reckoning any thing which exceeds that quantity, they begin again at one, numbering by scores. Of their manufacture, and commerce, little can be said: the small and common Hindostany bedsteads are made by the highlanders, and brought down for sale, with the wood work of ploughs rudely shaped: wood for various purposes, as well as for fire, with charcoal, and planks shaped with a hatchet, (probably that they may be more portable,) are also brought down for sale: to these bamboos, cotton, honey, plantains, sweet potatoes, and occasionally small quantities of grain, may be added, and will, I believe, include all the articles, which they barter for their few wants from the plains, such as salt, tobacco, rice, for the purpose of worship, cloth, iron heads for arrows, hatchets, crooks, and such iron implements, as they may have occasion for: I may add that they have no manufactures; except the bedsteads, there is nothing made in the hills, they are even indebted to their neighbours on the plains for earthen pots; salt and tobacco are their principal wants; for in describing such hill villages as are nearest market towns, or such as have haunts on the plains, it is common to say, such a hill village is supplied with these articles by such a town on the plains: thus their trade is confined to a very narrow compass. Cultivation is in as unimproved and rude a state as it well can be, and seldom more extensive than for the immediate consumption of the cultivator, and his family, the women as well as men work in their fields: the bringing wood, and water for all domestic purposes, cooking, cleaning, arranging all house affairs, belong to the former; and they are also employed in carrying wood, bamboos, and other things to market on the plains, to exchange for salt and tobacco:
HILLS NEAR RA'JAMAHALL.

hence it appears, that the greatest share of labour falls to the women, and a man is rich in proportion to the number of his wives, who are so many labourers. There are two sorts of soil which the mountaineers cultivate, the one a black earth which is esteemed the best; the inferior is called red, is stiff and of the nature of clay: where there is earth sufficient for the purpose of cultivation on the sides and tops of hills, the trees, with which these hills are well covered, are cut, leaving pretty large stumps; and such as cannot be conveniently moved, or are wanted, are burned where they fall in the places so cleared. Holes are made from three to four inches deep with a piece of hard wood pointed, in the middle of June, or setting in of the rains, in each of these, two grains of Takaloo, two of Kofarane, two or three of Lâhary, and from five to seven of Naito, are thrown in, when they are filled with earth: these holes are not made nearer than a cubit and an half; if less space was left, the grain would be too thick, and not so productive. Koppai, Gungarea, Mooto, and Koodama, are scattered in the same field, with Maffee, which is sometimes scattered, and, at others, put into separate small holes: in this field Kuldee is also planted, and slips of the Marallee; Bareally, or yams are cultivated, and grow wild likewise; Takaloo, or Indian corn, is the same as what is variously named in the plains, Bootah, Janeera, Jewar, Muckai, but is larger, and better on the hills, and is reaped in November; Kofarane, is like the Calley gram of the plains in taste, but is white and rather larger: it is reaped at the latter end of November, and beginning of December; Lâhary is a large pea, reaped in December; Naito is a round seed reaped in December; Koppai is cotton, and does not flower before the third year, when it is gathered in March, April, and May, and sells for as much as cotton produced in the plains; Gungarea is a grain smaller than the Cheennee of the plain, is reaped in September, and October; Mooto is some what like the Gungarea, and reaped at the same
time; Kosdama is also very small grain, and reaped as the two former; Mossee is the same as the Bhattmofis of the plains, but a smaller grain and is reaped in September and October; Kuldee is a large plantain, bears some fruit the second year, but more plentifully the third and fourth, after which it declines; Murallee is the same as the Sakkerkund, or sweet potatoe of the plains, but much larger, is taken out of the ground in November, December, and January. The foregoing includes all the cultivated productions of the hills: they are, as may be supposed, of a hardy nature, and are plentiful or scanty, in proportion to their having enough or too little rain, for they trust entirely to the monsoon for water, having neither reservoirs, nor any method of watering their fields, which in fact might not be possible from their situation. This last season their crops in general failed from want of rain: on these occasions, the mountaineers cut more wood and bamboos, and make greater quantities of charcoal, for which they find a ready mart in the lowlands, and exchange it for grain; from this resource, and the thriftiness of some among themselves, who are provident, they averted a famine during the great scarcity in 1769 and 1770: many of the inhabitants of the plains retired to the hills, where they got a subsistence, but having associated, and mixed with the highlanders, they of course lost their casts, and therefore many remained with them. The Takalloo is the most productive of any of their grain, and is their chief subsistence: there are no esculent herbs, nor garden stuff on the hills. Pungdoallee, the same as Sootnee in the lowlands, grows wild, and is larger than the Sootnee. In times of scarcity, Singlab (in Moors, Jingoor) is found in the jungles, but it must be boiled in several waters, or well roasted, and is a dangerous unwholesome food: of much the same nature is Kindallee, which is sliced thin and boiled in four waters, otherwise it is poisonous. The Mango-tree, Tamarind, Kuthul, Bale, Burrell, Bayer,
Mowwab, Jamon, Phulsab, Dwarf Cudjoor, that yields a bad kind of date, and Keand, with others peculiar to the hills, grow wild. Their domestic animals are hogs, goats, and fowls; they have also some dogs and cats; the wild animals are in general the same, that are met with in the plains, except a species of large deer, and another remarkably small; the former are called Mauk, and the latter Illaroo.

The internal government of the hills, or the connection between the Mauny and his Dungarear (adherents) is a simple engagement for mutual protection: the Mauny swears to do them justice in disputes among themselves, and not to suffer them to be oppressed by others, and they, on their part, swear fidelity to him, as long as he shall protect them and do them justice: a failure on either part dissolves the contract; in fine the Mauny is no more than primus inter pares. The Dungarear apply to him for land to cultivate, and he allots it: when the crops are ripe, the Cutwaul, and Phojedar, on the part of the Mauny, repair with the proprietor of each field, to estimate what portion he can afford to give his Mauny: thus an easy and amicable contribution is levied by the consent of the cultivator, who has no fixed proportion to yield to his chief: if the crops be luxuriant, he willingly gives what he can spare; if scanty, very little is demanded; if obstinately refused, (a case which seldom or never happens) the Mauny cannot forcibly take any part, but, as a punishment, he can prevent this refractory Dungarea, from cultivating in his territory again. The Cutwaul and Phojedar receive a little grain for their trouble, or perhaps the Mauny remits their contribution; for these officers, as well as the Mauny himself, cultivate their fields: they have no salary; the stations perhaps give them some degree of consequence, and on all trials they either receive some compensation, or are feasted; the latter however, from their disputes in ge-
neral being trivial, is most common. The appointments of Cutwails, Phoje-
dars, and Jemadar, belong to the Maungys; and he can dismiss from office
when any of them offend; the Jemadar is merely an honorary officer. I
cannot now learn, at what period the hill villages were formed into Tupp-
pahs: it seems however to have been an association for mutual protec-
tion; for the Sirdar Maungy, or chief of a Tupphah, receives no contribution from
any village, but his own, or one in which he resides: when appealed to,
or applied to for justice, he is paid in proportion to the amount or mag-
nitude of the cause. He could assemble the several Maungys with their
adherents on any offensive or defensive operations, but could not compel
those to act, who disapproved of the motives. In their wars when high-
landers were made prisoners, they were either set at liberty, or were ran-
somed. In their descents into the plains they were not however so merci-
ful; all who opposed them were put to death; those who made no defence,
women, and children were stripped of such valuables, as they might have;
but neither punished nor made prisoners: on such occasions the chastity of
women was held inviolable; for it was believed, if any of the assailants
committed violence on the persons of females, that he would infallibly
lose his reason and die: the bow and arrow is the only arm peculiar to
these mountaineers, some few have swords, and still fewer have match-
locks, but these probably were collected in their predatory incursions into
the plains, either in war or hunting; in general they use the bow and
arrow in the former, but always in the latter, though I do not think they are
expert archers, when it is considered they are all hunters, from the time
they can carry these arms, and are so fond of that diversion, that they go
out at all seasons, and undergo great fatigue for the gratification which it
affords them: a poisoned arrow is always used in hunting, but never in war,
though they generally had them; as it is said, to be prepared for any game that might start.

There are no slaves on the hills; slavery can neither be said to have been tolerated, nor forbidden: parents never sold their children, and those, who hire themselves as servants, stay no longer than they agree with or like their masters.

Enough may have been said of their modes of worship: they are not the first race of people, who, we are taught, believed that the chief means of pleasing the Gods, and of pacifying them when they were angry, consisted in certain ceremonies, sacrifices, and feasts, in the due observance of which they conceive their welfare depends; for in praying, the suppliant says little more than to recommend himself and family to the Supreme Being, and subordinate Deities, and to promise oblations at the shrine of the God he then worships, provided he is fortunate, and enabled so to do by his prosperity: their expiatory sacrifices are however confined to the brute creation; there is no instance of their offering up any of the human species to appease the Gods, who are supposed to be abundantly pleased by the votaries feasting as large congregations of men as they can afford to entertain; for in proportion to the expense in meat and spirituous drink, the piety of the votary is measured. The part which the Demauno, their oracle, "dreamer of dreams," bears in their ceremonies and forms of worship, has already been described: before a man vows to sacrifice at any shrine, he consults the Cherteen and Satane; when these agree, he repairs to the Demauno, without informing him of the reult of those two processes, but explains to him the cause of waiting on him; the Demauno is allowed one, two, and even three nights to confer with the Deity in a vision, to pre-
scribe what the suppliant ought to do; and, as it is believed he has familiar intercourse with God in his dreams, his decrees are obeyed, though, when they differ from what was discovered by the Cberreen and Satane, these are held over again to reconcile them. The women neither offer sacrifices, nor approach the shrines of their Gods; even husbands are forbidden to partake of festivals during the separation of their wives; these prohibitory laws regarding women are of an old date, and their origin perhaps not well known.

Colonel Brown, in his account of these hills forwarded to government in 1779, observes that it was about fifteen years, since the hill people had any government among themselves of a general nature, during which period they had become dangerous and troublesome to the low country, that their ravages had been the more violent, as they were stimulated by hatred against the Zemindars, for having cut off several of their chiefs by treachery. The Colonel might have added, that, during that interregnum or dissolution of government, it was a common practice for the Zemindars on the skirts of the hills to invite the Chiefs in their vicinity with their adherents to descend, and plunder the neighbouring Zemindaries for which, and for the passage through their lands, the mountaineers divided the booty with them; thus at one time, from repeated acts of treachery in the Zemindars, the mountaineers were provoked to take ample vengeance on them, and their unhappy ryots; and at other times, from their engaging the Chiefs to make predatory incursions, to which they were strongly incited, no less from a desire of plundering their more opulent neighbours, than from the difficulty of obtaining salt and tobacco from the baus, all friendly intercourse was at a stand, the low country bordering on the hills was almost depopulated, and travellers could not pass
with safety between Bhaugulpore and Furruckabad, nor could boats, without
danger of being plundered, put to for the night on the south side of the
Ganges between the beforehand named places. It was at this period of double
treachery on the part of the Zemindars, and predatory hostilities on the part
of the mountaineers, (from which it may not be a strained inference, that
the machinations of the former were in a great measure the cause of that
necessity, which compelled the latter to such frequent and fatal descents,
when these public and private incendiaries were making large strides in
ruining these once fertile districts?) that Captain Brooke was stationed with
a corps of light infantry to avert their utter destruction. On this duty, it is
well known that he acquitted himself with great credit, from his uncom-
mon exertions and success in pursuing the unfortunate mountaineers into
their hills, where numbers must have unavoidably fallen; for it became
unquestionably necessary to impress them with a dreadful awe of our prow-
ess: and in this harassing and unpleasant warfare, I have been well in-
formed by officers, who were with Captain Brooke, that his gallant conduct
could not be too much commended: he made them sensible of the ineffi-
cacy of opposing him in the field, and invited the chiefs to wait upon him
and negotiate, when he gave a feast to those who came, and made them pre-
tents of turbans; but before any permanent establishment took place, he
was succeeded in the command of the light-infantry by Captain Browne,
who made further progress in conciliating the minds of the discomfited
mountaineers: he placed them on the road from Furruckabad, near Colgong,
to protect the Dawaks, on which duty they still continue. From this and
other measures of his, Captain Brooke, and he, it will be allowed, laid the
foundation for the most permanent and happy settlement concluded with
the hill chiefs by the late Mr. Augustus Cleveland, that could possibly be
attained: he was sensible from the rapine and decay of these districts, that the
peaceable deportment of the mountaineers ought to be purchased; and, while he was reconciling them to become subject to the British government, he bestowed liberal presents, in money and clothes, to the chiefs, and to all the men and women who came down to him. Of his generosity they speak with gratitude; and for the blessings and benefit which they derive from the wise and judicious conditions which he granted, and which were confirmed by government, I hope they will ever have reason to be thankful: as long as that government lasts, the comforts and happiness, which they derive from them, must ever ensure their obedience. To engage their confidence, Mr. Cleveland, in the early part of his intercourse with the mountaineers, entertained all, who offered their services, as archers, and appointed many of the relations of the chiefs, officers; they were not (nor are they as rangers, though they very seldom now ask their discharges,) bound to serve for any limited time; the corps, of course, constantly fluctuated, and was frequently, I understand, above a thousand strong: he clothed them, and in less than two years after they were formed, from the confidence he had in their attachment and fidelity, obtained fire-arms for them, in the use of which, I may venture to observe, that they are expert, and have address; and I can also without hesitation assert, that they are capable of as high a degree of discipline as any native corps in the service; and I trust I shall have the happiness to prove this in due time. Exclusive of having thus employed so many of the mountaineers, Mr. Cleveland fixed the salary of ten rupees per month for each chief of a Tuppah, three rupees ditto for each of his Naibs, and two for the Maungy of each village, from which there shall be a man enrolled in the hill-rangers; but from such as supply not a man, the inferior Maungy receives no monthly allowance. In consideration of these establishments, I understand, the chiefs are not only responsible for the peaceable deportment of their own adherents, but bound to deliver over
all delinquents, and disturbers of the publick peace within their own limits to the collector, to be tried by an assembly of the chiefs, either at Bhau-gulpore or Rájamahall, as already related. It has ever been customary on these occasions to feast the chiefs so assembled; when any report is to be made to the collector, it is the duty of a Naib to wait on him with it, should the chief be indisposed or otherwise prevented.

From these happy and admirable arrangements, digested by Mr. Clevland, whose name ought to be dear both to the natives of the hills and lowlands, the ease, comfort, and happiness of the former is ensured (for which they are grateful and speak of him with reverential sorrow) and peace and safety secured to the latter; and if they have any goodness, they ought not to be less thankfull. These solid and essential benefits are attended comparatively with but a trivial expense, and must ultimately be an advantage to government. I have been led to say more on this subject than I intended; yet it may not be thought foreign to it, to add, that the Aum-lab and Zemindars erected a monument to the memory of Mr. Clevland, nearly in the form of a Pagoda, and that another was also erected at the expense of government, by the order of the Honourable the Governor General and Council; on which is the following inscription:

To the memory of Augustus Clevland, Esq.
Late collector of the districts of Bhau-gulpore and Rájamahall,
Who without bloodshed or the terrors of authority,
Employing only the means of conciliation, confidence, and benevolence,
Attempted and accomplished
The entire subjection of the lawless and savage inhabitants of the jungle-terry of Rájamahall,
Who had long infested the neighbouring lands by their predatory incursions, 
Inspired them with a taste for the arts of civilized life
And attached them to the British Government by a conquest over their minds;
The most permanent, as the most rational, mode of dominion.
The Governor General and Council of Bengal,
In honour of his character, and for an example to others,
Have ordered this monument to be erected.
He departed this life, on the 13th day of January 1784. Aged 29.

Before I conclude, I must do the mountaineers the justice to mention, that they have as great a regard for truth, as any people on earth, and will sooner die than deliberately tell a falsehood: in this I must confine myself to those, who have not associated or mixed in conversation with their neighbours, the Hindu and Musselman of the plains, where it is well known, lie and interest are synonymous terms; and what change in this respect a more familiar intercourse will occasion, I shall not pretend to premise.

They are in general of a cheerful disposition, and humane: both men and women are remarkably bashful. When asked to sing (their notes are wild and drawling, having a slow cadence, from forte to piano) or dance, they ever answer, that they can do neither, without drinking freely, for they are ashamed until they are intoxicated: like all people in so rude and uncultivated a state, they are passionately fond of all spirituous liquors, and, I am inclined to believe, prefer that, which from its strength will inebriate them the soonest; hence it appears they are not ashamed of being drunk, and in fact their religion promotes it, for a festival would not be much esteemed, that was unattended with a hearty carouse.
I conceive instances of remarkable longevity are very rare: I have heard of one man who was said to be more than five score; but, as I have never met with any of them that appeared so old, or that could tell his age, for they keep no account of it, I am inclined to doubt the fact. In a late excursion with Mr. Grant into the hills, we saw an old woman, who was said to be of a great age: she was a relation to a chief, whose house we were at, and, having taken a cheerful glass, with his wives and daughter, of liquors, which Mr. Grant had carried up to give them, she set them the example of singing and dancing to us, in which she was followed by the chief, and two of his youngest wives, who were at the time far from sober: when we had dined, the meat that remained was given to them, of which, the family being assembled, they thankfully partook, and made indubitably a more luxurious meal than they ever had before. We took a route in which no European had been, and Mr. Grant, to reconcile them to so novel a sight, as well as to conciliate their attachment, carried up a variety of presents, of clothes, beads, and looking glasses, which he distributed with money to every family in all the villages we passed, and thus left them the most acceptable memorials of their visitors.

Bhaugulpore, June 27, 1792.
V.

ADDITIONAL REMARKS on the SPIKENARD of the ANCIENTS.

By the PRESIDENT.

Nearly at the time, when the result of my first inquiries concerning spikenard was published in the second volume of our Asianick Researches, there appeared in the Philosophical Transactions an account of the ANDROPON Jwarâncusa, the specimen of which Dr. Blane had received from Lucnow, and which he supposes to be the true Indick nard of DIOSCORIDES and GALEN: having more than once read his arguments with pleasure, but not with conviction, I feel it incumbent on me, to state my reasons for dissenting from the learned physician with all the freedom of a searcher for truth, but without any diminution of that respect, to which his knowledge and candour justly entitle him.

In the first place, there is a passage in Dr. Blane's paper, which I could not but read with surprise; not because it is erroneous or disputable (for nothing can be more certain), but because it is decisive against the very proposition, which the writer endeavours to support: "DIOSCORIDES mentions the Syriack nard, says the doctor, as a species different from the Indian, which was certainly brought from some of the remote parts of India; for both he and Galen, by way of fixing more precisely the country, whence it came, call it also Gangites." We may add, that Ptolemy,
who, though not a professed naturalist, had opportunities in Egypt of conversing with Indian merchants on every thing remarkable in this country, distinguishes Rangamati, as producing the true spikenard; and it is from the borders of that very district, if we believe modern Indians, that the people of Butan bring it yearly into Bengal (a). Now it is not contended, that the new species of Andropogon (if it be a new species) may be the Indick nard of Dioscorides, (b), because it was found by Mr. Blane in a remote part of India (for that solitary fact would have proved nothing); but it is learnedly and elaborately urged, that it must be the true Indian spikenard, because it differs only in the length of the stalks from the nard of Garças, which, according to Him, is the only species of nardus exported from India, and which resembles a dried specimen seen by Rumphius, and brought, he says, among other countries, from Mackran, or the ancient Gadrosia, the very country, where, according to Arrian, the true nard grew in abundance; for "the Phenicians, he says, collected a plentiful store of it, and so much of it was trampled under foot by the army, that a strong perfume was diffused on all sides of them;" now there is a singular coincidence of circumstances; for our Andropogon was discovered by the scent of its roots, when they were crushed by the horses and elephants in a hunting-party of the Vazir A'sufuddaulah; so that, on the whole, it must be the same with the plant mentioned by Arrian: but it may be argued,

(a) Ptolémée distingue le canton de Rhandamarcotta, en ce qu'il fournit la plante, que nous appelons Spic nard, ce qui peut convenir à Rangamati; et des différentes espèces l'Indique est bien la plus estimée.


(b) Dr. Roxburgh with great reason supposes it to be the Muricatæ Andropogon of Koenig, who mentions the roots as odoriferous, when sprinkled with water.

See Retz. III. Fasc. 43 and v. 21.
I think, more conclusively, that a plant, growing with great luxuriance in
Gadrophia, or Mackran, which the doctor admits to be a maritime province of
Persia, could not possibly be the same with a plant confined to remote parts
of India; so that, if Garcias, Rumphius, and Arrian be supposed to
have meant the same species of nard, it was evidently different from that of
Dioscorides and Galen. The respectable writer, with whose opinions
I make so free, but from no other motive than a love of truth, seems aware
of a little geographical difficulty from the western position of Macrán; for
he, first, makes it extend to the river Indus, and then infers, from the long
march westward and the distresses of Alexander's army, subsequent to
the discovery of the spikenard, that it must have grown in the more eastern
part of the desert, and consequently on the very borders of India; but, even if
we allow Gadrophia, or Gadrosis, to have been the same tract of land with Mac-
rán (though the limits of all the provinces in Persia have been considerably
changed), yet the frontier of India could never with any propriety be carried
so far to the west; for not only the Orita and Arabita, but, according to
Mela, the whole province of Ariana, were between Gadrosis and the Indus;
and, though Macrán (for so the word should be written) may have been
annexed to India by such whimsical geographers as the Turks, who give-the
name of white Indians to the Persians of Arachosia, and of yellow Indians to
the Arabs of Yemen, yet the river Indus, with the countries of Sind and
Multân on both sides of it, has ever been considered by the Persians and
Arabs as the western limit of Hind of India; and Arrian himself expres-
sly names the Indus as its known boundary: let Gadrosis, however, be Mac-
rán, and let Macrán be an Indian province, yet it could never have been a
remote part of India in respect of Europe or Egypt, and, consequently, was
not meant by Galen and Dioscorides, when they described the true
spikenard. It must be admitted, that, if the Siree of Rumphius, which
differs little from the *nardus* of Garcia, which corresponds for the most part with the new *Andropogon*, was ever brought from the province of *Macrân*, they were all three probably the same plant with the nard of Arrian; but, unfortunately, Rumphius thought of no country less than of Persia, and of no province less than of Macrân; for he writes very distinctly, both in his Latin and his Dutch columns, that the plant in question grows in Mackian, which he well knew to be one of the Moluccas (c): I am far from intending to give pain by detecting this trifling mistake; and, as I may have made many of greater consequence, I shall be truly obliged to any man, who will set me right with good manners, the sacred laws of which ought never to be violated in a literary debate, except when some petulant aggressor has forfeited all claim to respect.

Arrian himself can by no means be understood to assert, that the Indian spikenard grew in Persia; for his words are a fragrant root of nard (d), where the omission of the definite articles implies rather a nard, than the nard, or the most celebrated species of it; and it seems very clear, that the Greeks used that foreign word generically for odoriferous plants of different natural orders: but Arrian in truth was a mere compiler; and his credit, even as a civil historian, seems liable to so much doubt, that it cannot be safe to rely on him for any fact in the history of nature. “We cannot, says the judicious and accurate Strabo, give easy credence to the generality even of contemporary writers concerning Alexander, whose fame was astonishingly high, and whose historians, preferring wonders to truth,


(d) Νάδος ζήσεις εύκομον.
"wrote with secure negligence; well knowing, that, as the farthest limits of Asia were the scene of his actions, their assertions could hardly be directly proved." Now Arrian’s principal authority was Aristobulus of Cassandra, whose writings were little prized by the ancients, and who not only asserted, "that Gudrosis produced very tall myrrh-trees, with the gum of which the Phenicians loaded many beasts" (notwithstanding the slaughter of them from the distress of the whole army), but, with the fancy of a poet describing the nest of a phenix, placed myrrh, incense, and cassia, with cinnamon and spikenard itself, even in the wilds of Arabia: "The fruitfulness of Arabia," says Arrian, "tempted the king of Macedon to form a design of invading it; for he had been assured, that myrrh and frankincense were collected from the trees of that country; that cinnamon was procured from one of its shrubs; and that its meadows produced spontaneously abundance of spikenard." Herodotus, indeed, had heard of cinnamon in Arabia, where the Laurus, to the bark of which we now give that name, was, I verily believe, never seen: even the myrrh-tree does not seem to have been a native of Arabia, and the publick are now informed, that it was transplanted from Abyssinian forests, and has not flourished on the opposite shore; but, whatever be the countries of myrrh and cinnamon, we may be certain, that any learned Arab would laugh at us, if we were to tell him, that the Sumbulel Hind grew wild in abundance on the plains of Tabamab. It seems a bold allegation of Grassias, that he has exhibited the only species of nardus known in India, either for consumption by the natives or for exportation to Persia and Arabia: if he meant, that any plant was either used in this country or exported from it by the name of nard, he had been strangely deceived; and if he meant, that it was the only fragrant grass used here as a medicine or as a perfume, his error was yet more gross. But, whatever his meaning might have been, if the nard of

P
Additional Remarks on the

Garcias and of Arrian was one and the same plant, it is wonderful, that it should ever have been exported to Persia and Arabia, where it grew, we are told, in so great abundance. The nard of Arabia was, probably, the Andropogon Schoenanthus, which is a native of that country; but, even if we suppose, that the spikenard of India was a reed or a grass, we shall never be able to distinguish it among the many Indian species of Cyperus, Andropogon, Schoenus, Carex, and other genera of those natural orders, which here form a wilderness of sweets, and some of which have not only fragrant roots, but even spikes in the ancient and modern senses of that emphatical word; one of them, which I never have seen in blossom, but suppose from its appearance to be a Schoenus, is even called Gónarda, and its dry root has a most agreeable odour; another, which Rheede names Bálaca, or Ramacciam, or white Iriveli, and which Burman thought a variety of the Schoenanthus, is a considerable article, it seems, of Indian commerce, and, therefore, cultivated with diligence, but less esteemed than the black sort, or Carábála, which has a more fragrant root and affords an extremely odoriferous oil (c). All those plants would, perhaps, have been called nares by the ancients; and all of them have stronger pretensions to the appellation of the true spikenard, than the Feverfew Andropogon, which the Hindus of Behár do not use as a perfume. After all, it is assuming a fact without proof, to assert, that the Indian spikenard was evidently gramineous; and, surely, that fact is not proved by the word arista, which is conceived to be of a Grecian origin, though never applied in the same sense by the Greeks themselves, who perfectly well knew what was best for mankind in the vegetable system, and for what gift they adored the goddess of Eleusis. The Roman poets (and poets only are cited by Dr. Blane, though natura-

(c) 12 Hort. Malab. tab. 12, and 9 H. M. p. 145. See also the Flora Indica, and a note from Hermann on the valuable oil of Sere.
SPIKENARD OF THE ANCIENTS.

Lifts also are mentioned) were fond of the word amisa, because it was very convenient at the close of an hexameter, where we generally, if not constantly, find it: as Homer declares in Lucian, that he began his Iliad with Ἄρες, because it was the first commodious word, that presented itself, and is introduced laughing at a profound critic, who discovered in that single word an epitome of the whole poem on the wrath of Achilles: such poets as Ovid and Lactantius described plants, which they never had seen, as they described the nest of the phenix, which never existed, from their fancy alone; and their descriptions ought not seriously to be adduced as authorities on a question merely botanical; but, if all the naturalists of Greece and Italy had concurred in assuring us, that the nard of India bore an ear or spike, without naming the source of their own information, they would have deserved no credit whatever; because not one of them pretends to have seen the fresh plant, and they had not even agreed among themselves, whether its virtues resided in the root or in the husky leaves and stalks, that were united with it. Pietro della Valle, the most learned and accomplished of eastern travellers, does not seem to have known the Indian spikenard, though he mentions it more than once by the obsolete name of Spigonardo; but he introduces a Sumbul from Khatá, or a part of China, which he had seen dry, and endeavours to account for the Arabick name in the following manner:

"Since the Khatáin Sumbul, says he, is not a spike, but a root, it was probably so named, because the word Sumbul may signify, in a large acceptation, not only the spike, but the whole plant, whatever herb or grass may be sown; as the Arabick dictionary (f), entitled Kámús, appears to indicate: The passage, to which he alludes, is this: "

(f) Giacchè il Sembel del Caiasa è radice e non è Spiga, potremmo dire, che così sì chiami, perché forse la parola Sembel possa più largamente significare non solo la spiga, ma tutta la pianta d'ogni erba e biada, che si semini; come par, che il Cumi, vocabolario Arabico, ne dica indizio. Lett. 18. di Baghdad.
"the Kāmbūs, is an odoriferous plant, the strongest of which is the Sūrū, and "the weakest, the Hindī; but the Sumbul of Rūm has the name of nardīn." I suggested in my former paper, and shall repeat in this, that the Indian spikenard, as it is gathered for use, is in fact the whole plant; but there is a better reason why the name Sumbul has been applied to it. By the way, Della Valle failed, as he tells us, along the coast of Macrān, which he too supposes to have been a part of Gedrosīa; but he never had heard, that it produced Indian spikenard, though the Persians were fully acquainted with that province; for he would not have omitted so curious a fact in his correspondence with a learned physician of Naples, for whose sake he was particularly inquisitive concerning the drugs of Asia: it is much to be wished, that he had been induced to make a short excursion into the plains of Macrān, where he might have found, that the wonderful tree, which Arrian places in them, with flowers like violets, and with thorns of such force and magnitude, as to keep wild beasts in captivity, and to transfixed men on horseback, who rode by them incautiously, was no more probably than a Mimosa, the blossoms of which resembled violets in nothing but in having an agreeable scent.

Let us return to the Arabs, by whom Dioscorides was translated with assistance, which the wealth of a great prince will always purchase, from learned Greeks, and who know the Indian spikenard, better than any European, by the name of Sumbul Hind: it is no wonder, that they represent it as weaker in scent and in power than the Sumbul of the lower Asia, which, unless my smell be uncommonly defective, is a strong Valerian; especially as they could only have used the dry nard of India, which loses much of its odour between Rangpur and Calcutta. One question only remains (if it be a question), whether the Sumbul Hind be the true Indian spikenard; for, in that case, we know the plant to be of the natural order, which Linnaeus
SPIKENARD OF THE ANCIENTS.

calls aggregate. Since the publication of my paper on this subject, I put a
fair and plain question severally to three or four Muslim physicians, "What
is the Indian name of the plant, which the Arabs call Sumbulu'l Hind?"
They all answered, but some with more readiness than others, Ḣatamānṣī.
After a pretty long interval, I showed them the spikes (as they are called) of
Ḥatamānṣī, and asked, what was the Arabick name of that Indian drug: they
all answered readily, Sumbulu'l Hind. The same evidence may be obtained
in this country by any other European, who seeks it; and if, among twelve
native physicians, versed in Arabian and Indian philology, a single man should
after due consideration give different answers, I will cheerfully submit to the
Roman judgement of non liquet. My own inquiries having convinced me, that
the Indian spikenard of Dioscorides is the Sumbulu'l Hind, and that the
Sumbulu'l Hind is the Ḣatamānṣī of Amarsinē, I am persuaded, that the
true nard is a species of Valerian, produced in the most remote and hilly parts
of India, such as Nepāl, Morang, and Butan, near which Ptolemy fixes
its native soil: the commercial agents of the Dēvarāja call it also Pampī, and,
by their account, the dried specimens, which look like the tails of ermines,
rise from the ground, resembling ears of green wheat both in form and colour; a
fact, which perfectly accounts for the names Stachys, Spica, Sumbul, and
Khūṣbāb, which Greeks, Romans, Arabs, and Persians have given to the drug,
though it is not properly a spike, and not merely a root, but the whole plant,
which the natives gather for sale, before the radical leaves, of which the fibres
only remain after a few months, have unfolded themselves from the base of the
stem. It is used, say the Butan agents, as a perfume and in medicinal un-
guents, but with other fragrant substances, the scent and power of which it
is thought to increase: as a medicine, they add, it is principally esteemed for
complaints in the bowels. Though considerable quantities of Ḣatamānṣī are
brought in the caravans from Butan, yet the living plants, by a law of the
country, cannot be exported without a licence from the sovereign, and the
late Mr. PURLING, on receiving this intelligence, obligingly wrote, for my
satisfaction, to the Dévarája, requesting him to send eight or ten of the plants
to Rangpúr: ten were accordingly sent in pots from Tosísladan, with as many
of the natives to take care of them under a chief, who brought a written an-
swer from the Rájá of Bután; but that prince made a great merit of having
complied with such a request, and my friend had the trouble of entertaining
the messenger and his train for several weeks in his own house, which they
seem to have left with reluctance. An account of this transaction was con-
tained in one of the last letters, that Mr. PURLING lived to write; but, as all
the plants withered before they could reach Calcutta, and as inquiries of
greater importance engaged all my time, there was an end of my endeavours
to procure the fresh Jatámánsí, though not of my conviction, that it is the
true nard of the ancients.
VI.

On the Dhane'sa, or Indian Buceros.—By Lieut. Charles White; communicated by Lieut. Fraser.

There are two distinct species of this bird, one called Bægma Dunnase, and the other Putteal Dunnase.

I shall first treat of the Bægma, which is divided into two kinds, the specific marks of which I shall hereafter mention.

The Bægma Dunnase is a very remarkable bird, and, I believe, has not hitherto been described: as far as lies in my power, I shall endeavour to rescue it from a situation so unworthy the distinction it has a strong claim to among the curious productions of nature.

It may be necessary to premise, that the names of black-horned and white-horned are given by myself, the natives not making any distinction between them: I have bestowed upon them these names from the difference of the bases of their horns.

Black-horned Bægma Dunnase, with a large double beak, or a large beak surmounted by a horn, shaped like the upper mandible, which gives it the appearance of a double beak; the horn is hollow, at the base brown, with a broad edging of black, quite hard; a black mark runs from about one inch
from the base to the point of the horn, very irregular in its breadth, in the centre reaches to the junction of the horn with the upper mandible: upper and lower mandible serrated, and separate from each other, about three inches in the middle of the beak longitudinally; upper mandible marked with black at its junction with the head, which part is quite hard; immediately below this, the lower mandible has a large black mark, which appears on both sides, and joins at the bottom; joining to this and covering the base of the lower mandible, is about an inch of white shrivelled skin; between these, at the edge of the mandible, is a small brown spot covered slightly with feathers; the rest of the beak and horn cream colour, patched with yellow, except the point, which is much whiter; the nostril placed at a small distance from the head, in the junction of the horn with the beak: head, neck, back, and coverts of the tail, black; breast, belly, thighs, and coverts of the vent, white; scapulars, greater and lesser coverts of the wings, black, varying to a greenish tinge; under-coverts of the wings, white; primaries, white at their base, then black, with three inches of white at their ends; secondaries nearly the same; tertials black; a few white feathers on the outward edge of the wing, just below the shoulder; tail cuneiform, two middle feathers black, longer than the rest, which are white, four on each side: crested, close; the feathers extending a little way down the neck: eye, speculum black, irides reddish brown; the cheek, immediately round the eye, and extending from the beak to the ear, devoid of feathers, consisting of a shrivelled skin, which is nearly black; ear-feathers, about an inch long, extending partly across the head; tongue, short, formed like a dart with the ears of the barb raised above the shaft; near the epiglottis it swells to the size of a small nutmeg, which part is perforated: when the mouth is open, a black and brown knob appears below the upper mandible, rising from its base to an inch beyond its apparent junction with the head: legs and feet, black, tinged with brown,
and dirty white: claws, large, and strong, three in front, and one behind: length upon an average from the forehead to the tip of the tail, two feet, eight inches; extent, three feet two inches.

White-horned Bægma Dunnæsæ, agreeing with the former in description, except in the following particulars: the horn in these is generally smaller, and blunter at the point, and at the base it is soft, consisting of a membranous substance; the ground white, marked with crimson; the skin, which covers the base of the lower mandible, is very differently shaped, and is much stained with crimson, only a small spot of black upon the upper mandible where it joins the head, which junction is soft; eye black, the skin round the eye, extending to the ear, white marked with crimson: the ear feathers form a curve, beginning in the centre of the black mark of the lower mandible, running along it, and rising above the ear, where it joins the crest, in some I have observed the white tail feathers marked in the web with black at their base; these birds in size are rather smaller than the first.

Putteal Dunnæsæ, with a double beak, or horn upon the upper mandible, over which it curves about half way, base hid in feathers; horn black, except at the lower edge near the point which is brown; the upper mandible black in the middle, shaded off to white at the point; lower mandible the same, white at the bottom, both serrated; a small black projection from the bottom of the lower mandible, crested, cinereous, tinged with brown; the feathers, from the eye to an inch over the beak, iron grey, dashed with brown; ear feathers dark iron grey, forming a curve from the lower part of the eye, extending nearly across the head, under the crest; back grey; neck the same, much lighter; breast, belly, thighs, and coverts of the vent, white; coverts of the tail, greyish brown; scapulars, greater, and lesser
coverts of the wings, lead colour; primaries at the base of the web, black, then dark grey, edged with white; each primary white at the end near an inch; secondaries nearly the same; tertial greyish brown; under coverts of the wings, white: tail cuneiform, very long, two middle feathers reddish brown, longer than the rest, which are ferruginous, tipt with near an inch of white, above which is a mark much larger, black; eye, speculum black irides reddish brown; from the beak to the ear feathers, and round the eye bare; this part is black; legs and feet, black, marked with dirty white at the joints; claws large and strong; length two feet five inches, from the tip of the beak to the tip of the tail; extent two feet four inches.

The last of these birds is to be met with in almost every part of the country, more particularly where there are jungles: I have seen a variety of them at Burragong in Sircar Sarun, where, instead of the horn, they had a large knob at the base of the beak, very much resembling that of a wild goose: the one I have attempted to give a description of, was brought to me at Midnapore, in which province and the extending hilly country, they abound. I have seen them in the vicinity of Sheergotty.

The Bægma Dunnæfe chiefly inhabits the western range of hills, extending from Neelgur through Mohurbunge, Midnapore, Ramgur, Rotas, towards Bidzigur. In Ramgur, I have been informed by an intelligent person, they are to be seen in abundance, he told me that he had seen crowds of them on the Peepul trees; the berry of which they feed upon at times. Their note or voice in concert has a strong resemblance to the mournful cries of monkies, for which this person, deceived by the sound, at first took them. The place where I met with them, was at Midnapore, in the jungles adjacent to which they are to be found, from the month of November to
the month of March only, at which time they retire to the hills to breed. I should have been highly pleased, could my curiosity have been gratified in the inquiries I made, respecting the economy of this extraordinary bird, but the people I had to deal with, were poor ignorant folk, from whom I could gain but little information; I therefore can do little more than ascertain one curious fact, and display some qualities of the bird, which may hereafter be of benefit, if thoroughly investigated by some person of medical skill.

These birds have a most remarkable appearance, when in the act of flying, from the great size of their beaks, and length of tail; I have seen several of them in this state, and a more uncouth object I never beheld: the beak, which forms the most prominent feature in this strange bird, may be considered as one of the most uncommonly curious among the feathered tribe. The Toucan, the Spoonbill, the Pelican, the Dodo, and others, certainly claim the attention of the naturalist, but in my humble opinion, the Bægma has merits far superior; on the ground of rarity. The largest beak I ever saw was produced from a bird, shot at a place called Kullar, about nine miles from Midnapore. The following is the measurement:

<table>
<thead>
<tr>
<th>Item</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the beak in a straight line from its junction with the head</td>
<td>8½</td>
</tr>
<tr>
<td>Length of the horn from the base to the point</td>
<td>8½</td>
</tr>
<tr>
<td>Depth of the whole beak including the horn, near</td>
<td>4½</td>
</tr>
<tr>
<td>The horn to its junction with the upper mandible</td>
<td>2⅘</td>
</tr>
<tr>
<td>Each mandible in the centre of the beak</td>
<td></td>
</tr>
<tr>
<td>Distance from the point of the horn to the point of the beak</td>
<td>3</td>
</tr>
</tbody>
</table>

It may be proper to observe here, that the beak forms a much greater curve than the horn; the point of which is parallel to its junction with the beak, whereas the point of the beak comes down an inch and a quarter.
below the lower mandible. The following is the measurement of the bird to which this beak belonged:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Feet</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length from the forehead to the tip of the tail</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Circumference in the thickest part</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Neck from the chin to the shoulder</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Body from the shoulder to the rump</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Tail from the rump to the point</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Height and breadth of the head</td>
<td>0</td>
<td>3 1/2</td>
</tr>
<tr>
<td>Circumference of the neck in the middle</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Length of the wing when closed</td>
<td>1</td>
<td>1 1/2</td>
</tr>
<tr>
<td>Ditto when open</td>
<td>1</td>
<td>5 1/2</td>
</tr>
<tr>
<td>Extent when expanded from tip to tip</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Length of the legs</td>
<td>0</td>
<td>1 1/2</td>
</tr>
<tr>
<td>Ditto of the toes</td>
<td>0</td>
<td>2 1/4</td>
</tr>
<tr>
<td>Ditto of the claws, largest</td>
<td>0</td>
<td>3/4</td>
</tr>
<tr>
<td>Circumference of the legs</td>
<td>0</td>
<td>1 1/2</td>
</tr>
</tbody>
</table>

I have to regret, that I did not weigh this bird: indeed at the time I had no idea that I should attempt the description of it; I can only therefore venture to guess that it might weigh about six or seven pounds. I took a drawing of the bird, which has enabled me to give the above account.

I endeavoured to acquire some information from the bird-catchers respecting the use of the horn, upon the idea that *nature forms nothing in vain*, but all that I could learn was unsatisfactory, and amounted to little more than this: one of the beaks was brought to me, with the horn very much worn at the point, which they told me proceeded from the birds striking it against the trees, but for what particular purpose they so applied it, they could give no clear account.
But what may be probably deemed the most extraordinary circumstance relating to this curious bird, is its feeding upon the *Nux vomica*. This is a point, which I have been able clearly to ascertain: one of these birds, purchased by Capt. John Campbell, was opened by his orders, before several respectable gentlemen at Midnapore; and in its craw were found several seeds of the *Nux vomica*. With respect to my own observation, I have had only one opportunity of seeing the contents of the craw, which was that of the bird shot at Kullur; nothing was found in it, but the remains of an egg and some weeds: but to carry on the inquiry, that I might be able safely to assert, what appeared to me a circumstance of great curiosity, I asked the bird-catchers what these birds fed upon: they very particularly mentioned a fruit, called *Cocchla*; agreeably to my directions, they brought it to me: it was about the size of a lime, of an orange colour, with a very hard skin, shining and almost smooth, it contained a pulpsous substance, distinct and separate from the shell: conversing since with a man, who had been in Major Crawford's corps at Jelda, who had seen great numbers of these birds in the surrounding hilly country, I inquired of him what they fed upon; he said some times upon the berry of the *Peepul* tree, but that the food they affected most, and with which they were most delighted, was the *Cocchla*, which he said was to be had in every bazar: he brought me some of it; it proved to be the true *Nux vomica*, which, from an account given to me by a native, is produced from the fruit abovementioned; the pulpsous substance drying leaves one, two, and some times three of the flat seeds, which are known as the *Nux vomica*: and this agrees with the account given of it by Caspar Neuman in his *Chemical Works*, who says, "*Nux vomica*, so called, is not a nut, but the seed of a fruit, like an orange, growing in the "East Indies." The tree, which produces the *Cocchla*, abounds in the range of western hills before mentioned; it varies in its size, some times
attains to a considerable height, has a leaf nearly shaped like a heart: it appears from what I have said, that these birds feed not only upon the seed, when it has arrived at a state of maturity, but that they also eat it in the state it was brought to me by the bird catchers; and that, when the Coochla is not to be had, they resort to other food. These birds at particular seasons grow very fat, and this season appears to be, when the fruit of the Nux vomica prevails, about the month of December: the one beforementioned, shot at Kul-lar, was killed in that month and was very fat. The natives make use of the fat, and also of the flesh and bones, as a medicine; they apply both species to this purpose. The cases they use it in, are in the contractions, which sometimes proceed from catching cold after the profuse use of mercury; it is applied to alleviate and remove violent pains, that often succeed venereal complaints, called by the natives Guttrea ke Axar: it is also used by the natives, in very cold weather, when the pores of the skin are affected, for, being in its nature extremely hot, in this case it causes a free perspiration; the Bægna is preferred to the Putteal, as being deemed more efficacious. The mode they apply it in, is this: they reduce the fat to an ointment, at the same time mixing with it every kind of spice, pepper, cloves, cardamums, &c. the flesh is also mixed in the same manner; the ointment is rubbed into the part affected every night when they go to sleep, and a certain portion of the meat is eaten in the morning rising; the gall is also used by the native women in cases of sterility. They take it either infused in water, or mix it with their Pawns, and of the efficacy of this they have the firmest reliance under Providence. I inquired of the person, who gave me this account, whether he had ever known any one, who had been benefited by this medicine; he told me, that he was acquainted with a man, who had used it in contractions of his limbs, and that this person declared he had derived great advantage from the application: at any rate, it is certainly an opinion generally adopted by the natives, that it is of great
use in the cases I have mentioned. With every one, with whom I have conversed, the medicinal properties of this extraordinary bird are held in the highest estimation: they speak of it with a degree of admiration bordering on enthusiasm. Thus I have endeavoured from the slight ability I possessed, to bring forward to publick notice one of the most curious birds I have ever seen or heard of: some allowance, I trust, will be made, from the consideration that this is my first essay; perhaps, I should never have made the attempt, but from having taken a drawing of the bird, and having heard of its feeding upon the Nux vomica; these circumstances induced me to give the above account. Wolf, in his description of Ceylon, has the following words: "a very rare species too of cock is found here, called double-billed; this has a white double bill, which is almost as large as the bird itself." It is by no means improbable, that this may be the same bird, which I have given an account of; the beak of the Bægma Durnaf, particularly when in the act of flying, appears to be as large as the bird itself; the depth in measurement is nearly the same. It is impossible to form any reasonable conjecture respecting the use of the horn: that some it must have, may naturally be supposed; but what, must be left to the future investigation of some one, whose situation will afford him full opportunity of making the inquiry; it is certainly an object worthy of attention, more particularly so, as tending to elucidate the wisdom of the Supreme Being, who undoubtedly creates nothing in vain.

**Remark by the President.**

**Though the genus of the Dhane'sa be already known to our naturalists by the appellations of Buceros, Calao, and Hornbill, and though even the several species be distinguished, I believe, with exactness, yet we are obliged**
to Lieut. White for a complete description of so extraordinary a bird, and for our knowledge of the singular facts, which he first made publick: the hollow protuberance at the base of the upper mandible has been supposed with reason by count GiKa to serve as a receptacle for nourishment, and the natives, I find, consider it as a natural cistern to supply the bird with water in the dry season and on its long excursions; whence the name of Dhanésá or Lord of Wealth, may possibly have been given to it. The count had been informed, that it was no other than the Garuda of Indian Mythologists; but the Pandits unanimously assure me, that, by the word Garuda, they mean in common discourse the Gridbra, or King of Vultures, and they have a curious legend of a young Garuda, or Eagle, who burned his wings by soaring too near the sun, on which he had fixed his eyes: the bird of Víshnu is in fact wholly mythological; and I have seen it painted in the form of a boy with an Eagle’s plumage. As to the Cucibilá (for so is the word written and correctly pronounced) it is, no doubt, the STRYCHNOS Nux vomica or Colubrina, for they are now thought specifically the same: the leaves and fruit of both the varieties were brought to me by a Bráhman as those of the Cucibilá, and he repeated a Sanskrit verse, in which it was called Vanarája, or King of the Forest; but, according to an approved comment on the Amaracóth, it has four other names, among which Cúlaca is the smoothest; so that the first true species of this genus may be named STRYCHNOS Cúlaca, and the second, STRYCHNOS Cátaca; by which denomination it is mentioned in the Laws of Menú, where allusion is made to the Indian practice of clearing water, by bruising one of the seeds and casting it into the jar, where, says Koenig, all impurities are in a few moments precipitated, and the water becomes perfectly limpid.
VII.

On the Islands Nancowry and Comarty.—By Lieutenant R. H. Colebrooke.

The island of Nancowry, or Soury, as it is sometimes called, is nearly centrically situated among the Nicobar Isles. Its length may be about eight miles, and its breadth nearly equal. The island of Comarty, which is near it, is more extensive, but does not perhaps contain more solid land; being excavated by a very large bay from the sea. The space between these two islands, forms a capacious and excellent harbour; the eastern entrance of which is sheltered by another island, called Trikut, lying at the distance of about a league. The inlet from the west is narrow, but sufficiently deep to admit the largest ships, when the wind is fair.

The Danes have long maintained a small settlement at this place, which stands on the northernmost point of Nancowry within the harbour. A serjeant and three or four soldiers, a few black slaves, and two rusty old pieces of ordnance, compose the whole of their establishment. They have here two houses, one of which, built entirely of wood, is their habitation; the other, formerly inhabited by their missionaries, serves now for a storehouse.

These islands are in general woody, but contain likewise some portions of clear land. From the summits of their hills, the prospects are often beauti-
ful and romantick. The soil is rich, and probably capable of producing all the various fruits and vegetables common to hot climates. The natural productions of this kind, which mostly abound, are cocoanuts, ράπια, plantains, limes, tamarinds, beetlenuts, and the melóri*, a species of breadfruit; yams, and other roots, are cultivated and thrive, but rice is here unknown. The mangostain-tree, whose fruit is so justly extolled, grows wild, and pine apples of a delicious flavour are found in the woods.

The Nicobar isles are but thinly inhabited, and some of them are not inhabited at all. Of those we visited, Nancowry and Comarty appeared to be the best peopled. There were thirteen villages, we were told, upon both islands, each village might contain upon an average fifty or sixty people, so that the whole population of these two will scarcely amount to eight hundred.

The natives of Nancowry, and of the Nicobar islands in general, live on the sea shores, and never erect their habitations inland. † Their houses are of a circular form, and are covered with elliptical domes, thatched with grass and the leaves of cocoanut. They are raised upon piles to the height of six or eight feet above the ground; the floor and sides are laid with planks, and the ascent is by a ladder. In those bays or inlets, which are sheltered from the surf, they erect them sometimes so near the margin.

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* Mr. Fontana has given an accurate and learned description of this Fruit. Vide Aflatick Researches, 3d vol. p. 161.

† The great Nicobar island is perhaps an exception, where it is said, a race of men exists, who are totally different in their colour and manners. They are considered as the Abrisnines of the country. They live in the interior parts, among the mountains, and commit frequent depredations on the peaceable inhabitants of the Coasts.
of the water, as to admit the tide to flow under, and wash away the ordure from below.

In front of their villages, and a little advanced in the water, they plant beacons of a great height, which they adorn with tufts made of grass or the bark of some tree. These objects are discernible at a great distance, and are intended probably for landmarks; their houses, which are overshadowed by thick groves of cocoanut trees, seldom being visible from afar.

The Nicobareans, though indolent, are in general robust and well limbed. Their features are somewhat like the Malays, and their colour is nearly similar. The women are much inferior in stature to the men, but more active in all domestic affairs. Contrary to the custom of other natives, they shave the hair of their heads, or keep it close cropped; which gives them an uncouth appearance, in the eyes of strangers at least. The dress of both sexes, their mode of life, and some of their customs, have been so ably described by Mr. Fontana, that little needs be said of them here: I have only to state, in addition, an extraordinary ceremony, which they annually perform in honour of the dead.

On the anniversary of this festival, if it can be so called, their houses are decorated with garlands of flowers, fruits, and branches of trees. The people of each village assemble, drest in their best attire, at the principal house in the place, where they spend the day in a convivial manner; the men, sitting apart from the women, smoke tobacco and intoxicate themselves, while the latter are nursing their children and employed in preparations for the mournful business of the night. At a certain hour of the af-
ternoon, announced by striking the Goung,* the women set up the most dismal howls and lamentations, which they continue without intermission till about sun set; when the whole party gets up, and walks in procession to the burying-ground. Arrived at the place, they form a circle around one of the graves, when a stake, planted exactly over the head of the corpse, is pulled up. The woman, who is nearest of kin to the deceased, steps out from the crowd, digs up the scull †, and draws it up with her hands. At sight of the bones, her strength seems to fail her; she shrieks, she sobs; and tears of anguish abundantly fall on the mouldering object of her pious care. She clears it from the earth, scrapes off the festering flesh, and laves it plentifully with the milk of fresh cocoanuts, supplied by the bystanders; after which she rubs it over with an infusion of saffron, and wraps it carefully in a piece of new cloth. It is then deposited again in the earth, and covered up; the stake is replanted, and hung with the various trappings and implements belonging to the deceased. They proceed then to the other graves, and the whole night is spent in repetitions of these dismal and disgustful rites.

On the morning following, the ceremony is concluded by an offering of many fat swine, when the sacrifice, made to the dead, affords an ample feast to the living; they besmear themselves with the blood of the slaughtered hogs, and some, more voracious than others, eat the flesh raw. They have various ways however of dressing their meat, but always eat it without salt.

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* An instrument of bracts somewhat like the Garry of Bengal. Its sound is more hollow.

† We were present at the ceremony on the 1st of February 1790, when the first scull we saw was that of a woman, who had been buried but a few months before. It was then dug up for the first time by her daughter. This office, we were told, is always performed by the women, whichever sex the scull belongs to. A man in a fantastick garb officiates as priest.
A kind of paste made of the melóri serves them for bread, and they finish their repast with copious potations of taury.

The Nicobareans are hospitable and honest, and are remarkable for a strict observance of truth, and for punctuality in adhering to their engagements. Such crimes as theft, robbery, and murder, are unknown in these islands; but they do not want spirit to revenge their injuries, and will fight resolutely and slay their enemies, if attacked or unjustly dealt with*. Their only vice, if this failing can be so called, is inebriation, but in their cups they are generally jovial and good humoured. It some times however happens at their feasts, that the men of different villages fall out, and the quarrel immediately becomes general. In these cases, they terminate their differences in a pitched battle, where the only weapons used are long sticks, of a hard and knotty wood: with these they drub one another most heartily, till, no longer able to endure the conflict, they mutually put a stop to the combat, and all get drunk again.

* We were informed, that a party of Malays had once landed at Nancowry, to commit depredations, and were cut off to a man by the enraged inhabitants. A similar instance of their vengeance is said to have happened at the island Carnicobar, when they put to death some sailors, who were plundering their houses and probably attempting to violate their women.
VIII.

On the Loris, or Slowpaced Lemur.

By the President.

The singular animal, which most of you saw alive, and of which I now lay before you a perfectly accurate figure, has been very correctly described by Linnaeus; except that sickled would have been a juister epithet than awled for the bent claws on its hinder indices, and that the size of a squirrel seems an improper, because a variable, measure: its configuration and colours are particularized also with great accuracy by M. Daubenton; but the short account of the Loris by M. De Buffon appears unsatisfactory, and his engraved representation of it has little resemblance to nature; so little that, when I was endeavouring to find in his work a description of the quadrumane, which had just been sent me from Dacea, I passed over the chapter on the Loris, and ascertained it merely by seeing, in a note, the Linnean character of the slow-paced Lemur. The illustrious French naturalist, whom, even when we criticize a few parts of his noble work, we cannot but name with admiration, observes of the Loris, that, from the proportion of its body and limbs, one would not suppose it slow in walking or leaping, and intimates an opinion, that Seba gave this animal the epithet of slow-moving, from some fancied likeness to the sloth of America: but, though its body be remarkably long in proportion to the breadth of it, and the hinder legs, or more properly arms, much longer than those before, yet the Loris, in fact, walks
or climbs very slowly, and is, probably, unable to leap. Neither its genus nor species, we find, are new: yet, as its temper and instincts are undescribed, and as the *Natural History* by M. De Buffon, or the *System of Nature* by Linnaeus, cannot always be readily procured, I have set down a few remarks on the form, the manners, the name, and the country of my little favourite, who engaged my affection, while he lived, and whose memory I wish to perpetuate.

I. This male animal had four hands, each five-fingered; palms, naked; nails, round; except those of the indices behind, which were long, curved, pointed; hair, very thick, especially on the haunches, extremely soft, mostly dark gray, varied above with brown and a tinge of russet; darker on the back, paler about the face and under the throat, reddish towards the rump; no tail; a dorsal stripe, broad, chestnut-coloured, narrower towards the neck; a head, almost spherical; a countenance, expressive and interesting; eyes, round, large, approximated, weak in the daytime, glowing and animated at night; a white vertical stripe between them; eyelashes, black, short; ears, dark, rounded, concave; great acuteness at night both in seeing and hearing, a face, hairy, flattish; a nose, pointed, not much elongated; the upper lip, cleft; canine teeth, comparatively long, very sharp.

More than this I could not observe on the living animal; and he died at a season, when I could neither attend a dissection of his body, nor with propriety request any of my medical friends to perform such an operation during the heats of August; but I opened his jaw and counted only two incisors above, and as many below, which might have been a defect in the individual; and it is mentioned simply as a fact, without any intention to censure the generick arrangement of Linnaeus.
II. In his manners he was for the most part gentle, except in the cold season, when his temper seemed wholly changed; and his creator, who made him so sensible of cold, to which he must often have been exposed even in his native forests, gave him, probably, for that reason his thick fur, which we rarely see on animals in these tropical climates: to me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he clearly distinguished from others, he was at all times grateful; but, when I disturbed him in winter, he was usually indignant, and seemed to reproach me with the uneasiness which he felt, though no possible precautions had been omitted to keep him in a proper degree of warmth. At all times he was pleased with being stroked on the head and throat, and frequently suffered me to touch his extremely sharp teeth; but at all times his temper was quick, and, when he was uneasily disturbed, he expressed a little resentment by an obscure murmur, like that of a squirrel, or a greater degree of displeasure by a peevish cry, especially in winter, when he was often as fierce, on being much importuned, as any beast of the woods.

From half an hour after sunrise to half an hour before sunset, he slept without intermission rolled up like a hedgehog; and as soon as he awoke, he began to prepare himself for the labours of his approaching day, licking and dressing himself like a cat; an operation, which the flexibility of his neck and limbs enabled him to perform very completely: he was then ready for a slight breakfast, after which he commonly took a short nap; but, when the sun was quite set, he recovered all his vivacity. His ordinary food was the sweet fruit of this country; plantains always, and mangos during the season; but he refused peaches, and was not fond of mulberries, or even of guaiavas: milk he lapped eagerly, but was contented with plain water. In general he was not voracious, but never appeared satiated with grasshoppers; and passed the whole night, while the hot season lasted, in prowling for
them: when a grasshopper, or any insect, alighted within his reach, his eyes, which he fixed on his prey, glowed with uncommon fire; and, having drawn himself back to spring on it with greater force, he seized the victim with both his forepaws, but held it in one of them, while he devoured it. For other purposes, and sometimes even for that of holding his food, he used all his paws indifferently as hands, and frequently grasped with one of them the higher part of his ample cage, while his three others were severally engaged at the bottom of it; but the posture, of which he seemed fonder, was to cling with all four of them to the upper wires, his body being inverted; and in the evening he usually stood erect for many minutes, playing on the wires with his fingers and rapidly moving his body from side to side, as if he had found the utility of exercise in his unnatural state of confinement. A little before daybreak, when my early hours gave me frequent opportunities of observing him, he seemed to solicit my attention; and, if I presented my finger to him, he licked or nibbled it with great gentleness, but eagerly took fruit, when I offered it; though he seldom ate much at his morning repast: when the day brought back his night, his eyes lost their luster and strength, and he composed himself for a slumber of ten or eleven hours.

III. The names Loris and Lemur will, no doubt, be continued by the respective disciples of Buffon and Linnaeus; nor can I suggest any other, since the Pandits know little or nothing of the animal: the lower Hindus of this province generally call it Lajjabanar, or the Bashful Ape, and the Musselmans, retaining the sense of the epithet, give it the absurd appellation of a cat; but it is neither a cat nor bashful; for, though a Pandit, who saw my Lemur by daylight, remarked that he was Lajjalu, or modest (a word which the Hindus apply to all Sensitive Plants), yet he only seemed bashful, while in fact he was dimfighted and drowsy; for, at night, as you perceive
by his figure, he had open eyes, and as much boldness as any of the Lemures, poetical or Linnean.

IV. As to his country, the first of the species, that I saw in India, was in the district of Tipra, properly Tripura, whither it had been brought, like mine, from the Garrow mountains; and Dr. Anderson informs me, that it is found in the woods on the coast of Coromandel: another had been sent to a member of our society from one of the eastern isles; and, though, the Loris may be also a native of Sylan, yet I cannot agree with M. De Buffon, that it is the minute, sociable, and docile animal mentioned by Thevenot, which it resembles neither in size nor in disposition.

My little friend was, on the whole, very engaging; and, when he was found lifelike, in the same posture in which he would naturally have slept, I confided myself with believing, that he had died without pain; and lived with as much pleasure as he could have enjoyed in a state of captivity.
IX.

ASTRONOMICAL OBSERVATIONS made in the upper parts of Hindustán, and on a journey thence to Oujein.

By William Hunter, Esq.

BEFORE delivering the following observations, it will be proper to give some account of the instruments, with which they were made. The altitudes, for determining latitudes and time, were taken with a sextant, of ten inches radius, made by Troughton: the limb is divided into degrees and thirds of a degree, and the divisions on the vernier go to half minutes; so that, by the help of the magnifying lens, a difference of ten seconds is sufficiently perceptible. The two specula, being screwed down in their places, do not (as far as I can discover) admit of the principal, or vertical, adjustment: but the error was almost daily ascertained, by the double mensuration of the sun's diameter, and constantly allowed for. It is subtractive, and my determination of its quantity varied from 2° 30' to 3° 30'. These differences may have in part arisen from a real variation in the quantity of this correction; but I attribute them chiefly to some inaccuracy in my mensuration of the sun's diameter. To form some judgement of the influence this cause might have, I have examined twenty-three of those measurements, made between the 7th of March and the 7th of June (being all of which I have any record) by taking the medium of the sun's diameters as measured on the limb, to the right and left of zero, and comparing it with the diameter for that day, as laid down in the Ephemeris. It will appear, from a list of those observations, that my measurements commonly exceeded those given in the Ephemeris; but the greatest excess was 25'.
## MENSURATIONS OF THE SUN's DIAMETER

<table>
<thead>
<tr>
<th>Date</th>
<th>Adjustment of Standard Subtracted</th>
<th>Difference of Sun's Diameter measured, from that in the Ephemeris</th>
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<tbody>
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<td>March</td>
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<td>7</td>
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These mensurations may have a farther use, besides ascertaining the adjustment of the quadrant. If the eye could determine, with perfect accuracy, the contact of the limbs, the mean between the two measurements of the sun's diameter would be exactly equal to his apparent diameter, as determined by calculation, and given in the Ephemeris; but, from the imperfection of our organs, it happens, that the limbs will sometimes appear to be in contact, when a little space remains between them; at others, when they overlap one another: in the former case, the diameter will appear greater, in the latter less, than the truth. But it is probable, that at nearly the same period of time, the state of the eye, or of the sensorium, by which we judge of this contact, is, in the same person, nearly the same. Of this I have made some trials, and found, that when the sun's diameter, by my mensuration, differed from that in the Ephemeris, on repeating the mensurations, at short intervals, the difference remained nearly the same. Therefore, if we observe the sun's altitude, a little time before or after measuring his diameter, the contact of the limbs will, probably, appear to take place, in the same real situation of those limbs, as when we measured the sun's diameter. But here, the effect of too open, or too close, observation will be reversed; the former making the altitude appear less, the latter, greater than the truth. These measurements then may be applied, as corrections of the observed altitude. Thus, if the diameter of the sun has appeared too great, add the quantity of its excess to the angle observed, between the sun and his image in Mercury; if it appeared too small, subtract the defect, to give the true angle. Thus, March the 13th, the error of the sextant was 2° 52′, to be subtracted. But the measurement of the sun's diameter exceeds the truth, by 24″. Therefore, this quantity is to be added to the observed angle, the observation being, probably, so much too open.
The angle between the sun and his image in quicksilver, that day at noon, was

| Error Sextant | 2° 52" |
| Do. Observation | 0 24 |
| **Diff.** | 2 28 |

\[ \frac{2}{62} \begin{array}{l} 123° 33' 45'' \\ 61 45 38 5 \\ 61 45 12 \\ 62 1 19 \\ 64 37 42 \\ 25 22 18 \end{array} \]

Difference refr. and parallax

Sun's Semidiameter +

Sun's Declin. South +

Co-Latitude

Latitude of Burwa Sagur

which is 13" less than in the following list, where this error was not allowed for.

The secondary, or horizontal, adjustment, made by a small screw at the fore-part of the little speculum, was, from time to time, carefully attended to.

The altitudes were taken by means of the image in quicksilver, which, if the sun was the object, was defended from the wind by a covering of
thin gauze, as recommended by Mr. Burrow in the first volume of the Asiatick Researches. When the altitude of a star was to be taken, this method did not answer; as it rendered the image too obscure. A thick cloth was therefore properly disposed to windward of the mercury.

The small telescope belonging to the sextant was used in all the observations.

As the instrument is only graduated to 125 degrees, I could not take altitudes exceeding 62 degrees. While the sun's meridian altitude could be observed, I have preferred it, for the latitude; but, as this was soon about to be impracticable, I began, on the 29th of February, to compare the latitudes by meridian altitude, with those obtained from two altitudes and the elapsed time, by the rule in the requisite tables, in order to judge how far the latter might be depended on. The result of the comparison, which appears in the observations from that time to the 15th of March, determined me to trust to those double altitudes, while they could be taken within the prescribed limits; at the same time, comparing them occasionally with observations by a fixed star. From the first of April, I was obliged to trust entirely to the stars; and, to make the observations by them as accurate as possible, I have, when circumstances would allow, taken the meridian altitude of one to the north, and another to the south, of the zenith. The telescope is an achromatic, made by Dolland, of twenty-eight inches focal distance. It inverts the object, and magnifies eighty times.

The watch is made by Brookbank, with horizontal balance wheel, and continues to go while winding up. To determine, as accurately as possible, the time of an observation, I took equal altitudes of the sun, on the
days preceding and following it, and, having thus found the quantity gained or lost in twenty-four hours, applied to the time of observation a part proportional to its distance from the preceding or following noon. In this calculation, allowance was made for the difference of longitude (ascertained by geometrical survey) if the altitudes on the two days were taken at different places. Besides this I have, when I had the opportunity, taken the altitudes of two fixed flars, one to the east, and another to the west of the meridian, within an hour before or after the observation, and calculated the time from them.

**OBSERVATIONS OF LATITUDE.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Sun or Star</th>
<th>Latitude</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 24</td>
<td>Agra; monument of Taj Mahl</td>
<td>27 10 00</td>
<td></td>
<td>doubtful.</td>
</tr>
<tr>
<td>25</td>
<td>Ditto,</td>
<td>27 10 11</td>
<td></td>
<td>distinct.</td>
</tr>
<tr>
<td>Nov. 1</td>
<td>Lucknow; Mr. Taylor's House</td>
<td>25 51 9</td>
<td></td>
<td>clear.</td>
</tr>
<tr>
<td>24</td>
<td>Futtehburg; Mr. Phillips's Bungalow, near the centre of cantonments,</td>
<td>27 21 5</td>
<td></td>
<td>cloudy.</td>
</tr>
<tr>
<td>25</td>
<td>Ditto,</td>
<td>27 21 54</td>
<td></td>
<td>clear.</td>
</tr>
<tr>
<td>26</td>
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<td>27 22 45</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>28</td>
<td>Ditto,</td>
<td>27 21 44</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>Dec. 4</td>
<td>Gureiah village, bearing N 1/2 E 1/4 mile,</td>
<td>27 28 42</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>9</td>
<td>Ditto,</td>
<td>27 29 11</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>Jan. 24</td>
<td>Debliah; near the Bungalow,</td>
<td>27 21 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Nawabgunge; bg. E dist. 3 furl.</td>
<td>27 26 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Place</td>
<td>Sun or Star</td>
<td>Latitude</td>
<td>Remarks</td>
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<td>Jan. 26</td>
<td>Allygunge, Mosque, S 72 E</td>
<td>○</td>
<td>27° 30' 00&quot;</td>
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<td>27</td>
<td>Doomree, Fort, S 22° E, dist. 2 1/2 f.</td>
<td>○</td>
<td>27° 32' 41&quot;</td>
<td>clear, windy. Sun had begun to fall.</td>
</tr>
<tr>
<td>28</td>
<td>Sukheet, N W, 2 1/2 f.</td>
<td>○</td>
<td>27° 25' 15&quot;</td>
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<tr>
<td>29</td>
<td>Girool, Fort, S 10° W, 1 1/2 f.</td>
<td>○</td>
<td>27° 11' 13&quot;</td>
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<td>30</td>
<td>Shekobabad, Agra-gate, S 55° E, 7 f.</td>
<td>○</td>
<td>27° 6' 58&quot;</td>
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<td>Feb. 1</td>
<td>Feerozabad, Gate, S E, 3 f.</td>
<td>○</td>
<td>27° 9' 14&quot;</td>
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<td>Eatumadpoor, Tank, S 67° W, 2 f.</td>
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<td>27° 14' 7&quot;</td>
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<td>3</td>
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<td>27° 10' 28&quot;</td>
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</tr>
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<td>9</td>
<td>Camp at Gober Chokey, Ditto,</td>
<td>○</td>
<td>27° 10' 38&quot;</td>
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<td>20</td>
<td>Baad, bearing N 2° E, dist. 3 f.</td>
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<td>27° 3' 23&quot;</td>
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<td>23</td>
<td>Munniab, S 3° W, 1</td>
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<td>26° 49' 48&quot;</td>
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<td>Dholpour, S 8° W, 3</td>
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<td>26° 37' 25&quot;</td>
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<td>Nosrabad, Garden, S 3° E, 2</td>
<td>○</td>
<td>26° 24' 17&quot;</td>
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</tr>
<tr>
<td>29</td>
<td>Guリアル, Hill, S 3° E, S 45° E, Ditto,</td>
<td>○ M.A.</td>
<td>26° 15' 7&quot;</td>
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<td></td>
<td>Ditto,</td>
<td>○ 2 A.</td>
<td>26° 15' 38&quot;</td>
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<td>Mar. 2</td>
<td>Ditto,</td>
<td>○ M.A.</td>
<td>26° 14' 48&quot;</td>
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<td>6</td>
<td>Antery, Fort, S 10° W, dist. 4 f.</td>
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<td>26° 4' 20&quot;</td>
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<td>7</td>
<td>Dibborah, Ditto,</td>
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<td>25° 53' 43&quot;</td>
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<td></td>
<td>○ 2 A.</td>
<td>25° 53' 51&quot;</td>
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<td>1792.</td>
<td><strong>PLACE</strong></td>
<td><strong>Sun or Star</strong></td>
<td><strong>Latitude</strong></td>
<td><strong>Remarks</strong></td>
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<tr>
<td>March</td>
<td>8     Ditteab, S 32 E diff. 3½ miles.</td>
<td>o M.A.</td>
<td>25 43 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditto,</td>
<td>o 2 A.</td>
<td>25 43 9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Ditto, Rajab's House NW 3 f.</td>
<td>o M.A.</td>
<td>25 39 44</td>
<td></td>
</tr>
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<td></td>
<td>Ditto,</td>
<td>o 2 A.</td>
<td>25 39 27</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Jbansy; S E angle fort, N 88 E 2½ f.</td>
<td>o M.A.</td>
<td>25 27 56</td>
<td></td>
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<tr>
<td></td>
<td>Ditto,</td>
<td>o 2 A.</td>
<td>25 28 1</td>
<td></td>
</tr>
<tr>
<td>12</td>
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<td>o M.A.</td>
<td>25 27 45</td>
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<tr>
<td>13</td>
<td>Burwah-Sagur; Castle, N 51 E 7½ f.</td>
<td>o M.A.</td>
<td>25 22 31</td>
<td>clear.</td>
</tr>
<tr>
<td></td>
<td>Ditto,</td>
<td>o 2 A.</td>
<td>25 21 16</td>
<td></td>
</tr>
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<td>14</td>
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<td>25 22 31</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Pirripoor; N 80 W—N 18 E 1½ f.</td>
<td>o M.A.</td>
<td>25 12 53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditto,</td>
<td>o 2 A.</td>
<td>25 12 33</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Bumaury; N 2 W—N 42 W 1½ f.</td>
<td>o 2 A.</td>
<td>25 2 6</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Belgaung; N 1 f.</td>
<td>o 2 A.</td>
<td>24 53 11</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Tairy; N 55 E 3½ f.</td>
<td>o 2 A.</td>
<td>24 43 30</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Marouny; Fort, S 75 E 2.</td>
<td>o 2 A.</td>
<td>24 35 1</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Sindwaba; N 55 E 2.</td>
<td>o 2 A.</td>
<td>24 31 34</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Narat; Temple of Hanumān, S 14 E 3½ f.</td>
<td>o 2 A.</td>
<td>24 24 25</td>
<td></td>
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<tr>
<td></td>
<td>Ditto,</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>22</td>
<td>Maleen; Fort, N 14 E diff 10 f.</td>
<td>o 2 A.</td>
<td>24 17 30</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>K. bimlásah; N 48 E—N 57 W 2.</td>
<td>β U. M.</td>
<td>24 13 44</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Place</td>
<td>Sun or Star</td>
<td>Latitude</td>
<td>Remarks</td>
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<tr>
<td>March 24</td>
<td>Rámpoor; N 5° E N—43 W</td>
<td>0 2 A.</td>
<td>24 6 18</td>
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<td></td>
<td>Ditto,</td>
<td>24 7 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Kaorwac; Fort N 42—52 W 3</td>
<td>0 2 A.</td>
<td>24 7 24</td>
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<tr>
<td>26</td>
<td>Kirwak; close to the village,</td>
<td>0 2 A.</td>
<td>23 57 31</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Bósoudas; N 35 W</td>
<td>0 2 A.</td>
<td>23 53 25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditto,</td>
<td>23 50 46</td>
<td></td>
<td>cl. moderate;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>a diff. obser.</td>
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<tr>
<td>28</td>
<td>North Bank Gulcutta River,</td>
<td>0 2 A.</td>
<td>23 41 48</td>
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<td>29</td>
<td>Bektab; S 56 E</td>
<td>0 2 A.</td>
<td>23 31 19</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>30</td>
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<td>23 31 39</td>
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<td>31</td>
<td>Ditto,</td>
<td>23 32 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 1</td>
<td>Goolgawng; N 58 E</td>
<td>0 2 A.</td>
<td>23 31 33</td>
<td>cl. moderate.</td>
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<tr>
<td></td>
<td>Ditto,</td>
<td>23 28 46</td>
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<td>clear, calm.</td>
</tr>
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<td>2</td>
<td>Amáry; N 67 E</td>
<td>β U. M.</td>
<td>23 25 24</td>
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<tr>
<td></td>
<td>Ditto,</td>
<td>23 24 29</td>
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<td></td>
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<tr>
<td>4</td>
<td>Bepaul; Futtehgurb fort, S 62 W 1 mile,</td>
<td>β U. M.</td>
<td>23 15 46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditto,</td>
<td>23 16 35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ditto,</td>
<td>23 15 58</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Pundah; N 42 E S 82 E 1 fur.</td>
<td>β U. M.</td>
<td>23 13 50</td>
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<td>Schone; S 85 E</td>
<td>2 1/2 A.</td>
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<td>9</td>
<td>Furber; N 28—55 W</td>
<td>4 1/2 β U. M</td>
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<td>10</td>
<td>Shujawulpoor; N 18 W N 80 E 3</td>
<td>β U. M.</td>
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<tr>
<td>Date</td>
<td>Place</td>
<td>Sun or Star</td>
<td>Latitude</td>
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<td>April 11</td>
<td>Beinsfrond; N 64° E—S 65° E</td>
<td>α Hydræ</td>
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<td></td>
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<td>Bhobjebanpoor; S 83° W</td>
<td>α Hydræ</td>
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<td>Ditto,</td>
<td>β U. M.</td>
<td>23 19 39</td>
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<tr>
<td>April 13</td>
<td>Túrana, N 70° W 3½</td>
<td>α Hydræ</td>
<td>23 20 2</td>
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<td>Ditto,</td>
<td>β U. M.</td>
<td>23 13 1</td>
<td></td>
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<tr>
<td>April 14</td>
<td>Tajpoor; close to the village</td>
<td>α Hydræ</td>
<td>23 14 47</td>
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<td>Ditto,</td>
<td>β U. M.</td>
<td>23 13 1</td>
<td></td>
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<tr>
<td>April 15</td>
<td>Oujein; near Rána Khán's Garden,</td>
<td>α Hydræ</td>
<td>23 12 9</td>
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<td></td>
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<td>23 12 13</td>
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<td>Do.</td>
<td>α Hydræ</td>
<td>23 12 13</td>
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<td>Do.</td>
<td>β U. M.</td>
<td>23 10 58</td>
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<td>April 18</td>
<td>Do.</td>
<td>α Hydræ</td>
<td>23 12 13</td>
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<td>Do.</td>
<td>β U. M.</td>
<td>23 10 50</td>
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<td>April 19</td>
<td>Do.</td>
<td>α M.</td>
<td>23 11 28</td>
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<td></td>
<td>Do.</td>
<td>α M.</td>
<td>23 11 8</td>
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<td>May 29</td>
<td>Do. house near Scindiah's pal.</td>
<td>α M.</td>
<td>23 10 45</td>
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<td>June 14</td>
<td>Do.</td>
<td>α M.</td>
<td>23 10 45</td>
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### Eclipses of Jupiter's Satellites, observed with Dolland's achromat-ick telescope, magnifying 80 times.

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<th>Apparent time</th>
<th>Im. or Em.</th>
<th>Place of observation</th>
<th>Longitude</th>
<th>Weather,</th>
<th>Remarks</th>
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<td><strong>1791 D. H.</strong></td>
<td>1 Em.</td>
<td>Agra; Monument Taj Mahl</td>
<td>78 11 00</td>
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<td>May 11 11 58 56</td>
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<td>Ditto</td>
<td>77 58 00</td>
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<td>Ditto</td>
<td>78 22 00</td>
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<td>Ditto</td>
<td>78 27 15</td>
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<td>Ditto</td>
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<td>Futtlegur;&amp; Mr. Phillips'</td>
<td>79 28 45</td>
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<td>Bungalow</td>
<td>79 1 40</td>
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<td>2 Im.</td>
<td>Ditto</td>
<td>79 32 45</td>
<td>cloudy, calm,</td>
<td></td>
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<tr>
<td><strong>1792.</strong></td>
<td>1 Im.</td>
<td>Ditto</td>
<td>79 00 30</td>
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<td></td>
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<td>Aliygunge</td>
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<td>do. do.</td>
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<td>Ferozabad</td>
<td>78 1 30</td>
<td>do. do.</td>
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<td><strong>Feb. 1 15 27 38</strong></td>
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<td>kaiumddpoor</td>
<td>78 13 15</td>
<td>do. do.</td>
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<td>2 15 12 32</td>
<td>2 Im.</td>
<td>Agra; Monument Taj Mahl</td>
<td>77 33 00</td>
<td>thin clouds, calm,</td>
<td></td>
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<tr>
<td>8 17 57 17</td>
<td>2 Im.</td>
<td>Ditto</td>
<td>77 41 30</td>
<td>clear, calm,</td>
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<tr>
<td>9 17 4 19</td>
<td>1 Im.</td>
<td>Ditto</td>
<td>77 47 30</td>
<td>a little hazy, calm,</td>
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<tr>
<td>18 13 8 7</td>
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<td>Ditto</td>
<td>77 49 15</td>
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<td><strong>Mar. 15 10 33 48</strong></td>
<td>3 Im.</td>
<td>Firdhop</td>
<td>77 52 00</td>
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<tr>
<td>12 31 48</td>
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<td>Ditto</td>
<td>77 52 00</td>
<td>do. do.</td>
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<td>31 10 7 5</td>
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<td>78 2 00</td>
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<td>22 9 23 8</td>
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<td>Malton</td>
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<td>1 Im.</td>
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<td>77 44 15</td>
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<td>29 11 57 13</td>
<td>2 Im.</td>
<td>Bledjiah</td>
<td>77 44 15</td>
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<td><strong>Apr. 5 14 51 58</strong></td>
<td>2 Im.</td>
<td>Bopaul</td>
<td>77 4 45</td>
<td>do. do.</td>
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<td>6 8 26 6</td>
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<td>Turana</td>
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<tr>
<td>30 14 28 18</td>
<td>1 Em.</td>
<td>Ugein; near Rana Khan's</td>
<td>76 19 00</td>
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<tr>
<td>8 8 48 49</td>
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<td>Ditto</td>
<td>75 43 30</td>
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<tr>
<td>13 11 27 55</td>
<td>2 Em.</td>
<td>Ditto</td>
<td>75 09 00</td>
<td>do. do.</td>
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<td>19 10 44 48</td>
<td>1 Em.</td>
<td>Ditto</td>
<td>75 48 00</td>
<td>do. do.</td>
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### LATITUDES OBSERVED

<table>
<thead>
<tr>
<th>Year</th>
<th>Place</th>
<th>Sun or Star</th>
<th>Latitude</th>
<th>Remarks</th>
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<tr>
<td>1792</td>
<td>Ugein, Camp at Shah Daul's</td>
<td>☉ M.A.</td>
<td>23 12 4</td>
<td>clear, calm</td>
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<tr>
<td></td>
<td></td>
<td>ditto</td>
<td>23 11 45</td>
<td></td>
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<tr>
<td>1793</td>
<td>Do. Camp near Rana Khan's Garden</td>
<td>ditto</td>
<td>23 11 30</td>
<td></td>
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<tr>
<td>Mar.</td>
<td>Ditto, Camp atUNK-Pat,</td>
<td>☉ Hydra</td>
<td>23 14 2</td>
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<tr>
<td></td>
<td>Gutenab,</td>
<td>☉ Hydra</td>
<td>23 23 55</td>
<td></td>
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<td></td>
<td>Tenauriah,</td>
<td>ditto</td>
<td>23 36 10</td>
<td></td>
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<tr>
<td></td>
<td>Ager,</td>
<td>ditto</td>
<td>23 43 48</td>
<td></td>
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<tr>
<td>17</td>
<td>Soosner (N 10 58 W dist. 2 fur.)</td>
<td>Sirius</td>
<td>23 56 47</td>
<td>med. 23 57 21</td>
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<tr>
<td>18</td>
<td>Peraza,</td>
<td>☉ Hydra</td>
<td>23 57 56</td>
<td>med. 23 57 21</td>
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<td></td>
<td></td>
<td>Sirius</td>
<td>24 9 11</td>
<td>med. 24 9 14</td>
</tr>
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<td>1792</td>
<td><strong>PLACES</strong></td>
<td>Sun or Star</td>
<td>Latitude</td>
<td>Remarks</td>
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<tr>
<td>March 19</td>
<td>Soonel (N 18 W dist. 3, 58 fur.)</td>
<td>Sirius</td>
<td>24 22 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Julmee (from S to S 35 W, dist.)</td>
<td>α Hydra</td>
<td>24 36 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. 33 fur.)</td>
<td>β U. M.</td>
<td>25 59 39</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mucundra,</td>
<td></td>
<td>25 6 40</td>
<td></td>
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</tbody>
</table>
| | Puchpahar (N 10 E dist. 4. 5 f.) | β U. M. | 25 7 31 | med. 25° 7' 5"
<p>| | Anandpoor, | | | |
| | Kotah (Camp near Bagh-Dur- | | | |
| | waza,) | | | |
| | Gaumuch (S 77 E dist. 3 f.) | ditto. | 25 16 56 | |
| | Teekeree (S 10--60 W dist. 1 f.) | β U. M. | 25 20 53 | |
| | Boondee (Rajab's Mabi N 42 W) | β U. M. | 25 26 38 | |
| | Dublana (from S to S 80 E dist. 1 furlong) | ditto. | 25 35 45 | |
| April 1 | Doogaree (S W) | | 25 40 00 | cloudy, uncert. |
| | Babmen-gaung (E to S 15 E dist. 1 furlong) | | 25 45 8 | |
| | Ooniara (S to S 63 E dist. 7 f.) | ditto. | 25 53 8 | ditto, ditto. |
| | Ditto, | | | clear, |
| | Ditto, | | | moderate. |
| | Ditto, | | | |
| | Burvarab (S 22 E to N 47 E dist. extremes, 2 f.) | ditto. | 26 3 31 | do. do. |
| | Bhugwunt-gurb (N 30 — 85 W dist. 3 f.) | ditto. | 26 9 16 | do. do. |
| | Kheernee (S 30—82 E dist. 1 f.) | ditto. | 26 16 9 | do. do. |</p>
<table>
<thead>
<tr>
<th>Places</th>
<th>Sun or Star</th>
<th>Latitude</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulárrna (S 57° 80 W diff. 3°)</td>
<td>ditto</td>
<td>26°19'9&quot;</td>
<td>ditto, windy</td>
</tr>
<tr>
<td>Amegurh (S 20° E diff. 2 f.)</td>
<td>ditto</td>
<td>26°27'9&quot;</td>
<td>do. moderate</td>
</tr>
<tr>
<td>Khoofh-bal-gurh (N 55° 65E diff. 4 f.)</td>
<td>Hydræ</td>
<td>26°28'9&quot;</td>
<td>ditto, ditto</td>
</tr>
<tr>
<td>Ditto</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Peelaudob, (N 60° 80 E diff. 3 f.)</td>
<td>Hydræ</td>
<td>26°35'54&quot;</td>
<td>ditto, ditto</td>
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<td>Ditto</td>
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<td></td>
<td></td>
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<tr>
<td>Hindoun, (N 12° W to N 80E distant nearest 1 f.)</td>
<td>Hydræ</td>
<td>26°43'24&quot;</td>
<td>clear, moderate</td>
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<tr>
<td>Ditto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surout (S 48° W to W diffaut 2, 6 f.)</td>
<td></td>
<td>26°49'9&quot;</td>
<td>ditto, ditto</td>
</tr>
<tr>
<td>Ditto</td>
<td></td>
<td></td>
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<tr>
<td>Biána (S 32° W to S 48° E distant 1 f.)</td>
<td>Hydræ</td>
<td>26°55'40&quot;</td>
<td>ditto, ditto. do. windy</td>
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<td>Ditto</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Rudáwul (N 5° 50 W diff. 2 f.)</td>
<td>Hydræ</td>
<td>26°58'25&quot;</td>
<td>ditto, moderate</td>
</tr>
<tr>
<td>Ditto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Káuna (S 69E to N 88E diff. 3 f.)</td>
<td>ditto</td>
<td>27°2'25&quot;</td>
<td>ditto, ditto</td>
</tr>
<tr>
<td>Ditto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Futtehpoor (Camp within Chun-nunpooree Durwaza,)</td>
<td>Hydræ</td>
<td>27°5'55&quot;</td>
<td>ditto, ditto</td>
</tr>
<tr>
<td>Ditto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparent Time</td>
<td>Sr.</td>
<td>Im. or Em.</td>
<td>Place of Observation</td>
</tr>
<tr>
<td>---------------</td>
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<tr>
<td>1793</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>D. H. M. S.</td>
<td>1</td>
<td>Im.</td>
<td>Anandpur</td>
</tr>
<tr>
<td>Mar. 24 12:48:26</td>
<td>1</td>
<td>Im.</td>
<td>Boudi</td>
</tr>
<tr>
<td>31 14:43:35</td>
<td>1</td>
<td>Im.</td>
<td>Dubnata</td>
</tr>
<tr>
<td>Apr. 6 10:53:26</td>
<td>3</td>
<td>Em.</td>
<td>Oumiara</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Im.</td>
<td>Ditto</td>
</tr>
<tr>
<td>Mar. 9 11:26:26</td>
<td>1</td>
<td>Im.</td>
<td>Bhagaung-garb</td>
</tr>
<tr>
<td>13 13:1 8</td>
<td>3</td>
<td>Im.</td>
<td>Kooch-kal-garb</td>
</tr>
<tr>
<td>Mar. 16 10:24</td>
<td>3</td>
<td>Em.</td>
<td>Ditto</td>
</tr>
<tr>
<td>May 9 13:27:45</td>
<td>1</td>
<td>Im.</td>
<td>Aged, Rooh Taj-Mahl</td>
</tr>
</tbody>
</table>

The satellite had emerged sometime before I perceived it.

By observations of Procyon and Arcturus, at 9 p.m. watch low 10' 56', and by this the time is adjusted. But on the 7th at 7½ A.M. by the Sun, watch low only 3' 5", being 9' 51" gained in 10 hours. If we allow a proportionable gain, to the time of immersion, 1' 49" the time was 18° 58' 17", and Longitude 73° 14' 30''.

Med. 76 3

1793. Feb. 25th, at Oujein, Moon eclipsed.

At 3 P.M. watch by the Sun

At 12½ P.M. by Procyon

At 14½ by Lyra

By Watch 14° 14' =

+ 10 30

Appar. Time, 14 24 30 A slight obscurity began on the Moon's N.E. limb.
If we reckon the beginning of the eclipse from the first perceptible obscurity; i. e. 14 24 30
Then beginning by *Ephemeris* 9 23 45

| Diff. of Long. in time | 5 00 45 | 75° 11' 15"

But, reckoning from the entrance of the dark shadow, the difference is 5 4 45 76° 11' 15"

The end, by observation 17 10 30
By *Ephemeris* 12 6 30

| 5 4 00 | 76 00 00 |

Beginning of obscurity 14 24 30
End 71 10 30

Middle 15 47 30
Ditto by *Ephemeris* 10 45 15

| 5 2 15 | 75 33 45 |
IN UPPER HINDUSTAN.

Duration observed, - - - 2 46 00
by Ephemeris - - - 2 42 45

Excess of observation - - 00 3 15

As the state of the limbs at the times marked as the beginning of obscurity, and end of the eclipse were similar; if we add half this difference (1° 37'') to the first of these times, and subtract it from the last, we shall have the beginning 14° 26'. 7''.

End 17 8 53

Either of which will give the longitude 75° 35' 46''.

REMARK by the PRESIDENT.

The observations, with which Mr. Hunter has favoured us, will be a valuable acquisition to all Indian geographers and antiquaries; for, since Ujjayini, or Ujjain, is in the first meridian of the Hindus, its longitude ascertains the position of Lancâ on the equator, and fixes the longitude, at least according to the Hindu astronomers, of Curucshêtra, Vatsâ, the Pool Sannibita, Cânobî, and other places, which are frequently celebrated in Sanskrit books of the highest antiquity. Hence also we shall possibly ascertain the seven dwîpas, which, on the authority of Patanjali and of the Vedâ itself, we may pronounce to be neither the seven planets nor the seven climates, but great peninsulas of this earth, or large tracts of land with water on both sides of them: for example, in a preface to the Sûrya Sîd-dhânta, the peninsula, called Sâlma, is declared to be 422 Yôjanas to the east of Lancâ; now a true Yôjana is equal to 4 ½ geometrical miles; and the longitude of Sâlma will thus bring us to the Gulph of Siam, or to
the eastern Indian peninsula beyond Malacca. There is a passage in one of
the Purānas, which confirms this argument; where king Sraṇava is
described “on the White Mountain in the extensive region of Śalma-
“lia, meditating on the traces of the divine foot, at a place called the
“station of Trivikrama;” now we are assured by credible travellers,
that the Siamese boast of a rock in their country, on which a footprint, as
they say, of Viṣṇu is clearly discernible.
Questions and Remarks on the Astronomy of the Hindus.

By John Playfair, A. M. Professor of Mathematicks at Edinburgh; written 10th October, 1792.

Presuming on the invitation given, with so much liberality, in the Advertisement prefixed to the second volume of the Asiatick Researches, I have ventured to submit the following queries and observations to the President and other Members of the learned Society in Bengal.

I.

Are any books to be found among the Hindus, which treat professedly of Geometry?

I am led to propose this question by having observed, not only that the whole of the Indian Astronomy is a system constructed with great geometrical skill, but that the trigonometrical rules, given in the translation from the Sūrya Siddhānta, with which Mr. Davis has obliged the world, point out some very curious theorems, which must have been known to the author of that ancient book. The rule, for instance, by which the trigonometrical canon of the Hindu Astronomers is constructed (a), involves in it the following theorem: “If there be three arches of a circle in arithmetical progression, the sum of the sines of the two extreme arches is to twice the sine of the

(a) 2 Asi. Ref. 245.
middle arch, as the cosine of the common difference of the arches to the radius of the circle." Now this theorem, though not difficult to be demonstrated, is yet so far from obvious, that it seems not known to the Mathematicians of Europe till the beginning of the last century, when it was discovered by Vieta: it has ever since been used for the construction of trigonometrical tables, as it affords a method of calculating the sines and arches much easier than that, which depends on successive extractions of the square root. To find, that this theorem was known to the Brâhmens many ages ago, is therefore extremely curious; and the more so, because there is some reason to think, that the commentator on the Siddhânta, quoted and translated by Mr. Davis, did not understand the principle of this rule, since the method, which he lays down, is entirely different, much less profound in theory, and much more difficult in practice. If this be true, it indicates a retrograde order in the progress of eastern science, which must have had its origin in a very remote age.

II.

Are any books of Hindu Arithmetick to be procured?

It should seem, that, if such books exist, they must contain much curious information, with many abridgements in the labour of calculating, and the like, all which may be reasonably expected from them, since an arithmetical notation, so perfect as that of India, has existed in that country much longer than in any other; but that, which most of all seems to deserve the attention of the learned, is the discovery said to be made of something like Algebra among the Hindus, such as the expression of number in general by

(b) p. 246, 247.
certain symbols and the idea of negative quantities: these certainly cannot be
too carefully inquired into, and will, it is hoped, be considered by the Soci-
ety at Calcutta as a part of that rich mine, from which they have already
extracted so many valuable materials. The problem, mentioned by Mr.
Burrow (c) proves, that the Hindu have turned their attention to certain
arithmetical investigations, of which there is no trace in the writings of the
Greek mathematicians.

III.

Must not a complete translation of the Sūrya Siddhānta
be considered as the grand desideratum with respect to Indian
Astronomy?

Sir W. Jones gives us reason, I think, to hope, that this will be exe-
cuted by Mr. Davis; and the specimen, which that gentleman has exhibi-
ted, leaves as little reason to doubt of his abilities to translate the work accu-
rately, as of the great value of the original: I have therefore only to ex-
press a wish, that, if there be any diagrams in the Sūrya Siddhānta, they
may be carefully preserved.

IV.

Would not a Catalogue Raisonné, containing an enum-
eration and a short account of the Sanscrit books on Indian
Astronomy, be a work highly interesting and useful?
V.

MIGHT not an actual examination of the heavens, in company with a Hindu astronomer, to ascertain all the stars and constellations, for which there are names in Sanscrit, prove a most valuable addition to our knowledge of Indian Astronomy?

Let me here take the liberty of reminding the President of his promise to make such an examination; by which the mistakes concerning the Indian Zodiack, some of which he has already pointed out, may be decisively corrected.

VI.

May it not be of consequence to procure descriptions of the principal astronomical buildings and instruments, of which any remains are still to be found, and which are certainly known to be of Hindu origin?

Under this head I would comprehend not only such works as the Observatory at Benares, which is well described by Sir Robert Barker, but also such instruments as the Astrolabe, mentioned by Mr. Burrow in the Appendix to the second volume of the Asiatick Researches; and engravings of such instruments will be necessary to accompany the descriptions.

Though, in the preceding questions, there may be nothing, that has escaped the attention of the Society in Bengal, yet they will, perhaps, be
forgiven to one, who feels himself deeply interested in the subject, to which they relate, and who would not lose even the feeblest ray of a light, which, without the exertions of the Asiatick Society, must perish for ever.

**Remark by the President.**

We shall concur, I am persuaded, in giving our publick thanks to Professor Playfair for the Questions, which he has proposed, and in expressing our wish, that his example may be followed by the learned in Europe: concise answers to his queries will be given in my next annual discourse, the subject of which will comprise a general account of Indian astronomy and mathematicks. I would long ago have accomplished my design (which I never meant as a promise to be performed in all events) of examining the heavens in company with an intelligent Hindu astronomer, if such a companion could have been found in this province; but, though I offered ample stipends to any Hindu astronomer, who could name in Sanscrit all the constellations, which I should point out, and to any Hindu physician, who could bring me all the planets named in Sanscrit books, I was assuaged by the Brâhmen, whom I had commissioned to search for such instructors, that no Pandit in Bengal even pretended to possess the knowledge, which I required. Lieut. Wilford, however, has lately favoured me with a Sanscrit work, procured by him at Banares, containing the names, figures, and positions of all the asterisms, known to ancient or modern Hindus, not only in the Zodiac, but in both hemispheres, and almost from pole to pole: that work I translated with attention, and immediately consigned it to Mr. Davis, who of all men living is the best qualified to exhibit a copious and accurate History of Indian Astronomy.
XI.

DISCOURSE the ELEVENTH:—On the PHILOSOPHY of the ASIA-
ticks.—Delivered 20th February, 1794.

By the President.

HAD it been of any importance, gentlemen, to arrange these annual discourses according to the ordinary progress of the human mind, in the gradual expansion of its three most considerable powers, memory, imagination, and reason, I should certainly have presented you with an essay on the liberal arts of the five Asiatic nations, before I produced my remarks on their abstract sciences; because, from my own observation at least, it seems evident, that fancy, or the faculty of combining our ideas agreeably by various modes of imitation and substitution, is in general earlier exercised, and sooner attains maturity, than the power of separating and comparing those ideas by the laborious exertions of intellect; and hence, I believe, it has happened, that all nations in the world had poets before they had mere philosophers: but, as M. D’ALEMBERT has deliberately placed science before art, as the question of precedence is, on this occasion, of no moment whatever, and as many new facts on the subject of Asiatic philosophy are fresh in my remembrance, I propose to address you now on the sciences of Asia, reserving for our next annual meeting a disquisition concerning those fine arts, which have immemorially been cultivated, with different success and in very different modes, within the circle of our common inquiries.
By science I mean an assemblage of transcendental propositions discoverable by human reason, and reducible to first principles, axioms, or maxims, from which they may all be derived in a regular succession; and there are consequently as many sciences as there are general objects of our intellectual powers: when man first exerts those powers, his objects are himself and the rest of nature; himself he perceives to be composed of body and mind, and in his individual capacity, he reasons on the uses of his animal frame and of its parts both exterior and internal, on the disorders impeding their regular functions of those parts, and on the most probable methods of preventing those disorders or of removing them; he soon feels the close connexion between his corporeal and mental faculties, and when his mind is reflected on itself, he discourses on its essence and its operations; in his social character, he analyzes his various duties and rights both private and public; and in the leisure, which the fullest discharge of those duties always admits, his intellect is directed to nature at large, to the substance of natural bodies, to their several properties, and to their quantity both separate and united, finite and infinite; from all which objects he deduces notions, either purely abstract and universal, or mixed with undoubted facts, he argues from phenomena to theorems, from those theorems to other phenomena, from causes to effects, from effects to causes, and thus arrives at the demonstration of a first intelligent cause; whence his collected wisdom, being arranged in the form of science, chiefly consists of physiology and medicine, metaphysics and logic, ethics and jurisprudence, natural philosophy and mathematicks; from which the religion of nature (since revealed religion must be referred to history, as alone affording evidence of it) has in all ages and in all nations been the sublime and confoling result. Without professing to have given a logical definition of science, or to have exhibited a perfect enumeration of its objects, I shall confine myself to those five divisions of Asiatick philosophy, enlarging for the
most part on the progress which the Hindus have made in them, and occasionally introducing the sciences of the Arabs and Persians, the Tartars, and the Chinese; but, how extensive soever may be the range which I have chosen, I shall beware of exhausting your patience with tedious discussions, and of exceeding those limits, which the occasion of our present meeting has necessarily prescribed.

I. The first article affords little scope; since I have no evidence, that, in any language of Asia, there exists one original treatise on medicine considered as a science: physic, indeed, appears in these regions to have been from time immemorial, as we see it practiced at this day by Hindus and Musselmans, a mere empirical history of diseases and remedies; useful, I admit, in a high degree, and worthy of attentive examination, but wholly foreign to the subject before us: though the Arabs, however, have chiefly followed the Greeks in this branch of knowledge, and have themselves been implicitly followed by other Mohammedan writers, yet (not to mention the Chinese, of whose medical works I can at present say nothing with confidence) we still have access to a number of Sanscrit books on the old Indian practice of physic, from which, if the Hindus had a theoretical system, we might easily collect it. The Ayurveda, supposed to be the work of a celestial physician, is almost entirely lost, unfortunately perhaps for the curious European, but happily for the patient Hindu; since a revealed science precludes improvement from experience, to which that of medicine ought, above all others, to be left perpetually open; but I have myself met with curious fragments of that primeval work, and, in the Veda itself, I found with astonishment an entire Upanishad on the internal parts of the human body; with an enumeration of nerves, veins, and arteries, a description of the heart, spleen, and liver, and various disquisitions on the formation and growth of the fetus: from the
laws, indeed, of Menu, which have lately appeared in our own language, we may perceive, that the ancient Hindus were fond of reasoning in their way on the mysteries of animal generation, and on the comparative influence of the sexes in the production of perfect offspring; and we may collect from the authorities adduced in the learned Essay on Egypt and the Nile, that their physiological disputes led to violent schisms in religion, and even to bloody wars. On the whole, we cannot expect to acquire many valuable truths from an examination of eastern books on the science of medicine; but examine them we must, if we wish to complete the history of universal philosophy, and to supply the scholars of Europe with authentick materials for an account of the opinions anciently formed on this head by the philosophers of Asia: to know, indeed, with certainty, that so much and no more can be known on any branch of science, would in itself be very important and useful knowledge, if it had no other effect than to check the boundless curiosity of mankind, and to fix them in the straight path of attainable science, especially of such as relates to their duties and may conduce to their happiness.

II. We have an ample field in the next division, and a field almost wholly new; since the metaphysicks and logick of the Bráhmens, comprised in their six philosophical Sástras, and explained by numerous glosses or comments, have never yet been accessible to Europeans; and, by the help of the Sanscrit language, we now may read the works of the Saugatas, Baudhbas, Arhatas, Jainas, and other heterodox philosophers, whence we may gather the metaphysical tenets prevalent in China and Japan, in the eastern peninsula of India, and in many considerable nations of Tartary: there are also some valuable tracts on these branches of science in Persian and Arabick, partly copied from the Greeks, and partly comprising the doctrines of the Sáfs.
which anciently prevailed, and still prevail in great measure over this oriental world, and which the Greeks themselves condescended to borrow from eastern sage.

The little treatise in four chapters, ascribed to Vyāsa, is the only philosophical Sāstra, the original text of which I have had leisure to peruse with a Brāhmaṇ of the Védánti school: it is extremely obscure, and, though composed in sentences elegantly modulated, has more resemblance to a table of contents, or an accurate summary, than to a regular systematical tract; but all its obscurity has been cleared by the labour of the very judicious and most learned Śāṅkara, whose commentary on the Védánta, which I read also with great attention, not only elucidates every word of the text, but exhibits a perspicuous account of all other Indian schools, from that of Čapila to those of the more modern heretics. It is not possible, indeed, to speak with too much applause of so excellent a work; and I am confident in asserting, that, until an accurate translation of it shall appear in some European language, the general history of philosophy must remain incomplete; for I perfectly agree with those, who are of opinion, that one correct version of any celebrated Hindu book would be of greater value than all the dissertations or essays, that could be composed on the same subject; you will not, however, expect, that, in such a discourse as I am now delivering, I should expatiate on the diversity of Indian philosophical schools, on the several founders of them, on the doctrines, which they respectively taught, or on their many disciples, who dissented from their instructors in some particular points. On the present occasion, it will be sufficient to say, that the oldest head of a sect, whose entire work is preserved, was (according to some authors) Čapila; not the divine personage, a reputed grandchild of Brahma, to whom Črīṣhna compares himself in the Gītā, but a sage of his name, who invented the Śānc'bya, or

X
Number, philosophy, which Cri'shna himself appears to impugn in his conversation with Arjuna, and which, as far as I can collect it from a few original texts, resembled in part the metaphysics of Pythagoras, and in part the theology of Zeno: his doctrines were enforced and illustrated, with some additions, by the venerable Patanjali, who has also left us a fine comment on the grammatical rules of Panini, which are more obscure, without a gloss, than the darkest oracle; and here by the way let me add, that I refer to metaphysics the curious and important science of universal grammar, on which many subtil disquisitions may be found interspersed in the particular grammars of the ancient Hindus, and in those of the more modern Arabs. The next founder, I believe, of a philosophical school was Go'tama, if, indeed, he was not the most ancient of all; for his wife Ahalya was, according to Indian legends, restored to a human shape by the great Rama; and a sage of his name, whom we have no reason to suppose a different personage, is frequently mentioned in the Veda itself; to his rational doctrines those of Canna were in general conformable; and the philosophy of them both is usually called Nyaya, or logical, a title aptly bestowed; for it seems to be a system of metaphysics and logic better accommodated than any other anciently known in India, to the natural reason and common sense of mankind; admitting the actual existence of material substance in the popular acceptation of the word matter, and comprising not only a body of sublime dialectics, but an artificial method of reasoning, with different names for the three parts of a proposition, and even for those of a regular syllogism. Here I cannot refrain from introducing a singular tradition, which prevailed, according to the well-informed author of the Dabistan, in the Panjab and in several Persian provinces, that, "among other Indian curiosities, which CALLISTHENES transmitted to his uncle, was a technical system of logic, which the Brabmans had communicated to the inquisitive Greek," and
which the Mohammedan writer supposes to have been the ground work of
the famous Aristotelian method: if this be true, it is one of the most inter-
esting facts, that I have met with in Asia; and if it be false, it is very
extraordinary, that such a story should have been fabricated either by the can-
did Mohsani Fani; or by the simple Parsis and Pandits, with whom he
had conversed; but, not having had leisure to study the Nyaya Sashtra, I can
only assure you, that I have frequently seen perfect syllogisms in the philoso-
phical writings of the Brabmans, and have often heard them used in their
verbal controversies. Whatever might have been the merit or age of
Gotama, yet the most celebrated Indian school is that, with which I be-
gan, founded by Vyasa, and supported in most respects by his pupil
Jaimini, whose dissent on a few points is mentioned by his master with
respectful moderation: their several systems are frequently distinguished
by the names of the first and second Mimansa, a word, which, like Nyaya,
denotes the operations and conclusions of reason; but the tract of Vyasa
has in general the appellation of Vedanta, or the scope and end of the Veda,
on the texts of which, as they were understood by the philosopher, who col-
lected them, his doctrines are principally grounded. The fundamental
tenet of the Vedantic school, to which in a more modern age the incompara-
able Sancara was a firm and illustrious adherent, consisted, not in denying
the existence of matter, that is, of solidity, impenetrability, and extended
figure (to deny which would be lunacy), but, in correcting the popular no-
tion of it, and in contending, that it has no essence independent of mental
perception, that existence and perceptibility are convertible terms, that ex-
ternal appearances and sensations are illusory, and would vanish into nothing,
if the divine energy, which alone sustains them, were suspended but for a
moment; an opinion, which Epicurus and Plato seem to have adopt-
ed, and which has been maintained in the present century with great ele-
gance, but with little publick applause; partly because it has been misun-
derstood, and partly because it has been misapplied by the false reasoning of
some unpopular writers, who are said to have disbelieved in the moral attrib-
utes of God, whose omnipresence, wisdom, and goodness are the basis of
the Indian philosophy: I have not sufficient evidence on the subject to pro-
fer a belief in the doctrine of the Védánta, which human reason alone could,
perhaps, neither fully demonstrate, nor fully disprove; but it is manifest, that
nothing can be farther removed from impiety than a system wholly built
on the purest devotion; and the inexpressible difficulty, which any man, who
shall make the attempt, will assuredly find in giving a satisfactory definition
of material substance, must induce us to deliberate with coolness, before we
censure the learned and pious restorer of the ancient Véda; though we can-
not but admit, that, if the common opinions of mankind be the criterion of
philosophical truth, we must adhere to the system of Go'Tama, which the
Brahmens of this province almost universally follow.

If the metaphysicks of the Védántis be wild and erroneous, the pupils of
Buddha have run, it is asserted, into an error diametrically opposite; for
they are charged with denying the existence of pure spirit, and with believing
nothing absolutely and really to exist but material substance; a heavy accusa-
tion which ought only to have been made on positive and incontestable proof, espe-
cially, by the orthodox Brahmens, who, as Buddha disfavored from their
ancestors in regard to bloody sacrifices, which the Véda certainly prescribes,
may not unjustly be suspected of low and interested malignity. Though I
cannot credit the charge, yet I am unable to prove it entirely false, having
only read a few pages of a Saugata book, which Captain Kirkpatrick
had lately the kindness to give me; but it begins, like other Hindu books,
with the word O'm, which we know to be a symbol of the divine attributes:
then follows, indeed, a mysterious hymn to the Goddess of Nature, by the name of A'ryá, but with several other titles, which the Bráhmens themselves continually bestow on their Dévi; now the Bráhmens, who have no idea, that any such personage exists as Dévi, or the Goddess, and only mean to express allegorically the power of God, exerted in creating, preserving and renovating this universe, we cannot with justice infer, that the dissenters admit no deity but visible nature: the Pandit, who now attends me, and who told Mr. Wilkins, that the Saugatas were atheists, would not have attempted to resist the decisive evidence of the contrary, which appears in the very instrument, on which he was consulted, if his understanding had not been blinded by the intolerant zeal of a mercenary priesthood. A literal version of the book just mentioned (if any studious man had learning and industry equal to the task) would be an inestimable treasure to the compiler of such a history as that of the laborious Brucker; but let us proceed to the morals and jurisprudence of the Asiaticks, on which I could expatiate, if the occasion admitted a full discussion of the subject, with correctness and confidence.

III. That both ethicks and abstract law might be reduced to the method of science, cannot surely be doubted; but, although such a method would be of infinite use in a system of universal, or even of national, jurisprudence, yet the principles of morality are so few, so luminous, and so ready to present themselves on every occasion, that the practical utility of a scientifical arrangement, in a treatise on ethnics, may very justly be questioned. The moralists of the east have in general chosen to deliver their precepts in short sententious maxims, to illustrate them by sprightly comparisons, or to inculcate them in the very ancient form of agreeable apoloques; there are, indeed, both in Arabick and Persian, philosophical tracts
on ethicks written with sound ratiocination and elegant perspicuity: but in every part of this eastern world, from Pekin to Damascus, the popular teachers of moral-wisdom have immemorially been poets, and there would be no end of enumerating their works, which are still extant in the five principal languages of Asia. Our divine religion, the truth of which (if any history be true) is abundantly proved by historical evidence, has no need of such aids, as many are willing to give it, by asserting, that the wisest men of this world were ignorant of the two great maxims, that we must act in respect of others, as we should wish them to act in respect of ourselves, and that, instead of returning evil for evil, we should confer benefits even on those who injure us; but the first rule is implied in a speech of Lysias, and expressed in distinct phrases by Thales and Pittacus; and I have even seen it word for word in the original of Confucius, which I carefully compared with the Latin translation. It has been usual with zealous men, to ridicule and abuse all those, who dare on this point to quote the Chinese philosopher; but, instead of supporting their cause, they would shake it, if it could be shaken, by their uncandid asperity; for they ought to remember, that one great end of revelation, as it is most expressly declared, was not to instruct the wise and few, but the many and unenlightened. If the conversion, therefore, of the Pandits and Maulavis in this country shall ever be attempted by protestant missionaries, they must beware of asserting, while they teach the gospel of truth, what those Pandits and Maulavis would know to be false: the former would cite the beautiful Aryá couplet, which was written at least three centuries before our era, and which pronounces the duty of a good man, even in the moment of his destruction, to consult not only in forgiving, but even in a desire of benefiting, his destroyer, as the Sandal-tree, in the instant of its overthrow, sheds perfume on the ax, which falls it; and
the latter would triumph in repeating the verse of Sadi, who represents a
return of good for good as a slight reciprocity, but says to the virtuous man,
"Confer benefits on him, who has injured thee," using an Arabick sentence,
and a maxim apparently of the ancient Arabs. Nor would the Musselmans
fail to recite four distichs of Ha'fiz, who has illustrated that maxim with
fanciful but elegant allusions:

Learn from yon orient shell to love thy foe,
And store with pearls the hand, that brings thee wo:
Free, like yon rock, from base vindictive pride,
Imblaze with gems the wrist, that rends thy side:
Mark, where yon tree rewards the flomy show'r;
With fruit nectarous, or the balmy show'r:
All nature calls aloud: "Shall man do less
Than heal the smiter, and the railest bles?"

Now there is not a shadow of reason for believing, that the poet of Shi-
rauz had borrowed this doctrine from the Christians; but, as the cause of
Christianity could never be promoted by falsehood or error, so it will ne-
ever be obstructed by candour and veracity; for the lessons of Confucius
and Chanacya, of Sadi and Ha'fiz, are unknown even at this day to
millions of Chinese and Hindus, Persians and other Mahometans, who toil
for their daily support; nor, were they known ever so perfectly, would they
have a divine sanction with the multitude; so that, in order to enlighten the
minds of the ignorant, and to enforce the obedience of the perverse, it is
evident a priori, that a revealed religion was necessary in the great system of
providence: but my principal motive for introducing this topick, was to
give you a specimen of that antient oriental morality, which is comprised
in an infinite number of Persian, Arabick, and Sanscrit compositions.
Nearly one half of jurisprudence is closely connected with ethiccs; but, since the learned of Asia consider most of their laws as positive and divine institutions, and not as the mere conclusions of human reason, and since I have prepared a mass of extremely curious materials, which I reserve for an introduction to the digest of Indian laws, I proceed to the fourth division, which consists principally of science transcendentally so named, or the knowledge of abstract quantities, of their limits, properties, and relations, impressed on the understanding with the force of irresistible demonstration, which, as all other knowledge depends at best on our fallible senses, and in great measure on still more fallible testimony, can only be found, in pure mental abstractions; though for all the purposes of life, our own senses, and even the credible testimony of others, give us in most cases the highest degree of certainty, physical and moral.

IV. I have already had occasion to touch on the Indian metaphysics of natural bodies according to the most celebrated of the Asiatick schools, from which the Pythagoreans are supposed to have borrowed many of their opinions; and, as we learn from Cicero, that the old sages of Europe had an idea of centripetal force and a principle of universal gravitation, (which they never indeed attempted to demonstrate) so I can venture to affirm, without meaning to pluck a leaf from the neverfading laurels of our immortal Newton, that the whole of his theology and part of his philosophy may be found in the Vedas and even in the works of the Sufis: that most subtle spirit, which he suspected to pervade natural bodies, and, lying concealed in them, to cause attraction and repulsion, the emission, reflection, and refraction of light, electricity, calefaction, sensation, and muscular motion, is described by the Hindus as a fifth element endued with those very powers; and the Vedas abound with allusions to a force univer-
fally attractive, which they chiefly ascribe to the Sun, thence called Aditya, or the Attractor; a name designed by the Mythologists to mean the child of the Goddess Aditi; but the most wonderful passage on the theory of attraction occurs in the charming allegorical poem of Shiři'n and Ferha'd, or the Divine Spirit and a human Soul disinterestedly pious; a work which from the first verse to the last, is a blaze of religious and poetical fire. The whole passage appears to me so curious, that I make no apology for giving you a faithful translation of it: "There is a strong propensity, which dances through every atom, and attracts the minutest particle to some peculiar object; search this universe from its base to its summit, from fire to air, from water to earth, from all below the Moon to all above the celestial spheres; and thou wilt not find a corpuscle destitute of that natural attractibility; the very point of the first thread, in this apparently tangled skein, is no other than such a principle of attraction, and all principles beside are void of a real basis; from such a propensity arises every motion perceived in heavenly or in terrestrial bodies; it is a disposition to be attracted, which taught hard steel to rush from its place and rivet itself on the magnet; it is the same disposition, which impels the light straw to attach itself firmly on amber; it is this quality, which gives every substance in nature a tendency toward another, and an inclination forcibly directed to a determinate point." These notions are vague, indeed, and unsatisfactory; but permit me to ask, whether the last paragraph of Newton's incomparable work goes much farther, and whether any subsequent experiments have thrown light on a subject so abstruse and obscure: that the sublime astronomy and exquisitely beautiful geometry, with which that work is illumined, should in any degree be approached by the Mathematicians of Asia, while of all Europeans, who ever lived, Archimedes alone was capable of emulating them, would
be a vain expectation; but we must suspend our opinion of Indian astronomical knowledge, till the Sūrya siddhānta shall appear in our own language, and even then (to adopt a phrase of Cicero) our greedy and capacious ears will by no means be satisfied; for in order to complete an historical account of genuine Hindu astronomy, we require verbal translations of at least three other Sanscrit books; of the treatise by Parāśara, for the first age of Indian science, of that by Varāha, with the copious comment of his very learned son, for the middle age, and of those written by Bhāscara for times comparatively modern. The valuable and now accessible works of the last-mentioned philosopher, contain also an universal, or species, arithmetic, with one chapter at least on geometry; nor would it, surely, be difficult to procure, through our several residents with the Pishwā and with Scindhyā, the older books on algebra, which Bhāscara mentions, and on which Mr. Davis would justly set a very high value; but the Sanscrit work, from which we might expect the most ample and important information, is entitled Gbetrāderśa, or a View of Geometrical Knowledge, and was compiled in a very large volume by order of the illustrious Jayasinha, comprising all that remains on that science in the sacred language of India: it was inspected in the west by a Pandit now in the service of Lieutenant Wilford, and might, I am persuaded, be purchased at Jyānagar, where Colonel Polier had permission from the Rājā to buy the four Vedas themselves. Thus have I answered, to the best of my power, the three first questions obligingly transmitted to us by professor Playfair; whether the Hindus have books in Sanscrit expressly on geometry, whether they have any such on arithmetic, and whether a translation of the Sūrya siddhānta be not the great desideratum on the subject of Indian astronomy; to his three last questions, whether an accurate summary account of all the Sanscrit works on that subject, a delineation of the Indian ce-
Istial sphere, with correct remarks on it, and a description of the astronomical instruments used by the ancient Hindus, would not severally be of great utility, we cannot but answer in the affirmative, provided that the utmost critical sagacity were applied in distinguishing such works, constellations, and instruments, as are clearly of Indian origin, from such as were introduced into this country by Muselman astronomers from Tartary and Persia, or in later days by Mathematicians from Europe.

V. From all the properties of man and of nature, from all the various branches of science, from all the deductions of human reason, the general corollary, admitted by Hindus, Arabs, and Tartars, by Persians, and by Chinese, is the supremacy of an all-creating and all-preserving spirit, infinitely wise, good, and powerful, but infinitely removed from the comprehension of his most exalted creatures; nor are there in any language (the ancient Hebrew always excepted) more pious and sublime addresses to the being of beings, more splendid enumerations of his attributes, or more beautiful descriptions of his visible works, than in Arabick, Persian and Sanscrit, especially in the Koran, the introductions to the poems of Sadi, Nizami, and Firdausi; the four Vedas and many parts of the numerous Puranas: but supplication and praise would not satisfy the boundless imagination of the Vedanti and Sufi theologists, who blending uncertain metaphysics with undoubted principles of religion, have presumed to reason confidently on the very nature and essence of the divine Spirit, and asserted in a very remote age, what multitudes of Hindus and Muselmans assert at this hour; that all Spirit is homogeneous, that the spirit of God is in kind the same with that of man, though differing from it infinitely in degree, and that, as material substance is mere illusion, there exists in this universe only one generic spiritual substance, the sole primary cause, efficient, substan-
tial and formal of all secondary causes and of all appearances whatever, but
endued in its highest degree, with a sublime providential wisdom and pro-
ceeding by ways incomprehensible to the spirits which emanate from it; an
opinion, which Goṭama never taught, and which we have no authority
to believe, but which, as it is grounded on the doctrine of an immaterial
creator supremely wise, and a constant preserver supremely benevolent, dif-
fers as widely from the pantheism of Spinoza and Toland, as the affirma-
tion of a proposition differs from the negation of it; though the last-
named professor of that insane philosophy had the baseness to conceal his
meaning under the very words of Saint Paul, which are cited by New-
ton for a purpose totally different, and has even used a phrase, which oc-
curs, indeed, in the Vedā, but in a sense diametrically opposite to that,
which he would have given it. The passage, to which I allude is in a
speech of Varuna to his son, where he says: “That spirit, from which
these created beings proceed; through which, having proceeded from it,
they live; toward which they tend and in which they are ultimately
absorbed, that spirit study to know; that spirit is the Great One.”

The subject of this discourse, Gentlemen, is inexhaustible: it has been
my endeavour to say as much on it as possible in the fewest words; and, at
the beginning of next year, I hope to close these general disquisitions with
topicks measureless in extent, but less abstruse than that, which has this
day been discussed, and better adapted to the gayety, which seems to have
prevailed in the learned banquets of the Greeks, and which ought, surely,
to prevail in every symposium assembly.
A DISCOURSE DELIVERED AT A MEETING OF THE ASIATICK SOCIETY, ON THE 22d MAY 1794, BY SIR JOHN SHORE, BART. PRESIDENT.

Gentlemen,

If I had consulted my competency only, for the station which your choice has conferred upon me, I must without hesitation, have declined the honor of being the President of this Society; and although I most cheerfully accept your invitation, with every inclination to assist, as far as my abilities extend, in promoting the laudable views of our association, I must still retain the consciousness of those disqualifications, which you have been pleased to overlook.

It was lately our boast to possess a President, whose name, talents, and character would have been honorable to any Institution; it is now our misfortune to lament, that Sir William Jones exists but in the affections of his friends, and in the esteem, veneration, and regret of all.
I CANNOT, I flatter myself, offer a more grateful tribute to the Society, than by making his character the subject of my first address to you; and if in the delineation of it, fondness or affection for the man, should appear blended with my reverence for his genius and abilities, in the sympathy of your feelings I shall find my apology.

To define with accuracy the variety, value, and extent of his literary attainments, requires more learning than I pretend to possess, and I am therefore to solicit your indulgence for an imperfect sketch, rather, than expect your approbation for a compleat description, of the talents, and knowledge, of your late, and lamented President.

I SHALL begin with mentioning his wonderful capacity for the acquisition of languages, which has never been excelled. In Greek and Roman literature, his early proficiency was the subject of admiration and applause, and knowledge of whatever nature, once obtained by him, was ever afterwards progressive. The more elegant dialects of modern Europe, the French, the Spanish and the Italian, he spoke and wrote with the greatest fluency and precision, and the German and Portuguese were familiar to him. At an early period of life his application to oriental literature commenced; he studied the Hebrew with ease and success, and many of the most learned Asiaticks have the candour to avow, that his knowledge of Arabick and Persian, was as accurate and extensive as their own; he was also conversant in the Turkish idiom, and the Chinese had even attracted his notice, so far as to induce him to learn the radical characters of that language, with a view perhaps to farther improvements. It was to be expected, after his arrival in India, that he would eagerly embrace the opportunity of making himself master of the Sanscrit, and the most enlightened professors of the doctrines of Brahma, confess with
pride, delight and surprize, that his knowledge of their sacred dialect was most critically correct, and profound. The Pandits, who were in the habit of attending him, when I saw them after his death, at a public Durbar, could neither suppress their tears for his loss, nor find terms to express their admiration, at the wonderful progress he had made in their sciences.

Before the expiration of his twenty-second year, he had completed his Commentaries on the Poetry of the Asiatics, although a considerable time afterwards elapsed, before their publication; and this work, if no other monument of his labours existed, would at once furnish proofs, of his consummate skill in the oriental dialects, of his proficiency in those of Rome and Greece, of taste and erudition far beyond his years, and of talents and application without example.

But the judgement of Sir William Jones was too discerning to consider language in any other light than as the key of science, and he would have despised the reputation of a mere linguist. Knowledge, and truth, were the objects of all his studies, and his ambition was to be useful to mankind; with these views, he extended his researches to all languages, nations, and times.

Such were the motives, that induced him, to propose to the Government of this country, what he justly denominated a work of national utility and importance, the compilation of a copious digest of Hindu and Mahomedan Law, from Sanscrit and Arabic originals, with an offer of his services to superintend the compilation, and with a promise to translate it. He had foreseen previous to his departure from Europe, that without the aid of such a work, the wise and benevolent intentions of the legislature of Great Britain,
in leaving, to a certain extent, the natives of these provinces, in possession of their own laws, could not be completely fulfilled; and his experience, after a short residence in India, confirmed what his sagacity had anticipated, that without principles to refer to, in a language familiar to the Judges of the Courts, adjudications amongst the natives, must too often be subject, to an uncertain and erroneous exposition, or wilful misinterpretation, of their laws.

To the superintendence of this work, which was immediately undertaken at his suggestion, he assiduously devoted those hours, which he could spare from his professional duties. After tracing the plan of the digest, he prescribed its arrangement and mode of execution, and selected from the most learned Hindus and Mahomedans fit persons for the task of compiling it, flattered by his attention, and encouraged by his applause, the Pandits prosecuted their labours with cheerful zeal, to a satisfactory conclusion. The Molucces, have also nearly finished their portion of the work, but we must ever regret, that the promised translation, as well as the meditated preliminary dissertation, have been frustrated by that decree, which so often intercepts the performance of human purposes.

During the course of this compilation, and as auxiliary to it, he was led to study the works of Menu, reputed by the Hindus to be the oldest, and holiest of legislators; and finding them, to comprise a system, of religious and civil duties, and of law in all its branches, so comprehensive and minutely exact, that it might be considered as the Institutes of Hindu law, he presented a translation of them to the Government of Bengal. During the same period, deeming no labour excessive or superfluous that tended in any respect, to promote the welfare or happiness of mankind, he gave the public an English version of the Arabic text of the Siraj-uy-Yah, of Mahomedan law of
Inheritance, with a Commentary. He had already published in England, a translation of a Tract on the same subject, by another Mahomedan Lawyer, containing, as his own words express, a lively and elegant epitome of the law of Inheritance, according to Zaid.

To these learned and important works, so far out of the road of amusement, nothing could have engaged his application, but that desire which he ever professed, of rendering his knowledge useful to his own nation, and beneficial to the inhabitants of these provinces.

Without attending to the Chronological Order of their publication, I shall briefly recapitulate his other performances in Asiatic Literature, as far as my knowledge and recollection of them extend.

The vanity and petulance, of Anquetil du Perron, with his illiberal reflections on some of the learned Members of the University of Oxford, extorted from him a letter in the French language, which has been admired for accurate criticism, just satire, and elegant composition. A regard for the literary reputation of his country, induced him to translate from a Persian original into French, the life of Nadir Shah, that it might not be carried out of England, with a reflection, that no person had been found in the British dominions capable of translating it. The students of Persian literature must ever be grateful to him, for a grammar of that language, in which he has shewn the possibility of combining taste, and elegance, with the precision of a grammarian, and every admirer of Arabic poetry, must acknowledge his obligations to him, for an English version of the seven celebrated poems, so well known by the name of Moallakat, from the distinction to which their excellence had entitled them, of being suspended in the temple of Mecca. I should
scarcely think it of importance to mention, that he did not disdain the office of Editor of a Sanscrit and Persian work, if it did not afford me an opportunity of adding, that the latter was published at his own expense, and was sold for the benefit of insolvent debtors. A similar application was made, of the produce of the Sirajiyyah.

Of his lighter productions, the elegant amusements of his leisure hours, comprehending hymns on the Hindu mythology, poems consisting chiefly of translations from the Astatic languages, and the version of Sacontala, an ancient Indian drama, it would be unbecoming to speak in a style of importance which he did not himself annex to them. They shew the activity of a vigorous mind, its fertility, its genius, and its taste. Nor shall I particularly dwell on the discourses addressed to this society, which we have all perused or heard, or on the other learned and interesting dissertations, which form so large, and valuable a portion of the records of our researches; let us lament that the spirit which dictated them is to us extinct, and that the voice to which we listened with improvement, and rapture, will be heard by us, no more.

But I cannot pass over a paper, which has fallen into my possession since his demise, in the hand writing of Sir William Jones himself, entitled Desiderata, as more explanatory than any thing I can say, of the comprehensive views of his enlightened mind. It contains, as a perusal of it will shew, whatever is most curious, important, and attainable in the sciences and histories of India, Arabia, China, and Tartary; subjects, which he had already most amply discussed in the disquisitions which he laid before the Society.
DESIDERATA.

INDIA.

I.
The Ancient Geography of India &c. from the Purānas.

II.
A Botanical Description of Indian Plants, from the Cosmas, &c.

III.
A Grammar of the Sanscrit Language, from Pāṇini, &c.

IV.
A Dictionary of the Sanscrit Language, from thirty-two original vocabularies and Niructi.

V.
On the Ancient Music of the Indians.

VI.
On the Medical Substances of India, and the Indian Art of Medicine.

VII.
On the Philosophy of the Ancient Indians.

VIII.
A Translation of the Veda.

IX.
On Ancient Indian Geometry, Astronomy, and Algebra.

X.
A Translation of the Purānas.

XI.
Translations of the Mahābhārata and Rāmāyan.

XII.
On the Indian Theatre, &c. &c. &c.
On the *Indian Constellations*, with their Mythology, from the Purānas.

XIV.

The History of *India* before the Mahommedan conquest, from the Sanscrit-Cashmir-Histories.

**ARABIA.**

XV.

The History of *Arabia* before Muhammed.

XVI.

A Translation of the *Hamâja*.

XVII.

A Translation of *Harî'rî*.

XVIII.

A Translation of the *Fâcabatûl Khuâfa*.

Of the *Câsiâb*.

**PERSIA.**

XIX.

The History of *Persia* from authorities in Sanscrit, Arabick, Greek, Turkiß, Persian, ancient and modern.

*Firdausî's-Khosrau nàma*.

XX.

The five Poems of *Nîza'mî*, translated in prose.

A Dictionary of pure Persian, *Jebangire*.

**CHINA.**

XXI.

A Translation of the *Shi-cing*. 
XXII.

The Text of Can-fu-tsu verbally translated.

T A R T A R Y.

XXIII.

A History of the Tartar Nations, chiefly of the Moguls and Othmans, from the Turkish and Persian.

We are not authorized to conclude, that he had himself formed a determination to compleat the works which his genius, and knowledge, had thus sketched; the task seems to require a period, beyond the probable duration of any human life, but we, who had the happiness to know Sir William Jones, who were witnesses of his indefatigable perseverance in the pursuit of knowledge, and of his ardor to accomplish whatever he deemed important, who saw the extent of his intellectual powers, his wonderful attainments in literature and science, and the facility with which all his compositions were made, cannot doubt, if it had pleased providence to protract the date of his existence, that he would have ably executed much, of what, he had so extensively planned.

I have hitherto, principally confined my discourse, to the pursuits of our late President, in oriental literature, which from their extent, might appear to have occupied all his time; but they neither precluded his attention to professional studies, nor to science in general; amongst his publications in Europe in polite literature, exclusive of various compositions in prose and verse, I find a translation of the speeches of Isæus, with a learned comment; and in law, an essay on the law of Bailments: Upon the subject of this last work, I cannot deny myself the gratification of quoting the
the sentiments of a celebrated historian, "Sir William Jones has given an
ingenious and rational essay on the law of Bailments. He is perhaps the
only lawyer equally conversant with the year books of Westminster, the com-
mentaries of Ulpian, the attick pleadings of Isceus, and the sentences
of Arabian and Persian Cadbic."

His professional studies did not commence before his twenty-second year,
and I have his own authority for asserting, that the first book of English
jurisprudence which he ever studied, was Fortescue's essay, in praise of
the laws of England.

Of the ability and conscientious integrity, with which he discharged the
functions of a Magistrate, and the duties of a Judge of the Supreme Court
of Judicature, in this settlement, the public voice and public regret, bear
ample and merited testimony. The same penetration which marked his
scientific researches, distinguished his legal investigations and decisions,
and he deemed no enquiries burdensome, which had for their object substantial
justice under the rules of law.

His addresses to the jurors are no less distinguished for philanthrophy,
and liberality of sentiment, than for just expositions of the law, perspicuity
and elegance of diction; and his oratory was as captivating, as his arguments
were convincing.

In an epilogue to his commentaries on Asiatic poetry, he bids farewell to
polite literature, without relinquishing his affection for it; and concludes
with an intimation of his intention to study law, expressed in a wish, which
we now know to have been prophetic,
Mibi sit, oro, non inutilis toga,
Nec indiferta lingua, nec turpis manus!

I have already enumerated attainments and works, which from their diversity and extent, seem far beyond the capacity of the most enlarged minds; but the catalogue may yet be augmented. To a proficiency in the languages of Greece, Rome and Asia, he added the knowledge, of the philosophy of those countries, and of every thing curious, and valuable that had been taught in them. The doctrines of the Academy, the Lyceum or the Portico, were not more familiar to him than the tenets of the Vedas, the mysticism of the Sufis, or the religion of the ancient Persians; and whilst with a kindred genius he perused with rapture, the heroick, lyric, or moral compositions, of the most renowned poets of Greece, Rome, and Asia; he could turn with equal delight and knowledge, to the sublime speculations, or mathematical calculations, of Barrow and Newton. With them also, he professed his conviction of the truth of the Christian religion, and he justly deemed it no inconsiderable advantage, that his researches had corroborated the multiplied evidence of revelation by confirming the Mosaic account of the primitive world. We all recollect, and can refer to, the following sentiments in his eighth Anniversary Discourse.

"Theological inquiries are no part of my present subject; but I cannot refrain from adding, that the collection of tracts, which we call from their excellence the Scriptures, contain independently of a divine origin, more true sublimity, more exquisite beauty, purer morality, more important history, and finer strains both of poetry and eloquence, than could be collected within the same compass from all other books, that were ever composed in any age, or in any idiom. The two parts, of which the scrip-
tures consist, are connected by a chain of compositions, which bear no re-
semblance in form or style to any that can be produced from the stores
of Grecian, Indian, Persian, or even Arabian learning; the antiquity of
those compositions no man doubts, and the unstrained application of them
to events long subsequent to their publication, is a solid ground of belief,
that they were genuine predictions, and consequently inspired.

There were in truth few sciences, in which he had not acquired consider-
derable proficiency, in most, his knowledge was profound. The theory of
music was familiar to him, nor had he neglected to make himself acquainted
with the interesting discoveries lately made in Chymistry, and I have heard
him assert that his admiration of the structure of the human frame, had in-
duced him to attend for a season to a course of anatomical lectures delivered
by his friend the celebrated Hunter.

His last and favourite pursuit, was the study of Botany, which he original-
ly began under the confinement of a severe and lingering disorder, which
with most minds, would have proved a disqualification from any application.
It constituted the principal amusement of his leisure hours. In the arrange-
ments of Linnaeus he discovered system, truth, and science, which never
failed to captivate and engage his attention; and from the proofs which he
has exhibited of his progress in Botany, we may conclude that he would have
extended the discoveries in that science. The last composition which he read
in this society, was a description of select Indian plants, and I hope his Ex-
ecutors will allow us to fulfill his intention of publishing it, a number in
our Researches.

It cannot be deemed useless or superfluous to enquire, by what arts or
method he was enabled to attain to a degree of knowledge, almost universal, and apparently beyond the powers of man, during a life little exceeding forty-seven years.

The faculties of his mind by nature vigorous, were improved by constant exercise, and his memory by habitual practice, had acquired a capacity of retaining, whatever had once been impressed upon it. To an unextinguished ardour for universal knowledge, he joined a perseverance in the pursuit of it, which subdued all obstacles; his studies began with the dawn, and during the intermissions of professional duties were continued throughout the day; reflection and meditation strengthened and confirmed, what industry and investigation had accumulated. It was a fixed principle with him, from which he never voluntarily deviated, not to be deterred by any difficulties, that were surmountable, from prosecuting to a successful termination, what he had once deliberately undertaken.

But what appears to me more particularly to have enabled him, to employ his talents so much to his own and the public advantage, was the regular allotment of his time to particular occupations, and a scrupulous adherence to the distribution which he had fixed; hence, all his studies were pursued without interruption or confusion: nor can I here omit remarking, what may probably have attracted your observation, as well as mine, the candour and complacency, with which he gave his attention to all persons, of whatever quality, talents, or education; he justly concluded, that curious or important information, might be gained, even from the illiterate, and wherever it was to be obtained, he sought and seized it.

Of the private and social virtues of our lamented President, our hearts
are the best records; to you who knew him, it cannot be necessary for me, to expatiate on the independence of his integrity, his humanity, probity, or benevolence, which every living creature participated; on the affability of his conversation and manners, or his modest unassuming deportment; nor need I remark, that he was totally free from pedantry, as well as from arrogance and self-sufficiency which sometimes accompany, and disgrace the greatest abilities, his presence was the delight of every society, which his conversation exhilarated and improved, and the public have not only to lament the loss of his talents and abilities, but that of his example.

To him, as the founder of our Institution, and whilst he lived its firmest support, our reverence is more particularly due: instructed, animated and encouraged by him, genius was called forth into exertion, and modest merit was excited to distinguish itself. Anxious for the reputation of the society, he was indefatigable in his own endeavours to promote it, whilst he cheerfully assisted those of others. In losing him, we have not only been deprived of our brightest ornament, but of a guide and patron, on whose instructions, judgement, and candour, we could implicitly rely.

But it will I trust be long, very long, before the remembrance of his virtues, his genius, and abilities lose that influence over the Members of this Society, which his living example had maintained, and if previous to his demise he had been asked, by what posthumous honors, or attentions we could best shew our respect for his memory, I may venture to assert he would have replied, by exerting yourselves to support the credit of the Society, applying to it, perhaps the dying wish of father Paul, "Esto perpetua."
XIII.

A TREATISE ON THE BAROMETER.

BY FRANCIS BALFOUR, ESQ.

I.

IN a Treatise published at this place a few weeks ago on Sol-lunar influence in Fevers, I have endeavoured to shew "That all fevers are liable to certain diurnal and septenary (a) revolutions; and that these revolutions are uniformly and constantly connected with fixed periods of time.

II.

HAVING established this proposition (1) it was natural to suppose that the power or influence which is capable of producing these very remarkable and interesting revolutions on the human constitution, at certain intervals, did not exert itself without effecting, at the same time, some corresponding periodical change in the state of that element in which we constantly exist; and in which all the operations of life and nature are carried on.

Other necessary avocations having hitherto prevented me from being able to make those experiments myself that are required for deciding on this question, I applied to Mr. Farquhar who I understood had paid some attention to this subject, and was favored with the following very obliging and instructive letter:

(a) That is to say changes happening after an interval of seven or eight days.
DEAR SIR,

"You likewise desire me to give you some account of the regular diurnal variations of the Barometer which take place in this country, and which I said I conceived to be peculiar to tropical climates from the otherwise unaccountable silence of every author whose work I had been able to consult on the subject. The first intimation of this was from Mr. Henry Trail, who informed me that he had observed the Mercury to rise every night till about 11 o'clock, when it became stationary. I immediately repeated his observations, and found that the fact was certain; but that there was likewise another diurnal variation which had escaped his notice. After numerous observations, at all hours during the day and night, I found that the Mercury is subject to the following variations, with the utmost degree of regularity, throughout the whole year. From six in the morning till between seven and eight it is stationary; it then rises till nine, sometimes though rarely till ten, when it remains stationary till noon; it then descends, and is lowest at three, and continues stationary till eight; when it begins to rise, and continues till eleven, and is then at the same height that it was at nine in the morning.

On relating the above observations to the late Colonel Pearce, an indefatigable and rigidly accurate observer, and who had devoted much time and attention to Barometrical pursuits, he was surprised that such regular variations of the Mercury should have escaped his observation; but some time after with great candor acknowledged the certainty of the fact; and framed an hypothesis to account for it, which you will probably be able to obtain on an application to Captain Grace.

To me the phenomena appear inexplicable to any hypothesis that I can
think of. The periods are evidently connected with the earth’s diurnal motion; and, if we had not a Satellite, might be easily explained by the atmospheric tides caused by the sun. But when we find that the Barometer is not in the least observable degree affected by the moon’s passage over the meridian, or by the united action of the sun and moon at the syzygies, we have absolute proof, that this cannot be the cause; neither can the expansion of the Mercury, being directly opposite to the phenomena, the greatest degree of heat taking place at three o’clock, when the Mercury is lowest.

With respect to the influence of the moon on the atmosphere, I was perfectly satisfied while in Beerboom, that the cold season set in at the syzygies only; and that there was always a considerable increase of cold at every return of them. But at the old powder works near Calcutta, I observed the greatest degree of cold to happen sometimes at the quadratures. Being however at that time much engaged in other pursuits, I did not attend to the circumstance of the moon’s absolute distance, though of the utmost consequence in all calculations of the heights of the tide, to which the variations of the state of the atmosphere occasioned by the attraction of the sun and moon must be analogous. And yet this fact, important as it is to every seafaring person, especially in river navigations, as well as to ship-builders, for predicting the highest spring tides, seems to be totally unknown to the generality of these persons; nor is it surprising, as it is not taken notice of in any treatise on navigation that I have met with. But M. De la Lande (Astronomy, vol. 3d, p. 656,) shews that if the moon’s mean force to raise the waters of the ocean be two and a half, her greatest force when Apogee will be three; and her least when Perigee two; a difference sufficient to account for the tides at the quadratures being sometimes nearly as high as those at the syzygies: a circumstance which was ascertained by part of a committee
instituted for examining plans for new powder works at the Old Fort Ghaut: where stakes had been driven on purpose to find the rise of the tide. M. De la Lande confirms the theory by many observations made with great accuracy in some of the ports of France (Supplement vol. 4), and I can vouch for the fact by numerous measures of the heights of the tide, both at the old and new powder works. But you may easily satisfy yourself of the fact, by observing the height of a few tides at Champaigne Gaut, when you will find invariably, that every great parallax of the moon, at the syzygies, is attended with a very high tide, and strong bore; and vice versa. I have not been able to observe, that the moon's declination, notwithstanding what you may have heard from other quarters, has any perceptible effect on the tides.

I have been the more particular on this subject that I have heard it made an unanswerable objection to your system, that the first attacks of intermittent fever do happen at the quadratures as well as the syzygies; and that relapses do likewise happen at the quadratures. Now should you meet with any such cases, the above observations may perhaps tend to reconcile them to your system, &c.

John Farquhar.
Banky Bazar, 12th February, 1794.

III.

Although in this letter Mr. Farquhar describes in the Barometer only three different diurnal periods of rising and falling, I could not help suspecting that there must likewise be a fourth which had escaped his notice; and that I should be able to discover a periodical falling, also, in the state of the mercury, between eleven at night and six in the morning, analogous to that which he had observed between eleven at midday and six in the evening.
Accordingly by keeping myself awake, and continuing my observations during the night, I have now the satisfaction to be assured that my anticipation of the revolution I expected to discover was perfectly just.

IV.

With a view of ascertaining the progress of these four different revolutions by personal observation, I imposed upon myself the task of observing and recording the changes of the Barometer, as far as I was able every half-hour, day and night, during the period of one compleat lunation.

The result of this undertaking I have now the honor to lay before the society; and if in matter or form it contain anything worthy of their attention, or of a place amongst their Researches, it will afford me a degree of satisfaction that will more than reward me for my labor.

I. Of the Periodical Diurnal Changes of the Barometer.

THE DETAIL OF FACTS.

V.

The detail of Facts is comprehended in the following record of observations made on the Barometer as regularly as I was able to perform it every half-hour, both day and night, during the lunation which intervened between the 31st of March and the 29th of April 1794. To these I have added the state of the Thermometer and Wind, with the appearance of the sky.

VI.

My observations of the Barometer were taken with scrupulous exactness,
and although the weighty hand of sleep has more than once deprived me of observations that I was just about to make and was anxious to record, I have never ventured to assume any probable state of the Mercury as an actual observation.

VII.

With respect to the Thermometer, although it was liable to some inaccuracy from my not being able to preserve the apartment in which it was hung uniformly open or shut, yet, as the variations from this cause were trifling, and never obscured the regular and progressive rise and fall which it observes at different periods of the day, I conceive that my record is sufficiently exact for enabling me to decide with safety that the daily fluctuations which appeared in the Barometer were not connected with the daily vicissitudes of heat and cold.

VIII.

Although the state of the wind was not measured by any instrument, but estimated only grossly by the effect which it appeared to produce on the trees and other objects around, still I conceive, that I may also venture to determine on this ground that the diurnal fluctuation of the Mercury was not connected with the state of the wind.

In the column appropriated for recording the state of the wind, Number 1, represents a breeze capable of carrying on a ship two or three miles in the hour; Number 2, a breeze capable of carrying on a ship four or five miles; and Number 3, a breeze capable of carrying on a ship six, seven, or eight miles.
A SYNOPSIS OF THE DIURNAL AND STEPTENARY CHANGES OF THE BAROMETER.

<table>
<thead>
<tr>
<th>d. h. m.</th>
<th>New Moon, March 31</th>
<th>15 P.M.</th>
<th>First Quarter, April 7</th>
<th>11 A.M.</th>
<th>Full Moon, April 15</th>
<th>4 P.M.</th>
<th>Last Quarter, April 23</th>
<th>6 P.M.</th>
<th>New Moon, April 29</th>
<th>9 P.M.</th>
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| A. M. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| I     | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| II    | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| III   | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| IV    | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| V     | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| VI    | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| VII   | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| VIII  | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| IX    | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| X     | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| XI    | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
| XII   | 29.37 | 29.99 | 30.4 | 30.7 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 |
Neither are the appearances of the sky defined with much precision or minuteness; yet upon the description that I have given, I think I may pronounce with sufficient confidence that they did not direct or regulate the periodical diurnal fluctuation of the Barometer.

By conceiving the wind, which in the month of April is generally from some point in the south, carrying constantly along with it, in the different degrees of velocity I have described (VIII), different proportions of light and heavy clouds, we may obtain a tolerably just idea of the appearance of the sky at Calcutta during that month.

To express these different states we have employed in the record the terms clear, cloudy, and overcast. When few clouds only appear, or none, which is seldom the case at this season, the sky is said to be clear; when the sun or stars shine through a number of clouds, the sky is said to be cloudy; and when the sun or stars don't appear at all, the sky is said to be overcast.

N. B. As the record of observations from which these negative propositions (VII, VIII, IX,) respecting the thermometer, the state of the wind, and appearance of the sky are inferred, is voluminous; and would necessarily exclude from this volume of the Researches matter that is much more interesting, it has been considered sufficient for the object of this paper to insert only the opposite abstract or Synopsis of the observations made on the Barometer.
A TREATISE ON

THE STATEMENT.

XI.

The sum of my observations respecting the Four Periodical Diurnal Revolutions of the Barometer which I have described, appears at one view in the preceding Synoptical Arrangement, and when stated precisely in numbers amounts to this.

1st. That on every day of the thirty comprehended in the Record, excepting one (a), the Barometer constantly fell between ten at night and six in the morning; and that progressively, and without any intermediate rising excepting in one instance (b).

2d. That on every day of the thirty comprehended in the Record, without one exception, the Barometer constantly rose between six and ten in the morning; and that progressively, and without any intermediate falling, excepting in two instances (c)(d).

3d. That on every day of the thirty comprehended in the Record, without one exception, the Barometer constantly fell between ten in the morning and six in the evening; and that progressively, and without any intermediate rising in any instance.

4th. That on every day of the thirty comprehended in the Record, excepting two (e)(f), the Barometer constantly rose between six and ten in the evening; and that progressively and without any intermediate falling in any instance.

(a) Between the 20th and 21st—Vid. Synopsis.
(b) Between the 22nd and 23rd—ditto.
(c) On the 1st—ditto.
(d) On the 23rd—ditto.
(e) On the 15th—ditto.
(f) On the 20th—ditto.
THE INFEERENCE.

XII.

From the preceding statement of the coincidences observed in these four portions of the day, it appears that we may reasonably infer the following propositions, limited to Calcutta in the month of April 1794.

1st. That, in the interval between ten at night and six in the morning there existed a prevailing tendency in the Mercury to fall.

2d. That, in the interval between six and ten in the morning there existed a prevailing tendency in the Mercury to rise.

3d. That, in the interval between ten in the morning and six in the evening, there existed a prevailing tendency in the Mercury to fall.

4th. That, in the interval between six and ten in the evening, there existed a prevailing tendency in the Mercury to rise.

These different prevailing tendencies to rise and fall periodically at certain times of the day and night, necessarily imply a proportionate corresponding cause sufficient to produce them. But here we stop and venture to proceed no farther than to say, with Mr. Farquhar, that they seem to be connected with the diurnal revolutions of the planet which we inhabit.

XIII.

By an attentive examination of the Synopsis it will appear, that the general characters of the tendencies which prevail at the different periods, we have described, are liable, within their respective limits, to several remarkable variations, viz.

1. With regard to the time of beginning to rise or fall.

2. With regard to the time of ceasing to rise or fall.

3. With regard to the steps or degrees by which the Mercury rises or falls.

4. With regard to the limits or extremes to which it rises or falls.
Being under the necessity of acknowledging our ignorance of the cause which produces these prevailing tendencies themselves, we can of course have no adequate idea or conception in theory of the different circumstances that are capable of producing the different variations which appear in their general character; and our observations being much too limited to establish concerning them anything like practical rules, we must remain contented for the present with pointing them out as questions which want investigation: expressing however a strong suspicion that they are not unconnected with the relative positions of the Moon, and the other planets.

The Application.

XIV.

At the time of digesting the ideas which I have delivered upon this subject, being possessed of no information but that which was communicated in Mr. Farquhar’s letter, and what I obtained afterwards from my own observations, I did not conceive that I was authorized to extend the propositions which I have advanced (XII) respecting these tendencies beyond the limits of Calcutta. By a note, however which is just now pointed out to me in Dr. Moseley’s very ingenious Treatise on Tropical Diseases (a), I have the satisfaction to find that the very same tendencies have been observed to prevail on the opposite side of the globe. We may therefore now venture to allow them a more extensive range; and it will, no doubt, be considered of some importance to establish, in certain latitudes, (b) the existence of a law in nature by which the Mercury of the Baro-

(a). Vide the Note A, at the end of the Treatise.
(b). As far as I can judge from the following extract from Father Cotte’s Memoir on the prevailing winds, &c. &c. which I have just met with in the Edinburgh Magazine for March 1792, there seems to be great reason to believe, that similar fluctuations take place in the Mercury in the
meter, let the standing weight and pressure of the atmosphere be what it may, is liable to the effects of a constant and regular periodical diurnal fluctuation: for it will then follow that the power of each succeeding hour to raise or sink it, is liable to differ from that which went before, that the height of the Mercury, therefore taken only at two or three stated hours of the day cannot with propriety be asumed to represent, or form a just estimate of the whole twenty-four, that calculations proceeding hitherto on such partial grounds must necessarily include error and require adjustment, and that in future, wherever this law extends, no correct philosophical investigation connected with the nature of the atmosphere can be carried on without giving it a place; and no just prognostic formed of the weather without distinguishing those regular and constant changes from such as are only occasional and temporary.

With respect to Medicine, this law is a principle entirely new; and it has now become a matter of real consequence to ascertain in what respects it co-operates with the power of the sun and moon in producing and regulating the paroxysms of Fevers. From the striking coincidence of these tendencies with the periods at which the paroxysms of Fevers generally attack and remit, and from their superior prevalence in tropical climates different Latitudes of Europe; and that they are not entirely confined to the Regions under the Equator.

"The Mercury is generally a little lower about two o'clock in the afternoon, than at any other time of the day; and it is highest towards eight o'clock at night. I would compare this fact without pretending to draw any consequences from it, with the phenomenon of the Magnetic needle, the greatest variation of which from North towards West takes place about two or three in the afternoon, and the least about eight o'clock in the morning.—Vid. the Edinburgh Magazine for March 1792, page 211.—Par. 6.

(c) A mean extracted from means obtained from the extremes of these different diurnal fluctuations will give the mean weight of the atmosphere much more correctly than the common process,
where the paroxysms of Fever are also most prevalent; "it seems to be highly probable that they may have a considerable share in constituting that power which shews itself in so remarkable a manner in this country, and which we have denominated Sol-lunar Influence."

II. Of the Periodical Septenary Changes of the Barometer.

Respecting periodical septenary changes in the state of the Barometer, the only information I have been able to obtain, is extracted from an abridged Exposition of the system of Mr. Toaldo upon the probability of the change of weather by the lunar points taken from the Journal des Sciences Utiles, and published in the Calcutta Magazine for July and August 1793. Mr. Toaldo, it appears, in order to ascertain whether the moon had any influence on the Mercury, collected a journal of the Barometer kept for several years, from which he discovered that the Barometer was six-tenths of a line higher, at the times of the quadratures than at the syzygies.

If this Journal was kept correctly on a proper plan, periodical septenary changes in the Barometer connected with the revolutions of the moon are established of course. But if it was kept in the ordinary way of assuming two or three observations taken in the course of the day, to serve as a standard or rule for estimating the state of the whole twenty four, it is evidently liable to errors which render the calculation precarious and inconclusive for the reasons already explained, which however had not occurred to me at the time of writing my last Treatise on Sol-lunar Influence.

That the Barometer will be differently affected at the Springs and Neaps is an anticipation which has in its favor the strongest probability
that analogy can afford. Yet upon a review of the observations collected during the Springs and Neaps of the Lunation which I have observed, I cannot say, that when arranged as they stand in the Synopsis, in coincidence with their respective periods, they exhibit a difference of character to establish this conclusion. We therefore leave it to the decision of a far more extensive experience conducting its observations on a plan similar to that which we have exemplified in this Treatise.

NOTES.

A.

The Note referred to in Dr. Moseley's Treatise is this:—"It has been observed in these and more Equatorial Regions, that though the Barometer is useless in indicating the variations of the weather, it exhibits a phenomenon not correctly ascertained in temperate climates; which is that the Mercury has two diurnal motions of ascent and descent, of nearly a line corresponding with the course of the sun; ascending as the sun approaches the zenith and nadir, and descending as the sun deviates from these points. It remains stationary at its lowest and highest degrees for some hours.

In looking over Dr. Moseley's Treatise on this occasion I am sorry to discover that trusting too much to memory, in referring to his work in my last publication, I have given a very imperfect account of what he has communicated on the subject of Sol-lunar Influence. But when he considers that by my inaccuracy I have deprived myself of the weight of his authority in supporting a proposition I was anxious to establish, he will be inclined to ascribe it to the cause I have stated. Dr. Moseley's observations are contained in the Conclusion to his Treatise, between page 550 and 556. They confirm the power of Sol-lunar Influence in Europe in a very unequivocal manner and merit, the attention of those who wish for information on this subject.
XIV.

On the Duties of a Faithful Hindu Widow.

By Henry Colebrooke, Esq.

While the light, which the labours of the Asiatick Society have thrown on the sciences and religion of the Hindus, has drawn the attention of the literary world to that subject, the hint thrown out by the President for rejecting the authority of every publication preceding the translation of the Gité does not appear to have made sufficient impression. Several late compilations in Europe betray great want of judgement in the selection of authorities; and their motley dress of true and false colours tends to perpetuate error; for this reason it seems necessary on every topick, to revert to original authorities for the purpose of cancelling error or verifying facts already published; and this object will no way be more readily attained, than by the communication of detached essays on each topick, as it may present itself to the Orientalist in the progress of his researches.

From this or any other motive for indulgence, should the following authorities from Sanscrit books be thought worthy of a place in the next volume of the Society's Transactions, I shall be rewarded for the pains taken in collecting them.

"Having first bathed, the widow dressed in two clean garments, and holding some csá grasses, tips water from the palm of her hand. Bear--
ing cāṣṭa and tile (a) on her hand, she looks towards the east or north while the Brāhmaṇa utters the mystick word Om. Bowing to Nerayana, she next declares (b): "On this month, so named, in such a Pāḍhva, on such a tit'bi, I (naming herself and her (c), family) that I may meet Arundhati (d) and reside in Swarga; that the years of my stay may be numerous as the hairs on the human body; that I may enjoy with my husband the felicity of heaven; and sanctify my paternal and maternal progenitors, and the ancestry of my husband's father; that lauded by the Apsaras, I may be happy with my lord, through the reigns of fourteen Indras; that expiation be made for my husband's offences, whether he have killed a Brāhmaṇa, broken the ties of gratitude, or murdered his friend, thus I ascend my husband's burning pile. I call on you, ye guardians of the eight regions of the World! Sun, and Moon! Air, fire, ether (e), earth and water! My own soul! Yama! Day, night, and twilight! And thou, conscience, bear witness. I follow my husband's corpse on the funeral pile (f)."

"Having repeated the Sancalpa, she walks thrice round the pile; and the Brāhmaṇa utters the following Mantras:

(a) Sefasum. (b) This declaration is called the Sancalpa.
(c) Gūtra, the family or race—Four great families of Brāhmaṇas are now extant, and have branched into many distinct races. Since the memorable massacre of the Cīsatriya's, by Parasā Rāma, the Cīsatriya's describe themselves from the same Gūtras as the Brāhmaṇas.
(d) Wife of Vāsishth'ha. (e) Atēja.
(f) In several publications the woman has been described as placing herself on the pile before it be lighted, but the ritual quoted is conformable to the text of the Brāhmaṇa:

"When the corpse is about to be consumed in the Sabāja, the faithful wife, who stood without, rushes on the fire."

Nā'ada to Yudisht'hir.

* Cabin of girls or leaves, sometimes erected on the funeral pile. "The Shed on the funeral pile of a Muni" is (called) Parn'ūtaja and Sahūtaja." See the vocabulary entitled Ha'ra'balī.
"Om! Let these women, not to be widowed, good wives, adorned with collyrium, holding clarified butter, consign themselves to the fire. Immortal, not childless, nor husbandless, excellent, let them pass into fire, whose original element is water.

From the Rigveda.

"Om! Let these wives, pure, beautiful, commit themselves to the fire, with their husband's corpse.

A Paurânic Mantra.

"With this benediction, and uttering the mystic Namô Namah; she ascends the flaming pile."

While the prescribed ceremonies are performed by the widow, the son, or other near kinsman, of the deceased, applies the first torch, with the forms directed for funeral rites in the Grihya (g); by which his tribe is governed.

The Sancalpa is evidently formed on the words of Angiras:

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(g) Extracts or compilations from the sacred books, containing the particular forms for religious ceremonies, to be observed by the race or family, for whom that portion of the sacred writings has been adopted, which compose their Grihya. We learn from the Bhâgavata, that Vyasa divided the Vedas into four (Rich, Vajra, Sama, and Aharvan;) or five, including the Vishṇus or other Puranas as one Veda. Paila accepted the Rigveda; Jaimeni and Cavi or Sūdra, the Sama; Baisampayana learned the Yajurveda; Samuntu, Daruna and others of the family of Angiras, the Aharvanveda.

"My father (Sūtra, son of Vyasa speaks) selected the Vishṇus and Puranas; then the several Rishi chose the Vedas variously, (parts of each.) Their pupils, the successors of their pupils, and the pupils of these became followers of particular Śākha's."
"The wife who commits herself to the flames with her husband's corpse, shall equal Arundhati and reside in Swarga:

Accompanying her husband she shall reside so long in Swarga, as are the thirty-five millions of hairs on the human body.

As the snake-catcher forcibly drags the serpent from his earth, so, bearing her husband, (from hell) with him she shall enjoy heavenly bliss.

Dying with her husband, she sanctifies her maternal and paternal ancestors; and the ancestry of him to whom she gave her virginity.

Such a wife, adoring her husband, in celestial felicity with him, greatest, most admired (b), with him shall enjoy the delights of heaven; while fourteen Indras reign.

Though her husband had killed a Brāhmaṇa, (i) broken the ties of gratitude, or murdered his friend, she expiates the crime."

Angiras.

The Mantras are adopted on the authority of the Brahma Purāṇa.

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(b) The word in the text is expounded "lauded by the choirs of heaven, Gaudhavas &c."

(i) The commentators are at the pains of showing that this expiation must refer to a crime committed in a former existence; for funeral rites are refused to the murderer of a Brāhmaṇa.
"While the pile is preparing, tell the faithful wife of the greatest
duty of woman, she is loyal and pure, who burns herself with her husband’s
corpse. Hearing this, fortified (in her resolution) and full of affection, she
completes the Pitriyedha Yaga (k) and ascends to Swarga."

Brahme Purana.

It is held to be the duty of a widow to burn herself with her husband’s
corpse, but she has the alternative;

"On the death of her husband to live as Brabmachari, or commit her-
selt to the flames."

Vishnu.

The austerities intended consists in chastity, and in acts of piety and
mortification.

"The use of Tambula, dress, and feeding off vessels of tutenague is
forbidden to the Yati (l), the Brabmachari and the widow.

Prachetats.

"The widow shall never exceed one meal a day, nor sleep on a bed:
if she do so, her husband falls from Swarga.

"She shall eat no other than simple food, and (m) shall daily offer the
tarpana of chisa, tila, and water (n).

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(1) Act of burning herself with her husband.  
(2) Sannyasi.  
(1) If she has no male descendants. See Madana Parijata.  
(2) Oblations for the manes of ancestors to the third degree, though not exclusively, for the prayer
In Varāčha, Cārtica, and Māgha, she shall exceed the usual duties of ablution, alms and pilgrimage, and often use the name of God (in prayer).

The Smṛiti.

After undertaking the duty of a Sati, should the widow recede, she incurs the penalties of defilement.

"If the woman, regretting life, recede from the pile, she is defiled; but may be purified by observing the fast called Prājopatya (o).

'Apastamba.

Though an alternative be allowed, the Hindu legislators have shown themselves disposed to encourage widows to burn themselves with their husband's corpse.

Hārita thus defines a loyal wife: "She, whose sympathy feels the pains and joys of her husband; who mourns and pines in his absence; and dies when he dies; is a good and loyal wife.

Hārita.

"Always revere a loyal wife, as you venerate the Dēvatās; for, by her virtues, the prince's empire may extend over the three worlds."

Matsya Purāṇa.

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Includes a general petition for remoter ancestors. Yet daily oblations (Vajriśtra) are separately offered for ancestors beyond the third degree.

(o) It extends to twelve days: the first three, a spare meal may be taken once in each day; the next three, once in each night; the succeeding three days nothing may be eaten, but what is given unsolicited; the last three days are a rigid fast.
"Though the husband died unhappy by the disobedience of his wife. If from motives of love; disgust (of the world); fear (of living unprotected); or sorrow, she commit herself to the flames: she is entitled to veneration."

Mahā Bhārata.

Obsequies for suicides are forbidden; but the Rigvēda expressly declares, "that the loyal wife (who burns herself) shall not be deemed a suicide: when a mourning of three days has been completed, the Srāddha is to be performed (p). This appears from the prayer for the occasion directed in the Rigvēda.

Regularly the chief mourner for the husband and, for the wife would, in many cases, be distinct persons: but the Bhavishya Purāṇa provides, that,

"When the widow consigns herself to the same pile with the corpse of the deceased, whoever performs the Crijā for the husband, shall perform it for Her.

"As to the ceremonies from the lighting of the funeral pile, to the Pinda; whoever lights the pile, shall also offer the Pinda."

Vāyu Purāṇa.

In certain circumstances the widow is disqualified for this act of a Sati:

(p) The shortest of the mourning is honorable; the longest mourning is for the lowest tribe.
"She, who has an infant child, or is pregnant, or whose pregnancy is doubtful, or who is unclean, may not. O princess! ascend the funeral pile.

"So said NA'EDA to the mother of SAGARA."

"The mother of an infant, shall not relinquish the care of her child, to ascend the pile; nor shall one who is unclean (from a periodical cause), or whose time for purification after childbirth is not passed, nor shall one who is pregnant, commit herself to the flames (q). But the mother of an infant may: if the care of the child can be otherwise provided."

VRI'HASPATI.

In the event of a Brâhmana dying in a distant country, his widow is not permitted to burn herself.

"A Vîpra or Brâhmanâ may not ascend a second pile."

GOTAMA.

But with other castes, this proof of fidelity is not precluded, by the remote death of the husband, and is called Anugamana.

"The widow, on the news of her husband's dying in a distant country, should expeditiously burn herself; so shall she obtain perfection."

VYA'SA.

(q) It has been erroneously asserted, that, a wise, pregnant at the time of her husband's death, may burn herself after delivery. Hindu authorities positively contradict it. In addition to the text, it may be remarked, that it is a maxim: "What was prevented in its season, may not afterwards be resumed."
"Should the husband die on a journey, holding his sandals to her breast, let her pass into the flames."

Brahme Purâna.

The expression is not understood of sandals exclusively: for thus Usanas or Sucra.

"Except a Viprâ, the widow may take any thing that belonged to her husband; and ascend the pile.

"But a Viprâ may not ascend a second pile; this practice belongs to other tribes."

Sucra.

In two of the excepted cases, a latitude is allowed for a widow desirous of offering this token of loyalty, by postponing the obsequies of the deceased: for Vyâsâ directs that, "If the loyal wife be distant less than the journey of a day; and desire to die with her husband; his corpse shall not be burnt, until she arrive." And the Bhavishya Purâna permits that, the corpse be kept one night, if the third day of her uncleanness had expired, when her husband died."

With respect to a circumstance of time (r), which might on some occasions be objected, the commentators obviate the difficulty by arguing, from several texts "that to die with or after (her husband), is for a widow

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(r) Occasional observances are omitted on intercalary days.
"Naimittica (s) and Cāmya (t), and consequently allowable in the intercalary
"month," for Dacsha teaches that, "whenever an act both Naimittica
"and Cāmya is in hand, it is then to be performed, without consulting sea-
"son." They are at the trouble of removing another difficulty:

"Dhritauraśtra, in the state of Samadbi, quitted his terrestrial
"form to proceed to the Mucchi, or beatitude, which awaited him. When
"the leaves and wood were lighted to consume the corpse; his wife Gaṇḍ-
"hārī was seen to pass into the flames. Now also, a husband dying at
"Cāsi and attaining Mucchi, it becomes his widow to follow the corpse in the
"flames."

It were superfluous to pursue commentators through all their frivolous
distinctions and laborious illustrations on latent difficulties.

All the ceremonies essentiai to this awful rite are included in the instruc-
tions already quoted. But many practices have been introduced though not
sanctioned by any ritual. A widow, who declares her resolution of burning
herself with the corpse, is required to give a token of her fortitude. And it is
acknowledged, that one who receded after the ceremony commenced, would
be compelled by her relations to complete the sacrifice. This may explain
circumstances described by some, who have witnessed the melancholy
scene.

Other ceremonies noticed in the relations of persons, who have been
present on such occasions, are directed in several rituals:

(i) Eventual; incumbent, when a certain event happens,
(ii) Optional; done for its reward.
“Adorned with all jewels, decked with minium and other customary ornaments, with the box of minium in her hand, having made pūjā, or adoration, to the Dévatās, thus reflecting that this life is nought: my lord and master to me was all; she walks round the burning pile. She bestows jewels on the Brāhmānas, comforts her relations, and shows her friends the attentions of civility; while calling the Sun and Elements to witness, she distributes minium at pleasure; and having repeated the Sancalpa proceeds into the flames. There embracing the corpse, she abandons herself to the fire, calling Satya! Satya! Satya!”

The bystanders throw on butter and wood: for this they are taught, that they acquire merit exceeding ten million fold, the merit of an Aswamedha, or other great sacrifice. Even those, who join the procession from the house of the deceased to the funeral pile, for every step, are rewarded as for an Aswamedha. Such indulgences are promised by grave authors: they are quoted in this place only as they seem to authorize an inference, that happily the Martyrs of this superstition have never been numerous. It is certain, that the instances of the widow’s sacrifice are now rare: on this it is only necessary to appeal to the recollection of every person residing in India, how few instances have actually occurred within his knowledge. And, had they ever been frequent, superstition would hardly have promised its indulgences to spectators.
On the traces of the Hindu Language and Literature, extant amongst the Malays.—By William Marsden, Esq.

The Sanscrit, or ancient language of the Hindus, is a subject so interesting in itself, that every discovery which contributes to throw light upon its history or to mark its extent, carries with it a degree of importance. The proofs of its influence in the northern countries of Assam, Nepal, Bootan, and Tibet, as well as in the southern parts of the peninsula of India, are to be found in the works of the Missionaries and the Researches of this Society, but the progress it made, in early times, amongst the inhabitants of the eastern islands and countries possessed by the Malays, has not, I believe, been pointed out by any writer. My acquaintance with the language of the latter people, together with some attention paid to the dialects of India in general, have enabled me to observe, that the Malayan is indebted to the Sanscrit for a considerable number of its terms. I have also satisfied myself, that the intercourse by which this communication was effected, must have taken place in times anterior, probably by many centuries, to the conversion of these people to the Mahometan religion. The language, it is true, abounds at present with Arabick words, which their writers affect to introduce, because this display of literary skill is, at the same time a proof of their religious knowledge; but they are generally legal or metaphysical terms, borrowed from the Koran and its commentaries, are never expressive of simple
On the Traces of the

ideas, have not been incorporated into the language (a few excepted), and are rarely made use of in conversation. The Hindu words, on the contrary, are such as the progress of civilization must soon have rendered necessary, being frequently expressive of the feelings of the mind, or denoting those ordinary modes of thought, which result from the social habits of mankind, or from the evils that tend to interrupt them. It is not however to be understood, that the affinity between these languages is radical, or that the names for the common objects of sense are borrowed from the Sanscrit. The Malayan is a branch or dialect of the widely extended language, prevailing throughout the islands of the Archipelago, to which it gives name (*), and those of the south-sea; comprehending between Madagascar on the one side, and Easter island on the other, both inclusive, the space of full two hundred degrees of longitude. This consideration alone is sufficient to give it claim to the highest degree of antiquity, and to originality, as far as that term can be applied. The various dialects of this speech, though they have a wonderful accordance in many essential properties, have experienced those changes which separation, time, and accident produce, and in respect to the purposes of intercourse, may be classed into several languages, differing considerably from each other. The marks of cultivation by which the Malayan is distinguished from its ruder neighbours, are to be attributed, in my opinion, to the effects of an early connexion that must have subsisted between the inhabitants of this eastern peninsula, and those of the continent of India; but what the nature and circumstances of this connexion may have been, it is not easy to determine. A spirit of foreign conquest, and still more a zeal for the propagation of their religious tenets, appear incompatible with the

(*) The Malay-Archipelago may be understood to comprehend the Sunda, Philippin, and Malacca islands, in the maritime parts of which the Malayan is used as a lingua franca.
genius of the Hindu system, excepting amongst the disciples of Bhood; but I have never discovered in the Malayan customs or opinions any traces of the peculiar institutions of that extraordinary sect.

A commercial intercourse has always subsisted between the manufacturing countries of India, and the marts for the produce of the Spice-islands, such as Jobor, Singapoora, and Malacca, and when the Portuguese, at the commencement of the sixteenth century, first visited these places, they mention with surprise the concourse of foreign vessels assembled there. But independently of other objections that might be raised to the probability of these traders having polished the language of the people whose ports they frequented, or having imparted to them their national literature, it is to be observed that by much the greater proportion of the ships belonging to native merchants which now enter the straits of Malacca, come from the coast of Coromandel, and consequently are navigated by persons who speak the languages prevailing in that part; whereas it is evident, that from the Telinga or the Tamool, the Malayan has not received any portion of its improvement, but from the genuine Hindupee of the northern provinces, prior to its debasement by the mixture of Arabick nouns, and the abuse of verbal auxiliaries. If the communication must necessarily be supposed to have its origin in commerce, I should be inclined to consider the people of Guzerat, notwithstanding their distance, as the instructors of the Malays. Their resort to Malacca is particularly noticed by De Barros and other authentic writers, and it is well known, that the Hindu language has been preserved with more purity in that, than in any other maritime province of India.

The nature of the affinity suggested, will sufficiently appear to those who are conversant with the Hindu dialects, by the following examples of
Sanscrit words, which are at the same time so familiar to the Malays, and so thoroughly incorporated into their vernacular tongue, that their foreign origin is never suspected, although the terms adopted from the Arabs, can, with very few exceptions, be immediately pointed out by the most ordinary scholar. It is true that he is aslifted in this discrimination by the peculiarities of the Arabick orthography; for the Malays, as well as the Persians and other people, who, in consequence of their conversion to the faith of the Koran, employ this alphabet in their writings, do yet reject the use of certain letters, either as superfluous or as not suited to the smoothness of their own sounds, and which therefore appear only in words purely Arabick. The Hinduvee words, on the contrary, being divested of their proper dress, and clothed, in common with those originally Malayan, in the adopted Arabick character (with certain judicious modifications) want the same token of their origin, and are more assimilated with the rest of the language.

In this short list of words taken, with little pains in the selection, from a Malayan dictionary, the departure from the Hinduvee is scarcely more than may arise from a different habit of spelling them in our letters, unless where it consists in a slight variation of the sense, or of the part of speech.

Sooka. Fond, pleased.
Sooka cheta. Pleasure, joy.
Dooka. Sad.
Bagee. To divide.
Bangfa. Race, family.
Bafa. Language.
Beebara. Advice, counsel, judicial proceeding.

Beejee. Seed.
Boodee. Wisdom, understanding.
Loba. Covetous.
Jaga. To watch.
Pootree. Princess.
Rata. Chariot.
Pernama. Full moon.
Charee. To seek.
Hindu Language and Literature.

An inspection of the characters used by the natives of the islands, who have not adopted the Malayan or Arabick mode of writing, will shew that in the arrangement of their letters they have taken the Hindu for their guide, and have even preserved the rhythmus terminated by a nasal, which so peculiarly distinguishes this from every other system. The aspirated letters not being required for expressing the sounds of these languages, are omitted, and each division of the series consists therefore of three, instead of five. In the Rejang alphabet the order is as follows, Ka, ga, nga; Ta, da, na; Pa, ba, ma; Cha, ja, nia; &c. (see History of Sumatra. Plate): in the Sanscrit, I need scarcely to observe, the series of consonants begins thus, Ka, k'ba, ga, g'ba, nga; Cha, ch'ba, ja, j'ba, gnya; Ta, t'ba, da, d'ba, na; &c. If other proofs were wanting of the influence of Hindu intercourse in these parts, such conformity alone, in a matter so arbitrary, and which exists equally in other obscure dialects and extends even to the island of Celebes, would be sufficient to establish it. The languages of these islanders have not, however, been enriched by an accession of Hindu words in any degree proportioned to the Malayan, which uses the Arabick alphabet; but the probability is strong, that the inhabitants of the Malay peninsula were in possession of an alphabet on the same model and were even skilled in composition, before the Mahometans introduced their learning and character among them.

But the circumstance which has more immediately struck my attention and given occasion to these remarks, is that of my having met with frequent allusion in their writings, to the most celebrated works of the Hindu mythological poets, especially the Mahabharat and the Ramayan. A manuscript now laying before me, which is a species of romance, exhibits in almost every page the marks of the author's acquaintance with Hindu literature and man-
It contains the adventures of two princes who were sent by the king their father, to obtain for him the possession of an extraordinary, self-performing instrument of music, whose enchanting air he had heard in a dream. However slimly this foundation, and incoherent the parts of its superstructure, it gives scope to the display of a lively and fertile imagination, much delicate imagery, and pathetic expression of sentiment. The following passages allude unequivocally to well-known personages in the Poorans: "Tertalo beek segala roop a'nia maha-indab separtee pandooa leema" — "surpassing good was their whole appearance; most admirable, like unto the five Pandooas." Again: "Lakoo'nia meng-amok eetoo separtee pandooa leema tatkala eea meng-amok dedalam rayet kooroo," — "the manner in which they fought was like that of the five Pandooas, when they rushed into the ranks of the Kooroos." These can be no other than the renowned favorites of Krishna, whose brilliant actions and personal accomplishments are the theme of immortal song. The machinery of the Ramayan is interwoven with the story, and this circumstance tends to increase my regret that we possess no translation, even in abstract, of that much admired poem. The Malayan princes are, like Rama, attended in their wars by apes of extraordinary endowments, who fight with more than human prowess, and overcome the Raksha or hobgoblins, who serve under the banners of the adversary. One of the former, whose talents as an ambassador are the subject of panegyric, is said to resemble that diplomatic monkey who was sent by Sree Rama to the King of Langkapoorree. The mixture of qualities and actions gravely attributed to them in their double capacity of monkeys and heroes, produces a very ludicrous and amusing effect. Though their ideas are rational, their manners and propensities are faithful to nature. Mention is also made of Bisnoo dewa; of the mountain Maba-meroo; of the blue lote growing in the pool Mandoo ratna; of a lion possessing supernatural powers, Sing-asaktee
and elsewhere Sing-a rajoon رجوع, who shot arrows at Mabaraja Karna, كرنا. Some of these latter names I do not recollect to have met with in the notices we have of the Hindu mythology.

These similes and allusions must refer, as in all poetry, to stories with which the readers were presumed to be well acquainted, and seem to imply, that translations of the works were formerly in the hands of the Malays. I do not know that such remain amongst them at this day; but my ignorance is no proof of the contrary; for at the time when I had opportunities of making the enquiry, I was uninformed as to the existence of the originals, and the passages above quoted were of course unintelligible to me. They must be sought for in the peninsula of Malacca, or amongst the Menangkabon people in Sumatra. A spirit of investigation is now gone forth, and under the influence of the Asiatick Society, and from the example of its President, we may confidently hope that no region of oriental literature will be left unexplored.

Since the foregoing Paper was written, and communicated to a few friends, I have seen a copy of the third volume of the Asiatick Researches (just received from Calcutta), and observe that the connexion between the Malayan and the Sanscrit has not escaped the notice of the President, whose learned and elegant Anniversary Discourse points it out (p. 9 & 10) in a clear and decided manner. The sanction of his authority to my opinion fully reconciles me to the anticipation of a supposed discovery.
A Catalogue of Indian Plants, comprehending their Sanscrit and as many of their Linnæan Generic names as could with any degree of precision be ascertained.—By the late President.

\[\text{A} \] CA’SABALLI, Cassia.
Achyuta, Morinda.
Acránti, Solanum.
Acśha.

\[5\] Agaśtya, Æschynomene.
Agniś‘ic’há.
Aguru, Cordia.
Alábū, Cucurbita.
Alamvusha, Bryonia.

\[10\] Alarca, Asclepias.
Alpamárisha.
Amála.
Amalací, Phyllanthus.
Ambáśht”ha.

\[15\] Amlána, Gomphrena?
Amlalónica, Oxalis.
Amlavétasa, Hypericum.
Amlicá, Tamarindus.
Amra, Mangifera.

\[20\] Amrátaca, Spondias.
Ancót’a.
Anś’umá’tį.
An’u, Oryxa.
Apámarga.

\[25\] Aparájitá, Clitoria.
Aṛca, Asclepias.
Aṛdraca, Amomum.
Ariméda.

\[30\] Aṛśhṭa, Xanthium.
Arjaca, Ocymum.
Arjuna, Lagerstroemia?
Arushcara, Semecarpus.
As’mantaca.

\[35\] As’óca, a new genus.
Aśpaḥ’óta, Nyctanthes.
Aśv’ṛih, Oryxa.
Atavishá.
Atichará.

\[40\] Aśv’ṛih, Baniśtera.
Aśv’ṛih, Carissa?
Bacula, *Mimusops*.
Badari, *Rhannus*.
Bahuvâraca.
Bahvangâ, a new genus.

45
Balâ.
Bâla.
Bandhúca, *Ixora*.
Bangâ, *Cannabis*?
Batâ, *Ficus*.

Bhadramuñtaca, *Cyperus*?
Bhanga, *Gossypium*.
Bhanti, *Clerodendrum*.
Bhavya, *Dillenia*.
Bharadwâjî.

50
Bhúchampaca, *Kämpferia*.
Bhújambúca.
Bhúlavanga, *Fuchsia*.
Bhurandî, *Ipomoea*?
Bhûrja.

60
Bhûstrîna, *Andropogon*?
Bhútavâsî, *Nyctanthes*.
Berberá.
Bimba, *Bryonia*?
Bimbicâ, the same?

65
Bráhmani, *Ovieda*.
Brahmasuverchalâ.
Bráhmi, *Ruta*.
Bilva, *Crataeva*.

Biranga.

70
Cácamâchi.
Câcângi, *Aponogeton*?
Cachu, *Arun*.
Cadali, *Musâ*.
Cadamba, *Nauclea*.

75
Cahlâra, *Nymphea*.
Câla.
Câliâ.
Calambî.
Calami.

80
Caláya Câlinga, *Cucurbita*.
Calpaca.
Cámalatâ, *Ipomoea*.
Câmpilla, a new genus.
Câncanâra, *Baûbinia*.

85
Canda, *Dracontium*.
Candarâla.
Candúra, *Dolicbos*.
Candúru, *Scilla*?
Cângu.

90
Cantâla, *Agaave*?
Capillâ.
Capitt'ha, *Lîmônia*.
Caranjâca, a new genus.

95
Cáravélla, *Cleome*?
Câravî, *Laurus*.
Caravâra, *Nerium*. 
INDIAN PLANTS.

Carmaranga, Averrhoa.
Carnicára, Pavetta.

100 Carparálá, Aloë ?
Carpásí, Gossypium.
Carpúra, Laurus.
Cartuna, Citrus.
Cájá, Saccharum.

5 Cásfmirá.
Ca'táca, Strychnos.
Ca'íp'hala, Tabernamontana.
Catu.
Cémuca.

10 Césara, Crocus.
Cétaca, Pandanus.
Chacrálá,
C'hadira, Mimosa.
Ch'hátráca, Agaricus.

15 Champaca, Michelia.
Chanaca.
Chandá.
Chandana, Santalum.
Chandricá,

20 C'harjúra, Phænix.
Charmacafná.
Chavaca.
Chitrá.
Chitraca, Plumbago.

25 Chórappushpí, Scirpus.
Círáta.
Códrava.
Córangí.
Cóvidára, Baubinia.
Clítaca.
Cramuca.
Críhná.
Crífnachúrá, Poinciana.
Cfhírví, Ajílepia?
Cfhumá, Linum.
Culaca, Strychnos.
Culmála.
Cumbha.
Cumbhíca, Piśía.

40 Cumuda, Menianthes.
(Cuncuma, Crocus)?
Cunda, Jassínum.
Curubaca, Barlería.
Curuntaca.

45 Curuvaca.
Cuša, Poa.
Cuńhmánda, Cucumis ?
Cuśumbha, Carthamus.
Cutaja, Jassínum.

50 Cuvalaya.
Cuvéricaca, Swietenia?
Dámápana.
Danticá.
Dhanyāca.
Dárima, Punica.
Dāsi.
Dévadāru, Unona.
Dhátaci.
Dhustūra, Datura.
Dónā, Artemisia.
Drācshā, Vitis.
Durgājātā, Ophioglossum.
Dūrvā, Agrostis.
Dwipatā, Impatiens.

Elā, Anomum.
Elabāluca.
Eranda, Ricinus.
Gajapippali, a new genus?
Gambhārl.

Gandāli.
Gandharāja, Gardenia.
Gandirā, Solanum?
Gaurichandra, Hedyarum.
Ghantapātali,

Ghontā, Rhamnus.
Ghoshacā.
Gránt'hila.
Grinjana, Daucus.
Gocantaca, Barleria.

Gódhāpadī.
Gódhúma, Triticum.

Gójihvā, Elephantopus.
Gólomī, Agrostis?
Gónardā, Cyperus?

Góraçshā.
Govāçshī.
Góvarā, Eranthemum?
Guggulu.
Guhā.

Gunjā, Abrus.
Guvāca, Areca.
Haimavati.
Halaca, Nymphaea.
Hanu.

Haricus'ā, Acanthus.
Haridrā, Curcuma.
Haridru.
Haritacī, Terminalia.
Haritāla.

Haryanga, Cissus.
Hemapushpicā, Jasminum.
Hemaśāgara, Cotyledon.
Hilamóchicā.
Himavatī.

Hingu, Terebinthus.
Hinguli, Solanum.
Hintāla, Elate.
Hólīcā.
Jambira, Citrus.
<table>
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<th>Indian Plants</th>
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<td>Jambu, <em>Eugenia.</em></td>
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<tr>
<td></td>
<td>Jatamansi, <em>Valeriana.</em></td>
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<td>Java, <em>Terminalia?</em></td>
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<td></td>
<td>Jayap'hala, <em>Myristica.</em></td>
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<td></td>
<td>Jayantì, <em>Æfèbýnomène.</em></td>
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<td>15</td>
<td>Içhu, <em>Saccharum.</em></td>
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<td>Içhura.</td>
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<td>Içhwácu.</td>
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<td>Jímúta.</td>
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<td>Indívara, <em>Tradeescantia?</em></td>
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<td>20</td>
<td>Jíraca.</td>
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<td>Jívantì.</td>
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<td>Indráváruní.</td>
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<td>Ingudí.</td>
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<td>Irbáru.</td>
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<td>25</td>
<td>'Is'waramúla, <em>Aristolochia.</em></td>
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<td></td>
<td>Lacucha, <em>Artocarpus?</em></td>
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<td>Langálì, <em>Nama?</em></td>
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<td></td>
<td>Latárca, <em>Allium.</em></td>
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<td>Láfuná, <em>Allium.</em></td>
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<td>30</td>
<td>Lavalí, <em>Averrhoa.</em></td>
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<td>Lavanga, <em>Caryophyllus.</em></td>
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<td>Lódhra.</td>
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<td>Madana, <em>Pisonia.</em></td>
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<td>Madhúca, <em>Bassia.</em></td>
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<td>35</td>
<td>Madhúlaca.</td>
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<td>Madhúraca.</td>
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<td>Madhusigru, <em>Guilandina.</em></td>
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<td>40</td>
<td>Mahajálì.</td>
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<td>Mahásvéta.</td>
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<td>Malapu.</td>
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<td>Málátì, <em>fásminum.</em></td>
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<td>Mallicá, <em>Nyctanthes.</em></td>
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<td>Mánaca, <em>Arum?</em></td>
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<td>Mandára, <em>Erythrina.</em></td>
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<td>45</td>
<td>Márcara.</td>
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<td>Marcatì.</td>
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<td>Marícha, <em>Capsicum.</em></td>
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<td>Marunmálá.</td>
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<td>Málaparnì.</td>
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<td>50</td>
<td>Mátha, <em>Phaseolus.</em></td>
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<td>Máthandarí, <em>Callicarpa.</em></td>
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<td>Máfúra.</td>
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<td>Mátilunga, <em>Citrus.</em></td>
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<td>Maurì.</td>
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<td>55</td>
<td>Mayúra.</td>
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<td>Muchucunda, <em>Pentápetes.</em></td>
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<td>Mudga.</td>
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<td>Mudgaparnì.</td>
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<td>Múlaca, <em>Raphanus.</em></td>
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<td>60</td>
<td>Mundaballí, <em>Ipomoea.</em></td>
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<td>Murá.</td>
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<td>Murvá, <em>Alétris.</em></td>
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<td>Mustaca, <em>Schenus?</em></td>
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<td>Nágabalá, <em>Sida.</em></td>
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<tr>
<td>65</td>
<td>Nágaballì, <em>Baubinia.</em></td>
</tr>
</tbody>
</table>
A CATALOGUE OF

Nagacélara, Mésuá.
Nágadána, Artemísia.
Nágaranga, Citrus.
Nala, Ariśvida ?

70 Náli.
Náraga.
Náricélá, Cocos.
Nichula, a new genus.
Nílí, Indígofera.

75 Nilótpala, Pontederia.
Nimba, Melia.
Nívára, Oryza.
Pácala.
Padma, Nympháceae.

80 Palándu, Allium.
Palásá, Butea.
Panaśa, Artocarpus.
Parnála, Ocymum.
Pátalí, Bignónia.

85 Pátólá, Solanum ?
Paurá.
Pichula, Tamarix.
Pílu, Aloé ?
Pinyá.

90 Pippala, Ficus.
Pippalí, Piper.
Piyála.
Piṭtaśála.

95 Pífšhápári.
Priyangu.
Pótica, Physalis.
Punarnavá, Boerhaavia.
Pundaráca.

300 Pundra.
Púticarajá, Guilandína.
Račtamúla, Oldenlandíá.
Rájádána.
Rajaní.

5 Rájica.
Ráśhrícá.
Rášná, Ophíoxylum ?
Rénucá.
Rddhi.

10 Ríshhabha.
Rócháná.
Róhitá, Púncia.
Sácótaca, Tropíbus.
Sahácára, Mangiféra.

15 Sahácharí.
Saḷéya, Muscus.
Saṁśyaca, Barleríá.
Saivála.
"Sála.

-20 "Sálanchí.
"Sálmali, Bombax.
Samangá, 2
'Sami, *Mimosa.*

'Samíra, *Mimosa.*

Saná, *Crotalaria.*
Sancarajátá, *Hedysarum.*
'Sanc'hapushpa, *Coix.*
'Sara.

30 'Sarala,
Saraná.
'Satamúlī.
'Satapushpa.
'Sa 't'hi.

35 'Sep'hálíca, *Nyctanthes.*
Septalá, *Nyctanthes.*
Septaparna, *Echites.*
'Serfíapa, *Sinapis.*
'Simbi, *Dolichos.*

40 Sindhúca, *Vitex.*
Sirísha, *Mimosa.*
'Sisu, *Croton?*
'Sivá.
Sóbhánjana, *Guilandina.*

45 Sómalatá, *Ruta?*
Sómarájí, *Psderia.*
'Sólp'ha.
'Sónaca, *Bignonia.*
Sríngátaca, *Trapa.*

50 'Sríparna.
St'halapadma, *Hibiscus.*
'Suca.
'Sučtí.
Suníshannaca, *Marsilea.*

55 Surabhī.
Súryamani, *Hibiscus.*
Suvernaca, *Cassia.*
'Syámá, a new genus.
'Syámáca.

60 Tálá, *Borassus.*
Tálamúlaca, *Cochlearia ?*
Tálí, *Corypha.*
Tamála, *Laurus ?*
Tábúlī, *Piper.*

65 Támracúta, *Nicotiana.*
Táraça, *Amomum ?*
Taruní, *Aloë.*
Tatpatrí, *Laurus.*
Tíla, *Sesamum.*

70 Tilaca.
Tindúca, *Diospyros.*
Tínfa, *Ebenus ?*
Trupushha, *Cucumis.*
Trayamáná.

75 Tri'vri'tá.
Tubarica.
Túla, *Morus.*
Tunga.
Udumbara, Ficus.
Ulpap, Aristida?
Upodica.
Urana, Caffia.
Utpala?
Vajramidru, Euphorbia.
85 Valvaja, Andropogon?
Vanaceli, Canna.
Vanamudga.
Vanardaca, Coitus?
Vandha, Epidendrum.
90 Vandha, Loranthus.
Vandha, Viscum.
Vandaca, Quercus.
Vana, Bambos.
Varahi.
95 Varangaca, Laurus.
Varuna.
Vasaca, Dianthera.
Vasalya.
Vastuca, Amaranthus?
400 Vasu.
Vataca.
Vatsadan, Menispernum.
Vayasoli.
Vetafa, Barleria.
5 Vatra, Calamus.
Vichitra, Tragia.
Vidara.
Vidula.
Vrana, Andropogon.
10 Vrishani.
Vistaraca, Convulvulus.
Vriti, Oryxa.
Vyaghranac'ha.
Vyaghrapada.
15 Yasa.
Yava, Hordeum.
Yavasa, Poa?
Yuclarasa.
Yut'hic, Jasminum.
If my names of plants displease you, says the great Swedish botanist, 
choose others more agreeable to your taste; and, by this candour, 
he has disarmed all the criticism, to which as it must be allowed, even the 
critical parts of his admirable works lie continually open: I avail myself of 
his indulgence, and am very solicitous to give Indian plants their true Indian 
appellations; because I am fully persuaded, that Linnaeus himself would 
have adopted them, had he known the learned and ancient language of this 
country; as he, like all other men would have retained the native names of 
Asiatick regions and cities, rivers and mountains, leaving friends or persons 
of eminence to preserve their own names by their own merit, and inventing 
new ones, from distinguishing marks and properties, for such objects only as, 
being recently discovered, could have had no previous denomination. Far 
am I from doubting the great importance of perfect botanical descriptions; for 
languages expire as nations decay, and the true sense of many appellatives in 
every dead language must be lost in a course of ages: but, as long as those 
appellatives remain understood, a travelling physician, who should wish to

* This paper was announced in the specimen of an Asiatick Common-place Book, which the President 
added, in the third volume of these Transactions, to Mr. Harrington's proposal for an improvement of 
Locke's useful plan.
procure an Arabian or Indian plant, and, without asking for it by its learned or vulgar name, should hunt for it in the woods by its botanical Character, would resemble a geographer, who, desiring to find his way in a foreign city or province, should never inquire by name for a street or a town, but wait with his tables and instruments, for a proper occasion to determine its longitude and latitude.

The plants, described in the following paper by their classical appellations, with their synonyma or epithets, and their names in the vulgar dialects, have been selected for their novelty, beauty, poetical fame, reputed use in medicine, or supposed holiness; and frequent allusions to them all will be found, if the Sanscrit language should ever be generally studied, in the popular and sacred poems of the ancient Hindus, in their medical books and law-tracts, and even in the Vedas themselves: though unhappily I cannot profess, with the fortunate Swede to have seen without glasses all the parts of the flowers, which I have described, yet you may be assured, that I have mentioned no part of them, which I have not again and again examined with my own eyes; and though the weakness of my sight will for ever prevent my becoming a botanist, yet I have in some little degree atoned for that fatal defect by extreme attention, and by an ardent zeal for the most lovely and fascinating branch of natural knowledge.

Before I was acquainted with the method pursued by Van Rheede, necessity had obliged me to follow a similar plan on a smaller scale; and, as his mode of studying botany, in a country and climate by no means favourable to botanical excursions, may be adopted more successfully by those who have more leisure than I shall ever enjoy, I present you with an interesting passage from one of his prefaces, to which I should barely have referred you,
if his great work were not unfortunately confined, from its rarity, to very few hands. He informs us, in an introduction to his third volume, "that several Indian physicians and Brāhmins had composed by his order, a cata-
logue of the most celebrated plants, which they distributed according to their times of blossoming and seeding, to the configuration of their leaves, and to the forms of their flowers and fruit; that, at the proper seasons he gave copies of the list to several intelligent men, of whom he sent parties into different forests, with instructions to bring him, from all quarters, such plants as they saw named, with their fruit, flowers, and leaves, even though they should be obliged to climb the most lofty trees for them; that three or four painters, who lived in his family, constantly and accurately delineated the fresh plants, of which, in his presence, a full description was added; that, in the mean while, he had earnestly requested all the princes and chiefs on the Malabar coast to send him such vegetables, as were most distinguished for use or for elegance, and that not one of them failed to supply his garden with flowers, which he sometimes received from the distance of fifty or sixty leagues; that when his herbarists had collected a sufficient number of plants, when his draughtsmen had sketched their figures, and his native botanists had subjoined their description, he submitted the drawings to a little academy of Pandits, whom he used to convene for that purpose from different parts of the country; that his assembly often consisted of fifteen or sixteen learned natives, who vied with each other in giving correct answers to all his questions concerning the names and virtues of the principal vegetables, and that he wrote all their answers in his note-book; that he was infinitely delighted with the candid, modest, amicable, and respectful debates of those pagan philosophers, each of whom adduced passages from ancient books in support of his own opinion, but without any bitterness of contest or the least perturbation of mind;
that the texts, which they cited, were in verse, and taken from books,
as they positively asserted, more than four thousand years old; that the
first couplet of each section in those books comprised the synonymous
terms for the plant, which was the subject of it, and that, in the subse-
quent verses, there was an ample account of its kind or species, its pro-
erties, accidents, qualities, figure, parts, place of growth, time of flow-
ering and bearing fruit, medical virtues, and more general uses; that they
quoted those texts by memory, having gotten them by heart in their earliest
youth, rather as a play than a study, according to the immemorial usage
of such Indian tribes, as are destined by law to the learned professi-
ons; and on that singular law of tribes, peculiar to the old Egyptians and Indians,
he adds many solid and pertinent remarks." Now when we complain,
and myself as much as any, that we have no leisure in India for literary and
philosophical pursuits, we should consider, that Van Rheede was a no-
bleman at the head of an Indian government in his time very considerable,
and that he fully discharged all the duties of his important station, while he
found leisure, to compile, in the manner just described, those twelve large
volumes, which Linnaeus himself pronounces accurate.

1. Tá'raca:

Vulgar. Tárac.

Linn. Amomum.

Cal. Perianth spathe-like, but sitting on the germ; tubular, one leaved,
broken at the mouth into few irregular sharp toothlets; downy, striated;
in part coloured, in part semipellucid.

Cor. one-petaled, villous. Tube short, funnel form. Border double.
Exterior three parted; coloured like the calyx; divisions oblong, striated,
internally concave, rounded into slipperlike bags; the two lower divisions,
equal, rather deflected; the higher, somewhat longer, opposite, bent in a contrary direction, terminated with a long point. Interior, two-lipped (unless the upper lip be called the filament); under lip revolute, with a tooth on each side near the base; two-parted from the middle; divisions axe-form, irregularly end-nicked.

Nectaries, two or three honey-bearing, light brown, glossy bodies at the base of the under lip, just below the teeth; erect, awled, converging into a small cone.

Stam. Filament (unless it be called the upper lip of the interior border), channelled within, sheathing the style; dilated above into the large fleshy anther, if it can justly be so named. Anther oblong, externally convex and entire, internally flat, divided by a deep furrow; each division, marked with a perpendicular pollen-bearing line, and ending in a membranous point.

Pist. Germ beneath, protuberant, roundish, obscurely three sided, externally soft with down. Style threadform, long as the filament, the top of which nearly closes round it. Stigma headed, perforated.

Per. Capsule (or capsular berry, not bursting in a determinate mode) oblong-roundish, three striped, smooth, crowned with the permanent calyx and corol; with a brittle coat, almost black without, pearly within.

Seeds, lopped, with three or four angles, very smooth, enclosed within three oblong, rounded, soft, membranous integuments, conjoined by a branchy receptacle; in each parcel, four or five.

Interior Border of the corol, pink and white; under lip, internally milkwhite, with a rich carmine stripe in each of its divisions. Seeds aromatic, hotter than Cardamoms. Leaves alternate, sheathing, oblong, pointed, keeled, most entire, margined, bright grass green above, very smooth; pale seagreen below. Stem compressed, three or four feet long, bright pink near its base.
erect, ending in a beautiful panicle. Peduncles many flowered; bracts few lance-linear, very long, withering. Root fibrous, with two or three bulbous knobs, light brown and spongy within, faintly aromaticck.

Although the Taraca has properties of an Amomum, and appears to be one of those plants, which Rumphius names Globba, yet it has the air of a Languas, the fruit, I believe, of a Renealmia, and no exact correspondence with any of the genera so elaborately described by Koenig: its essential character, according to Retz, would consist in its two parted interior border, its channelled filament, and its two-cleft anther with pointed divisions.

2. Bhuchampaca:

Vulg. Bhuchampac.

Linn. Round-rooted Kæmpferia.

Cal. Common Spathe imbricated, many flowered; partial, Perianth one leaved, small, thin, obscure.

Cor. One petaled. Tube very long, slender, sub-cylindrick below, funnel form above, somewhat incurved. Border double, each three parted: exterior, divisions lanced, acute, dropping; interior, two higher divisions erect, lapping over, oblong, pointed, supporting the back of the anther; lower division, expanding, deflected, two cleft; subdivisions broad, axeform, irregularly notched, endnicked, with a point.

Stam. Filament adhering to the throat of the corol, oblong below, enlarged, and twolobed above, coloured. Anther double, linear, higher than the mouth of the tube, fixed on the lower part of the filament, conjoined round the pistil, fronting the two cleft division of the border.

Pist. Germ very low near the root, attended with a nectarous gland. Style capillary, very long. Stigma funnel form below, compressed above.
fan-shaped, twolipped, downy, emerging a little from the conjoined anther.

Pep and Seeds not yet seen.

Scape thickish, very short. Corol richly fragrant; tube and exterior border milkwhite, divisions dropping, as if sensitive, on the slightest touch, and soon yielding to the pressure of the air; interior border purple, the higher divisions diluted, the lower deeply coloured within, variegated near the base. One or two flowers blow every morning in April or May, and wither entirely before sunset: after the spike is exhausted, rise the large leaves keeled, broad-lanced, membranous nerved. Root with many roundish, or rather spindle-shaped bulbs.

This plant is clearly the Benchópo of Rheede, whose native assitant had written Ebu on the drawing, and intended to follow it with Champá: the spicy odour and elegance of the flowers, induced me to place this Kæmpferia (though generally known) in a series of select Indian plants; but the name Ground Champac is very improper, since the true Champa belongs to a different order and class: nor is there any resemblance between the two flowers, except that both have a rich aromatic scent.

Among all the natural orders, there is none, in which the genera seem less precisely ascertained by clear essential characters, than in that, which (for want of a better denomination) has been called sevitamineous; and the judicious Retz, after confessing himself rather dissatisfied with his own generick arrangement, which he takes from the border of the corol, from the stamen, and principally from the anther, declares his fixed opinion, that the genera in this order will never be determined with absolute certainty until all the sevitamineous plants of India shall be perfectly described.
3. Sephalica:

Syn. Suvabá, Ningudi, Nilicá, Nivaricá.

Vulg. Singabár, Niíari.

Linn. Sorrowful Nyctanthes.

In all the plants of this species examined by me, the calyx was villous, the border of the corol white, five-parted, each division unequally subdivided; and the tube of a dark orange-colour; the stamens and pistil entirely within the tube; the berries, twin, compressed, capsular, two-celled, margined, inverse-hearted with a point. This gay tree (for nothing sorrowful appears in its nature) spreads its rich odour to a considerable distance every evening; but at sunrise it sheds most of its night-flowers, which are collected with care for the use of perfumers and dyers. My Pandits unanimously assure me, that the plant before us is their Sephalica, thus named because bees are supposed to sleep on its blossoms; but Nilicá must imply a blue colour; and our travellers insist, that the Indians give the names of Párijática or Párijáta to this useful species of Nyctanthes: on the other hand, I know that Párijáta is a name given to flowers of a genus totally different; and there may be a variety of this with blueish corols; for it is expressly declared, in the Amarcósh, that, “when the Sephalica has white flowers, it is named Swetasurasá, and Bhalavési.”

4. a. Maghyà.

Syn. Cunda.

Linn. Nyctanthes Sambac.

See Rheede: 6 H. M. tab. 54.

Flowers exquisitely white, but with little or no fragrance; stem, petioles, and calyx very downy; leaves egged, acute; below rather hearted.
6. **Septala**:

*Syn.* *Navamallicá, Navamállicá.*

*Vulg.* *Béla, Muta-béla.*

*Burm.* *Many-flowered Nyctanthes.*

See 5 Rumph. tab. 30. 6 H. M. tab. 50.

The blossoms of this variety are extremely fragrant *Zambak* (so the word should be written) is a flower to which *Persian* and *Arabian* poets frequently allude.

5. **Mallica**:

*Syn.* *Trīnasúlya, Malli, Bhúpadí, Satábhíru.*

*Vulg.* *Désí-béla.*

*Linn.* *Wavy-leaved Nyctanthes.*

*Berry* globular, *simple, one-celled, Seed* large, *single, globular.*

According to Rheede, the *Bráhmens* in the west of *India* distinguish this flower by the word *Cašúri, or musk,* on account of its very rich odour.

6. **Asphota**:

*Syn.* *Vananallí.*

*Vulg.* *Banmallica.*

*Linn.* *Narrow-leaved Nyctanthes.*

The *Indians* consider this as a variety of the former species; and the flowers are nearly alike. *Obtuse-leaved* would have been a better specific name: the *petals,* indeed, are comparatively *narrow,* but not the leaves. This charming flower grows wild in the forests; whence it was called
Flowers on a very large terminal panicle, more than two feet long, in the plant before me, and one foot across in the broadest part; consisting of numerous compound spikes, divided into spikelets, each on a capillary jointed rachis, at the joints of which are the flowerets alternately sessile and pedicelled. Common peduncle many-furrowed, with reddish joints. Valvelet of the corol purple or light red; stamens and pistils ruddy; stigma, purple; pedicels, of a reddish tint; finely contrasted with the long silvery beard of the calyx. Leaves very long, striated, minutely sawed; teeth upwards; keel smooth white, within; sheathing the culm; the mouths of the sheaths thick, set with white hairs. Culm above twenty feet high; very smooth, round and light; more closely jointed and woody near the root, which is thick and fibrous; it grows in large clumps, like the Venu. This beautiful and superb grass is highly celebrated in the Puránas, the Indian God of War, having been born in a grove of it, which burst into a flame; and the gods gave notice of his birth to the nymph of the Pleiades, who descended and suckled the child, thence named Cúrticéya. The Cásá, vulgarly Cata, has a shorter culm, leaves much narrower, longer and thicker hairs, but a smaller panicle, less compounded, without the purplish tints of the Sara: it is often described with praise by the Hindu poets, for the whiteness of its blossoms, which give a large plain, at some distance, the appearance of a broad river. Both plants are extremely useful to the Indians, who harden the internodal parts of the culms, and cut them into implements for writing on their polished paper. From the munja, or culm, of the Sara was made the maunî, or holy thread, ordained by Mênú to form the sacred girdle, in preference even to the Cusa-grass.

11. Dúrva:

SYN. 'Sataparvicā, Sahaśrayīrā, Bhārgava, Rudrā, Anantā.'
Vulg. Dub.
Koen. Agrostis Linearis.

Nothing essential can be added to the mere botanical description of this most beautiful grass; which Van Rheede has exhibited in a coarse delineation of its leaves only, under the barbarous appellation of Beli-caraga: its flowers, in their perfect state, are among the loveliest objects in the vegetable world, and appear, through a lens, like minute rubies and emeralds in constant motion from the least breath of air. It is the sweetest and most nutritious pasture for cattle; and its usefulness added to its beauty induced the Hindus, in their earliest ages, to believe, that it was the mansion of a benevolent nymph. Even the Veda celebrates it; as in the following text of the A'ñnarana: "May Dûrvâ, which rose from the water of life, which has a hundred roots and a hundred stems, efface a hundred dreed of my sins and prolong my existence on earth for a hundred years!"
The plate was engraved from a drawing in Dr. Roxburgh's valuable collection of Indian grasses.

12. Cus'â; or Cus'âha:
Syn. Cuth'â, Darbha, Pavitra.
Vulg. Cus'ha.
Koen. Poa Cynosuroides.

Having never seen this most celebrated grass in a state of perfect inflorescence, I class it according to the information, which Dr. Roxburgh has been so kind as to send me: the leaves are very long, with margins acutely sawed downwards but smooth on other parts, even on the keels, and with long points, of which the extreme acuteness was proverbial among the
N. u. Darva.

Agrostis linearis of Dr. Koenig.
Vulg. Dāb.
Koen. Agrostis Linearis.

Nothing essential can be added to the mere botanical description of this most beautiful grass; which Van Reede has exhibited in a coarse delineation of its leaves only, under the barbarous appellation of Beli-caragae; its flowers, in their perfect state, are among the loveliest objects in the vegetable world, and appear, through a lens, like minute rubies and emeralds in constant motion from the least breath of air. It is the sweetest and most nutritious pasture for cattle; and its usefulness added to its beauty induced the Hindus, in their earliest ages, to believe, that it was the mansion of a benevolent nymph. Even the Veda celebrates it; as in the following text of the Aṭharvānā: "May Dārav, which rises from the water of life, which has a hundred roots and a hundred stems, efface a hundred dreads of my sins and prolong my existence on earth for a hundred years!"

The plate was engraved from a drawing in Dr. Roxburgh's valuable collection of Indian grasses.

12. Cus'a; or Cus'ha:
Syn. Cūtha, Darbha, Pavitra.
Vulg. Cusha.
Koen. Poa Cynosuroides.

Having never seen this most celebrated grass in a state of perfect inflorescence, I classify it according to the information, which Dr. Roxburgh has been so kind as to send me; the leaves are very long, with margins acutely sawed downwards but smooth on other parts, even on the keels, and with long points, of which the extreme acuteness was proverbial among the...
old *Hindus*. Every law-book, and almost every poem, in Sanskrit contains frequent allusions to the holiness of this plant; and, in the fourth *Veda*, we have the following address to it at the close of a terrible incantation: 'Thee, O *Darbbha*, the learned proclaim a divinity not subject to age or death; they call the armour of *Indra*, the preserver of regions, the destroyer of enemies; a gem that gives increase to the field. At the time, when the ocean resounded, when the clouds murmured and lightnings flashed, then was *Darbbha* produced, pure as a drop of fine gold.' Some of the leaves taper to a most acute, evanescent point; whence the *Pandits* often say of a very sharp-minded man, that his intellects are *acute as the point of a Cusa* leaf.

13. **BANDHU’CA**:

*Syn.* Raetaca, Bandhujtvaca.

*Vulg.* Bándbý, Ranjan.

*Linn.* Scarlet Ixora.

*Cal.* Perianth four-parted, permanent; *divisions*, coloured, erect, acute.

*Cor.* One-petaled, funnel-form. *Tube*, cylindrick, very long, slender, somewhat curved. Border four-parted; *divisions*, egged, acute, deflect-
ed.

*Stam.* Filaments four, above the throat very short, incurved. *Anthers* oblong, depressed.

*Pist.* Germ roundish, oblate beneath. *Style*, threadform, long as the tube. *Stigma* two-cleft, just above the throat; *divisions*, externally curved.

*Per.*

*Seeds*:

*Flowers* bright crimson-scarlet, umbel-fascicled. *Leaves* oval, cross-paired, half-item-clasping, pointed; pale below, dark green above, leathery, cloth-
ing the whole plant. *Stipules* between the opposite leaves, erect, linear. *Stem* ruflet, channelled.

The *Bandúca*-flower is often mentioned by the best *Indian* poets; but the *Pandits* are strangely divided in opinion concerning the plant, which the ancients knew by that name. *Rádhá*cánt brought me, as the famed *Bandúca*, some flowers of the *Doubtful Papaver*; and his younger brother *Rama*cánt produced on the following day the *Scarlet Ixora*, with a beautiful couplet in which it is named *Bandúca*: soon after, *Servo*rú showed me a book, in which it is said to have the vulgar name *Dbp*‘barróyía, or *Meridian*; but by that *Hindu*fání name, the *Muselmans* in some districts mean the *Scarlet Pentapetes*, and, in others, the *Scarlet Hibiscus*, which the *Hindus* call *Saryamani*, or *Gem of the Sun*. The last-mentioned plant is the *Sia*mní of *Rheede*, which *Linnéus*, through mere inadvertence, has confounded with the *Scarlet Pentapetes*, described in the fifty-sixth plate of the same volume. I cannot refrain from adding, that no *Indian* god was ever named *Ixora*; and that *Iswara*, which is, indeed, a title of *Siva*, would be a very improper appellation of a plant, which has already a classical name.

14. *Carníca*éra:

Syn. *Drumótpala*, *Perivyádha*.

Vulg. *Cáncrás*, *Cat‘bachampá*.

Linn. *Indian Pavetta*.

It is wonderful, that the *Pandits* of this province, both priests and physicians, are unable to bring me the flower, which *Calída*śa mentions by the name of *Carníca*éra, and celebrates as a *flame of the woods*: the lovely
Pavetta, which botanists have sufficiently described, is called by the Bengal peasants Cáncra, which I should conclude to be a corruption of the Sanskrit word, if a comment on the Amaracótha, had not exhibited, the vulgar name Cat'ba-champá; which raises a doubt, and almost inclines me to believe, that the Carnicára is one of the many flowers, which the natives of this country improperly called wild Champacs.

15. Maśhandari:
Vulg. Mafandari in Bengal; and Baśra in Hinduśán.
Linn. American Callicarpus; yet a native of Java?
Cal. Perianth one-leaved, four-parted; Divisions pointed, erect.
Cor. One-petaled, funnel-form; border four-cleft.
Stam. Filaments four, thread-form, coloured, longer than the corol. Anthers roundish, incumbent.
Per.
Seeds.

Flowers minute, bright lilac, or light purple, extremely beautiful. Panicles axillary one to each leaf, two-forked, very short in comparison of the leaves, downy. Bracts awled, opposite, placed at each fork of the panicle. Leaves opposite, petioled, very long, egged, veined, pointed, obtusely-notched, bright green and soft above, pale and downy beneath. Branches and petiols hoary with down. Shrub, with flexible branches; growing wild near Calcutta: its root has medicinal virtues, and cures, they say, a cutaneous disorder called mášba, whence the plant has its name. Though the leaves be not sawed, yet I dare not pronounce the species to be new. See a note on the Hoary Callicarpus, 5 Retz. Fascic. p. 1, n. 19.
16. **Sringatá**:

*Syn.* Sringataca.

*Vulg.* Singhāra.

*Linn.* Floating *Trapa*.

I can add nothing to what has been written on this remarkable water-plant; but as the ancient Hindus were so fond of its nut (from the horns of which, they gave a name to the plant itself), that they placed it among their lunar constellations, it may certainly claim a place in a series of Indian vegetables.

17. **Chandana**:

*Syn.* Gandbasāra, Malayaja, Bhabras'ri.

*Vulg.* Chandan, Sandal, Sanders.

*Linn.* True *Santalum*; more properly *Sandalum*.

Seed large, globular, smooth.

Having received from Colonel Fullarton many seeds of this exquisite plant, which he had found in the thickets of Midnapur, I had a sanguine hope of being able to describe its flowers, of which Rumphius could procure no account, and concerning which there is a singular difference between Linnaeus and Burman the younger, though they both cite the same authors, and each refers to the works of the other; but the seeds have never germinated in my garden, and the Chandan only claims a place in the present series, from the deserved celebrity of its fragrant wood, and the perpetual mention of it in the most antient books of the Hindus, who constantly describe the best sort of it as flourishing on the mountains of Malaya. An elegant
Sanskrit stanza, of which the following Version is literally exact, alludes to the popular belief, that the Venus, or balmus, as they are vulgarly called, often take fire by the violence of their collision, and is addressed, under the allegory of a sandal-tree to a virtuous man dwelling in a town inhabited by contending factions: "Delight of the world, beloved Chandana, stay no longer in this forest, which is overspread with rigid pernicious Vansi's, whose hearts are unsound; and who, being themselves confounded in the scorching stream of flames kindled by their mutual attrition, will consume not their own families merely, but this whole wood." The original word durvansa' has a double sense, meaning both a dangerous bhum, and a man with a mischievous offspring. Three other species or varieties of Chandan are mentioned in the Amarako'sha, by the names Ladaparnica, Gosvisha, and Riebandana: the red sandal (of which I can give no description) is named Cuchandana from its inferior quality, Rayana, and Raetha from its colour, and Tilaparni or Patranga from the form of its leaves.

18. Cumuda:
Syn. Cairava.
Vulc. Ghain-chu.
Rheede: Tjerooa Cit Ambel. I. H. M. t. 29.
Linn. Meianthes?
Cal. Five-parted, longer than the tube of the corol, expanding, permanent; divisions, awled.
Cor. One-petaled, Tube, rather belled; border five-parted; divisions oblong, wavy on the margin; a longitudinal wing or soldlet in the middle of each. The mouth and whole interior part of the corol shaggy.
STAM. Filaments five, awled, erect; Anthers twin, converging; five, alternate, shorter, sterile.

PIST. Germ egged, very large in proportion; girt at its base with five roundish glands. Style very short, if any. Stigma headed.

PER. Capsule four-celled, many-seeded.

SEEDS round, compressed, minute, appearing rough, with small dots or points.

LEAVES hearted, subtargeted, bright green on one side, dark russet on the other. Flowers umbel fascicled, placed on the stem, just below the leaf. Glands and Tube of the corol yellow; border white; both of the most exquisite texture: Cumuda, or Delight of the Water, seems a general name for beautiful aquatic flowers; and among them, according to Van Rheede, for the Indian Memianthes; which this in part resembles. The divisions of the corol may be called three-winged: they look as if covered with silver frost.

19. Chitraca:

SYN. *Pāṭh'īn, Vahni, and all other names of Fire.

VULG. Chita, Chitā, Chitrā.

LINN. Plumbago of Sīlán.

CAL. Perianth one-leaved, egg-obleng, tubular, five-sided; rugged, interspersed with minute pedicelled glands, exuding transparent glutinous droplets; erect, closely embracing the tube of the corol; mouth fivetoothed; base protuberant with the valves of the nectary.

COR. one-petaled, funnel form. Tube five-angled, rather incurved, longer than the calyx. Border five-parted, expanding. Divisions inverse egg, oblong, pointed, somewhat keeled.

Nectary five-valved, pointed, minute, including the germ.
Stam. Filaments five, thread-form, inserted on the valvelets of the nectary, as long as the tube of the corol. Anthers oblong, oblique.

Pist. Germ egged, very small; at first, when cleared of the nectary, smooth; but assuming, as it swells, five angles. Style columnar, as long as the stamens. Stigma five-parted, slender.

Per. none, unless we give that name to the five-angled coat of the seed.

Seed one, oblong, obscurely five-sided, inclosed in a coat.

Racemes viscid, leafy. Calyx light green. Corol milk-white. Anthers purple, seen through the pellucid tube. Leaves alternate, egged, smooth, pointed, half sheathing, partly waved, partly entire; floral leaves, similar, minute. Stem flexible, (climbing,) many-angled, jointed at the rise of the leaves. Root caufick; whence the name Vabni, and the like. Chitraca means attracting the mind; and any of the Indian names would be preferable to Plumbago, or Leadwort. The species here described, seems most to resemble that of Seilan; the rosy Plumbago is less common here: the joints of its stems are red; the bracts three, egged, equal, pointed, coloured.

20. Ca’malata’:

Syn. Súrya-cánti, or Sunshine, Í. H. M. t. 60.


Linn. Ipomoea Quamoclit.

The plant before us is the most beautiful of its order, both in the colour and form of its leaves and flowers; its elegant blossoms are celestial rosy red, love’s proper hue, and have justly procured it the name of Cámalatá, or Love’s Creeper, from which I should have thought Quamoclit a corruption, if there
were not some reason to suppose it an American word: Camalatá may also mean a mythological plant, by which all desires are granted to such as inhabit the heaven of Indra; and, if ever flower was worthy of paradise, it is our charming Ipomoea. Many species of this genus, and of its near ally the Convolvulus, grow wild in our Indian provinces, some spreading a purple light over the hedges, some snowwhite with a delicate fragrance; and one breathing after sunset the odour of cloves; but the two genera are so blended by playful nature, that very frequently they are undistinguishable by the corols and stigmas: for instance, the Mundavalli, or Beautiful Climber, of Rheede (of which I have often watched the large spiral buds, and seen them burst into full bloom) is called Ipomoea by Linnaeus, and Convolvulus (according to the Supplement) by König; and it seems a shade between both. The divisions of the perianth are egg-oblung, pointed; free above, intricate below; its corol and tube, those of an Ipomoea; its filaments of different lengths, with anthers arrowed, jointed above the barbs, furrowed, half-incumbent; the stigmas, two globular heads, each globe an aggregate of minute roundish tubercles; the stem not quite smooth, but here and there bearing a few small prickles; the very large corol exquisitely white, with greenish ribs, that seem to act as muscles in expanding the contorted bud; its odour in the evening very agreeable; less strong than the primrose and less faint than the lily. The clove-scented creeper, which blows in my garden at a season and hour, when I cannot examine it accurately, seems of the same genus, if not of the same species, with the Mundavalli.

21. Cadamba:
Vulg. Cadamb, Cadám.
Linn. Oriental Nauclea.
To the botanical description of this plant I can add nothing, except that I always observed a minute five-parted calyx to each floret, and that the leaves are oblong, acute, opposite, and transversely nervet. It is one of the most elegant among Indian trees in the opinion of all, who have seen it, and one of the holiest among them in the opinion of the Hindus: the Poet Ca'lid o's alludes to it by the name of NIPA; and it may justly be celebrated among the beauties of summer, when the multitude of aggregate flowers, each consisting of a common receptacle perfectly globular and covered uniformly with gold-coloured florets, from which the white thread-like styles conspicuously emerge, exhibits a rich and singular appearance on the branchy trees decked with foliage charmingly verdant. The flowers have an odour, very agreeable in the open air, which the ancient Indians compared to the scent of new wine; and hence they call the plant Halipriya, or beloved by Halin, that is, by the third Ra'ma, who was evidently the Bacchus of India.

22. Gandi'ra:
SYN. Samasht'bila, Lavana-bhantaca.
VULG. Lona-bhart; Ins.; Sulatiya.
LINN. SOLANUM. Is it the Verbascum-leaved?

CAL. Perianth one-leaved, cup-form or bell-shaped; obscurely five-cleft, downy, pale, frosted, permanent, Divisions egged, erect, pointed, very villous.

COR. One-petaled. Tube very short; Border five-parted. Divisions oblong, pointed, expanding, villous.

STAM. Filaments five, most short, in the mouth of the tube. Anthers oblong, furrowed, converging, nearly coalescent, with two large pores gaping above.

Per. Berry roundish, dotted above, hoary, divided into cells by a fleshy receptacle with two, or three, wings.

Seeds very many, roundish, compressed, nestling.

Leaves alternate, egg-oblong, pointed, rather wavy on the margin, delicately fringed with down; darker and very soft above, paler below with protuberant veins, downy on both sides, mostly decurrent on the long hoary petiols.

Stem shrubby, scabrous with tubercles, unarmed.


This plant is believed to contain a quantity of lavana, or salt, which makes it useful as a manure; but the single word Bhantáca, vulgarly Bháni, means the Clerodendrum, which (without being unfortunate) beautifies our Indian fields and hedges with its very black berry in the centre of a bright-red, expanding, permanent calyx. The charming little bird Chatráca, commonly called Chattárya or Tuntuni, forms its wonderful nest with a leaf of this downy Solanum, which it sews with the silk-cotton of the Seven-leaved Bombax, by the help of its delicate, but sharp, bill: that lovely bird is well known by the Linnean appellation of Motacilla Sartoria, properly Sartrix, but the figures of it, that have been published, give no idea of its engaging and exquisite beauty.

23. Samudraca:

Syn. Dhóla-samudra.

Vulg. Dhól-samudr.
Linn. Aquilicia; but a new species.

Cal. Perianth one-leaved, funnel-shaped, five-toothed, short; the teeth closely pressing the corol; permanent.

Cor. Petals five, egg-oblong, sessile, greenish; acute, curved inwards with a small angled concave appendage. Nectarary tubular, fleshy, five-parted, yellowish; divisions, egg-oblong, doubled, compressed like minute bags with inverted mouths; enclosing the germ.

Stam. Filaments five, smooth and convex externally, bent into the top of the nectarary, between the divisions or scales, and compressing it into a globular figure. Anthers arrowed; the points hidden within the nectarary, surrounding the stigma; the barbs without, in the form of a star.


Per. Berry roundish, flattened, navelled, longitudinally furrowed, mostly five-celled.

Seeds solitary, three-sided, externally convex. Gomes mostly three-parted. Stem deeply channelled, jointed, two-forked. Peduncles also jointed and channelled. Fruitification bursting laterally, where the stem sends forth a petiol. Berries black, watry. Leaves alternate, except one terminal pair; hearted, pointed, toothed; twelve or fourteen of the teeth shooting into lobes; above, dark green; below, pale, ribbed with processes from the petiol, and reticulated with protuberant veins; the full-grown leaves, above two feet long from the apex, and nearly as broad toward the base; many of them rather targeted: this new species may be called large-leaved, or Aquilicia Samudraca. The species described by the younger Burman, under the name of the Indian Staphylea, is not uncommon at Cripna-nagar; where the peafans, call it Cacajanghâ, or Crow's foot: if they are correct, we have erroneously supposed the Pting of the modern Bengalese to be the Câcângi of the ancient Hindus. It mult
not be omitted, that the stem of the *Aquilicia Sambucina* is also channeled, but that its fructification differs in many respects from the descriptions of *Burman* and *Linnaeus*; though there can be no doubt as to the identity of the genus.

24. **Somara**'ji:

**Syn.** Ayalguja, Subali, Somaballicá, Calaméshi, Črīsthnáphalá, Vácuhi, Vágujé, Pútip'ballí.

**Vulg.** Sómráj, Bacuchi.

**Linn.** Fetid Pæderia.

The character as in *Linnaeus*, with few variations. *Calyx* incurved. *Coral* very shaggy within. *Style* two-cleft, pubescent; *divisions* contorted. *Stern* climbing, smooth. *Leaves* opposite, long-petioled; the lower ones oblong, hearted; the higher, egg-oblong; veined, with a wavy margin. *Panicles* axillary, (except the highest,) crossed-armed. *Flowers* beautiful to the sight, crimson, with milkwhite edges, resembling the *Dianthus vulgaris* called *Sweet William*, but resembling it only in form and colours; almost scentless to those who are very near it, but diffusing to a distance a rank odour of carrion. All the peasants at *Crīsthna-nagar* called this plant *Sómráj*; but my own servants, and a family of *Brāhmens* from *Tribeni*, gave that name to a very different plant, of the *nineteenth* class, which I took, on a cursory inspection, for a *Prenanthes*.

25. **Syāma**:

**Syn.** Gópi, Sārivá, Anantá, Ulkalasúrivá, Gópá, Gopállicá, Gópavalli.

**Vulg.** Syámá-lutá.

**Rheede:** in Malabar letters, Puppál-valli.
CAL. *Perianth*, one-leaved, five-toothed, erect, minute, permanent.

Cor. One-petaled, falver-form. *Tube*, itself cylindrick, but protuberant in the middle with the germ and anthers; *throat* very villous. *Border* five-parted; *divisions* very long, lance-linear, spirally contorted, fringed, closed, concealing the fructification.

Stam. Filaments, if any, very short. *Anthers*, five, awled, erect, converging at the top.


Per. Capsule one-celled; one-seeded, roundish, hispid.

Seed oval, very minute, glossy.

Flowers raceme-panicled, greenish-white; very small, scented like those of the hawthorn, but far sweeter; and thence the *Portuguese* called them *honey-flowers*.

Peduncles axillary, rufset; pedicels many-flowered. *Branchlets* milky. Leaves opposite, lance-oval, pointed at both ends, most entire veined; above dark green; below, pale. *Stipules* linear, axillary, adhering. Stem climbing, round, of a rufset hue, rimmed at the insertion of the short petiols.

The ripe fruit of this elegant climber, which *Calida*’s mentions in his poem of the *Seasons*, has been seen by me only in a very dry state; but it seemed, that the hispid appearance of the *capsules*, or *berries*, which in a microscope looked exactly like the burrs in *Van Rheede*’s engraving, was caused by the hardened calyxes and fringe of the permanent corols: the *seeds* in each burr were numerous and like black shining sand; for no single pericarp could be disengaged from it, and it is described as *one-seeded* merely from an inspection of the dissected germ. Before I had seen the *fruit*, I
thought the *Syâma* very nearly connected with the *Shrubby Apocynum*,
which it resembles in the leaves, and in parts of the corol.

**Five of the Sanscrit names are strung together, by the author of the**
*Amaracòsl*, in the following verse;

Gòpí syâmâ bârivâ syâadanantôtpala sarivâ:

and his commentator observes, that the last name was given to the *Sarivâ* from
the resemblance of its flowers to those of the *Utpala*, which I thence conclude
to be a *Menyanthes*; especially as it is always described among the *Indian*
water-plants. The other synonymous words are taken from *Vâchaspâti*.

26. **Avigna**, or **Avinga**:

**Syn.** Crisânapâcapbtala, *Syâhenas*, *Caramardaca*.

**Vulg.** Carôndâ or *Caraundâ* in two dictionaries; in one, *Pâniomalâ*.

**Linn.** *Carissa* Carandâs.

**Cal.** Periantb five-clft, acute, very small, coloured, persistent.

**Cor.** One petaled, funnel-form. *Tubè* longish; *throat* swoln by the in-
closed anthers. *Border* five-parted; *divisions* oblong; one side of each
embracing the next.

**Stam.** Filaments five; extremely short. *Anthers*, oblong, erect.

**Pist.** Germ above; roundish. *Style* thread-form, short, clubbed. *Stigma*
narrower, pubescent.

**Per.** Berry, elliptoidal, two-celled.

**Seeds** at last seven, oval, compressed, margined. *Flowers* milkwhite,
jasmin-like. *Fruit* beautiful in form and colour, finely shaded with car-
mine and white; agreeably acid. *Branches* two-forked. *Leaves* opposite,
short-petioled, elliptick, obtuse, most entire, smooth; some small leaves
roundish, inverse-hearted. *Thorns* axillary, opposite, expanding, points.
bright red. *Peduncles twin, subterminal, three-flowered; pedicels, equal.*
The whole plant, even the fruit, milky. We have both species of *Carissa*
in this province; but they melt, scarce distinguishably, into each other.

The Pandits have always brought me this elegant plant, as the *Carcandhu*
mentioned by *Jayade'va*; but, judging only by the shape and taste of the
fruit, they seem to confound it with the *Rhamnus fujuba*; and the confu-
sion is increased by the obscurity of the following passage in their best vocab-
ulary:

*Carcandhu, vadari, colli; colom, cuvela phénila.*
*Sauviram, vadaram, ghontá.*

All agree, that the *neuter* words mean fruits only; but some insist, that
the *Ghontá* is a distinct plant thus described in an ancient verse: *The*
*ghontá, called also gápaphonti, is a tree shaped like the Vadari, with a*
*very small fruit, growing only in forests.* For the *ghontá*, here known
by the name of *Séhácul, my servants brought me a Rhamnus with leaves*
alternate egg-oblong, three-nerved, obscurely sawed, paler beneath, and
most beautifully veined; *floral young leaves crowded, very long, linear;*
*prickles often solitary, sometimes paired, one straight, one curved; a small*
globular drape, quite black, with a one-celled *nut;* the flowers I never saw
perfect; but it seems the *nineteenth* species of *Linnæus*. We have many
species of *Rhamnus* in our woods and hedges; some like the *Malernus*, po-
lygamous by male and hermaphrodite flowers; others, distinguished by va-
rious forms and positions of the *prickles and leaves;* but the common *Badari*
or *Baiar*, is the *Fujube* tree described by *Reed* and by *Rumphius* cal-
led *Indian Apple-tree.* *Its Persian name is Conúr, by which it is mentioned*
in the letters of *Pietro della Valle, who takes notice of the soapy froth*
procured from its leaves; whence it has in Sanscrit the epithet *phénila, or*
frothy. To the plant the Arabs give the name of Sidr, and to its fruit, that of Nabik; from which perhaps, Napeco has been corrupted.

27. Caravi'tra:
Syn. Pratthása, Sataprása, Chan láta, Hayamá raca.
Linn. Nerium Oleander, and other species.
Vulg. Canér, Carbir.

A plant so well known would not have been inserted in this place, if it had not been thought proper to take notice of the remarkable epithet bayamáraca, or horse-killer; which arose from an opinion still preserved among the Hindus, that a horse, unwarily eating the leaves of the Nerium, can hardly escape death: most of the species, especially their roots, have strong medicinal but probably narcotic, powers. The blue-dying Nerium grows in woods at a little distance from my garden; and the Hindu peasants, who brought it me, called it Nil, or blue; a proof, that its quality was known to them, as it probably was to their ancestors from time immemorial.

28. Septaperma, or seven-leaved:
Vulg. Ch'hitavani, Ch'bátiván, Ch'bátin, Ch'bátan.
Linn. School Echites.
Cal. Perianth five-parted, sub-acute, small, villous, permanent; closing round the germ, immediately on the removal of the tube.
Cor. One-petaled, funnel-form. Tube cylindric below, prominent above with enclosed anthers, very villous in the throat. Border five-parted, shorter than the tube: divisions inverise-egged, obtuse, oblique, reflected, waved.

K k
on the margin. *Nectary*, a circular undivided coronet, or rim, terminating the tube, with a short erect villous edge.

**Stam.** *Filaments* five, cylindrick, very short, in the throat of the tube. *Anthers* heart-arrowed, cleft, pointed, forming a flap, visible through the mouth of the tube, with points diverging.

**Pist.** *Germ* above roundish-egged, very villous, scarce extricable from the calyx enclosing and grasping it. *Style* cylindrick, as long as the tube. *Stigma* two-parted, with parts diverging, placed on an irregular orblet.

**Per.** *Follicles* two, linear, very long, one-valved.

**Seeds** numerous, oblong, compressed with silky pappus pencilled at both ends.

**NOTE.**

The whole plant, milky. *Stem* dotted with minute whitish tubercles. *Leaves* mostly seveined in verticils at short distances, very soft, oblong inverse-egg'd, some pointed, some obtuse, some end-nicked; some entire, some rather scalloped; with many transverse parallel veins on each side of the axis; rich dark green above, diluted below. *Petioles* furrowed above, smooth and convex beneath, elongated into a strong protuberant nerve continually diminishing and evanescent at the apex. *Stipules* above, erect, acute, set in a coronet round the stem; the verticils of the leaves answering to the definition of fronds. *Flowers* rather small, greenish white, with a very particular odour less pleasant than that of elder-flowers. *Peduncles* terminal with two verticils pedicelled umbel-wise, but horizontal. *Pedicels* six, headed, many-flowered; highest verticils similar to those heads, more crowded. *Tree* very large, when full-grown; light and elegant, when young. This plant so greatly resembles the *Pala* of **Van Rheede** (which
has more of the *Nerium* than of the *Tabernantheia*) that I suspect the genus and species to be the same, with some little variety; that author says, that the Brabmins call it Santend, but his Nagari letters make it Savanu, and neither of the two words is to be found in Sanscrit. With all due respect for Plumier and Burman, I should call this plant *Nerium Septaparna*; it is the Fule of Rumphius, who enumerates its various uses at great length and with great confidence.

29. *Arca*:

*Syn.* Vasica, *Asphóta*, Genárupa, Vicirána, Mandára, Arcaperma; and any name of the Sun.

*Vulg.* A'cand, Anc.

*Linn.* Gigantick Asclepias.

*nectaries* with two-glanded, compressed, folds, instead of awled bornlets at the summit; spirally eared at the base. *Filaments* twisted in the folds of the nectaries. *Anthers* flat, smooth, rather wedge-form. *Styles* near half an inch long, subcylindrick. *Stigmas* expanded. *Flowers* terminal and axillary umbel-fascicled; amethyst-coloured with some darker shades of purple on the petals and nectaries; the starred corpuscle, bright yellow. *Leaves* opposite, heart-oblong, mostly inverfe-egged, subtargeted, very rarely stem-clasping, pointed, villous on both sides, hoary beneath with soft down; *petiols* very short, concave and bearded above; with a thickish conical * stipule*. The whole plant filled with caustick milk. A variety of this species has exquisitely delicate milkwhite flowers; it is named *Alarca* or *Pratápasa*, and highly esteemed for its anti-spasmodick powers. The *Padmárca*, which I have not seen, is said to have small crimson corols; the individual plants, often examined by
me vary considerably in the forms of the leaves and the tops of the nectary.

30. **Pichula**:

**Syn.** J'hāvaca.

**Vulg.** J'hau.

**Koen.** Indian Tamarix?

Flowers very small, whitish, with a light purple tinge, crowded on a number of spikes, which form all together a most elegant panicle. Stem generally bent, often straight, and used anciently for arrows by the Persians, who call the plant Gaz: the celebrated shaft of Isfendiyār was formed of it, as I learned from Bahmen, who first showed it to me on a bank of the Ganges, but affirmed, that it was common in Persia. The leaves are extremely minute, sessile, mostly imbricated. **Calyx** and corol as described by Linnaeus; five filaments considerably longer than the petal; **anthers** lobed, furrowed; **germ** very small; **style**, scarce any; **stigmas** three, revolute, but, to my eyes, hardly feathered.

**Nothing** can be more beautiful than the appearance of this plant in flower during the rains on the banks of rivers, where it is commonly interwoven with a lovely twining Asclepias, of which the following description is, I hope, very exact:

31. **Du'gdhica'** or Milkplant;

**Syn.** Cyhiravi, Dugdbicā.

**Vulg.** Kyirui, Dūbhi, Dūb-latā.

**Linn.** Eculent Periploca.

**Cal.** One-leaved, five-parted; **divisions** awled, acute, coloured, expanding.
Cor. One-petaled, salver-form, starlike; divisions five, egged, pointed, fringed.

Nectary double, on a five cleft base, gibbous between the clefts, protruded and pointed above, surmounted with a bright green villous rim: exterior five-parted; divisions egged, converging, attenuated into daggers; each concave externally, gibbous below the cavity, which is two-parted and wrinkled within. Interior, a five-parted corpuscle, lopped above, five-angled, surrounding the fructification.

Stam. Filaments scarce any. Anthers five, roundish, very minute, set round the summit of the lopped corpuscle.

Pist. Germs two, egged, pointed, erect, internally flat. Styles none, unless you so call the points of the germs. Stigma, none but the interior nectary, unless you consider that as a common stigma.

Per. Follicles two, oblong; in some, pointed; in others, obtuse; inflated, one-valved; each containing a one-winged receptacle.

Seeds numerous, roundish, compressed, crowned with pappus.

To each pair of leaves a peduncle mostly two flowered, often with three, sometimes with five, flowers. Calyx reddish. Corol white, elegantly marked with purple veins; fringe, white, thick; anthers black. Leaves linear-awled, pointed, opposite, petioled with one strong nerved; stipules, very soft, minute. Stem smooth, round, twining; the whole plant abounding with milk.

32. La'ngali:

Syn. Saradi, Töyapppali, Saculândan.

Vulg. Cânebrà, Išholángolyá.

Rheeše: Chéra-vallél?

Linn. Nama of Silán.
CAL. Perianth one-leaved, five-parted, villous; divisions, lanced, pointed, long, permanent.


STAM. Filaments five, awled, expanding; from the mouth of the tube, adhering to the divisions of the border by rhomboidal concave bases convergent above. Anthers large, arrowed.


PER. Capsule many-seeded.

SEEDS very minute.

Stem herbaceous, branchy, smooth, pale, creeping. Leaves alternate, short-petioled, most entire, lance-oblong, smooth, acutish. Peduncles mostly axillary, sometimes terminal, villous, often many flowered, rarely sub-umbelled, three-rayed, with involucres general and partial. Corols bright-blue, or violet; Stamens white. The plant is aquatic; and by no means peculiar to Silan: I have great reason, however, to doubt whether it be the Lāngali of the Amaracōsh, which is certainly the Canchbrā of Bengal; for though it was first brought to me by that name, yet my gardener insisted, that Canchbrā is a very different plant, which, on examination, appears to be the Ascending Jussieua of Linnaeus, with leaves inverse-egged, smooth, and peduncles shorter: its fibrous, creeping roots are purplish, buoy, white, pointed, solitary; and at the top of the germ fits a nectar, composed of five shaggy bodies arched like horse shoes, with external honey-bearing cavities.

33. Uma:

Syn. Anai, Cshumā.
Vulg. Titâ, Mafanâ.
Linn. Most common Linum.
Cal. Perianth five-leaved. Leaflets oblong, acute, imbricated, keeled, fringed, minutely having somewhat reflected at the points.
Cor. Small, blue; petals, notched, striated, wavy, reflex, imbricated.
Stam. Anthers light blue, converging, no rudiments of filaments.
Per. Capsule pointed. Furrowed.
Root simple.
Stem. Herbaceous, low, erect, furrowed, knotty? naked at the base.
Leaves linear, three nerved, alternate crosswise, sessile, smooth, obtuse, reflected, stipuled, glanded?
Stipules linear. Q. a minute gland at the base.

34. Murva:
Syn. Dévt, Madhurasá, Móratá, Téjant, Survá, Madhúlicá, Madhusrénì, Gócarnti, Pílpamarnti;
Vulg. Muragá, Murabará, Murgábi.
Linn. Hyacintheá, Aletris.
Cal. None.
Cor. One-petaled, funnel-form, six-angled. Tube short, bellied with the germ. Border six-parted. Division lanced; three quite reflected in a circle; three alternate, deflected, pointed.
Stam. Filaments six, awled, as long as the corol, diverging, inserted in the base of the divisions. Anthers oblong, incumbent.
Pist. Germ inverse-egged, obscurely three-sided, with two or three honey-bearing pores on the flattish top. Style awled, one-furrowed as long as the stamens. Stigma clubbed.
PERICARP and SEEDS not yet inspected.

Root fibrous, tawny, obscurely jointed, stolon-bearing. Scape long, columnar, sheathed with leaves, imbricated from the root; a few sheaths above, straggling. Leaves fleshy, channelled, swordform, keeled, terminated with awls, the interior ones longer; mostly arched; variegated with transverse undulating bands of a dark green hue approaching to black. Raceme erect, very long; Flowers, from three to seven in each salsicle, on very short petiols. Bracts linear, minute. Corols, pale peagreen, with a delicate fragrance, resembling that of the Peruvian Heliotrope; some of the Sanscrit names allude to the honey of these delicious flowers; but the nectareous pores at the top of the germ are not very distinct: in one copy of the Amaracōsha we read Dhanub-śreni among the synonyma; and if that word, which means a series of bows, be correct, it must allude either to the arched leaves or to the reflected divisions of the corol. This Aletris appears to be a nightflower; the raceme being covered, every evening, with fresh blossoms, which fall before sunrise.

From the leaves of this plant, the ancient Hindus extricated a very tough elastick thread, called Mauroc, of which they made bowstrings, and which for that reason, was ordained by Menu to form the sacrificial zone of the military class.

35. TARUNI:

SYN. Sabá, Cumári.

VULG. Ghrita-cumári.

LINN. Two-ranked Aloe, A Perfoliata, P?
Flowers racemed, pendulous, subcylindrical, rather incurved. Flowers, one to each peduncle, awled, concave, deciduous, pale, with three dark stripes. Corol six-parted; three external divisions, orange-scarlet; internal, yellow, keeled, more fleshy, and more highly coloured in the middle. Filaments with a double curvature. Germ six-furrowed. Stigma simple. Leaves awled, two-ranked; the lowest, expanding; sea-green, very fleshy; externally quite convex, edged with soft thorns; variegated on both sides with white spots. Van Rheede exhibits the true Aloe by the name of Cumarī; but the specimen, brought me by a native gardener, seemed a variety of the two-ranked, though melting into the species, which immediately precedes it in Linnaeus.

36. Bacula:

Syn. Çāra.

Vulg. Mustari or Mulaśī.

Linn. Mimusops Elengi.

Cal. Perianth eight-leaved; leaflets egged, acute, permanent; four interior, simple; four exterior, leathery.

Cor. Petals sixteen, lanced, expanding; as long as the calyx. Nectary eight-leaved; leaflets lanced, converging round the stamen and pistil.

Stam. Filaments eight, (or from seven to ten) awled, very short, hairy. Anthers oblong, erect.


Per. Drupe oval, pointed; bright orange-scarlet.

Nut oval, wrinkled, flattish and smooth at one edge, broad and two-furrowed at the other.

Flowers agreeably fragrant in the open air; but with too strong a perfume to give pleasure in an apartment: since it must require the imagination of
a Burman to discover in them a resemblance to the face of a man, or of an ape, the genus will, I hope be called Bacula, by which name it is frequently celebrated in the Puránas, and even placed among the flowers of the Hindu, paradise. Leaves alternate, peltièd, egg-oblong pointed, smooth. The tree is very ornamental in parks and pleasure-grounds.

37. Asòca:

Syn. Vanjula.

Cal. Perianth two-leaved, closely embracing the tube.

Cor. One-petaled. Tube long; cylindrick, subincurved; mouth encircled with a nectarous rim. Border four-parted, divisions, roundish.

Stam. Filaments eight, long, coloured, inserted on the rim of the tube. Anthers kidney-shaped.


Per. Legume long, compressed at first, then protuberant with the swelling seeds; incurved, strongly veined and margined, sharp-pointed.

Seeds from two to eight, solid, large, many-shaped, some oblong-roundish, some rhomboidal, some rather kidney-shaped, mostly thick, some flat. Leaves egg-oblong-lanced, opposite, mostly five-paired, nervèd; long from four or five to twelve or thirteen inches.

The number of flaments varies considerably in the same plant: they are from six or seven to eight or nine; but the regular number seems eight, one in the interstices of the corol, and one before the centre of each division. Most of the flowers, indeed, have one abortive flamen, and some only mark its place, but many are perfect; and Van Rheede speaks of eight as the constant number; in fact no part of the plant is constant. Flowers fascicled,
fragrant just after sunset and before sunrise, when they are fresh with evening and morning dew; beautifully diversified with tints of orange-scarlet, of pale yellow, and of bright orange, which grows deeper every day, and forms a variety of shades according to the age of each blossom, that opens in the fascicle. The vegetable world scarce exhibits a richer sight than an Asbea-tree in full bloom: it is about as high as an ordinary Cherry-tree. A Brāhmaṇ informs me, that one species of the Asbea is a creeper; and Jayadeva gives it the epithet volubilis: the Sanscrit name will, I hope, be retained by botanists, as it perpetually occurs in the old Indian poems and in treatises on religious rites.

33. S'āiva'la:

Syn. 'Janali't. S'āivala.

Vulg. Simār, S'yālā, Pā'tasyālā, Sēbdālā.

Linn. Vallisneria f. R.

Cal. Common Spatha: one-leaved, many-flowered, very long, furrowed, two-cleft at the top; each division end-nicked. Proper Perianth three-parted; divisions, awled.

Cor. Petals three, linear, long, expanding, fleshy.


Per. Capsule very long, smooth, awled, one-celled, infolded in an angled Spatha.

Seeds very numerous, murexed, in a viscid mucus.

Flowrets from six to fourteen, small. Scape compressed, very narrow, fleshy, furrowed in the middle.

L12
Pedicel of the floweret, thread-form, crimson above; proper perianth, rufset; petals, white; anthers, deep yellow. Leaves swordform, pointed, very narrow, smooth, and soft, about two feet long, crowded, white at the base. Root small, fibrous. It flourishes in the ponds at Crīśna-nagar: the refiners of sugar, use it in this province. If this plant be a Valliferia, I have been so unfortunate as never to have seen a female plant, nor fewer than nine stamens in one blossom out of more than a hundred, which I carefully examined.

39. Puticaraja:

Syn. Prac'rya, Pūtica, Calimāraca.

Vulg. Nātācaranja.

Linn. Guilandina Bonduccella.

The species of this genus vary in a singular manner: on several plants, with the oblong leaflets and double prickles of the Bonduccella, I could see only male flowers, as Rheede has described them; they were yellow, with an aromatic fragrance. Others, with similar leaves and prickles, were clearly polygamous, and the flowers had the following character:

**Male.**

Cal. Perianth one-leaved, salver-form, downy; Border five-parted, with equal, oblong divisions.

Cor. Petals five, wedge-form, obtusely notched at the top; four equal, erect, the fifth, depressed.

Stam. Filaments ten, awled, inserted in the calyx, villous, very unequal in length. Anthers oblong, furrowed, incumbent.
HERMAPHRODITE.

Calyx, Corol, and Stamens, as before,
Pist. Germ oblong, villous. Style cylindrick, longer than the filaments.
   Stigma simple.
Per. and Seeds well described by Linnaæus.
Flowers yellow; the depressed petal variegated with red specks. Bracts
   three-fold, roundish, pointed. Spikes, set with floral leaflets, lanced,
   four-fold, reflected.

40. Sobha'njana:
Syn. Sgyru, Ticsena, Gandhaca, A'chiva, Môchaca.
Vulg. Saijana, Moranga.
Linn. Guilandina Moringa.
Cal. Perianth one-leaved. Tube short, unequal, gibbous. Border five-
   parted. Divisions oblong-lanced, subequal; first deflected, then revolute;
   coloured below, white above.
Cor. Petals five, inserted into the calyx, resembling a boat-form flower.
   Wing-like, two, inverse-egged, clawed, expanding.
   Awning-like, two, inverse-egged, erect; claws, shorter.
   Keel-like, one, oblong, concave; enclosing the fructification; beyond it,
   spatuled; longer than the wing-petals.
Stam. Filaments five, fertile; three, bent over the pistil: two shorter,
   inserted into the claws of the middle petals. Anthers twin, rather moon-
   ed, obtuse, incumbent. Five sterile (often four only) alternate with the
   fertile, shorter; their bases villous.
Pist. Germ oblong, coloured, villous; below it a nectar-bearing gland.
   Style, shorter than the stamen, rather downy, curved, thicker above,
   Stigma, simple.
PER. Legume very long, slender, wreathed, pointed, three-sided, channelled, prominent with seeds, one-celled.

SEEDS many, winged, three-sided.

TREE very high; branches in an extreme degree light and beautiful, rich with clustering flowers. Stem exuding a red gum. Leaves mostly thrice-feathered with an odd one; leaflets some inverse egged, some egged, some oval, minutely end-nicked. Raceme-panicles mostly axillary. In perfect flowers the whole calyx is quite deflected, counterfeiting five petals; whereas Van Rheede made it a part of the corol. Corols delicately odorous; milk-white, but the two central erect petals, beautifully tinged with pink. The root answers all the purposes of our horse-radish, both for the table and for medicine; the fruit and blossoms are dressed in caris. In hundreds of its flowers, examined by me with attention, five stamens and a pistil were invariably perfect; indeed, it is possible, that they may be only the female hermaphrodites, and that the males have ten perfect stamens with pistils abortive; but no such flowers have been discovered by me after a most diligent search.

There is another species or variety, called Medhu Sigr, that is Honey-Sigr; a word intended to be expressed on Van Rheede's plate in Nagari letters; its vulgar name is Muna, or Rasā Sajjana, because its flowers or wood are of a redder hue.

Linnaeus refers to Mrs. Blackwell, who represents this plant, by the name of Balanus Myrtifica, as the celebrated Ben, properly Bān of the Arabian physicians and poets.
41. COVIDARA:

SYN. Canchanara, Chamarica, Cuddála; Yugapatra.

VULG. Cachnár, Raël cáñchan.

LNN. Variegated Bauhina.

CAL. Perianth one-leaved, obscurely five-cleft, deciduous.

COR. Petals five, egged, clawed, expanded, wavy; one more distant, more beautiful, striated.

STAM. Filaments ten, unequally connected at the base; five, shorter. Anthers, double, incumbent.


PER. Legume flattish, long, pointed, mostly five-celled.

SEEDS mostly five; compressed, wrinkled, roundish.

LEAVES rather hearted, two-lobed; some with rounded, some with pointed, lobes. Flowers chiefly purplish and rose-coloured, fragrant; the sweet and beautiful buds are eaten by the natives in their favoury messes.

We have seen many species and varieties of this charming plant: one had racemmed flowers, with petals equal, expanding, lanced, exquisitely white, with a rose-coloured stripe from the base of each to its centre; anthers, four only, fertile; six, much shorter, sterile; a second had three fertile, and seven very short, barren; another had light purple corols, with no more than five filaments, three longer, coloured, curved in a line of beauty. A noble Climbing Bauhina was lately sent from Népal; with flowers racemmed, cream-coloured; style, pink; germ, villous; flamen three filaments, with rudiments of two more; stem, downy, four-furrowed, often spirally. Tendril opposite, below the leaves.

Leaves two-lobed, extremely large: it is a stout climber up the highest Arundo Vénus. The Sanscrit name Mandára is erroneously applied to this plant in the first volume of Van Rheede.
42. Capitt'ha:

Syn. Grabin, Dabdit'tha, Manmat'ba, Dabhip'bala, Pushap'bala, Danta-

vat'ba.

Vulg. Cat'b-bél.

Koen. Crateva, Valanga.

Cal. Perianth five-parted, minute, deciduous; divisions expanded, acute.

Cor. Petals five, equal, oblong, reflected.

Stam. Filaments ten, very short, with a small gland between each pair, awl-
ed, furrowed. Anthers thick, five times as long as the filaments; furrowed,
coloured, erect-expanding.


Stigma simple.

Per. Berry large, spheroidal, rugged, often warted, externally, netted with-

in; many seeded.

Seeds oblong-roundish, flat, woolly, nestling in five parcels, affixed by long

threads to the branchy receptacles.

Flowers axillary, mostly toward the unarmed extremity of the branch. Divi-
sions of the Perianth, with pink tips; petals, pale; anthers, crimson, or co-

vered with bright yellow pollen. Fruit extremely acid before its maturity;

when ripe, filled with dark brown pulp agreeably subacid. Leaves jointedly

feathered with an odd one; leaflets five, seven, or nine; small, glossy, very
dark on one side, inverse-hearted, obtusely-notched, dotted round the margin

with pellucid specks, very strongly flavoured and scented like anise. Thorns

long, sharp, solitary, ascending, nearly cross-armed, axillary, three or four

petiols to one thorn. Kleinhoff limits the height of the tree to thirty

feet, but we have young trees forty or fifty feet high; and at Bandell there is

a full-grown Capiti'ha equal in size to the true Bilva, from its fancied resem-

blance to which the vulgar name has been taken: when the trees flourish,
the air around them breathes the odour of anise both from the leaves and the blossoms; and I cannot help mentioning a singular fact which may indeed, have been purely accidental: not a single flower, out of hundreds examined by me, had both perfect germs, and anthers visibly fertile, while others, on the same tree and at the same time, had their anthers profusely covered with pollen, but scarce any stiles, and germs to all appearance abortive.

43. **Cuve'raca:**

**Syn.** Tunna, Tuni, Cach'ba, Cántalaca, Cuni, Nandiovicia.

**Vulg.** Tùni, Tàn; absurdly, Vilhyati Nim.

**Linn.** Between Cedrela and Swietenia.

**Cal.** Perianth one-leaved, five-cleft, minute, deciduous; divisions roundish, concave, villous, expanding.

**Cor.** Rather bellied. Petals five, inverse-egg'd, obtuse, concave, erect, white with a greenish tint, three exterior lapping over the two others. Nectary short, five-parted; divisions roundish, orange-scarlet, bright and concave at the insertion of the stamens, rather downy.

**Stam.** Filaments five; inserted on the divisions of the nectary, awled, somewhat converging, nearly as long as the style. Anthers doubled, some three-parted, curved, incumbent.

**Pist.** Germ egg'd, obscurely five-cleft. Style awled, erect, rather longer than the corol. Stigma, broad-headed, flat, bright, green, circular, starred.

**Per.** Capsule egg'd, five-celled, woody, gaping at the base. Receptacle five-angled.

**Seeds** imbricated, winged.

Leaves feathered, scarce ever with an odd one; pairs from six to twelve; petioles, gibbous at their insertion, channelled on one side, convex and smooth on the other. Stipules thick, short, roundish; leaflets oblong-lance'd,

44. **Nichula**:

**Syn.** Ambuja, Ijala.

**Vulg.** Hijala, Badi, Jetuli.

**Cal.** *Perianth* one-leaved, belled, fleshy, downy, coloured, permanent, five-petalled; *division* erect, pointed.

**Cor.** Five-petaled; *petals* egged, short pointed, revolute, downy within and without.

**Stam.** *Filaments* ten, five mostly shorter; inserted in the bell of the calyx; awled, villous. *Anthers* erect, oblong, furrowed.

**Pist.** *Germ* egg-oblong, very villous. *Style* thread-form, curved. *Stigma* headed, with five obtuse corners.

**Per.** *Drupe* subglobose.

*Nut* scabrous, convex on one side, angled on the other.

*Leaves* feathery; *pairs* from five to nine; *leaflets* oblong, daggered, notched.

*Calyx* pale pink. *Corol* darker pink without, bright yellow within. *Cyme* terminal, spreading.

45. **Atimucta**:

**Syn.** Punáraca, Vášanté, Mádbhavilátá.

**Vulg.** Mádbhavilátá.

**Linn.** Bengal Banisteria.

**Rheede**: Dewenda. 6 H. M. tab. 59.

**Cal.** *Perianth* one-leaved, five-petalled, permanent; *division*, coloured,
oblong-oval, obtuse; between two of them, a rigid glossy honey-bearing tubercle, hearted, acute.

Cor. Five-petaled, imitating a boatform corol: Wings, two petals, conjoined back to back, involving the nectary, and retaining the honey.

Awning, large concave, more beautifully coloured. Keel, two petals, less than the wings, but similar. All five, roundish, elegantly fringed, with reflected margins, and short oblong claws.

Stam. Filaments ten; one, longer. Anthers oblong, thickish, furrowed.

Pist. Germs two, or three, coalesced. Style one, threadform, incurved, shorter than the longest filament. Stigma, simple.

Per. Capsules two or three, mostly two, coalesced back to back; each keeled, and extended into three oblong membranous wings, the lateral shorter than the central.

Seeds roundish, solitary.

Racemes axillary. Flowers delicately fragrant; white, with a shade of pink; the large petal, supported by the nectareous tubercle, shaded internally with bright yellow and pale red. Bracts linear; Wings of the seed, light brown; the long one russet. Leaves opposite, egg-oblong, pointed. Petiols short. Stipules linear, soft, three or four to each petiol. Two glands at the base of each leaf. Stem pale brown, ringed at the insertion of the leaves, downy.

This was the favourite plant of Sacontala, which she very justly called the Delight of the Woods; for the beauty and fragrance of its flowers give them a title to all the praises, which Cālīḍā's and Jayaḍēva bestow on them: it is a gigantick and luxuriant climber; but, when it meets with nothing to grasp, it assumes the form of a sturdy tree, the highest branches of which display, however, in the air their natural flexibility and in-
clination to climb. The two names Vásanti and Mádbhavī indicate a vernal flower; but I have seen an Atimučta rich both in blossoms and fruit on the first of January.

46. `Amra’taca:

Syn. Pitana, Capitana.

Vulg. Amdā, pronounced Amrā, or Amlā.

Linn. Spondias Myrobalan β, or a new species.

The natural character as in Linnaeus. Leaves feathered with an odd one: leaflets, mostly five-paired, egg-oblong, pointed, margined, veined, nerved; common petiol, smooth, gibbous at the base. Flowers raceme-panicled, yellowish white. Fruit agreeably acid; thence used in cookery. Van Rheede calls it Ambadó or Ambalam; and, as he describes it with five or six styles, it is wonderful, that Hill should have supposed it a Cbrysobalanus.

47. Hēmasa’gara; or The Sea of Gold.

Vulg. Himsāgar.

Linn. Jagged-leaved Cotyledon.

Cal. Perianth four-cleft; divisions acute.

Cor. One-petaled: Tube, four-angled, larger at the base; border four-parted; divisions, egged, acute. Nectary, one minute concave scale at the base of each germ.

Stam. Filaments eight, adhering to the tube; four, just emerging from its mouth; four, alternate, shorter. Anthers erect, small, furrowed.

Pist. Germs four, conical. Styles, one from each germ, awled, longer than the filaments. Stigmas simple.
Per. Capsules four, oblong, pointed, bellied, one-valved, bursting longitudinally within.

Seeds numerous, minute.

Panicles terminal. Flowers of the brightest gold-colour. Leaves thick, succulent, jagged, dull sea-green. Stem jointed, bending, in part recumbent. This plant flowers for many months annually in Bengal; in one blossom out of many the numbers were ten and five; but the filaments alternately long and short.

48. Madhuca


Vulg. Maiyala, Mabuyá, Mahewá.

Linn. Longleaved Bassia.

49. Cahára:

Syn. Saugandhica, or Sweet-scented.

Vulg. Sundhi-bálá, or Sundhi-bálá-nálá.

Linn. Nymphæa Lotos.

Calyx as in the genus.

Cor. Petals fifteen, lanced, rather pointed and keeled; the exterior series green without, imitating an interior calyx.

Stam. Filaments more than forty; below flat, broad; above narrow, channelled within, smooth without; the outer series erect, the inner somewhat converging. Anthers awled, erect; some coloured like the petals.

* According to the sacred Grammar, this word was written Cahára, and pronounced as Callara; would be in ancient British. When the flowers are red, the plant is called Hallaca and Rāja sandhaca.
Pist. *Germ* large, orbicular, flat at the top; with many (often seventeen) furrows externally, between which arise as many processes, converging toward the *stigma*: the disk, marked with as many furrowed rays from the center, uniting on the margin with the converging processes. *Stigma* roundish, rather compressed, sessile in the center of the disk, permanent.

Per. *Berry*, in the form of the *germ* expanded, with sixteen or seventeen cells.

Seeds very numerous, minute, roundish. *Flowers* beautifully azure; when full blown, more dilated; less fragrant than the red or rose-coloured, but with a delicate scent. *Leaves* radical, very large, subtargeted, hearted, deeply scollop-toothed. *On one side* dark purple, reticulated, *or the other*, dull green, smooth. *Petioles* very smooth and long, tubular. The seeds are eaten, as well as the bulb of the root, called *Sálacca*; a name applied by *RheeDee* to the whole plant, though the word *Camala*, which belongs to another *Linnean* species of *Nymphaea*, be clearly engraved on his plate in *Nágari* letters. There is a variety of this species with leaves purplish on both sides; flowers dark crimson, calycine petals richly coloured internally, and anthers flat, furrowed, adhering to the top of the filaments: the petals are more than fifteen, less pointed and broader than the blue, with little odour.

The true *Lotos of Egypt* is the *Nymphaea Nilúfer*, which in *Sanskrit* has the following names or epithets: *Pádma*, *Nalina*, *Aravinda*, *Mabotpála*, *Camala*, *Cufésbaya*, *Sahasrapatra*, *Sárasfa*, *Pancéruba*, *Támarafa*, *Sarasíruba*, *Rájíva*, *Vişapraśuna*, *Pusheara*, *Ambbóruba*, *Satapatra*. The new blown flowers of the rose-coloured *Pádma*, have a most agreeable fragrance; the white and yellow have less odour: the blue, I am told, is a native of *Cashmir* and *Persia*. 
50. **Champaca**

**Syn.** Champéya, Hémapushpaca.

**Vulg.** Champac, Champá.

**Linn.** Michelia.

The delineation of this charming and celebrated plant, exhibited by Van Rheede, is very correct, but rather on too large a scale: no material change can be made in its natural character given by Linnaeus; but, from an attentive examination of his two species, I suspect them to be varieties only, and am certain, that his trivial names are merely different ways of expressing the same word. The strong aromatic scent of the gold-coloured Champac is thought offensive to the bees, who are never seen on its blossoms; but their elegant appearance on the black hair of the Indian woman is mentioned by Rumphius; and both facts have supplied the Sanscrit poets with elegant allusions. Of the wild Champac, the leaves are lanced or lance-oblong; the three leaflets of the calyx, green, oval, concave; the petals constantly fix, cream-coloured, fleshy, concave, with little scent; the three exterior, inverse-egg'd; the three interior, more narrow, shorter pointed, converging; the anthers clubbed, closely set round the base of the imbricated germs, and with them forming a cone; the stigmas, minute, jagged.

**Both Mr. Marsden** and Rumphius mention the blue Champac as a rare flower highly prized in Sumatra and Java; but I should have suspected, that they meant the Kæmpferia Bbúchampac, if the Dutch naturalist had not asserted, that the plant, which bore it, was a tree resembling the Champaca with yellow blossoms: he probably, never had seen it; and the Brähmens of this province insist, that it flowers only in paradise.
51. Dévadáru:
Syn. Sacrapáda, Páribhadraça, Bhadrádu, Dvkeílima, Pítadáru, Dárva, Pútichásít'ba.
Vulg. Dévadár.
Linn. Most lofty Unona.

52. Parñáśa:
Syn. Tulásí, Cú'binjara, Cú'héraça, Príndá.
Vulg. Tulósí, Túlsí.
Linn. Holy Ocymum?

The Natural Character as in Linnaeus.

See 10 H. M. p. 173.

It is wonderful, that Rheede has exhibited no delineation of a shrub so highly venerated by the Hindus, who have given one of its names to a sacred grove of their Parnassus on the banks of the Yamuná: he describes it, however, in general terms, as resembling another of his Tolassis (for so he writes the word, though Tulásí be clearly intended by his Nágarí letters); and adds, that it is the only species reputed holy, and dedicated to the God Vishnu. I should, consequently, have taken it for the Holy Ocymum of Linnaeus, if its odour, of which that species is said to be nearly destitute, had not been very aromatic and grateful; but it is more probably a variety of that species, than of the Small-flowered, which resembles it a little in fragrance; whatever be its Linnean appellation, if it have any, the following are the only remarks that I have yet had leisure to make on it.

Stem one or two feet high, mostly incurved above; knotty, and rough, below. Branchlets cross-armed, channelled. Leaves opposite, rather
small, egged, pointed, acutely sawed; purple veined, beneath; dark above. Petals dark purple, downy. Racemes terminal; Flowers verticilled threefold, or fivefold, cross-armed; verticils from seven to fourteen; peduncles dark purple, channeled, villous; bracteoles sessile, roundish, concave, reflected. Calyx, with its upper lip orbicular, deeply concave externally. Coroll bluish purple. The whole plant has a dusky purplish hue approaching to black, and hence perhaps, like the large black bee of this country, it is held sacred to Krishna; though a fable, perfectly Ovidian, be told in the Puranas concerning the metamorphosis of the nymph Tulasi, who was beloved by the pastoral God, into the shrub, which has since borne her name: it may not be improper to add, that the White Ocymum is in Sanscrit called Arjaca.

53. Pátalí:
Syn. Pátala, Amághá, Cácalaśá ballistic, Pákalruba, Crishnavrinta, Guvéracbi.
Some read Mágá and Cálaśá ballistic.
Vulg. Páralá, Párali, Pául.
Linn. Bignonia. Chelomonoides?
Cal. Perianth one-leaved, belled, villous, withering, obscurely five-angled from the points of the divisions, five-parted; divisions, roundish, pointed, the two lowest most distant.
Cor. One-petaled, belled. Tube very short; throat, oblong-beliled, gibbous. Border five-parted; the two higher divisions reflected, each minutely toothed; convex externally; the three lower divisions, above, expanded; below, ribbed, furrowed, very villous. Palate nearly closing the throat.
Nectary, a prominent rim, surrounding the germ, obscurely five-parted.
Stam. Filaments four or five, incurved, inserted below the upper division of the border, shorter than the coroll, with the rudiment of a fifth or sixth,
between two shorter than the rest. *Anthers* two-cleft, incumbent at obtuse angles.

*Pist.* Germ oblong-conical. *Style* thread-form, as long as the *flamens.* *Stigma* headed with two folds often closed by viscidity.

*Per.* *Capsule* one-celled, two-valved, twelve inches long, at a medium, and one inch thick; rounded, four-sided, pointed, incurved, rather contorted, diminishing at both ends, dotted with ashy specks, here and there slightly prominent, striated; two flipes broader, very dark, at right angles with the valves.

*Rec.* A series of hard, broadish, woody rings, closely strung on two wiry central threads.

*Seeds* numerous, *forty-eight* on an average, three-angled, inserted by one angle in cavities between the rings of the receptacle, into which they are closely pressed by parallel ribs in the four sides of the capsule; winged on the two other angles with long subpellucid membranes, imbricated along the sides of the receptacle.

*Tree* rather large. *Stem* scabrous.

*Branchlets* crofs-armed, yellowish green, speckled with small white lines. *Leaves* feathered with an odd one; two or three paired, petaled. *Leaflets* opposite, egged, pointed, most entire, downy on both sides, veined; older leaflets roughish, margined, netted and paler below, dagged. *Petioles* tubercled, gibbous at the base; of the paired leaflets, very short; of the odd one, longer. *Stipules* linear. *Flowers* panicled; *pedicels* opposite, mostly three-flowered; an odd flower subseffile between the two terminal pedicels. *Corol* externally, light-purple above, brownish purple below, hairy at its convexity; internally, dark yellow below, amethystine above; exquisitely fragrant, preferred by the bees to all other flowers, and compared by the poets to the quiver of Çāmādevā, or the God of Love. The whole
plant, except the root and stem, very downy and viscid. The fruit can scarce be called a siliqua, since the seeds are nowhere affixed to the futures; but their wings indicate the genus, which might properly have been named Pterospermum: they are very hard, but enclose a white sweet kernel; and their light-coloured summits with three dark points, give them the appearance of winged insects. Before I saw the fruit of this lovely plant, I suspected it to be the Bignonia Chelonoideae, which Van Rheede calls Pádri; and I conceived that barbarous word to be a corruption of Páti, but the pericarp of the true Páti, and the form of the seeds, differ so much from the Pádri, that we can hardly consider them as varieties of the same species; although the specific character exhibited in the Supplement to Linnaeus, corresponds very nearly with both plants.

The Páti blossoms early in the spring, before a leaf appears on the tree, but the fruit is not ripe till the following winter.

54. Go’cant’aca:
Syn. Palancoshá, Icsjugandhá, Swádansbrá, Swáducant’aca, Góshuraca, Vanátrnigáta.
Vulg. Góshura, Gókyura, Culpt.
Rheede: Bahél Chulli.
Linn. Long-leaved Barleria?
Cal. Perianth one-leaved, hairy, five-toothed; upper tooth, long, incurved, pointed; two under, and two lateral, shorter, subequal, winged with sub-pellucid membranes.
Cor. One-petaled, two-lipped. Tube flatish, curved, protuberant at the mouth. Upper lip erect, two-parted, reflected at the sides, concave in the middle, enclosing the fructification. Under lip three-parted, reflecte-
ed, with two parallel, callous, hispid bodies on the centre of its convexity. Divisions, inverse-hearted.

Stam. Filaments four, inserted in the mouth of the tube; connected at their base, then separated into pairs and circling round the pistil; each pair united below, consisting of a long and a short filament. Anthers arrowed.

Pist. Germ awled; pointed, furrowed, with prominent seedlets, sitting on a glandular pedicel. Style thread-form; longer than the stamens, incurved above them. Stigma simple.

Per.

Flowers verticilled; Corols blue, or bright violet; centre of the under lip yellow. Verticils, each surrounded by six thorns, very long, diverging, coloured above; under which are the leaves, alike verticilled, lanced, acutely sawed, pubescent, interspersed with bristles. Stem jointed, flattish, hairy, reddish; furrowed on both sides; broader at the joints, or above the verticils; furrows alternate.

55. SINDHUCA:

Syn. Sindhuvara, Indrasurisa, Nirvandi, Indranica.

Vulg. Nisindia.

Linn. Three-leaved Vitex; or Negundo?

Cal. Perianth five-toothed, beneath, permanent; toothlets acute, subequal.

Cor. One-petaled, grinning; Tube funnel-shaped, internally villous; border two-lipped; upper lip broad, concave, more deeply coloured; under lip four-cleft; divisions, acute, similar.

Stam. Filaments four; two shorter, adhering to the Tube, villous at the base. Anthers half-mooned.
Pist. Germ globular; Style thread-form; Stigma two-parted, pointed, reflex.

Per. Berry (unless it be the coat of a naked seed) roundish, very hard, black, obscurely furrowed, with the calyx closely adhering.

Seeds from one to four? I never saw more than one as Rheede has well described it.

Flowers raceme-panicled; purplish or dark blue without, greyish within, small. Racemes mostly terminal; some pedicels, many-flowered.

Stem distinctly four-sided; sides channeled; jointed, bending. Stipules egged, scaly, thickish, close. Branchlets cross-armed.

The tube of the corol is covered internally with a tangle of silvery silky down, exquisitely beautiful; more dense below the upper lip.

This charming shrub, which seems to delight in watery places, rises to the height of ten or twelve, and sometimes of twenty, feet; exhibiting a most elegant appearance with rich racemes or panicles lightly dispersed on the summit of its branchlets. On a comparison of two engravings in Rumphius, and as many in Van Rheede, and of the descriptions in both works, I am nearly persuaded that the Sindhuga or Nirgandi, is the Vitex Negundo of Linnaeus; but it certainly resembles the three-leaved Vitex in its leaves, which are opposite, egged, acute, petioled; above mostly three; below mostly sawed; paler beneath; rarely sawed and very slightly, but generally entire: they are very aromatic, and pillows are stuffed with them, to remove a cold in the head and a head-ach occasioned by it. These, I presume, are the shrubs, which Bontius calls Lagondi, and which he seems to consider as a panacea.
56. Caravella:

Syn. Catillaca, Sushavī.


Linn. Five-leaved Cleome?

Cal. Perianth four-leaved, gaping at the base, then erect; leaflets egg-oblong, concave, downy; deciduous.

Cor. Cross-form. Petals four, expanding, claw long; folds wrinkled. Nectary, from six to twelve roundish, perforated glands, girding the gibsous receptacle.

Sta. Filaments six, thread-form, hardly differing in length, inserted on a pedicel below the germ. Anthers erect, pointed, furrowed.


Per. Siliqua one-celled, two-valved, spindle-shaped, with protuberant seeds; crowned with the permanent style.

Seeds very many, roundish, nodding. Receptacles linear, often more than two.

The whole plant, most distinctly one piece. Root whitish, with scattered capillary fibres. Stem herbaceous, pale green, in parts purple, hairy, cross-armed, produced into a long raceme crowded at the summit. Branchlets, similar to the stem, leaf-bearing; similar, but smaller leaves rising also from their axils. Leaves five, roundish-rhomboideal, notched, pointed, hairy, dark green, the lower pairs respectively equal, the odd one much larger, strongly ribbed with processes from the petiol-branchlets, conjoined by the bases of the ribs, in the form of a starlet, each ray, whitish and furrowed within. Calyx green. Petals white. Anthers covered with gold-coloured pollen. Pedicels purplish. Bracteas three, similar to the
cauline leaves. The sensible qualities of this herb seem to promise great antispasmodick virtues; it has a scent much resembling affa feotida, but comparatively delicate and extremely refreshing. For pronouncing this Cleome the Caravella of the ancient Indians, I have only the authority of Rheege, who has exactly written that word in Malabar letters: as to his Brâhmanical name Tilbni, my vocabularies have nothing more like it than Tilaca, to which Gburaca and Srîmat are the only synonyma.

57. Nagace'sara:
Syn. Châmpêya, Césara; Câñchana, or any other name of gold.
Vulg. Nagafar.
Linn. Iron Mesua.

To the botanical descriptions of this delightful plant, I need only add, that the tree is one of the most beautiful on earth, and that the delicious odour of its blossoms justly gives them a place in the quiver of Camadeva. In the poem, called Naishadhba, there is a wild, but elegant, couplet, where the poet compares the white of the Nâgacésara, from which the bees were scattering the pollen of the numerous gold-coloured anthers, to an alabaster wheel, on which Camâ was whetting his arrows, while sparks of fire were dispersed in every direction. Surely, the genuine appellation of an Indian plant should be substituted for the corrupted name of a Syrian physician who could never have seen it; and, if any trivial name were necessary to distinguish a single species, a more absurd one than iron could not possibly have been selected for a flower with petals like silver and anthers like gold.
58. **S'almali**:  
**Syn.** Pich'bild, Púran, Móchá, St'biryufk.  
**Vulg.** Semel.  
**Linn.** Seven-leaved Bombax.

59. **San'a**:  
**Syn.** Sanáp'ushpicá, Ghan'taravá.  
**Vulg.** San, pronounced Sun.  
**Linn.** Rushy Crotalaria.

**Cal.** Perianth one-leaved, villous, permanent; short below, gibbous on both sides, with minute linear tracts. Upper teeth, two, lanced, pressing the banner; lower tooth, boatform, concave, two-gashed in the middle, cohering above and below; sheathing the keel, rather shorter than it; pointed.

**Cor.** Boat-form.

**Banner,** broad, large, acute, rather hearted, with two dark callosities at the base, and with compressed sides, mostly involving the other parts; a dark line from base to point.

**Wings** inverse-egg-oblong, with dark callous bodies at their axils, two thirds of the banner in length.

**Keel** flattened at the point, nearly closed all round to include the fructification, very gibbous below to receive the germ.

**Stam. Filaments** ten, coalesced, cleft behind, two-parted below; alternately short with linear furrowed erect, and long with roundish, anthers.

**Pist. Germ** rather awled, flat, villous, at a right angle with the ascending, cylindrick, downy **Style.** Stigma pubescent, concave, open, somewhat lipped.

**Per. Legume** pedicelled, short, velvety, turgid, one-celled, two-valved,
SEEDS, from one or two to twelve or more, round-kidney-form, compressed.

Flowers deep yellow. Leaves alternate, lanced, paler beneath, keeled; pedicels very short; stipules, minute, roundish, villous. Stem striated.

Threads, called pavitraca, from their supposed purity, have been made of Sana from time immemorial; they are mentioned in the laws of Menu.

The retuse-leaved Crotalaria, which Van Rheede by mistake calls Schama Puspi, is cultivated, I believe, for the same purpose. Rumphius had been truly informed, that threads for nets were made from this genus in Bengal: but he suspected the information to be erroneous, and thought that the persons who conveyed it, had confounded the Crotalaria with the Capsular Corchorus: strong ropes and canvas are made of its macerated bark.

The Jangal-san, or a variety of the watry Crotalaria has very beautiful flowers, with a greenish white banner, purple-striped, wings, bright violet: stem, four-angled, and four-winged; leaves egged, obtuse, acute at the base, curled at the edges, downy; stipules, two, declining, mooned, if you choose to call them so, but irregular, and acutely pointed. In all the Indian species, a difference of soil and culture occasion varieties in the flower and fructification.

60. Jayanti:
Vulg. Janti, Jābi; some say, Aranā.
Rheede: Kedangu.
Linn. Æschynomene Sosban.

Cal. Perianth one-leaved, rather belled, five-cleft; toothlets, awled, erect, subequal, more distant on each side of the awning; permanent.
Cor. Boat-form.

Awning very broad, rather longer than the wings, inverse-hearted, quite reflected to as to touch the calyx; waved on the margin; furrowed at the base internally, with two converging hornlets, fronting the aperture of the keel, gibbous below, awled upwards, acute, erect, within the wings. Wings oblong, clawed, narrower above, obtuse, spurred below, embracing the keel and the hornlets of the awning.

Keel compressed, enclosing the fructification, inflected nearly in a right angle, gashed below and above the flexure; each division hatchet-form; beautifully striated.

Stam. Filaments simple and nine-cleft, inflected like the keel; the simple one curved at the base. Anthers oblong, roundish.

Pist. Germ compressed, linear, erect as high as the flexure of the filaments with visible partitions. Style nearly at a right angle with the germ, awled, inflected like the stamen. Stigma rather headed, somewhat cleft, pellucid.

Per. Legume very long, slender, wreathed when ripe, smooth at the valves, but with seeds rather protuberent, many-parted, terminated with a hard sharp point.

Seeds oblong, rather kidney-shaped, smooth, slightly affixed to the future, solitary.

Stem arborescent, rather knotty. Leaves feathered, pairs from nine to fifteen, or more, often alternate; leaflets oblong, end-nicked, some with an acute point, dark green above, paler beneath, with a gibbosity at the insertion of the petiols; sleeping, or collapsing, toward night. Racemes axillary; pedicels with a double curvature or line of beauty; flowers small, six or seven; varying in colour; in some plants, wholly yellow; in others, with a blackish-purple awning yellow within, and dark yellow
wings tipped with brown; in some with an awning of the richest orange-scarlet externally, and internally of a bright yellow; wings yellow, of different shades; and a keel pale below, with an exquisite changeable light purple above, striated in elegant curves. The whole plant is inexpressibly beautiful, especially in the colour of the buds and leaves, and the grace of all the curves, for there is no proper angle in any part of it. The Brāhmaṇs hold it sacred; Van Rheede says, that they call at Cananga; but I never met with that word in Sanscrit, it has parts like an Hedyasarum, and the air of a Cytisus.

61. Palaśa:

Syn. Cināeca, Parna, Vātapōt'ha.

Vulg. Palās, Plās, Dbāc.

Koen. Butea frondosa.

Cal. Perianth bell-shaped, two-lipped; upper lip broader, obscurely end-nicked; under lip three-cleft, downy; permanent.

Cor. Boatform.

Awnings reflected, hearted, downy beneath; sometimes, pointed.

Wings lanced, ascending, narrower than the keel.

Keel, as long as the wings, two-parted below, half-mooned, ascending.

Stam. Filaments nine and one, ascending, regularly curved. Anthers linear.

Pist. Germ pedicelled, oblongish, downy.

Style awned, about as long as the stamens. Stigma small, minutely cleft.

Per. Legume pedicelled, oblong, compressed, depending.

Seed one, toward the apex of the pericarp, flat, smooth, oval-roundish.

Flowers raceme-fascicled, large, red, or French scarlet, silvered with down.

O o 2
Leaves threed, petioled; leaflets entire, stipuled, large, rhomboïdal; the lateral ones unequally divided; the terminal one, larger, equally bisected; brightly verdant. A perfect description of the arborescent and the twining Palaśa has been exhibited in the last volume, with a full account of its beautiful red gum; but the same plant is here shortly described from the life, because few trees are considered by the Hindus as more venerable and holy. The Palaśa is named with honour in the Vedas, in the laws of Menu, and in Sanscrit poems, both sacred and popular; it gave its name to the memorable plain called Plásse by the vulgar, but properly Palasi; and, on every account, it must be hoped, that this noble plant will retain its ancient and classical appellation. A grove of Palásas was formerly the principal ornament of Cīshna-nagar, where we still see the trunk of an aged tree near six feet in circumference. This genus as far as we can judge from written descriptions, seems allied to the Nisaḥa.

62. Caranjaca:

Syn. Chirabilva, Naḍamāla, Caraja.

Vulg. Caranja.

Rheed: Caranfchi, 6 H. M. tab. 3.

Cal. Perianth one-leaved, cup-form, obscurely five-toothed, or scalloped, beaked.

Cor. Boat-form.

Awning broad, end-nicked, striated, rather spirally inflected, with two callosities at its base.

Wings oblong, of the same length with the awning.

Keel rather shorter, gibbous below, two-parted.

Stam. Filaments nine in one body, gaping at the base, and discovering a tenth close to the style. Anthers egged, erect.

Per. Legume mostly one-seeded, thick, rounded above, flattish, beaked below.

Seed oblong-roundish, rather kidney-form.

Racemes axillary. Azoning pale; wings violet. Leaves feathered with an odd one, mostly two-paired; leaflets egg-oblong, pointed, keeled, short-petioled; brownish on one side, pale on the other. Common petiole gibbous at its base. The seed yields an oil supposed to be a cure for the most in-veterate scabies.

63. Arjuna:


Vulg. Jaral.

Rheede. Adamboe; 4 H. M. tab. 20, 21, 22.

Linn. Beautiful Munchhausia?

Koen. Queen's-flower Lagerstroemia?

Cal. Perianth one-leaved, six-cleft, top-shaped, furrowed, with protuberant ridges, downy, permanent; divisions, coloured, with points reflected.

Cor. Petals six, roundish, somewhat notched, expanding, wavy; claws short, inserted in the calyx.

Stam. Filaments coloured, numerous, capillary shortish, obscurely conjoined in six parcels, one to each division of the calyx; Anthers thick, incumbent, roundish, kidney-shaped.


Per. Capsule egged, six-celled, six-valved.

Seeds numerous.
Panicles, racemed, terminal, erect. Flowers violet or light purple, in the highest degree beautiful. Leaves alternate, leathery, some opposite, egg-oblong, stipuled, most entire, short-petioled, smooth, paler beneath. Branches round and smooth: I have seen a single panicle, waving near the summit of the tree, covered with blossoms, and as large as a milkmaid's garland. The timber is used for the building of small boats.

64. Vanda; Syn. Vriēśādana, Vṛṣṭharubā, Śīvantīcā.
Vulg. Bándā, Pertārā, Perasārā.
These names, like the Linnaean, are applicable to all parasitic plants.
Linn. Retuse-leaved Epidendrum?
Cal. Spatbes, minute, straggling.
Cor. Petals five, diverging, oval-oblong, obtuse, wavy; the two lowest larger; the three highest, equal, bent towards the nectary.
Nectary central, rigid: Mouth gaping oblique: Upper lip shorter, three-parted, with a polished honey-cup; under lip, concave in the middle, keeled above, with two smaller cavities below; two processes at the base, incurved, hollow, oval-pointed, converging, honey-bearing.
Stam. Filaments very short. Anthers round, flattish, margined, covered with a lid, easily deciduous from the upper lip of the nectary.
Per. Capsule oblong-conick, wreathed, six-keeled, each with two smaller keels, three-celled, crowned with the dry corol.
Seeds innumerable like fine dust, affixed to the Receptacle with extremely fine hairs, which become thick wool.
Scapes incurved, solitary, from the cavity of the leaf, at most seven-flowered:
pedicels alternate. Petals milk-white externally, transparent; brown within, yellow-spotted. Upper lip of the nectary snow-white; under lip, rich purple or light crimson striated at the base, with a bright yellow gland, as it seems, on each process. The flowers gratefully fragrant and exquisitely beautiful, looking as if composed of shells or made of enamel; crisp, clasped, viscid internally. Leaves sheathing, opposite, equally curved, rather fleshy, sword-form, retuse in two ways at the summit, with one acute point. Roots fibrous smooth, flexible; shooting even from the top of the leaves. This lovely plant attaches itself chiefly to the highest Anraras and Bilvas; but it is an air-plant, and lives in a pot without earth or water: its leaves are excavated upwards to catch and retain dew. It most resembles the first and second Maravaras of Van Rheede in its roots, leaves, and fruit, but rather differs from them in its inflorescence. Since the parasites are distinguished by the trees, on which they most commonly grow, this may in Sanscrit be called Amaravanda; and the name Baculavanda should be applied to the Lorantbus; while the Viscum of the Oak, I am told, is named Vandâ simply and transcendently, the Vandâca, or Oak, being held sacred.

65. A'MALACI:
SYN. Tisyap'holâ, Amritâ, Vayast'hâ.
VULG.
LINN. PHYLLANTHUS EMBLICâ.

66. GAJAPAPPALI:
SYN. Caripippali, Capiballi, Colaballi, 'Sreyashi, Vašira. Some add, Chavicá or Chavya, but that is named, in the Amaracôô, as a distinct plant, vulgarly Chava, or Chayi.
Vulg. Pippal-j'banca, Maidah.

**Male flowers.**

**Cal.** Common Perianth four-leaved; leaflets, roundish, concave; the two exterior, opposite, smaller; containing from eight to fourteen florets.

**Partial calyx,** none.

**Cor.** None. **Nectary,** many yellow glands on the pedicel of the filaments.

**Stam.** Filaments from eight to eighteen in each floret, connected by a short villous pedicel, threadform, very hairy. **Anthers** large, netted, irregular, inflated, containing the pollen.

**Pist.** Rudiments of a **germ** and **style,** withering.

**Female flowers.**

**Cal.** Common Perianth as in the male, but smaller; containing from ten to twelve florets.

**Partial calyx,** none; unless you assume the corol.

**Cor.** many-petaled, belled. **Petals** erect lance-linear, fleshy, covered within, and externally with white hairs. **Nectary,** yellow glands sprinkling the receptacle.

**Pist.** Germ oval. **Style** cylindrick, curved at the base. **Stigma** headed.

**Per.** Berry globular, one-seeded.

**Seed,** spherical smooth.

**Flowers** umbelled, yellow from their anthers. **Leaves** mostly oblong-lanced, but remarkably varying in shape, alternate. Both flowers and fruit have an agreeable scent of lemon-peel; and the berries, as a native gardener informs me, are used as a spice or condiment: it was from him that I learned the Sanscrit name of the plant; but as **balli** means a creeper, and as the **Pippal-jbanca** is tree perfectly able to stand without support, I suspect in some degree the accuracy of his information; though I cannot account for his using a Sanscrit word without being led to
it, unless he had acquired at least traditional knowledge. It might be referred, from the imperfect mixed flower, to the twenty-third class.

67. Sa'co'ta'ca:

SYN.

Vulg. Sy'ura, or Syaura.

Koen. Roughleaved Trophis?

MALE.

CAL. Common imbricated; leaflets six or eight, egged, acute, small, expanding, withering, containing generally from five to seven flowerets. Partial four-parted; divisions egged, expanded, villous.

COR. None, unless you assume the calyx.

STAM. Filaments mostly four (in some, three; in one, five) awled, fleshy, rather compressed, spreading over the divisions of the calyx, and adhering to them at the point. Anthers double, folded.

The buds elastic, springing open on a touch.

FEMALE.

CAL. Four-parted; divisions egged, concave, pointed, permanent, propped by two small bracts, unless you call them the calyx.

COR. None; unless you give the calyx that name.


PER. Berry one-seeded, navelled, smooth, somewhat flattened.

SEED globular, arilled.

LEAVES various, some inverse egged, some oblong, some oval, pointed,

p p
irregularly notched, alternate, (some opposite), crowded, crisp, very rough veined, and paler beneath, smoother and dark above. Berry, deep yellow. The Pandits having only observed the male plant, insist that it bears no fruit. Female flowers axillary, from one to four or five in an axil.

68. Virana:
Syn. Viratara.
Vulg. Béná, Gándár, Càta.
Retz. Muricated Andropogon.
Roxb. Aromatic Andropogon.

The root of this useful plant, which Caˈlidaˈs calls uˈbra, has nine other names thus arranged in a Sanscrit verse:

Abbaya, Nalada, Sēnya, Amrīnāla, Jalāˈsaya,
Lāmājāca, Lāghulaya, Avadāba, Isbtacāpatˈha.

It will be sufficient to remark, that Jalāˈsaya means aquatitek, and that Avaˌdāba implies a power of allaying feverish heat; for which purpose the root was brought by Gautami to her pupil Sacontala: the slender fibres of it, which we know here by the name of Cˈbas, or Khaʃkas, are most agreeably aromatic, when tolerably fresh; and among the innocent luxuries of this climate, we may assign the first rank to the coolness and fragrance, which the large hurdles or screens in which they are interwoven, impart to the hottest air, by the means of water dashed through them; while the strong southern wind spreads the scent before it, and the quick evaporation contributes to cool the atmosphere. Having never seen the fresh plant, I guessed from the name in Van Rheede and from the əbin roots, that it was the Asiatick Acorus; but a drawing of Dr. Rox-burgh’s has convinced me, that I was mistaken.
69. S'ami:

Syn. Sačtu-p'halá, S'ivá.

Vulg. Sāen, Bābul.

Linn. Farnesian Mimosa.

Thorns double, white, black-pointed, stipular. Leaves twice-feathered; first, in three or four pairs; then in pairs from fourteen to sixteen. Spikes globular, with short peduncles; yellow, perfuming the woods and roads with a rich aromatick odour. A minute gland on the petiols below the leaflets. Wood, extremely hard, used by the Brāhmens to kindle their sacred fire, by rubbing two pieces of it together, when it is of a proper age and sufficiently dried. Gum semipellucid. Legumes rather spindle-shaped, but irregular, curved, acutely pointed, or daggered, with twelve or fourteen seeds rather prominent, gummy within. Seeds roundish, compressed. The gum of this valuable plant is more transparent than that of the Niloticl or Arabian species; which the Arabs call Um-mu’lgbilân, or Mother of Serpents, and the Persians, by an easy corruption, Mugbilân.

Sami’ra means a small Sami; but I cannot learn to what species that diminutive form is applied.

Lajjaru (properly Lajjālu) signifies bashful, or senstive, and appears to be the word engraved on a plate in the Malabar Garden; though Van Rheede pronounces it Lauri: there can be no doubt, that it is the swimming Mimosa, with senstive leaves, root enclosed in a spongy cylinder, and flowerets with only ten filaments. Linnaeus, by a mere slip, has referred to this plant as his Dwarf Aeschynomene; which we frequently meet with in India.—See 9 H. M. tab. 20. The epithet Lajjālu is given by the Pandits to the Modest Mimosa.
70. **Chandraça**

**Syn.** Chandrapuspá.

**Vulg.** Ch'bòta Chánd, or Moonlet.

**Rheede:** Sjoanna Amelpodi, 6 H. M. t. 47.

**Linn.** Serpent Ophioxylum.

**Cal.** Perianth, five-parted, small, coloured, erect, permanent; divisions, egged, acutish.

**Cor.** Petal, one. Tube very long in proportion; jointed near the middle, gibbous from the enclosed anthers; above them, rather funnel-form. Border five-parted; divisions, inverse-egged, wreathed.

**Pist.** Germ above, roundish. Style threadform. Stigma irregularly headed; with a circular pellucid base, or nectary, extremely viscid.

**Per.** Berry mostly twinned, often single, roundish, smooth, minutely pointed, one-seeded.

**Seed** on one side flattish, or concave; on the other, convex.

**Flowers** fascicled. Bracts minute, egged, pointed, coloured. Tube of the corol, light purple; border, small, milkwhite. Calyx, first pale pink, then bright carmine. Petiols, narrow-winged. Leaves oblong-oval, pointed, nervèd, dark and glossy above; mostly three-fold, sometimes paired, often four-fold near the summit; margins wavy. Few shrubs in the world are more elegant than the Chandra, especially when the vivid carmine of the perianth is contrasted not only with the milk-white corol, but with the rich green berries, which at the same time embellish the fascicle: the mature berries are black, and their pulp light purple. The Bengal peasants assure me, as the natives of Malabar had informed Rheede, that the root of this plant seldom fails to cure animals bitten by snakes, or stung by scorpions; and, if it be the plant, supposed to assist the Nacula, or Viverra Ickneumon, in his
battles with serpents, its *nine* synonyma have been *strung together* in the following distich:

\[ \text{Náculí, Surasá, Rásná, Sugandhá, Gandhanáculí,} \\
\text{Náculéshá, Bhujangáeshtí, Ch'hatricá, Suvahá, nova.} \]

The vulgar name, however, of the ichneumon-plant is *Rásan*, and its fourth Sanscrit appellation signifies *well-scented*; a quality which an ichneumon alone could apply to the *Ophioxylum*; since it has a strong, and rather a fetid, odour: the *fifth* and *sixth* epithets, indeed, seem to imply that its scent is agreeable to the *Nacula*; and the *seventh* (according to the comment on the *Amaracsh*), that it is offensive to snakes. It is asserted by some, that the *Rásan* is no other than the *Rough Indian Achi-ranthes*, and by others, that is one of the *Indian Aristolochias*.

From respect to *Linnaeus*, I leave this genus in his *mixed clasfs*; but neither my eyes, nor far better eyes than mine, have been able to discover its *male* flowers; and it must be confessed, that all the descriptions of the *Ophioxylum*, by *Rumphius, Burman*, and the great botanist himself, abound with erroneous references, and unaccountable oversights.

7. **Pippala**:

**Syn.** Bódhi-druma, Chala-dala, Cunjarásanas, Anval’ha.

**Vulg.** Pippat.

**Linn.** *Holy Ficus*: but the *three following* are also thought *holy*. *Fruit* small, round, axillary, seflile, mostly twin. *Leaves* hearted, scalloped, glossy, dagged; *petiols* very long; whence it is called *chaladala*, or the *tree with tremulous leaves*.

7. **Udumbara**;

**Syn.** Jantu-phala, Yajnyánga, Hémadugabhaca.
Vulgar. Dumbar.

Linn. Racemed Ficus.

Fruit peduncled, top-shape, navelled, racemed.

Leaves egg-oblong, pointed, some hearted, obscurely sawed, veined, rough above, netted beneath. Van Rheede has changed the Sanscrit name into Roembadoe: it is true, as he says, that minute ants are hatched in the ripe fruit, whence it is named Jantu-phala; and the Pandits compare it to the Mundane Egg.

73. Placsha:


Vulgar. Pācari, Pdcar.

Linn. Indian Ficus citron-leaved; but all four are Indian.

Fruit sessile, small, mostly twin, crowded, whitish.

Leaves oblong, hearted, pointed, with very long slender petiols.

74. Vata:

Syn. Nyagrođba, Babuṭat.

Vulgar. Ber.

Linn. Bengal Ficus, but all are found in this province, and none peculiar to it.

Fruit roundish, blood-red, navelled, mostly twin, sessile. Calyx three-leaved, imbricated.

Leaves some hearted, mostly egged, obtuse, broadish, most entire, petiols thick, short; branches radicating.

The Sanscrit name is given also to the very large Ficus Indica, with radicating branches, and to some other varieties of that species. Van
Rheede has by mistake transferred the name Aśvatīṭha to the Plaśṣa, which is never so called.

75. Caraca:
Syn. Bhauma, Cb'hatrāca.
Vulg,
Linn. Fungus Agarick.

This and the Pballus are the only fungi, which I have yet seen in India: the ancient Hindus held the fungus in such detestation; that Yama, a legislator, supposed now to be the judge of departed spirits, declares "those, "who eat mushrooms, whether springing from the ground or growing on "a tree, fully equal in guilt to the slayers of Brāhmens, and the most def-
"icable of all deadly sinners."

76. Ta'la:
Syn. Trinavījan.
Vulg. Tāl, Palmeira.
Linn. Borassus.

This magnificent palm is justly entitled the king of its order, which the Hindus call trina-druma, or grass trees. Van Rheede mentions the bluish, gelatinous, pellucid substance of the young seeds, which, in the hot season, is cooling, and rather agreeable to the taste; but the liquor ex-
tracted from the tree, is the most seducing and pernicious of intoxicating vegetable juices: when just drawn, it is as pleasant as Poubon-water-fresh from the spring, and almost equal to the best mild Champaigne. From this liquor, according to Rheede, sugar is extracted; and it would be
happy for these provinces, if it were always applied to so innocent a pur-
pose.

77. Na'rice'la:
SYN. Lángalin.
Vulg. Nárgil, Nárjil.
LINN: Nut-bearing Cocos.

Of a palm so well known to Europeans, little more needs be mentioned
than the true Asiatick name: the water of the young fruit is neither so co-
pious, nor so transparent and refreshing, in Bengal as in the isle of Hinzuan,
where the natives, who use the unripe nuts in their cookery, take extreme
care of the trees.

78. Guva'ca:
SYN. Ghónt'da, Pága, Cramuca, Capura.
Vulg. Supyári.
LINN: Areca Catechu.

The trivial name of this beautiful palm having been occasioned by a
gross error, it must necessarily be changed; and Guváca should be substi-
tuted in its place. The insipiated juice of the Mimosa C'hadira being
vulgarly known by the name of Cat'b, that vulgar name has been changed
by Europeans into Catechu; and because it is chewed with thin slices of
the Udvéga, or Areca-nut, a species of this palm has been distinguished by
the same ridiculous corruption.
A DESCRIPTION of the CUTTUB MINAR.—By Ensign
JAMES T. BLUNT, of the Engineers.

THE base of the Cuttub Minar, is a polygon of twenty-seven sides,
and rises upon it in a circular form; the diminution of the column,
is in a good proportion; I do not mean to infer, that the architect has follow-
ed any established rule, for it does not appear, that the ancients, in any
country, were tied down to rule, for although we see extremely different
instances of the diminution in their works, in general they all look well.

The exterior part of the Minar is fluted into twenty-seven semicircular
and angular divisions, upon which is written a good deal of a very ancient
Arabick character, it is supposed to contain passages from the Koran; there
are four balconys in the height of the building, the first is at the height of
ninety feet, the second at 140, the third at 180, and the fourth at 203 feet;
to the height of 180 feet, the pillar is built of an exceeding fine red Gra-
nite, and the fluting there ends. The balconys are supported upon large
stone brackets, and have had, small battlements erected upon them, as a
preventive from people who may choose to go into them from falling, and
serve likewise, as an ornamental purpose to the building; from the height of
203 feet, excepting a few inconsiderable ornaments, it rises with an even sur-
face, and circular form, built of very fine white marble; upon which the
date when the Minar was completed is said to be written. It was a matter
of much disappointment, that I could not approach sufficiently near to the
date to copy it, for I found it was situated at such a height, as to put it
totally out of my power, and what adds to the difficulty, is, that there is
not a bamboo, or wood of any kind produced in that part of the country,
calculated to raise a scaffolding with.

An irregular spiral staircase, leads from the bottom, to the summit of the
Minar, which is crowned with a majestic Cupola of red Granite; there are
many openings during the ascent, for the admission of light and air; at
each balcony, an opening to allow of people walking into them, but I found
the battlements in many parts entirely ruined, and those that were standing
in such a decayed state, as to render it a matter of some danger to venture out
from the staircase.

The entire height of the Cuttub Minar, is 242 feet and six inches, I as-
certained it by measuring a direct line, from its base, and, as it may be a
matter of some satisfaction to see that it is done with precision, I annex the
Trigonometrical calculation.

The Base AB being measured in a right line from the bottom of the
Minar, was found to be 402 feet and six inches, twenty-four feet, one inch, the se-
midiameter of the Base of the Minar being added to it, gave a line of 426 feet and
seven inches from the centre of the Pillar. At the extremity of the Base A a Theodo-
lite was placed, and previously being care-
fully adjusted, by putting the line of collimation in the Telescope, parallel.
to the plane of the Horizon, the angle B A C was observed to be twenty-nine degrees, thirty-nine minutes; thence the height of the Cuttub Minar, was found to be 242 feet and nearly six inches.

By Plane Trigonometry.

The base A B giving 426 feet seven inches say 426.5, the angle B A C is given 29° 39', the angle B A C is a right one; the sum of the angles in all triangles being equal to two right angles or 180 degrees by deducting the sum of the two angles C A B and A B C from the sum of three angles in the triangle A B C, the angle A C B will be found

\[ \begin{align*}
C A B &= 29.39 \\
A B C &= 90.0
\end{align*} \]

\[ 180 - 119.39 = 60.21 = \text{Angle A C B}. \]

Then as the angle A C B is to the side A B, so is the angle C A B to the side C B, or height of the Minar.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.93905</td>
<td>62942</td>
<td>9.69434</td>
<td>242.5</td>
</tr>
<tr>
<td>+</td>
<td>2,62942</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,32376</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 9.93905</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,38471</td>
<td>= 242.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Cuttub Minar is situated about nine miles bearing S 16° W from the Jumma Musjid, that was erected by the Emperor Shau Jan in the present city of Delbi, and appears to have been designed for a Minaret to a most stupendous mosque, which never was completed; a considerable part of the second and corresponding Minaret is to be seen, and many other
parts of this intended immense building, particularly the arches. The mosque seems to have been abandoned in this unfinished state, from causes at this time entirely unknown; perhaps the original designer of the fabric found human life too short to see it accomplished during his existence: it may not appear a matter of much surprize, that the wealth of one man should be found inadequate, to so arduous an undertaking, however opulent and exalted in life, his situation may have been. The tomb of Cuttub Shaw, at whose expence the Minar is said to have been built, is to be seen a few hundred yards to the westward of it, the tomb is rather inconsiderable and of mean appearance, when compared with the many more magnificent mausoleums that are to be met with in the extensive ruins of Delbi.

Cuttub Shaw came to the throne of Delbi in the Mussulman year 602, corresponding with the Christian era 1205, and died in the Mussulman year 607, or Christian era 1210, a reign of only five years, and certainly a period not sufficient to erect so large a building as a mosque to correspond in magnitude and grandeur with the Minar and other parts of the structure that were began upon adJOINING to it.

I think it may with some degree of reason be inferred that a stop was put to the building of the mosque at the decease of Cuttub Shaw, and from which period we may date the Minar to have been completed; conformably with this inference, it is ascertained, that the Minar has stood at least 580 years. Excepting the unavoidable and irresistible effects of lightning, from the goodness of the materials, and the excellent judgment with which they appear to have been put together, there is every reason to suppose it would have withstood the ravages of time, for succeeding generations to behold, with admiration and astonishment for yet many ages.
XIX.

ASTRONOMICAL OBSERVATIONS made on a Voyage to the Andaman and Nicobar Islands.—By Lieutenant R. H. Colebrooke.

DIAMOND ISLAND, near Cape Negrais, 1789.

December 14th. By the Sun’s Meridian Altitude \{ \}
\begin{align*}
\text{taken on shore,} & & \text{Latitude:} \\
\text{By Captain Kyd,} & & \text{15° 49’ 33’’} \\
\hline
\text{Mean} & & \text{15 49 38’}
\end{align*}

CARNICOBAR ISLAND, 1790. On board the Atalanta Sloop of War, about one mile from the western shore.

January 2d, Sun’s mer. alt. 57° 44’ 40” \quad \text{Latitude 9° 8’ 52’’}

BEARINGS.

Northernmost point of the Land, \text{N 16° E}
Southernmost point of do. \text{S 21 E}
Nearest shore, \text{N 70 E}

DANISH POINT, at Nancowry, 1790. Observations for the Latitude, taken near the Flag Staff:

\begin{align*}
\begin{array}{|c|c|c|}
\hline
\text{January 11th,} & \text{Doub. Mer. Alt.} & \text{Latitude N.} \\
\hline
\circ, \text{or Stars.} & 104° 33’ 0’’ & 8° 1’ 51’’ \\
\text{Capella,} & 58 48 0 & 8 2 17 \\
\text{Canopus,} & 97 54 30 & 8 2 31 \\
\text{σ Persei,} & 123 42 0 & 8 2 27 \\
\text{α’s lower limb,} & 104 34 30 & 8 2 36 \\
\text{Capella,} & 106 18 10 & 8 2 49 \\
\beta Aurigæ, & 104 34 20 & 8 2 35 \\
\beta Aurigæ, & 106 17 30 & 8 2 29 \\
\hline
\text{Mean of the whole} & & 8 2 26, 8
\end{array}
\end{align*}
If the first observation by Capella be rejected, the mean of the remaining seven will be 8° 2′ 32″.

The observations were made with a fine Sextant by Troughton, and Artificial Horizon. The refractions applied in computing these, and all the following observations were taken from Monsieur Le Gentil’s Table, published in his "Voyage dans les Mers de L’Inde." The declinations of the Stars were taken from Table 7th, of the Requisite Tables, and partly from Dunn’s Catalogue.

Observations for Longitude, by the Eclipses of Jupiter’s Satellites.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>H  ′  ″</td>
<td>1</td>
<td>Clear.</td>
<td>Imm.</td>
<td>6 13 25</td>
</tr>
<tr>
<td>11. 20. 23.</td>
<td>12 17 44</td>
<td>1</td>
<td>Do.</td>
<td>Imm.</td>
<td>6 13 27</td>
</tr>
<tr>
<td></td>
<td>8 36 51</td>
<td>2</td>
<td>Do.</td>
<td>Imm.</td>
<td>6 13 26</td>
</tr>
</tbody>
</table>

Mean Longitude of Damiq Point East from Greenwich, 93° 21′ 30″

The Telescope was a Refractor magnifying from 80 to 90 times.

PUMBAUK ISLAND, on board the Experiment Cutter. The Southern extremity of the Island bearing East.

February 10th, ⁰’s Mer. Alt. 67° 18′ 30″

Do. by Capt. Kyd, 67° 18′ 0″

Mean 67° 18′ 15″

Latitude 8° 13′ 1″

CARNICOBAR ISLAND.

February 15, ⁰’s Mer. Alt. 68° 5′ 30″

The Southernmost point of the Island bore E ⁴ S 1 mile distant.

February 16, ⁰’s Mer. Alt. 68 26 15

Do. by Capt. Kyd, 68 26 30

Mean 68 26 22.

Latitude 9° 6′ 24″

Southernmost point of the Island bore W ⁹ S 14° M. d
CHATHAM ISLAND in Port Cornwallis * at the Great Andaman, 1790.

**OBSERVATIONS FOR LATITUDE.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Names of Stars</th>
<th>D. Alls. on Mer.</th>
<th>Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 23</td>
<td>Canopus,</td>
<td>51° 31' 0&quot;</td>
<td>11° 41' 0&quot;</td>
</tr>
<tr>
<td></td>
<td>β Aurigae,</td>
<td>113° 36' 30&quot;</td>
<td>11° 42' 5&quot;</td>
</tr>
<tr>
<td></td>
<td>α Ursæ Majoris,</td>
<td>77° 40' 0&quot;</td>
<td>11° 41' 49&quot;</td>
</tr>
<tr>
<td>26</td>
<td>β Aurigæ,</td>
<td>113° 36' 0&quot;</td>
<td>11° 41' 50&quot;</td>
</tr>
<tr>
<td></td>
<td>α Canis Majoris,</td>
<td>99° 15' 0&quot;</td>
<td>11° 41' 23&quot;</td>
</tr>
<tr>
<td></td>
<td>β Can. Maj.</td>
<td>104° 31' 0&quot;</td>
<td>11° 40' 49&quot;</td>
</tr>
<tr>
<td>28</td>
<td>β Aurigæ,</td>
<td>113° 36' 20&quot;</td>
<td>11° 42' 0&quot;</td>
</tr>
<tr>
<td></td>
<td>Canopus,</td>
<td>51° 31' 10&quot;</td>
<td>11° 40' 55&quot;</td>
</tr>
<tr>
<td>March 2</td>
<td>α Canis Maj.</td>
<td>99° 15' 30&quot;</td>
<td>11° 41' 8&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Sirius,</td>
<td>123° 46' 30&quot;</td>
<td>11° 40' 50&quot;</td>
</tr>
<tr>
<td>9</td>
<td>Γ Argo Navis,</td>
<td>63° 14' 40&quot;</td>
<td>11° 40' 37&quot;</td>
</tr>
<tr>
<td>11</td>
<td>β Argo Navis,</td>
<td>77° 48' 30&quot;</td>
<td>11° 41' 40&quot;</td>
</tr>
<tr>
<td></td>
<td>β Ursæ Majoris,</td>
<td>88° 25' 30&quot;</td>
<td>11° 42' 5&quot;</td>
</tr>
</tbody>
</table>

Mean 11° 41' 23, 9

**OBSERVATIONS for Longitude by the Eclipses of Jupiter's Satellites.**

<table>
<thead>
<tr>
<th>Apparent Time. 1790.</th>
<th>Sat.</th>
<th>Weather</th>
<th>Imm. or Emer.</th>
<th>Longitude in Time</th>
<th>Longitude in Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.</td>
<td>H.</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>February 24</td>
<td>13</td>
<td>31</td>
<td>56,5</td>
<td>Clear, Emer.</td>
<td>6° 10 24.5</td>
</tr>
<tr>
<td>26</td>
<td>14</td>
<td>45</td>
<td>59</td>
<td>Ditto, Emer.</td>
<td>6° 10 35</td>
</tr>
<tr>
<td>March 7</td>
<td>11</td>
<td>10</td>
<td>41,5</td>
<td>Ditto, Emer.</td>
<td>6° 10 34.5</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>7</td>
<td>47,5</td>
<td>Ditto, Emer.</td>
<td>6° 10 33.5</td>
</tr>
<tr>
<td>14</td>
<td>13</td>
<td>6</td>
<td>38,5</td>
<td>Ditto, Emer.</td>
<td>6° 10 19.5</td>
</tr>
<tr>
<td>16</td>
<td>7</td>
<td>35</td>
<td>34</td>
<td>Ditto, Emer.</td>
<td>6° 10 10</td>
</tr>
</tbody>
</table>

Mean 92° 36' 32.5

* The Old Harbour so called.
An excellent Chronometer by Arnold was used in observing the time, to correct which, frequent observations of the sun and stars were taken. The former by equal or corresponding altitudes, observed before and after noon, to which the proper equations were applied, and in the latter case by taking several altitudes of a star east, and one west, a few minutes before, and after the observation; these were calculated separately, and the mean of the results was applied to the correction of the watch. The apparent time as deduced from the sun, or stars, agreed in general within a second or two.
XX.

ASTRONOMICAL OBSERVATIONS made on a Survey through the Carnatic and Mysore Country.—By Lieutenant R. H. Colebrooke.

OBSERVATIONS FOR LATITUDE.

<table>
<thead>
<tr>
<th>Date</th>
<th>Names of Stars</th>
<th>Mer. Alts. observed</th>
<th>Latitude derived</th>
<th>Mean Latitude</th>
<th>Bearing and distance of the nearest Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1791</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb. 2</td>
<td>Capella,</td>
<td>57 19 15 13 4 48</td>
<td></td>
<td></td>
<td>Villout Choultry, W 1 4 mile diff.</td>
</tr>
<tr>
<td></td>
<td>Canopus,</td>
<td>24 23 0 13 3 34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aurigae,</td>
<td>58 10 0 13 3 52</td>
<td></td>
<td>13 3 57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Canis Majoris</td>
<td>59 5 0 13 3 38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 30 10 13 3 53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Capella,</td>
<td>57 27 0 13 12 33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aurigae,</td>
<td>58 19 45 13 13 37</td>
<td>13 13 14,6</td>
<td></td>
<td>Chilore Fort, N 65 W</td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 20 30 13 13 34</td>
<td></td>
<td></td>
<td>1 4 mile diff.</td>
</tr>
<tr>
<td>16</td>
<td>Aurigae,</td>
<td>58 18 0 13 11 52</td>
<td></td>
<td></td>
<td>Marundrum Village, S b. E 4 furs. diff.</td>
</tr>
<tr>
<td></td>
<td>Canis Majoris</td>
<td>58 56 0 13 12 38</td>
<td>13 12 19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 21 37 13 12 27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Capella,</td>
<td>57 25 30 13 11 3</td>
<td></td>
<td></td>
<td>Moogly Pagoda, W 5 S 4 f. d.</td>
</tr>
<tr>
<td></td>
<td>Canopus,</td>
<td>24 14 50 13 11 46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aurigae,</td>
<td>58 18 20 13 12 12</td>
<td></td>
<td>13 11 38,7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 22 30 13 11 34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Capella,</td>
<td>57 26 45 13 12 19</td>
<td></td>
<td></td>
<td>Palmanaire, S 60 E 1 m. d.</td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 21 15 13 12 49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Aurigae,</td>
<td>58 19 30 13 13 22</td>
<td>13 12 51</td>
<td></td>
<td>Offscottah, N 72 W 1 m. 6 f. d.</td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 21 30 13 12 34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>Aurigae,</td>
<td>58 11 0 13 4 52</td>
<td>13 4 35,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sirius,</td>
<td>60 29 45 13 4 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Names of Stars</td>
<td>Mer. Alts. observed</td>
<td>Latitude derived</td>
<td>Mean Latitude</td>
<td>Bearing and distance of the nearest place</td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>---------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>May 7</td>
<td>Ursae Majoris</td>
<td>39° 36' 30&quot;</td>
<td>12° 27' 59&quot;</td>
<td>2°</td>
<td>Satanaor, N b. E 2 f. d.</td>
</tr>
<tr>
<td></td>
<td>Do. by Lieut.</td>
<td>39° 34' 15&quot;</td>
<td>12° 25' 44&quot;</td>
<td>12° 25' 42&quot; 5</td>
<td>Arakeeree Fort, S. E. 2 f. d.</td>
</tr>
<tr>
<td></td>
<td>Bulhby,</td>
<td>39° 34' 12&quot;</td>
<td>12° 25' 41&quot;</td>
<td></td>
<td>Kanambaddy, W. 1 m. d.</td>
</tr>
<tr>
<td>25</td>
<td>Ursae Majoris</td>
<td>47° 35' 45&quot;</td>
<td>12° 26' 14&quot;</td>
<td>12° 26' 24&quot; 6</td>
<td>Tondanor Village, N. N. W. 6 f. d.</td>
</tr>
<tr>
<td>30</td>
<td>Ursae Majoris</td>
<td>52° 11' 50&quot;</td>
<td>12° 32' 47&quot;</td>
<td>12° 32' 43&quot;</td>
<td>Yekaty Village, N. 27 E. 4 f. d.</td>
</tr>
<tr>
<td></td>
<td>Centauri,</td>
<td>42° 8' 20&quot;</td>
<td>12° 32' 39&quot;</td>
<td>2145 29</td>
<td></td>
</tr>
<tr>
<td>June 11</td>
<td>Ursae Majoris</td>
<td>46° 45' 45&quot;</td>
<td>12° 46' 2&quot;</td>
<td>12° 46' 8</td>
<td>Bimnelly Village West 1/2 f. d.</td>
</tr>
<tr>
<td></td>
<td>Ursae Majoris</td>
<td>52° 24' 30&quot;</td>
<td>12° 45' 24&quot;</td>
<td>4 miles distant</td>
<td>Holliordroog N. 74 W.</td>
</tr>
<tr>
<td></td>
<td>Centauri,</td>
<td>41° 56' 10&quot;</td>
<td>12° 45' 1&quot;</td>
<td>12° 47 58</td>
<td>Maggry Pagoda with the Bull N. 60 E. 1</td>
</tr>
<tr>
<td></td>
<td>Antares,</td>
<td>51° 6' 0&quot;</td>
<td>12° 57' 31&quot;</td>
<td>12° 57' 20' 5</td>
<td>furl. dift.</td>
</tr>
<tr>
<td></td>
<td>Draconis,</td>
<td>40° 59' 40&quot;</td>
<td>12° 57' 10&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 21</td>
<td>Scorpii,</td>
<td>49° 27' 30&quot;</td>
<td>12° 37' 23&quot;</td>
<td>12° 37' 42</td>
<td>Anchitty Droog S. 38 E. 3/4 m. d.</td>
</tr>
<tr>
<td></td>
<td>Draconis,</td>
<td>51° 7' 30&quot;</td>
<td>12° 38' 1&quot;</td>
<td></td>
<td>Neeldurgum N. 70 W. 1 1/2 m. d.</td>
</tr>
<tr>
<td></td>
<td>Antares,</td>
<td>51° 29' 0&quot;</td>
<td>12° 34' 30&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 29</td>
<td>Cygni,</td>
<td>58° 31' 30&quot;</td>
<td>12° 8' 41&quot;</td>
<td></td>
<td>Singanaikanapilly Villy S.S.E. 2 f. d.</td>
</tr>
<tr>
<td>a</td>
<td>Cygni,</td>
<td>58° 36' 45&quot;</td>
<td>12° 8' 47&quot;</td>
<td></td>
<td>In the Area of Bangalore Palace.</td>
</tr>
<tr>
<td></td>
<td>Grus,</td>
<td>38° 32' 30&quot;</td>
<td>12° 8' 27&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cygni,</td>
<td>58° 31' 35&quot;</td>
<td>12° 8' 46&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct. 1</td>
<td>Cygni,</td>
<td>58° 36' 45&quot;</td>
<td>12° 8' 47&quot;</td>
<td>8 50' 3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fomalhaut,</td>
<td>46° 8' 35&quot;</td>
<td>12° 8' 59&quot;</td>
<td>13 1 15' 5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fomalhaut,</td>
<td>46° 8' 30&quot;</td>
<td>12° 9' 4</td>
<td></td>
<td>Sandiconappang Fort East 1/2 f. d.</td>
</tr>
<tr>
<td>6 a</td>
<td>Grus,</td>
<td>28° 54' 50&quot;</td>
<td>12° 9' 12&quot;</td>
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</tr>
<tr>
<td>Nov. 26</td>
<td>Fomalhaut,</td>
<td>46° 20' 0&quot;</td>
<td>12° 57' 36&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Fomalhaut,</td>
<td>47° 34' 30&quot;</td>
<td>12° 57' 20&quot;</td>
<td>12 57 39</td>
<td></td>
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<tr>
<td></td>
<td>Do. by Capt. Kyd</td>
<td>47° 35' 0&quot;</td>
<td>12° 57' 50&quot;</td>
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<tr>
<td>b</td>
<td>Fomalhaut,</td>
<td>43° 50' 0&quot;</td>
<td>12° 57' 53&quot;</td>
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</tr>
<tr>
<td>Dec. 16</td>
<td>Lower Limb,</td>
<td>53° 32' 35&quot;</td>
<td>12° 1' 8&quot;</td>
<td>13 1 15' 5</td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Eridani,</td>
<td>35° 51' 30&quot;</td>
<td>12° 0' 59&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Persei,</td>
<td>53° 55' 45&quot;</td>
<td>12° 1' 34&quot;</td>
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### The Carnatic and Mysore Country.

<table>
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<tr>
<th>Date</th>
<th>Names of Stars</th>
<th>Mer. Alts. observed</th>
<th>Latitude derived</th>
<th>Mean Latitude</th>
<th>Bearing and Distance of the nearest Place</th>
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<td>Cassiopea,</td>
<td>43 49 45</td>
<td>12 57 40</td>
<td>12° 57' 27&quot;</td>
<td>Maggry Pagoda, with the Bull, N. 76 W. 4 furls. dilt.</td>
</tr>
<tr>
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<td>Eridani,</td>
<td>35 55 20</td>
<td>12 57 9</td>
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<td></td>
<td>Persei,</td>
<td>53 52 0</td>
<td>12 57 50</td>
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<tr>
<td>31</td>
<td>O's Lower Limb,</td>
<td>53 40 15</td>
<td>12 57 19</td>
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<tr>
<td>Feb. 20</td>
<td>Aurigae,</td>
<td>57 34 0</td>
<td>12 27 53</td>
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<tr>
<td>21</td>
<td>Canis Maj.</td>
<td>59 40 15</td>
<td>12 27 51</td>
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<tr>
<td></td>
<td>Sirius,</td>
<td>61 6 15</td>
<td>12 27 43</td>
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<td>12 28 3</td>
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<tr>
<td></td>
<td>Canis Maj.</td>
<td>59 41 10</td>
<td>12 27 26</td>
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<td></td>
<td>Sirius,</td>
<td>61 6 25</td>
<td>12 27 58</td>
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<td>March 2</td>
<td>Aurigae,</td>
<td>57 34 10</td>
<td>12 28 3</td>
<td>12° 27 52' 2&quot;</td>
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<tr>
<td>4</td>
<td>Ursae Majoris,</td>
<td>46 28 0</td>
<td>12 28 3</td>
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<tr>
<td>15</td>
<td>Urs. Maj.</td>
<td>52 7</td>
<td>12 27 42</td>
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<tr>
<td></td>
<td>Canis Maj.</td>
<td>48 51 0</td>
<td>12 27 45</td>
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<tr>
<td></td>
<td>Sirius,</td>
<td>51 28</td>
<td>12 28 11</td>
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<tr>
<td>April 19</td>
<td>Ursae Majoris,</td>
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<td>12 29 29</td>
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<tr>
<td>28</td>
<td>Urs. Maj.</td>
<td>40 3 20</td>
<td>12 54 30</td>
<td>12° 54' 32&quot;</td>
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<tr>
<td></td>
<td>Centauri,</td>
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<td>12 54 34</td>
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### Observations for Longitude by the Eclipses of Jupiter's Satellites.

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<th>Date and apparent Time of the Observations</th>
<th>Sat.</th>
<th>Imm. or Emer.</th>
<th>Weather</th>
<th>Longitude in Time</th>
<th>Longitude in Degrees</th>
<th>Bearing and Distance of nearest Place</th>
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</thead>
<tbody>
<tr>
<td>1791. D. H. 2</td>
<td>1</td>
<td>Imm.</td>
<td>clear</td>
<td>5 14 10</td>
<td>78 32 30</td>
<td>Palmanaire S. 60 E. 1 m. d.</td>
</tr>
<tr>
<td>Feb. 22 12 33 42</td>
<td>1</td>
<td>Imm.</td>
<td>ditto</td>
<td>5 10 28</td>
<td>77 37 0</td>
<td>Oosofftta N. 72 W. 1½ m. d.</td>
</tr>
<tr>
<td>Mar. 3 8 54 3</td>
<td>1</td>
<td>Imm.</td>
<td>ditto</td>
<td>5 6 24</td>
<td>76 36 0</td>
<td>Seringapatam Great Pagoda S. 8° E. 5 m. d.</td>
</tr>
</tbody>
</table>

R 12
<table>
<thead>
<tr>
<th>Date and appointed Time of the Observations</th>
<th>Sat.</th>
<th>Imm. or Emer.</th>
<th>Weather</th>
<th>Longitude in Time</th>
<th>Longitude in Degrees</th>
<th>Bearing and distance of nearest Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 12 8 25 19 5</td>
<td>1</td>
<td>Emer. clear</td>
<td>5</td>
<td>6 52 5</td>
<td>76 43 7 5</td>
<td>Yekaty village N. 27 E. 4 f. d.</td>
</tr>
<tr>
<td>19 10 18 54</td>
<td>1</td>
<td>Emer. ditto</td>
<td>5</td>
<td>7 17</td>
<td>76 49 15</td>
<td>Hoolio-droog N. 74 E. 4 m. d.</td>
</tr>
<tr>
<td>1792.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Mar. 12 13 36 9</td>
<td>1</td>
<td>Imm. ditto</td>
<td>5</td>
<td>6 12</td>
<td>76 33 0</td>
<td>Camp before Seriganapatam Pagodab,</td>
</tr>
<tr>
<td>19 15 32 8</td>
<td>1</td>
<td>Imm. ditto</td>
<td>5</td>
<td>6 8</td>
<td>76 32 0</td>
<td>bearing S, 2 W.</td>
</tr>
<tr>
<td>21 10 0 54</td>
<td>1</td>
<td>Imm. ditto</td>
<td>5</td>
<td>5 57</td>
<td>76 29 15</td>
<td>24 m. d.</td>
</tr>
</tbody>
</table>

Magnifying Power of the Telescope, 80 to 100 times Achromatic.
XXI.

**TABLE of LATITUDES and LONGITUDES of some principal Places in India, determined from Astronomical Observations.**—By Mr. Reuben Burrow, communicated by Lieut. R. H. Colebrooke.

<table>
<thead>
<tr>
<th>Places</th>
<th>Latitude N.</th>
<th>Longitude in Time.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russapugly near Calcuta</td>
<td>22° 30' 23'</td>
<td>5h 53' 30&quot;</td>
<td>Mr. Burrow's Residence.</td>
</tr>
<tr>
<td>Bygonbarry</td>
<td>24° 48' 14&quot;</td>
<td>6° 0' 46&quot;</td>
<td>The old Factory on the Barrampooter River.</td>
</tr>
<tr>
<td>Dewangunge</td>
<td>25° 9' 31&quot;</td>
<td>5° 58' 36&quot;</td>
<td>At the Conflux with the River.</td>
</tr>
<tr>
<td>Tealcoppee</td>
<td>25° 19' 16&quot;</td>
<td>5° 58' 34&quot;</td>
<td>The Kotie or Factory,</td>
</tr>
<tr>
<td>Shealdoo Nullah</td>
<td>25° 58' 8&quot;</td>
<td>5° 59' 17&quot;</td>
<td>The Mount,</td>
</tr>
<tr>
<td>Bakkamarchor</td>
<td>26° 1' 41&quot;</td>
<td>5° 59' 43&quot;</td>
<td>The large Tree,</td>
</tr>
<tr>
<td>Kazycotah</td>
<td>26° 9' 4&quot;</td>
<td>6° 0' 33&quot;</td>
<td></td>
</tr>
<tr>
<td>Goalparra</td>
<td>26° 11' 21&quot;</td>
<td>6° 2' 9&quot;</td>
<td></td>
</tr>
<tr>
<td>Doobarey</td>
<td>26° 1' 6&quot;</td>
<td>5° 59' 42&quot;</td>
<td></td>
</tr>
<tr>
<td>Dadnachorr</td>
<td>25° 3' 36&quot;</td>
<td>5° 59' 45&quot;</td>
<td></td>
</tr>
<tr>
<td>Pookereah</td>
<td>24° 54' 6&quot;</td>
<td>5° 59' 45&quot;</td>
<td></td>
</tr>
<tr>
<td>Sagow</td>
<td>24° 35' 41&quot;</td>
<td>5° 59' 45&quot;</td>
<td></td>
</tr>
<tr>
<td>Tingarchorr</td>
<td>24° 18' 6&quot;</td>
<td>6° 2' 15&quot;</td>
<td>Between two large Trees, Center of the Town,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Near the mouth of the Bannar River.</td>
</tr>
<tr>
<td>Diggamabad</td>
<td>24° 0' 38&quot;</td>
<td>6° 3' 7&quot;</td>
<td>Mouth of the Nullah,</td>
</tr>
<tr>
<td>Ameerabad</td>
<td>23° 55' 31&quot;</td>
<td>6° 2' 30&quot;</td>
<td>Conflux with the Megna River.</td>
</tr>
<tr>
<td>Sampmarray</td>
<td>23° 49' 16&quot;</td>
<td>6° 2' 54&quot;</td>
<td>End of the Town near Sootalooory.</td>
</tr>
<tr>
<td>Remateally Nulla</td>
<td>22° 55' 35&quot;</td>
<td>6° 0' 38&quot;</td>
<td></td>
</tr>
<tr>
<td>Rajegunge</td>
<td>22° 38' 7&quot;</td>
<td>5° 59' 55&quot;</td>
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<tr>
<td>Coweally</td>
<td>22° 37' 30&quot;</td>
<td>5° 59' 47&quot;</td>
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</tr>
<tr>
<td>Gonganagar</td>
<td>22° 37' 30&quot;</td>
<td>5° 59' 47&quot;</td>
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</tr>
</tbody>
</table>
# TABLE OF LATITUDES AND LONGITUDES

At Cheduba, and on the Arracan Coast.

<table>
<thead>
<tr>
<th>Places</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Spot of Observation and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Island</td>
<td>$18^\circ 27' 30''$</td>
<td>$6h 16' 12''$</td>
<td>Center Rock, Fort of Cheduba, Fort of Tumbiah, Island in the Cantabida, or Cantabida River.</td>
</tr>
<tr>
<td>Cheduba Flag Staff</td>
<td>$18 53 8$</td>
<td>$6 14 28$</td>
<td></td>
</tr>
<tr>
<td>House Island</td>
<td>$18 56 42$</td>
<td>$6 14 19$</td>
<td>Near the mouth of the Cantabida River.</td>
</tr>
<tr>
<td>Maykawoody</td>
<td>$18 50 43$</td>
<td>$6 15 11$</td>
<td>A Town in the Cantabida Harbour.</td>
</tr>
<tr>
<td>Jy</td>
<td>$19 5 46$</td>
<td>$6 16 7$</td>
<td>A remarkable point in Cheduba.</td>
</tr>
<tr>
<td>Dumfil</td>
<td>$18 57 40$</td>
<td>$6 15 43$</td>
<td>North end of the Island.</td>
</tr>
<tr>
<td>Jykuna Island</td>
<td>$18 44 40$</td>
<td>$6 15 43$</td>
<td></td>
</tr>
<tr>
<td>Chagoo Rock</td>
<td>$18 48 51$</td>
<td>$6 15 43$</td>
<td></td>
</tr>
<tr>
<td>Kyaunimo</td>
<td>$18 54 36$</td>
<td>$6 16 0$</td>
<td></td>
</tr>
<tr>
<td>Cedars Point</td>
<td>$18 52 58$</td>
<td>$6 15 21$</td>
<td></td>
</tr>
</tbody>
</table>

On the Ganges, &c.

<p>| Nudda             | $23^\circ 25' 49''$ | $5h 53' 32''$ | Junction of the Hoogly and Caffimbazar Rivers.                  |
| Sackey Fort       | $23 40 0$           |              | The ancient round Tower.                                        |
| Gour              | $24 53 0$           |              | The Marble Palace.                                               |
| Rajemah            | $25 3 15$           | $5 52 13$    | Mr. Cleveland's Bungalow, Rocky point of the Fort.              |
| Colgong           | $25 16 6$           | $5 48 39$    | Chehletoon or Alaverdi's Palace near the Fort.                  |
| Mongheer          | $25 22 57$          | $5 45 57$    | Granary.                                                        |
| Patna             | $25 36 3$           | $5 41 2$     | Fort Flag Staff.                                                |
| Bankipoor         | $25 37 38$          | $5 40 40$    |                                                                 |
| Buxar             | $25 34 27$          | $5 35 59$    |                                                                 |
| Mouth of the Caramnassa River | $25 30 20$ | $5 35 31$ |                                                                 |
| Mouth of the Goomty | $25^\circ 31' 25''$ | $5 32 36$ |                                                                 |
| Oojear            | $25 25 21$          |              | The Hindoo Observatory, Flag Staff, Captain Bouch's Bungalow, Conflux with the Ganges, S. E. Corner of the Fort at Preyag. |
| Benares           | $25 18 36$          | $5 31 59$    | Close to the Nulla, highest part of the Town.                   |
| Chunar Fort       | $25 7 40$           | $5 31 22$    |                                                                 |
| Chunar Camp       | $25 6 39$           | $5 31 12$    |                                                                 |
| Tonfe River       | $25 16 16$          | $5 28 0$     |                                                                 |
| Allahabad         | $25 25 56$          | $5 27 24$    |                                                                 |
| Correahcottah     | $25 33 16$          | $5 26 28$    |                                                                 |</p>
<table>
<thead>
<tr>
<th>Places</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Spot of Observation and Remarks</th>
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<td>Jaujefmow</td>
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<td>Joognagpoor</td>
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<td>27° 8' 56&quot;</td>
<td>5° 19' 5&quot;</td>
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<td>Futtigurh</td>
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<td>Jillalabad</td>
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<td>Berimitana</td>
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<td>28° 37' 35&quot;</td>
<td>5° 18' 44&quot;</td>
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<tr>
<td>Barrower</td>
<td>28° 36' 53&quot;</td>
<td>5° 17' 55&quot;</td>
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<td>Shair Ghur</td>
<td>28° 38' 50&quot;</td>
<td>5° 17' 1&quot;</td>
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<td>Bourkah</td>
<td>28° 43' 23&quot;</td>
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<td>Rampour</td>
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<td>Moradabad</td>
<td>28° 50' 24&quot;</td>
<td>5° 14' 44&quot;</td>
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<td>Mahmupore</td>
<td>28° 42' 1&quot;</td>
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<td>28° 35' 14&quot;</td>
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<tr>
<td>Bhyrah</td>
<td>29° 2' 11&quot;</td>
<td>5° 15' 6&quot;</td>
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</tr>
<tr>
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<td>5° 14' 53&quot;</td>
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<td>Rair</td>
<td>29° 21' 13&quot;</td>
<td>5° 14' 33&quot;</td>
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<td>Azul Ghur</td>
<td>29° 23' 45&quot;</td>
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<td>Places</td>
<td>Latitude</td>
<td>Longitude</td>
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</tr>
<tr>
<td>Sheercote</td>
<td>29° 19' 48&quot;</td>
<td>H.</td>
<td>Principal Mosque in the City, Brick Fort, White Mosque, High Gate of the Fort,</td>
</tr>
<tr>
<td>Nundeenah</td>
<td>29° 27' 16&quot;</td>
<td>5° 13' 19&quot;</td>
<td>Center of the Fort, This Village is in the large Jungle, Place where the Camp was in 1774 Bamboo Fort, Stone Temple opposite Hurdwar, The Northernmost Building in the Town, Also called Hyder Ghur, The Nawab's Artillery Shed, Dowlet Khan's Musjid, Nidjib Khan's Seray,</td>
</tr>
<tr>
<td>Nidjibabad</td>
<td>29° 36' 46&quot;</td>
<td>5° 12' 52&quot;</td>
<td></td>
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<tr>
<td>Patter Ghur</td>
<td>29° 36' 31&quot;</td>
<td>5° 12' 59&quot;</td>
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<tr>
<td>Chundonywalla</td>
<td>29° 52' 8&quot;</td>
<td></td>
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<tr>
<td>Afoph Ghur</td>
<td>29° 54' 14&quot;</td>
<td>5° 12' 19&quot;</td>
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<tr>
<td>Borunwalla</td>
<td>29° 47' 26&quot;</td>
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<td>Lolldong</td>
<td>29° 59' 8&quot;</td>
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<tr>
<td>Joogywalla</td>
<td>29° 58' 0&quot;</td>
<td>5° 12' 16&quot;</td>
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<tr>
<td>Chandy Gaut</td>
<td>29° 56' 24&quot;</td>
<td>5° 12' 10&quot;</td>
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<tr>
<td>Hurdwar</td>
<td>29° 57' 9&quot;</td>
<td>5° 12' 9&quot;</td>
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<td>Congree</td>
<td>29° 53' 19&quot;</td>
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<tr>
<td>Nagal</td>
<td>29° 39' 40&quot;</td>
<td>5° 12' 16&quot;</td>
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<tr>
<td>Mundawer</td>
<td>29° 29' 5&quot;</td>
<td>5° 12' 2&quot;</td>
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<tr>
<td>Darahnagur</td>
<td>29° 16' 49&quot;</td>
<td>5° 12' 0&quot;</td>
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<tr>
<td>Chaundpouri</td>
<td>29° 13' 4&quot;</td>
<td>5° 12' 12&quot;</td>
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<tr>
<td>Amroooh</td>
<td>28° 54' 22&quot;</td>
<td>5° 13' 27&quot;</td>
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<tr>
<td>Khuntpour</td>
<td>28° 44' 29&quot;</td>
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<tr>
<td>Huffepour</td>
<td>28° 43' 8&quot;</td>
<td>5° 12' 39&quot;</td>
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<td>Seereef</td>
<td>28° 28' 52&quot;</td>
<td>5° 12' 37&quot;</td>
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<tr>
<td>Anopshair</td>
<td>28° 22' 50&quot;</td>
<td>5° 12' 36&quot;</td>
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<td>Donnaree</td>
<td>28° 21' 10&quot;</td>
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<td>Chandoufey</td>
<td>28° 26' 51&quot;</td>
<td>5° 14' 45&quot;</td>
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<tr>
<td>Biffoolie</td>
<td>28° 18' 51&quot;</td>
<td>5° 15' 17&quot;</td>
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<td>Bunneah</td>
<td>28° 12' 29&quot;</td>
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<tr>
<td>Budawun</td>
<td>28° 2' 39&quot;</td>
<td>5° 16' 0&quot;</td>
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<td>Offoheet</td>
<td>27° 48' 12&quot;</td>
<td>5° 16' 28&quot;</td>
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<tr>
<td>Betoor</td>
<td>26° 37' 24&quot;</td>
<td>5° 20' 40&quot;</td>
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<tr>
<td>Gopaltour</td>
<td>26° 3' 49&quot;</td>
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<tr>
<td>Mobarickpour</td>
<td>25° 31' 18&quot;</td>
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<tr>
<td>Bogwanglelah</td>
<td>24° 20' 45&quot;</td>
<td>5° 22' 50&quot;</td>
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<tr>
<td>Tea Cally Dumduma</td>
<td>24° 1' 26&quot;</td>
<td>5° 55' 40&quot;</td>
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<tr>
<td>Pubna</td>
<td>24° 0' 12&quot;</td>
<td>5° 56' 27&quot;</td>
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<tr>
<td>Coffunda</td>
<td>23° 53' 8&quot;</td>
<td>5° 59' 3&quot;</td>
<td></td>
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<tr>
<td>Dacca</td>
<td>23° 43' 0&quot;</td>
<td>6° 1' 12&quot;</td>
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* The entrance of the Culculia or Culculia River is no longer at Bogwanglelah, but about twelve miles lower down, between Mureba and Cutlamary, which change may have been produced by the encroachment of the Ganges.*
Note by Mr. Burrow.

As a more particular account will be given hereafter, of the manner in which these Latitudes and Longitudes were deduced, it will be sufficient here to mention, that the Meridian Altitudes of Stars from whence the Latitudes were derived, sometimes amounted to twenty or thirty, North and South, and very seldom were less than five or six, and those mostly on both sides the Meridian; so that upon the whole I believe very few of the foregoing Latitudes can be more than five seconds wrong, perhaps not many of them so much, as the single observations with the Sextant seldom differed from one another more than fifteen or twenty seconds, and very often not half the number. As to the Longitudes it is possible there may in some cases be an error of two or three Miles, but I can scarce believe there is any great probability of it, as the observations were made, as well as calculated, in a different and more exact manner than is generally used at present.
On some Extraordinary Facts, Customs, and Practices of the Hindus.—By the President.

In the preliminary discourse addressed to the Society by our late President, Man and Nature were proposed as the comprehensive objects of our Researches; and although I by no means think that advantage should be taken of this extensive proposition to record every trivial peculiarity of practice, habit, or thinking, which characterises the natives of India, many singularities will be found amongst them which are equally calculated to gratify curiosity, and to attract the notice of the philosopher and politician.

Of all studies that of the human mind is of the greatest importance; and whether we trace it in its perfection, or debasement, we learn to avoid error, or obtain models for improvement and examples for imitation. In pursuing customs and habits to the principles from which they are derived, we ascertain by the sure rule of experience the effects of natural or moral causes upon the human mind.

The characters of the natives of India, notwithstanding all that has been published in Europe, are by no means well understood there, and a careful and accurate investigation of them, with a due discrimination of habits and usages, as local or general, would afford a subject for a curious, useful, and entertaining dissertation.
It is not my intention to undertake it. I neither profess to have ability, nor have I leisure for the task; and the preceding remarks are offered to the Society for the purpose only of introducing the recital of some extraordinary facts, customs, and practices of this country, which have occurred to my observation in the course of public duty. If the narrative has too much of the language of office, it may be deemed a sufficient compensation that it is extracted from official documents, and judicial records, and hence has a claim to authenticity.

The inviolability of a Brâhmen, is a fixed principle of the Hindus, and to deprive him of life, either by direct violence, or by causing his death in any mode, is a crime which admits of no expiation. To this principle may be traced the practice called Dherna, which was formerly familiar at Benares, and may be translated Captain or Arrest. It is used by the Brâhmens in that city, to gain a point which cannot be accomplished by any other means, and the process is as follows:

The Brâhmen who adopts this expedient for the purpose mentioned, proceeds to the door or house of the person against whom it is directed, or wherever he may most conveniently intercept him: he then sets down in Dherna, with poison, or a poignard, or some other instrument of suicide, in his hand, and threatening to use it if his adversary should attempt to molest, or pass him, he thus completely arrests him. In this situation the Brâhmen faits, and by the rigor of the etiquette, which is rarely infringed, the unfortunate object of his arrest ought also to faits; and thus they both remain until the institutor of the Dherna obtains satisfaction. In this, as he seldom makes the attempt without resolution to persevere, he rarely fails, for if the party thus arrested were to suffer the Brâhmen sitting in Dherna to perish by hun-
ger the sin would forever lie upon his head. This practice has been less frequent of late years, since the institution of the Court of Justice at Benares in 1783, but the interference of that Court, and even that of the Resident there, has occasionally proved insufficient to check it; as it has been deemed in general most prudent to avoid for this purpose the use of coercion, from an apprehension that the first appearance of it might drive the sinner in Dberna to suicide. The discredit of the act would not only fall upon the officers of Justice, but upon the Government itself.

The practice of sitting in Dberna is not confined to male Brâhmens only. The following instance, which happened at Benares in the year 1789, will at once prove and exemplify it.

Beeno Bhai, the widow of a man of the Brâhminical tribe, had a litigation with her brother-in-law Balkishen, which was tried by arbitration, and the trial and sentence were revised by the Court of Justice at Benares, and again in Appeal.

The suit of Beeno involved a claim of property, and a consideration of cast, which her antagonist declared she had forfeited; the decision was favourable to her, but not to the extent of her wishes, and she resolved therefore to procure by the expedient of the Dberna, as above explained, what neither the award of arbitration, nor the judicial decision, had granted.

In conformity to this resolution Beeno sat down in Dberna on Balkishen, and he, after a perseverance of several days, apprehensive of her death, repaired with her to a Hindu temple in Benares, where they both continued
to fast some time longer; thirteen days had elapsed from the commencement of Balkishen's arrest, when he yielded the contest, by entering into a conditional agreement with Beenoo, that if she could establish the validity of her cause, and in proof thereof prevail on some creditable members of her own tribe to partake with her of an entertainment of her providing, he would not only defray the expense of it, but would also discharge her debts. The conditions were accepted by Beenoo, who fulfilled her part of the obligation; and her antagonist without hesitation defrayed the charges of the entertainment: but the non-performance of his engagement to discharge her debts induced Beenoo Bhai to institute a suit against him, and the practice of the Dherna, with the proofs of it, were thus brought forward to official notice.

It is not unworthy of remark, that some of the Pandits on being consulted, admitted the validity of an obligation extorted by Dherna, provided the object were to obtain a just cause, or right wickedly withheld by the other party, but not otherwise. Others again rejected the validity of an engagement so extorted, unless it should be subsequently confirmed by the writer, either in whole or in part, after the removal of the coercion upon him.

Of the practice which I have related, no instance exactly similar has occurred to my knowledge in Bengal, or Bebar, although Brâbimens even in Calcutta have been known to obtain charity or subsistence from Hindus, by posting themselves before the doors of their houses, under a declaration to remain there until their solicitations were granted. The moderation of the demand generally induces a compliance with it, which would be withheld if the requisition were excessive. But I have been credibly informed that instances of this custom occasionally occur in some parts of the Vizier's dominions, and
that Brâbmens have been successfully employed there to recover claims, by calling upon the debtor to pay them with a notification that they would fast until the discharge of the debt. The debtor if he possessest property, or credit, never fails to satisfy the demand against him.

Another practice of a very singular and cruel nature is called Erecting a Koor. This term is explained to mean a circular pile of wood which is prepared ready for conflagration; upon this, sometimes a cow, and sometimes an old woman, is placed by the constructors of the pile, and the whole is consumed together. The object of this practice is to intimidate the officers of Government, or others, from importunate demands, as the effect of the sacrifice is supposed to involve in great sin the person whose conduct forces the constructor of the Koor to this expedient.

An instance of this practice occurred in a district of the province of Benares in the year 1788. Three Brâbmens had erected a Koor, upon which an old woman had suffered herself to be placed; the object of temporary intimidation was fully attained by it, and the timely interposition of authority prevented the completion of the sacrifice. It cannot be uninteresting to know the cause which urged the three Brâbmens, to this desperate and cruel resource. Their own explanation is summarily this; that they held lands in partnership with others, but that the public assessment was unequally imposed upon them; as their partners paid less, whilst they were charged with more, than their due proportion; they therefore refused to discharge any part of the revenues whatever, and erected a Koor to intimidate the government's officers from making any demands upon them: their sole object, as they explicitly declared, was to obtain an equal distribution of the public assessment between themselves and their partners.
A woman, nearly blind from age, had in this instance been placed upon the Koor: she was summoned to appear before the English superintendent of the province, but absolutely refused to attend him, declaring that she would throw herself into the first well rather than submit. The summons was not enforced.

This is the only instance of setting up a Koor which had occurred for many years previous to 1788, although the practice is said to have been frequent formerly. No information has reached me of the repetition of this practice in Benares, or of the existence of it in any other part of the Company's possessions, nor is it pretended that it was ever general throughout Benares, but is expressly asserted to have been limited to a very small portion of that extensive province.

This last mentioned fact is very opposite to that humanity, and mildness of disposition, by which the author of the historical disquisition regarding ancient and modern India affirms the inhabitants of this country to have been distinguished in every age. As a general position, liable to particular exceptions, I am not authorized to dispute it: but it must at the same time be admitted that individuals in India are often irritated, by petty provocations to the commission of acts which no provocation can justify: and, without reference to the conduct of professed depredators, examples may be produced of enormities scarcely credible, the result of vindictive pride, and ungoverned violence of temper.

In support of these assertions I shall quote three remarkable instances, attested by unquestionable evidence. In 1791 Soodishter Misra Brabmen, the farmer of land paying revenue and tenant of tax free land, in the
province of Benares, was summoned to appear before a native officer, the deputy collector of the district where he resided. He positively refused to obey the summons, which was repeated without effect, and after some time several people were deputed to enforce the process by compelling his attendance. On their approaching his house he cut off the head of his deceased son's widow, and threw it out. His first intention was to destroy his own wife, but it was proved in evidence that, upon his indication of it, his son's widow requested him to decapitate her, which he instantly did.

In this case, the process against Soodishter was regular, his disobedience contemptuous; his situation in life entitled him to no particular exemption, he had nothing to apprehend from obeying the requisition, and he was certain of redress if injury or injustice were practised upon him.

Another Brahmen, named Baloo Paunde, in 1793, was convicted of the murder of his daughter. His own account of the transaction will best explain it, and his motives; I give it in abstract. That about twelve years before the period of the murder, he, Baloo, and another man, were joint tenants and cultivators of a spot of ground, when his partner Baloo relinquished his share. In 1793 this partner again brought forward a claim to a share in the ground: the claim was referred to arbitration, and a decision was pronounced in favour of Baloo. He consequently repaired to the land, and was ploughing it, when he was interrupted by his opponent. The words of Baloo are as follows: "I became angry, and enraged at his forbidding me, and bringing my own little daughter Apunya, who was only a year and a half old, to the said field, I killed her with my sword." This transaction also happened in the province of Benares.
The last instance is an act of matricide perpetrated by Beechuk and Adher, two Brâbmen, and zemindars, or proprietors of landed estates, the extent of which did not exceed eight acres. The village in which they resided was the property of many other zemindars. A dispute, which originated in a competition for the general superintendence of the revenues of the village, had long subsisted between the two brothers, and a person named Gowry and the officer of Government who had conferred this charge upon the latter was intimidated into a revocation of it by the threats of the mother of Beechuk and Adher to swallow poison, as well as to the transfer of the management to the two Brâbmen. By the same means of intimidation he was deterred from investigating the complaints of Gowry, which had been referred to his enquiry by superior authority.

But the immediate cause which instigated the Brâbmen to murder their mother was an act of violence, said to have been committed by the emissaries of Gowry, with or without his authority, and employed by him for a different purpose, in entering their house, during their absence at night, and carrying off forty rupees, the property of Beechuk and Adher, from the apartments of their women.

Beechuk first returned to his house, where his mother, his wife, and his sister-in-law, related what had happened: he immediately conducted his mother to an adjacent rivulet, where being joined in the grey of the morning by his brother Adher, they called out aloud to the people of the village that although they would overlook the assault as an act which could not be remedied, the forty rupees must be returned. To this exclamation no answer was received; nor is there any certainty that it was even heard by any person; and
BEECHUK without further hesitation drew his scymetar, and at one stroke severed his mother's head from her body, with the professed view, as entertained and avowed both by parent and son, that the mother's spirit, excited by the beating of a large drum during forty days, might for ever haunt torment and pursue to death Gowry and the others concerned with him. The last words which the mother pronounced were that she would blast the said Gowry and those connected with him.

The violence asserted to have been committed by the emissaries of Gowry in forcibly entering the female apartments of Beechuk and Adher might be deemed an indignity of high provocation; but they appear to have considered this outrage as of less importance than the loss of their money, which might and would have been recovered with due satisfaction by application to the Court of Justice in Benares. The act which they perpetrated had no other sanction than what was derived from the local prejudices of the place where they resided; it was a crime against their religion; and the two brothers themselves quoted an instance of a Brâhmen, who six or seven years before had lost his caste and all intercourse with the other Brâhmens for an act of the same nature. But in truth Beechuk and Adher, although Brâhmens, had no knowledge or education suitable to the high distinction of their caste, of which they preserved the pride only; being as grossly ignorant and prejudiced as the meanest peasants in any part of the world. They seemed surprized when they heard the doom of forfeiture of caste pronounced against them by a learned Pandit, and openly avowed that so far from conceiving they had committed a barbarous crime, both they and their mother considered their act as a vindication of their honor not liable to any religious penalty.
The society will observe with some surprize, that the perpetrators of the several acts which I have related were Brâbmens. These facts took place within three districts only of the province of Benares, named Kuntel, Buddhooee, and Keerat Sekur. I mention these particulars that I may not lead any person into a common error of deducing general conclusions from partial circumstances. In Bengal and Bebar, where the passions of jealousy pride and revenge sometimes produce very fatal consequences, I recollect no instance where the efforts of their violence have been transferred from the objects which excited it to others that were innocent, as in the preceding cases.

That the practice of Infanticide should ever be so general as to become a custom with any sect or race of people requires the most unexceptionable evidence to gain belief; and I am sorry to say that the general practice, as far as regards female infants, is fully substantiated with respect to a particular tribe on the frontiers of Jueanpore, a district of the province of Benares, adjoining to the country of Oude. A race of Hindus called Rajekoomars reside here; and it was discovered in 1789 only that the custom of putting to death their female offspring, by causing the mothers to starve them, had long subsisted, and did actually then very generally prevail, amongst them: the Resident at Benares, in a circuit which he made through the country where the Rajekoomars dwell, had an opportunity of authenticating the existence of the custom from their own confessions: he conversed with several: all unequivocally admitted it, but all did not fully acknowledge its atrocity; and the only reason which they assigned for the inhuman practice was the great expense of procuring suitable matches for their daughters, if they allowed them to grow up. It is some satisfaction to add, that the custom though general was not universal, as natural affection or some other motive had induced the fathers of some Rajekoomars families to bring up one, or more, of
their female issue; but the instances where more than one daughter had been spared were very rare. One village only furnished a compleat exception to the general custom, and the Rajekoomar informant who noticed it supposed that the inhabitants had sworn, or solemnly pledged themselves to to each other, to bring up their females; in proof of his assertion in favor of the village in question he added that several old maids of the Rajekoomar tribe then actually existed there, and that their celibacy proceeded from the difficulty of procuring husbands for them, in consequence of the great expenses attending the marriages of this class of people.

It will naturally occur to the society to ask, by what mode a race of men could be continued under the existence of the horrid custom which I have described. To this my documents enable me to reply, partly from the exceptions to the general custom, which were occasionally admitted by the more wealthy Rajekoomars; more particularly those who happened to have no male issue; but chiefly by intermarriages with other Rajepoot families, to which the Rajekoomars were compelled by necessity.

A prohibition enforced by the denunciation of the severest temporal penalties would have little efficacy in abolishing a custom which existed in opposition to the feelings of humanity and natural affection; and the sanction of that religion which the Rajekoomars professed was appealed to, in aid of the ordinances of civil authority: upon this principle an engagement, binding themselves to desist in future from the barbarous practice of causing the death of their female children, was prepared, and circulated amongst the Rajekoomars for their signature; and as it was also discovered that the same custom prevailed, though in a less degree, amongst a smaller tribe of people, also within the province of Benares, called Rajebunfes, measures were adopted at
the same time, to make them sensible of its iniquity, and to procure from them a subscription similar to that exacted from the Rajekoomars:

The following is a copy of the engagement which the latter subscribed.

"Whereas it hath become known to the Government of the Honorable English East India Company, that we of the tribe of Rajekoomars do not suffer our female children to live; and whereas this is a great crime, as mentioned in the Brebma Bywant Pooran, where it is said that killing even a Fetus is as criminal as killing a Brâhmen, and that for killing a female, or woman, the punishment is to suffer in the neruk, or hell, called Kat Shootul, for as many years as there are hairs on that female's body, and that afterwards that person shall be born again, and successively become a leper, and be afflicted with the Jeukima; and whereas the British Government in India, whose subjects we are, have an utter detestation of such murderous practices, and we ourselves acknowledge, that although customary among us, they are highly sinful, we do therefore hereby agree not to commit any longer such detestable acts; and any among us (which God forbid) who shall be hereafter guilty thereof, or shall not bring up and get our daughters married to the best of our abilities among those of our cast, shall be expelled from our tribe, and shall neither eat, nor keep society, with us, besides suffering hereafter the punishments denounced in the above Pooran and Shoofer. We have therefore entered into this agreement.

"Dated the 17th December, 1789."

A record of the various superstitious ceremonies which prevail through-
Hindustan would form a large and curious volume; but as all the preceding instances which I have related are taken from transactions in Benares, I cannot refrain from mentioning the superstitious notions of the people of that province regarding the sugar-cane, which proves an ignorance that may be admitted in palliation of greater errors. The narrative is a mere extract from an official record, with an omission of some words and some trifling verbal alterations.

As it is usual with the ryots or husbandmen to reserve a certain portion of the canes of the preceding year to serve as plants for their new cultivation, it very frequently happens that inconsiderable portions of the old cane remain unappropriated. Whenever this happens, the proprietor repairs to the spot on the 25th of Jeyte, or about the 11th of June, and having sacrificed to Nagbele, or the tutelary duty of the cane, he immediately sets fire to the whole, and is exceedingly careful to have this operation executed in as complete and efficacious a manner as possible.

This act is performed from an apprehension, that if the old canes were allowed to remain in the ground beyond the 25th of Jeyte, they would in all probability produce flowers and seeds; and the appearance of these flowers they consider as one of the greatest misfortunes that can befall them.

They unanimously assert, that if the proprietor of a plantation ever happens to view even a single cane therein in flower after the 25th of Jeyte, the greatest calamities will befall himself, his parents, his children, and his property; in short that death will sweep away most of the members, or indeed the whole of his family, within a short period after this unfortunate spectacle. If the proprietor’s servant happen to see the flower and immediately
pulls it from the stalk, buries it in the earth, and never reveals the circumstance to his master; in this case they believe that it will not be productive of any evil consequence. But should the matter reach the proprietor's knowledge the calamities before stated must, according to the prevailing ideas, infallibly happen.

In support of this belief, many of the most aged zamindars and ryotts in the province of Benares recited several instances of the above nature, which they affirmed to have actually happened during their own time, and moreover, that they had been personal witnesses to the evils and misfortunes which befell the unhappy victims of the description alluded to.

When we reflect how generally credit was given to the power of witchcraft, long after the revival of letters in Europe, and that names of great repute for learning and abilities are found amongst its defenders, we shall not be surprised that charms and amulets are worn in this country by men of superior rank and education; that astrologers are consulted to name the fortunate hour for commencing a journey or expedition; and that the fascinating influence of an evil eye upon the human constitution, as well as the power of witchcraft, is admitted by the vulgar in general. Fortunately however the practice is not supposed to bear any proportion to the belief of the power; although two recent instances occur to my recollection of individuals having been sacrificed to this popular delusion; or at least the imputation of witchcraft was made the pretence for depriving them of life.

But the judicial records contain a case of great enormity in which five women were put to death for the supposed practice of sorcery. I shall sub-
mit the circumstances of this transaction, with some detail before the society
premising that it happened in a district of Rangur, the least civilized part
of the Company's possessions, amongst a wild and unlettered tribe, denom-
nated Soontaar, who have reduced the detection and trial of persons suspec-
ted of witchcraft to a system.

Three men of the cast of Soontaar were in the year 1792 indicted
for the murder of five women; the prisoners without hesitation confessed
the crime with which they were charged and pleaded in their defence
that with their tribes it was the immemorial custom and practice to try
persons notorious for witchcraft. That for this purpose, an assembly
was convened of those of the same tribe, from far and near, and if after due
investigation the charge was proved, the forcerers were put to death and
no complaint was ever preferred on this account to the ruling power. That
the women who were killed had undergone the prescribed form of trial,
were duly convicted of causing the death of the son of one of the prisoners
by witchcraft, and had been put to death by the prisoners in conformity to
the sentence of the assembly.

The prosecutors, who agreeably to the forms of the Mahommedan law
were the relations of the deceased women, declared they had no charge to pre-
fer against the prisoners, being satisfied that their relations had really practic-
ed sorcery.

The custom pleaded by the prisoners was fully substantiated by the testi-
mony of a great number of witnesses who recited specific facts in support of
it without any denial or disagreement, and from the collective evidence exhi-
bited in the course of the enquiry the following curious and extraordinary
circumstances appeared:

That the successive demise of three or four young people in a village led
to a suspicion of sorcery as the cause of it, and the inhabitants taking alarm
were upon the watch to detect the witches. They were generally discovered
dancing naked at midnight by the light of a lamp, with a broom tied round
their waists, either near the house of a sick person, or on the outside of the vil-
lage.

To ascertain with a greater degree of certainty the persons guilty of prac-
tising witchcraft the three following modes are adopted:

First. Branches of the Saul tree, marked with the names of all the females
in the village, whether married or unmarried, who have attained the age of
twelve years, are planted in the water in the morning for the space of four
hours and a half; and the withering of any of these branches is proof of
witchcraft against the person whose name is annexed to it.

Secondly. Small portions of rice enveloped in cloths marked as above are
placed in a nest of white ants; the consumption of the rice in any of the bags
establishes sorcery against the woman whose name it bears.

Thirdly. Lamps are lighted at night; water is placed in cups made of
leaves, and mustard seed and oil is poured drop by drop into the water, whilst
the name of each woman in the village is pronounced; the appearance of the
shadow of any woman on the water, during this ceremony, proves her a
witch.
Such are the general rules, for ascertaining those who practise witchcraft: in the instance which I have quoted the witnesses swore and probably believed, that all the proofs against the unfortunate women had been duly verified: they assert in evidence, that the branches marked with the names of the five women accused were withered; that the rice in the bags having their specific names was devoured by the white ants, whilst that in the other bags remained untouched; that their shadows appeared on the water, on the oil being poured upon it whilst their names were pronounced, and farther that they were seen dancing at midnight in the situation above described.

It is difficult to conceive that this coincidence of proof could have been made plausible to the grossest ignorance if experience did not shew that prepossession will supercede the evidence of the senses.

The following custom would be too trivial for notice if it were not strongly descriptive of the simplicity and ignorance which mark the character of the generality of the inhabitants of Ramgur.

From habitual neglect in ascertaining the quantities of land held in lease, and in defining with accuracy their respective tenures, frequent disputes arise between the inhabitants of different villages regarding their boundaries; to determine them a reference is usually made to one or more of the oldest inhabitants of the adjacent villages, and if these should not agree in their decision other men are selected from the inhabitants of the villages claiming the disputed ground, and the trial proceeds as follows. Holes are dug in the contested spot and into these holes each of the chosen men puts a leg; and the earth is then thrown upon it; and in this situation they remain, until one either expresses a wish to be released, or complains of being bitten or stung by some
insect. This decides the content and the property of the ground is adjudged to belong to that village, the inhabitant of which goes through the trial with the most fortitude and escapes unhurt by insects.

If the preceding detail has no relation to science, it is at least descriptive of manners, and in availing myself of the opportunities afforded by official occupations (which is all indeed that these occupations admit), to contribute my portion to the researches of the society, my example will, I hope, be imitated by those who with the same, or greater opportunities, possess more knowledge, ability, and leisure.

NOTE

Having lately received some farther documents on the subject of the Dburna, which I did not possess when the preceding paper was read to the society, I have extracted from them what appears to me requisite to elucidate this extraordinary practice. From these documents it appears that several cases of Dburna had been brought before the Provincial Court of Justice at Benares, and as a penalty had been annexed to the performance of this mode of importunity, it became necessary to define with precision the rules constituting Dburna, according to the Shape and Usage.

For this purpose a question was proposed to several Pandits, inhabitants of the province and city of Benares, and the answer subscribed by twenty-three Pandits is as follows.

"Any one who fits Dburna on another's door or in his house for the realization of a debt or for other purpose, in which the party sitting
AND PRACTICES OF THE HINDUS.

Takes with him some weapon or poison, and sits down, nor does he eat himself, nor allow the party against whom he is sitting, or his family to eat, nor does he allow any person ingress into that person's house nor egress from it, and addressing himself in terms of the strongest Oaths to the people of the house, he says, "If any of those of your house shall eat victuals or go into your house, or go out of it, I shall either wound myself with this weapon or swallow this poison," and it does some times happen that both these events take place, and that he who sits in Dburna is not to remove from it, without the entreaty of those on whom he is sitting, or the order of the Hakim, whenever all the requisites abovementioned are found united, they constitute Dburna; but if any one of them be wanting, that is not Dburna, but Tuckaza or Dunning; and as no text of the Sashtra hath been found concerning Dburna, wherefore we have delivered the requisites thereof according to the common custom and practice."

There is some difference in the opinions of other Pandits as to what is understood to constitute Dburna, but the quotation which I have inserted, appears to me to contain the most authentic information on this subject.

The society will observe that the practice is not specifically pointed out in the Sashtra, but has the sanction of usage only.

The following instance is of late occurrence. In January 1794, Mohun Panre, an inhabitant of a district in the province of Benares, sat down in Dburna before the house of some Rajapoots, for the purpose of obtaining the payment of Birt, or a charitable subsistence, to which he had a claim, and in this situation destroyed himself by swallowing poison. Some of the relations of the deceased retained his corpse for two days before the house of
the Rajepoots, who thus were compelled to forego taking sustenance, in order to induce them to settle the Birt on the heir of the deceased Brahmen.
XXIII.

Description of the Yak of Tartary, called Soora-Goy, or the Bushy-tailed Bull of Tibet.—By Lieutenant Samuel Turner.

The Yak of Tartary, called Soora-Goy in Hindostan, and which I term the bushy-tailed bull of Tibet, is about the heighth of an English bull, which he resembles in the figure of the body, head and legs. I could discover between them no essential difference except only that the Yak is covered all over with a thick coat of long hair. The head is rather short, crowned with two smooth, round horns, that tapering from the setting on terminate in sharp points, arch inwardly and near the extremities are a little turned back; the ears are small; the forehead appears prominent, being adorned with much curling hair; the eyes are full and large; the nose smooth and convex; the nostrils small; the neck short, describing a curvature nearly equal both above and below; the withers high and arched; the rump low. Over the shoulders rises a bunch, which at first sight would seem to be the same kind of extuberance peculiar to the cattle of Hindostan; but in reality it consists in the superior length of the hair only, which as well as that along the ridge of the back to the sitting on of the tail grows long and erect, but not harsh. The tail is composed of a prodigious quantity of long flowing glossy hair, descending to the hock, and is so extremely well furnished that not a joint of it is perceptible; but it has much the appearance of a large bunch of hair artificially set on. The shoulders, rump, and upper part of the body is clothed with a sort of thick soft wool, but the inferior parts
with strait pendant hair, that descends below the knee, and I have seen it so long in some cattle which were in high health and condition as to trail upon the ground. From the chest between the fore legs issues a large pointed tuft of hair, growing somewhat longer than the rest. The legs are very short. In every other respect hoofs, &c. he resembles the ordinary bull. There is a great variety of colors amongst them; but black or white are the most prevalent. It is not uncommon to see the long hair upon the ridge of the back, the tail, tuft upon the chest and the legs below the knee white, when all the rest of the animal is jet black.

These cattle, though not large, bended from the profuse quantity of hair with which they are provided appear of great bulk. They have a down heavy look, but are fierce and discover much impatience at the near approach of strangers. They do not loud, loud (like the cattle of England) any more than those of Hindostan; but make a low, grunting noise scarce audible, and that but seldom, when under some impression of uneasiness. These cattle are pastured in the coldest parts of Tibet, upon the short herbage peculiar to the tops of mountains and bleak plains. That chain of lofty mountains situated between the lat. 27 and 8, which divide Tibet from Bosten, and whose summits are most commonly cloathed with snow, is their favorite haunt. In this vicinity the southern glens afford them food and shelter during the severity of winter; in milder seasons, the northern aspect is more congenial to their nature and admits a wider range. They are a very valuable property to the tribes of illiterate Tartars, who live in tents and tend them from place to place, affording their herdsmen a mode of conveyance, a good covering and subsistence. They are never employed in agriculture, but are extremely useful as beasts of burthen; for they are strong, sure-footed and carry a great weight. Tents and ropes are manufactured of their
Tartary, called Soora-Gay.

hair, and I have, though amongst the humblest rank of herdsmen, seen caps and jackets worn of their skin. Their tails are esteemed throughout the East as far as luxury or parade have any influence on the manners of the people and on the continent of India are found, under the denomination of Choutries, in the hands of the meanest grooms as well as occasionally in those of the first ministers of state. Yet the best requital with which the care of their keepers is at length rewarded for selecting them good pastures, is in the abundant quantity of rich milk they give, yielding most excellent butter, which they have a custom of depositing in skins or bladders and excluding the air; it keeps in this cold climate during all the year, so that after sometime tending their flocks, when a sufficient stock is accumulated, it remains only to load their cattle and drive them to a proper market with their own produce, which constitutes to the utmost verge of Tartary, a most material article of merchandize.
A Description of the Jonesia. — By Doctor Roxburgh.

Cl: Heptandria Monogynia.

Essential Character.

Calyx, two-leaved, Corol, one-petaled, Pistil-bearing; base of the Tube impervious; Stamens, long, ascending, inserted into the margin of a glandulous nectarial ring, which crowns the mouth of the tube, the uppermost two of which, more distant; Style declining. Legume turgid.

Consecrated to the remembrance of our late President, the most justly celebrated Sir William Jones, whose great knowledge of this science, independent of his other incomparable qualifications, justly entitles his memory to this mark of regard.

Jonesia Asóca.


Asóca, is the Sanscrit name.

Vanjula, a synonyme.

Russuk of the Bengalse.

Found in gardens about Calcutta, where it grows to be a very handsome, middling sized, ramous tree, flowering time, the beginning of the hot season; seeds ripen during the rains. The plants and seeds were, I am informed,
originally brought from the interior parts of the country, where it is indigenous.

Trunk erect, though not very straight. Bark dark brown, pretty smooth. Branches numerous, spreading in every direction, so as to form a most elegant shady head.

Leaves alternate, abruptly-feathered, sessile, generally more than a foot long, when young pendulous, and coloured.

Leaflets opposite, from four to six pair, the lowermost broad lanced, the upper lanced; smooth, shining, firm, a little waved, from four to eight inches long.

Petiole common, round and smooth.

Stipule axillary, solitary; in fact a process from the base of the common petiole, as in many of the grasses and monandrits, &c.

Umbels terminal, and axillary, between the stipule and branchlet, globular, crouded, sessile, erect.

Bracts, a small hearted, one under each division of the umbel.

Peduncle and pedicels smooth, coloured.

Flowers very numerous, pretty large, when they first expand, they are of a beautiful orange colour, gradually changing to red, forming a variety of lovely shades; fragrant during the night.

Calyx perianth, below two-leaved, leaflets small, nearly opposite, coloured, hearted, bracte-like, marking the termination of the Pedicel, or beginning of the tube of the Corol.

Corol one-petal'd, funnel-form; tube slightly incurved, firm and fleshy, tapering towards the base (club-funnel-shaped), and there impervious; border four-parted; divisions spreading, suborbicular, margins most slightly wooly: one-third the length of the tube.
NECTARY a stimeniferous and pistiliferous ring crowns the mouth of the tube.

STAMENS, filaments (generally) seven, and seven must, I think, be the natural number; viz. three on each side, and one below, above a vacancy, as if the place of an eight filament, and is occupied on its inside, by the pistil, they are equal, distinct, ascending, from three to four times longer than the border of the corol.

ANThERS uniform, small, incumbent.

Pistil, germ oblong, pedicled; pedicel inserted into the inside of the nectary, immediately below the vacant space already mentioned; Style nearly as long as the stamens, declining; Stigma simple.

PERICARP, legume scimitar-form, turgid, out side reticulated, otherwise pretty smooth, from six to ten inches long and about two broad.

SEEDS generally from four to eight, smooth, gray, size of a large chestnut.

Note. Many of the flowers have only the rudiment of a pistil: a section of one of these is seen at D.

REFERENCES.

A. A branchlet natural size.

B. A single flower a little magnified, aa the calyx.

C. A section of the same, exhibiting four of the stamens, 1.1.1. the pistil 2, and how far the tube is perforated.

D. A similar section of one of the abortive flowers, 3 is the abortive pistil.

E. The ripe legume opening near the base, natural size. Note, the space between the b and c marks the original tube of the corol.

F. One of the seeds, natural size.

G. The base of the common petiole, with its stipule; aa the petioles of the lower pair of leaflets.
# Astronomical Observation

**By William Hunter, Esq.**

## Latitudes Observed

<table>
<thead>
<tr>
<th>1793</th>
<th>Places</th>
<th>Sun or Star</th>
<th>Latitude</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep. 27</td>
<td>Khodahgunge, Camp on the South Bank of the Caly-Nuddee; Gate N 58° W 4° 1 Furlongs</td>
<td>☉ M. A.</td>
<td>27° 10' 00&quot;</td>
<td>Clear: moderate. By survey, difference of Latitude between Futtergurh &amp; Khodahgunge is 1° 11' 15&quot;; Khodahgunge and Jellahabad 4° 54' 57&quot;. Making Futtergurh 27° 22' 28&quot;, these gives Khodahgunge 27° 11' 9&quot; and Jellahabad 27° 6' 15&quot;. As the last agrees so exactly with the observation, I think the Latitude observed at Khodahgunge was too little.</td>
</tr>
<tr>
<td>28</td>
<td>Jellahabad, Gate N 52° W, 1° 4 F.</td>
<td>☉ M. A.</td>
<td>27° 6' 0&quot;</td>
<td>Clear. moderate.</td>
</tr>
<tr>
<td>29</td>
<td>Meerin-ca-Seray, N 43° W, 2° 7 F.</td>
<td>☉ M. A.</td>
<td>27° 1' 17&quot;</td>
<td>Do. calm.</td>
</tr>
<tr>
<td>30</td>
<td>Poorceah, opposite Nanamow; which bears S 73° W, 12 F.</td>
<td>☉ M. A.</td>
<td>26° 58' 42&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>Oct. 2</td>
<td>Hasan-Gunge, Gate N 62° W, 1° F.</td>
<td>☉ M. A.</td>
<td>26° 46' 18&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>5</td>
<td>Lucknow, Mr. Taylor's House</td>
<td>☉ M. A.</td>
<td>26° 51' 11&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>17</td>
<td>Ditto</td>
<td>Do.</td>
<td>26° 51' 1&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>Dec. 12</td>
<td>Futtergurh, my Bungalow,</td>
<td>Do.</td>
<td>27° 22' 23&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>22</td>
<td>Jellahabad, (Station of Sep. 28.)</td>
<td>Do.</td>
<td>27° 5° 59&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>23</td>
<td>Meerin-ca-Seray, (Do. of 29.)</td>
<td>Do.</td>
<td>27° 1° 19&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>25</td>
<td>Teceah, N 85° W 0° 8 F.</td>
<td>Do.</td>
<td>26° 50° 59&quot;</td>
<td>windy.</td>
</tr>
<tr>
<td>Date</td>
<td>Places</td>
<td>Sun or Star</td>
<td>Latitude</td>
<td>Remarks</td>
</tr>
<tr>
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</tr>
<tr>
<td>Jan. 16</td>
<td>Sirt'hirra, W NW 2 Fs.</td>
<td>Do.</td>
<td>26 53 57</td>
<td>moderate</td>
</tr>
<tr>
<td>Jan. 17</td>
<td>Sudergunge, S 40 W, 1 F.</td>
<td>Do.</td>
<td>26 55 11</td>
<td>windy</td>
</tr>
<tr>
<td>Jan. 18</td>
<td>Derribad, S 64 W, 15 F.</td>
<td>Do.</td>
<td>26 53 37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditto</td>
<td>Do.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 19</td>
<td>Shujah-Gunge, N 28 W, - S 72 W</td>
<td>Do.</td>
<td>26 53 31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nearest distance (S end) 0,8 F.</td>
<td>Do.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 20</td>
<td>Noray, N E—S 55 W, nearest 30 Yds.</td>
<td>Do.</td>
<td>26 46 45</td>
<td>clear, windy</td>
</tr>
<tr>
<td>Feb. 1</td>
<td>Noray, N 42 E,—S 68 E, 1 F.</td>
<td>Do.</td>
<td>26 46 50</td>
<td></td>
</tr>
</tbody>
</table>
## IN HINDOSTAN.

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Sun or Star</th>
<th>Latitude</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 2</td>
<td>Shujah-Gunge, Gate S 48° E, 4.9 F.</td>
<td>ο M. A.</td>
<td>26° 50' 3&quot;</td>
<td>Clear. moderate.</td>
</tr>
<tr>
<td>3</td>
<td>Derriabad, Gate S 80° E, 1.3 F.</td>
<td>Do.</td>
<td>26° 54' 15&quot;</td>
<td>Do. windy.</td>
</tr>
<tr>
<td>Mar. 30</td>
<td>Bewar,</td>
<td>β. U. M.</td>
<td>27° 13' 41&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>31</td>
<td>Minpoory, Mohcumunge, S 31°</td>
<td>α Hydrae</td>
<td>27° 14' 30&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>April 1</td>
<td>Ditto,</td>
<td>β. U. M.</td>
<td>27° 13' 21&quot;</td>
<td>Do. windy.</td>
</tr>
<tr>
<td>2</td>
<td>Boongaung,</td>
<td>α Hydrae</td>
<td>27° 15' 30&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>3</td>
<td>Mobarommedabad,</td>
<td>Do.</td>
<td>27° 18' 8&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>May 29</td>
<td>Dawah, Mr. Becher's Bunga-lah,</td>
<td>a Δ</td>
<td>26° 51' 6&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>30</td>
<td>Ditto,</td>
<td>Do.</td>
<td>26° 51' 6&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>31</td>
<td>Ditto,</td>
<td>a Draco</td>
<td>26° 50' 47&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>Poorab, N 68° W, 4 Fs.</td>
<td>Poorab,</td>
<td>a θ</td>
<td>26° 44' 5&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>June 1</td>
<td>Chobeepeor,</td>
<td>a θ</td>
<td>26° 36' 41&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>June 2</td>
<td>Kanhpoo, Mr. Yeld's Bunga-lah.</td>
<td>a m</td>
<td>26° 28' 37&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>3</td>
<td>Ditto,</td>
<td>a θ</td>
<td>26° 27' 56&quot;</td>
<td>Do. windy.</td>
</tr>
<tr>
<td>12</td>
<td>Oonam, S W. 3 Fs.</td>
<td>Do.</td>
<td>26° 33' 26&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>13</td>
<td>Jelooter, Fort N 53° W, 7.7 Fs.</td>
<td>Do.</td>
<td>26° 41' 57&quot;</td>
<td>Do. windy.</td>
</tr>
<tr>
<td>14</td>
<td>Noel-Gunge, Gate S 20° W, 2 Fs.</td>
<td>Do.</td>
<td>26° 47' 42&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>Sept. 4</td>
<td>Meeah-Gunge (near Jelooter) West</td>
<td>a Pisc.</td>
<td>26° 38' 4&quot;</td>
<td>Do. calm.</td>
</tr>
<tr>
<td>Gate No. 1.75 Fs.</td>
<td></td>
<td>Aufl.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Kanhpoo, Mr. Yeld's Bunlgalah.</td>
<td>Do.</td>
<td>26° 28' 33&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>15</td>
<td>Ditto,</td>
<td>Do.</td>
<td>26° 28' 56&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>16</td>
<td>Rampeor, near Mufswafee.</td>
<td>Do.</td>
<td>26° 30' 49&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>Oct. 17</td>
<td>Eseewum, S 70° E, 4.1 F.</td>
<td>ο M. A.</td>
<td>26° 48' 50&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>18</td>
<td>Alterdhinee, N 42° W, 6 Fs.</td>
<td>Do.</td>
<td>26° 50' 48&quot;</td>
<td>Do. Do.</td>
</tr>
<tr>
<td>Date</td>
<td>Place</td>
<td>Sun or Star</td>
<td>Latitude</td>
<td>Remarks</td>
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</tr>
<tr>
<td>20</td>
<td>Purerah, Southeast-angle S 30° W</td>
<td>Do.</td>
<td>27° 7' 16&quot;</td>
<td>Do. calm.</td>
</tr>
<tr>
<td>21</td>
<td>Lisbikireepoor, S—S 34° E, 1° 2' F.</td>
<td>Do.</td>
<td>27° 1' 39&quot;</td>
<td>Do. moderate.</td>
</tr>
<tr>
<td>22</td>
<td>Meerin-ca-seray, S E, 1° F.</td>
<td>Do.</td>
<td>27° 1' 59&quot;</td>
<td>Do.</td>
</tr>
<tr>
<td>23</td>
<td>Sunfun, North end of Gunge.</td>
<td>Do.</td>
<td>27° 8' 27&quot;</td>
<td>Do.</td>
</tr>
</tbody>
</table>
A DISCUSSION on SEMIRAMIS,

The origin of Mecca, &c. from the Hindu Sacred Books.

By Lieut. FRANCIS WILFORD.

In the Scanda-purana, and Visva-sara-pracaśa, or declaration of what is most excellent in the world, we find the following legends, which have an evident relation to the origin of Semiramis, the Syrian dove, Ninus, and the building of Niniveh, Hierapolis and Mecca, &c.

Mahā-devā and his consort Pa'rvati, with a view to do good to mankind, quitted their divine abode on Cailā, and proceeding towards the north, alighted on the summit of the Nisbāda mountains, where they found the Devātas ready to receive them, with a numerous retinue of celestial nymphs, and heavenly quiresters. Mahā-devā was so struck with the beauty of some of the Apsaras, and his looks were so expressive of his internal raptures, that Pa'rvati unable to conceal her indignation, uttered the most virulent reproaches against him. Conscious of the impropriety of his behaviour, Mahā-devā used every endeavour to pacify her; he humbled himself; he praised her and addressed her by the flattering appellation of Mahā-bhāga; but to no purpose. She fled into Cusba-duiš on the mountains of Vabni-vyāpta, and seating herself in the hollow trunk of a Samī tree, performed Tapasyā (or austerer devotion) for the space of nine years; when fire springing from her, pervaded with rapid violence the whole range of mountains, in so much, that men and animals were terrified, and
A DISSERTATION ON SEMIRAMIS,

flled with the utmost precipitation. De'vi, unwilling that her devotion should prove a cause of distress to the animal creation, recalled the sacred flame, and confined it in the Sami tree. She made the hollow of that tree her place of abode and dalliance; and hence she is called Sami'-Ra'ma', or she who dallies in the Sami tree.

The fugitives returning, performed the Pujâ in adoration of her, with songs in her praise. The flame confined in the Sami tree still remains in it; and the Devulās are highly delighted with the fire, which is lighted from the Arani (or cubic wood of that tree). The Arani is the mother of fire and is produced from the Sami tree. From that time, this sacred tree gives an increase of virtue, and bestows wealth and corn. In the month of Aswina or Cooar, the tenth of the first fifteen days of the moon is kept holy, and Pujâ is made to Sami'-Ra'ma' and to the Sami tree; and those who perform it, obtain the object of their desires. This sacred rite I have hitherto kept concealed from the world, says Maha'-De'va, but now I make it known, for the good of mankind; and whosoever performs it, will be victorious over his enemies, for the space of one year.

During these transactions Víšveśwara-Maha'-De'va, or Ca'si-pati (that is to say Maha'-De'va, the lord of the world and sovereign of Ca'si or Benares) visited the country of Purushotama, in Utco-la-déSa or Orissa; which he was surprized to find overspread with long grass, and without inhabitants. He resolved to destroy the long grass, and for this purpose, assuming the diminutive shape of a dove, with an angry countenance, commenced the performance of Tapasa; his comfort De'vi also transformed herself into a bird of the same species; and from that time they were known to mankind, and worshipped under the titles of Capo-teśwara and Capo-te'si', or
Iswara and Isi in the shape of a dove. They set fire to the Cusba or long grass, and the country became like Vindra-van, (near Muttra), and was soon filled with inhabitants. The spot where they performed their Tapasya, is called to this day Capota-shali, or the place of the dove. It is a celebrated place of worship, and, as I am informed, about five cofs from Jagannath.

Almost the whole universe was likewise at this time overspread with long grass, and to destroy it, Mahadeva, with his consort, resolved to travel round the world. They according proceeded into Cusba-duipa, which they found thinly inhabited by a few Mlecchas or impure tribes; and the Yavanai, who concealed their booty in the grass which covered the country.

Mahadeva took compassion on them, and considering their sufferings in this inhospitable country as a sort of Tapasya, he resolved to bestow Mocsha, or eternal bliss on them: for this purpose he assumed the character and countenance of Mocsheiswara or Iswara who bestows Mocsha; and directed his consort Capoteasi, who is also called Maha-bha'ga, to go to Vabni-shban, on the borders of Cusba-duipa; there to make Tapasya, in order to destroy the long grass. Accordingly she went into Vabni-shban; and that she might effect it without trouble to herself, she assumed another form from which circumstance she was named Aya. In this character she seated herself on a beautiful hill, and there made Tapasya for many days. At last fire sprung from her devotion, and its presiding power standing before her, she directed him to destroy the Cusba; when the hills were soon in a blaze, and the Yavanai and other Mlecchas obtaining Mocsha, were reunited to the supreme being, without labour or effect on their part; that is say, they were involved in the general conflagration and destroyed.
When the grains was consumed, Ana'ya'sa' ordered the clouds to gather, and pour their waters on the land, which was soon overflowed. The waters then retired, and the four great tribes came into Cusha-duip, where they soon formed a powerful nation, and became rich and happy. After the conflagration, all sorts of metals and precious stones were found throughout the country. The countenance of Ana'ya'sa'-de'vi is that of fire, and a most divine form it is.

The inhabitants soon after deviating from the paths of rectitude, became like the Mlec'bhas: and the Yavanas re-entered Cusha-duip, plundering, and laying waste the whole country. The four tribes applied to Ana'ya'sa', offered praises to her, and requested she would protect them against the Yavanas, and dwell among them. Mahā-bha'ga' assented, and the spot, which she chose for her abode, is called Mahā-bhāgās'bān, or the place of Mahā-bha'ga'.

In the mean time, Mahā-de'va was at Mōcsha-s'bān, or Mōcshēsa', bestowing Mōcsha on all who came to worship there. It is a most holy place, and there Mahā-de'va laid aside the countenance and shape of Capo-te'swarā, and assumed that of Moc'she'swarā.

Among the first votaries of Mahā-de'va, who repaired to Mōcsha-s'bān, was Vi'ra'se'na, the son of Guhyāca. He had been making Tapasyā for a long time, in honor of Mahā-de'va, who at last appeared to him, and made him king over St'hāvaras, or the immoveable part of the creation: hence he was called St'hāvara-pati; and the hills, trees, plants and grasses of every kind were ordered to obey him. His native country was near the sea; and he began his reign with repressing the wicked, and in-
fitting on all his subjects walking in the paths of justice and rectitude. In order to make his sovereignty acknowledged throughout the world, he put himself at the head of a numerous army; and directing his course towards the north, he arrived at Mocsha-bân, where he performed the Pujâ in honor of Môcshe'swara, according to the rites prescribed in the sacred books. From Mocsha-bân, he advanced towards the Agni-pârvatas, or fire mountains in Vabni-s'tbân; but they refused to meet him with presents, and to pay tribute to him. Incensed at their insolence, Sthâ'vâr-pati resolved to destroy them; the officers on the part of Sami-'rama', the sovereign of Vabni-stbân, assembled all their troops, and met the army of Sthâ'vâr-pati; but, after a bloody conflict, they were put to flight.

Sami-'rama' amazed, enquired, who this new conqueror was; and soon reflected, that he could never have prevailed against her, without a boon from Maha'-de'va, obtained by the means of what is called Ugra-Tapasyâ, or a Tapasyâ performed with fervor, earnestness of desire and anger. She had a conference with Sthâ'vâr-pati, and as he was, through his Tapasyâ, become a son of Maha'-de'va, she told him, she considered him in that light, and would allow him to command over all the hills, trees and plants in Vabni-stbân. The hills then humbled themselves before Sthâ'vâr-pati and paid tribute to him.

The origin of Ninus is thus related in the same sacred books. One day, as Maha'-de'va was rambling over the earth, naked, and with a large club in his hand, he chanced to pass near the pool, where several Munis were performing their devotions. Maha'-de'va laughed at them, insulted them in the most provoking and indecent terms, and left his expressions should not be forcible enough, he accompanied the whole with significant signs, and get-
tures. The offended *Munis* cursed him, and the *Linga* or *Phallus* fell to the ground. *Mahā-deva*, in this state of mutilation, travelled over the world, bewailing his misfortune. His comfort too, hearing of this accident, gave herself up to grief, and ran after him in a state of distraction, repeating mournful songs. This is what the Greek mythologists called, the wanderings of *Damaṭer*, and the lamentations of *Bacchus*.

The world being thus deprived of its vivifying principle; generation and vegetation were at a stand; Gods and men were alarmed, but having discovered the cause of it, they all went in search of the sacred *Linga*; and at last found it grown to an immense size, and endowed with life and motion.

Having worshipped the sacred pledge, they cut it, with hatchets, into one and thirty pieces, which *Polyagus* like, soon became perfect *Lingas*. The *Devatas* left one and twenty of them on earth; carried nine into heaven, and removed one into the inferior regions, for the benefit of the inhabitants of the three worlds. One of these *Lingas* was erected on the banks of the *Cumud-vati*, or *Euphrates*, under the name of *Bā'leśwara-Linga*, or the *Linga* of *Iswara* the infant, who seems to answer to the Jupiter Puer of the western mythologists: To satisfy *Devi*, and restore all things to their former situation, *Mahā-deva* was born again in the character of *Bā'leśwara*, or *Iswara* the infant. *Bā'leśwara*, who fosters, and preserves all, though a child, was of uncommon strength; he had a beautiful countenance; his manners were most engaging; and his only wish was to please every body in which he succeeded effectually; but his subjects waited with impatience, till he came to the age of maturity, that he might bless them with an heir to his virtues. *Bā'leśwara*, to please them, threw off his childlike appearance, and suddenly became a man, under the title of *Li'leśwara*, or
Iswara, who gives pleasure and delight. He then began to reign over Gods and men, with the strictest adherence to justice and equity: his subjects were happy, and the women beheld with exacty his noble and manly appearance. With the view of doing good to mankind, he put himself at the head of a powerful army, and conquered many distant countries, destroying the wicked, and all oppressors, he had the happiness of his subjects, and of mankind in general, so much at heart, that he entirely neglected every other pursuit. His indifference for the female sex alarmed his subjects; he endeavoured to please them; but his embraces were fruitless. This is termed As"balana in Sanskrit; and the place where this happened was in consequence denominated As"balanash'an. The Apsaras, or celestial nymphs, tried in vain the effect of their charms. At last Samirama came to As"balanash'an; and retiring into a solitary place in its vicinity, chanted her own metamorphoses, and those of Lile'swhara, who happening to pass by, was so delighted with the sweetness of her voice, that he went to her, and enquired who she was. She related to him, how they went together into Unicolaideia in the characters of the Capoteswhara, and Capote'si: adding you appeared then as Moshe'swhara, and became Anayasa; you are now Lile'swhara, and I am Samirama, but I shall be soon Lile'swari. Lile'swhara, being under the influence of Ma'ya, of worldly illusion, did not recollect any of these transactions; but suspecting that the person, he was speaking to, might be a manifestation of Parvati, he thought it advisable to marry her; and having obtained her consent, he seized her hand, and led her to the performance of the nuptial ceremony, to the universal satisfaction of his subjects. Gods and men met to solemnize this happy union and the celestial nymphs, and heavenly virgins graced it with their presence. Thus Samirama and Lile'swhara commenced their reign, to the general satisfaction of mankind, who were happy under their virtuous administration.
From that period, the three worlds began to know and worship Li'le'swara, who after he had conquered the universe returned into Cusba-duipta. Li'le'swara, having married Sami'-ra'ma', lived constantly with her, and followed her wherever she chose to go: in whatever pursuits and pastimes she delighted, in these alone he took pleasure: thus they travelled over hills and though forests to distant countries; but at last returned to Cusba-duipt; and Sami'-ra'ma' seeing a delightful grove, near the Hradancitä, (or deep water) with a small river of the same name, expressed a wish, that he would fix the place of their residence in this beautiful spot, there to spend their days in pleasure.

This place became famous afterwards, under the name of Lila-st'ven or the place of delight. The water of the Hradancitä is very limpid, and abounds with Camala flowers, or red Lotos.

Sami'-ra'ma' is obviously the Semiramis of the western mythologists; whose appellation is derived from the Sanscrit Sami'-ra'me'si' or I'si' (Iśi) dallying in the Samâ, or Fire tree. The title of Sami'-ra'me'si' is not to be found in the Purânás; but it is more grammatical, than the other, and it is absolutely necessary to suppose the word I'si' or Esi' in composition, in order to make it intelligible.

Diodorus Siculus (*) informs us, that she was born at Asealon: the Purânás, that her first appearance in Syria, was at Ase'balana-st'ven, or the place, where Li'le'sa' or Ninus had Ase'balana.

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(*) Diodorus Siculus, Lib. 3d Cap. 2d.
The defeat of Semiramis, by Staurobates is recorded in the Puránás, with still more extravagant circumstances; for Staurobates is obviously St'hā'vāra-pati or St'hā'wara-pati, as it is more generally pronounced.

The places of worship mentioned in the above legends are Mocśbā or Mocśba-st'bān, Aś'bala-st'bān or Aś'balana-st'bān, two places of the name of Līlā-st'bān, or Liśa-st'bān, Anāyāsī-dēvi-st'bān and Mahā-bhāgā-st'bān.

The Brāhmens in the western parts of India insist that Mocśba-st'bān is the present town of Mecca. The word Mocśba is always pronounced in the vulgar dialects, either Mocā, or Mucūta; and the author of the Dabīšān says its ancient name was Mocā: we find it called Mucō Raba by Ptolemy, or Mocā the great, or illustrious. Guy Patin mentions a medal of Antoninus Pius with this legend "Mocā, sacra, inviolabilis, suis utens legibus. Mocā the holy, the inviolable, and using her own laws." This in my humble opinion, is applicable only to Mecca, or Mocśba-st'bān, which the Puránás describe as a most holy place. The Arabian authors unanimously confirm the truth of the above legend; and it is ridiculous to apply it to an obscure, and insignificant place in Arabia Petrea called also Mocā. It may be objected, that it does not appear, that Mecca was ever a Roman colony: I do not believe it ever was, but at the same time it is possible, that some connection for commercial purposes might have existed between the rulers of Mecca and the Romans in Egypt. The learned are not ignorant, that the Romans boasted a little too much of their progress in Arabia; and even medals were struck with no other view, apparently, but to impose on the multitude at Rome. It is unfortunate, that we do not meet in the Puránás, with the
necessary data to ascertain, beyond doubt, the situation of Moesbea. From the particulars contained in them, however, it appears to have been situated a great way to the westward, with respect to India, and not far from Egypt and Ethiopia, as has been shewn in a former dissertation on these countries, in the third volume of the Asiatick Researches.

It is declared in the Puránás, that Capóte'swara, and his consort Capóte'si, in the shape of two doves, remained there for some time; and Arabian authors inform us, that in the time of Mohammed, there was in the temple of Mecca, a pigeon carved in wood, and another above this, to destroy which, Mohammed lifted Ali upon his shoulders. These pigeons were most probably, placed there, in commemoration of the arrival of Mahadeva, and Devi, in the shape of two doves.

The worship of the dove seems to have been peculiar to India, Arabia, Syria, and Assyria. We read of Semiramis being fed by doves in the desert, and of her vanishing at last from the sight of men in the shape of a dove; and according to the Puránás Capóte'si, or the dove was but a manifestation of Samirama.

The dove seems to have been in former times, the device of the Assyrian, as the eagle was of the Roman empire; for we read in Isaias* "and the inhabitants of this country shall say in that day, such was our expectation! " behold, whither we wanted to fly for help, from the face of the dove; " but how could we have escaped."

I have adhered chiefly to the translation of Tremellius, which ap-

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* Isaias, Cap. xx in fine.
pears the most literal, and to be more expressive of the idea, which the prophet wished to convey to the Jews, who wanted to fly to Egypt and Ethiopia, to avoid falling into the hands of the Assyrians, but were to be disappointed by the fall of these two empires.

All commentators have unanimously understood Assyria by the Dove, and have translated the above passage accordingly. Capo te si, or the Assyrian Dove, was also mentioned in a song current in these countries, and which seems to refer to some misfortune, that had befallen the Assyrians. The 56th Psalm is directed to be sung to the tune of that song, which was known to everybody; and for this purpose the first verse, as usual is inserted. "The dove of distant countries is now struck dumb."

The Hindus further insist, that the black stone in the wall of the Caaba, is no other, than the Linga or Phallus of Maha-deva; and that, when the Caaba was rebuilt by Mohammed (as they affirm it to have been,) it was placed in the wall out of contempt; but the new converted pilgrims, would not give up the worship of the black stone, and siniéous portents forced the ministers of the new religion to connive at it. Arabian authors also inform us that stones were worshipped all over Arabia, particularly at Mecca; and Al-shahrestani (a) says, that the temple at Mecca was dedicated to Zohal or Kyevun, who is the same with Saturn. The author of the Dabistan declares positively, that the Hejar al aifad, or the black stone was, the image of Kyevun. Though these accounts somewhat differ from those in the Puranas, yet they shew, that this black stone was the object of an idolatrous worship from the most remote times.

* Sale's Koran.
The Mussulmans, in order to palliate their idolatry towards it, have contrived other legends. Kyevun is the Chyun of Scripture, also called Remphan, which is interpreted the God of Time. If so, Chyun, or Kyevun, must be Mahā-de'va, called also Mahā-ca'la, a denomination of the same import with Remphan: the Egyptians called Horus, the lord of time; and Horus is the same with Hara, or Mahā-de'va.

The reason of this tradition is, that the Sabians, who worshipped the seven planets, seem to have considered Saturn as the lord of time, on account of the length of its periodical revolution, and it appears from the Dabšlan, that some ancient tribes in Persia had contrived a cycle of years consisting of the revolution of Saturn repeatedly multiplied by itself.

Asc'hala-st'ha'n or As'balana-st'ban is obviously Ascalon; there Semiramis was born, according to Diodorus Siculus, or according to the Purānas there she made her first appearance.

Mahā-bha'gā-st'ha'n is the st'ban, or place of Samī-ra'mā', in the characters of Mahā-bha'gā', or the great and prosperous goddess: this implies also that she bestowed greatness and prosperity on her votaries.

We cannot but suppose, that the st'ban of Mahā-bha'gā' is the ancient town of Mabog, called now Menbigza and Menbig: the Greeks called it Hierapolis, or the holy city. It was a place of great antiquity, and there was a famous temple dedicated to the Syrian goddess, whose statue of gold was placed in the center, between those of Jupiter and Juno. It had a

* See Dissertation on Egypt, &c. in the third volume of the Asiatick Researches.
golden Dove on its head; hence some supposed it was designed for **Semiramis**, and it was twice every year carried to the sea side in procession. This statue was obviously that of the great goddess or **Maha’-bha’ga’-devi**; whose history is intimately connected with that of the **Dove in the western mythologies**, as well as in the **Purānás**.

An ancient author* thus relates her origin: "dicitur et Euphrates fluvio ovum piscis Columba ad sedis dies plurimos, et exclusisse Deam benignam et misericordem hominibus ad bonam vitam." "It is related that a Dove hatched the egg of a fish, near the Euphrates, and that after many days of incubation came forth the Goddess, merciful and propitious to men, on whom she bestows eternal bliss." Others said, that fishes rolled an egg on the dry land, where it was hatched by a Dove, after which appeared the **Syrian goddess**.

Her origin is thus related in the **Purānás**; the Yavanas having for a long time vexed the inhabitants of Cusba-duip; they at last applied for protection to **Maha’-bha’ga’-devi**, who had already appeared in that country in the characters of **Sami-rama** and **Capote’si or Isi**, in the shape of a Dove; they requested also that she would vouchsafe to reside amongst them. The merciful goddess granted their request; and the place where she made her abode, was called the **šbān**, or place of **Maha’-bha’ga’**.

The Syrian name of **Mabog** is obviously derived from **Maha’-bha’ga’**, this contraction is not uncommon in the western dialects derived from the

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*Lucius Ampelius ad Mascen*
Sanskrit, and Hefebhius informs us, that the Greeks pronounced the Hindu word Mahâ great, Mai. Mabog is mentioned by Pliny, where we read Magog, but Mr. Danville shews that it should be Mabog, I conclude from some manuscript copies. This is also confirmed by its present name which is to this day Manbig or Manbeg. We find it also called Bambukeb (Bambyce), and in Niebuhr’s travels it is called Bombäfsche, I suppose for Bombäfsche or Mombigs: but this is equally corrupted from Ma’abbâgâ; in the same manner we say Bombay for Momba, and what is called in India Bambu or Pambu, is called Mambu in Tibet.

The temple of Mabog was frequented by all nations, and amongst them were pilgrims from India, according to Lucian, as cited by the authors of the ancient universal history.

Mabog or Hierapolis was called also Old Ninus or Niniveh, according to Ammianus Marcellinus and Philostratus: and there is no mistake in Diodorus Siculus and Ctesias, when they assert, that there was a town called Niniveh near the Euphrates. Scripture also seems to place Niniveh thereabout, for it is said that Rezen was between Niniveh and Calach. And the situation of Rezen, called also Resaina by ancient authors, and Razain by the moderns, is well known, as well as that of Calach on the banks of the Lycus now the Zab, to the eastward of the Tigris. Niniveh of course, must have been to the westward of these two places, and falls where the Old Ninus is pointed out by Ammianus Philostratus, &c.

Two places of that name are mentioned in the Puránás under the name of Lilaßbàn, the šbân or place of Lît’e’sa or Ninus. There can be no doubt in my humble opinion, of their identity, for Sāmī’ra’mā’ is obvi-
ously Semiramis: Ninus was the son of Belus, and according to the Puránás, Li’le’ša sprung from Ba’le’swara or Balesa; for both denominations, being perfectly synonymous, are indifferently used in the Puránás.

Ninive on the Tigris seems to be the Šbán of Li’le’ša, where he laid aside the shape and countenance of Ba’le’sa, and assumed that of Li’le’ša. The other place of Li’le’ša, which Samí-ra’ma’, delighted with the beauty of the spot, chose for the place of her residence, is Hierapolis, called also Ninus or Niniveh: hence we find her statue in the temple of Mahá-bhá’ga’. It is said to have been situated near a deep pool, or small lake, called from that circumstance Hradancita; and the pool near the temple of Hierapolis was described to be two hundred fathoms deep. Samí-ra’ma is represented in a most amiable light in the Puránás, as well as her consort Li’le’swara or Li’le’ša.

Stephanus of Byzantium says, that Ninus lived at a place called Telané, previous to his building Niniveh, but this place I believe is not mentioned by any other author.

Ninus is with good reason supposed to be the Assur of scripture, who built Ninive; and Assur is obviously the I’swara of the Puránás with the title of Li’le’swara, Li’le’ša, or Ninus. The word I’swara, though generally applied to deities, is also given in the Puránás to Kings; it signifies Lord and Sovereign.

With respect to the monstrous origin of Ba’le’sa, and the thirty-one Pballi; my Pandit, who is an astronomer, suspects it to be an attempt to reconcile the course of the moon to that of the sun, by dividing the synodical
revolution into thirty-one parts, which may represent also three hundred and ten years. As this correction is now disused, he could give me no further information concerning it. To the event related is ascribed the origin of the Linga or Phallus, and of its worship: it is said to have happened on the banks of the Cumud-vati or Euphrates, and the first Phallus under the name of Baksara-Linga, was erected on its banks. This is confirmed by Diodorus Siculus, who says, that Semiramis brought an Obelisk from the mountains of Armenia, and erected it in the most conspicuous part of Babylon. It was 150 feet high, and is reckoned, by the same author, as one of the seven wonders of the world (a). The Jews in their Talmud allude to something of this kind; speaking of the different sorts of earths, of which the body of Adam was formed, they say that the earth which composed his generative parts, was brought from Babylonia.

The next place of worship is the βαν of Anâ'ya'sa'-de'vi': this is obviously the έυ ΄εν Άναίας (Heiron tês Anaias) of Strabo, or the temple of the goddess Anâia or Anaias, with its burning spring of Naphtha. They are upon a hillock called Corcura by the ancients, and now known by the name of Corcoor, it is near Kerkoob, and to the eastward of the Tigris, to this day it is visited by pilgrims from India, and I have been fortunate enough to meet with four or five, who had paid their devotions at this holy place. I consulted them separately, and their accounts were as satisfactory as could be expected. They call it 'juâlâ-muqibli, or the flaming mouth.

This conflagration is minutely described by Diodorus Siculus (b), who says that in former times a monster called Alcida, who vomited flames,
appeared in Phrygia; hence spreading along mount Taurus, the conflagration burnt down all the woods, as far as India, then with a retrograde course swept the forests of mount Liban, and extended as far as Egypt and Africa: at last a stop was put to it by Minerva.

The Phrygians remembered well this conflagration, and the flood which followed it; but as they could not conceive, that it could originate from a benevolent Goddess, they transformed her into a monster called Alcida. Alcida, however, is an old Greek word, imploving strength and power, and is therefore synonimous with Sácá or Saéta-dévi, the principal form of Sámi-ra’ma’, and other manifestations of the female power of nature.

Indeed the names and titles of most of the Babylonian deities are pure Sanscrit; and many of them are worshipped to this day in India, or at least their legends are to be found in the Puránas.

Thus Semiramis is derived from Sámi-ra’me’st or Sámi-ra’ma’, and Sámi-ra’ma’-de’vi.

Militta from Militia-Devi, because she brings people together (Connuba).

Shacka or Saca is from the Sanscrit Saéta-dévi, pronounced Sácá in the vulgar dialects: it implies strength and power.

Slamba or Salambo is from Sarwambá, often pronounced Sakwamba: it signifies the mother of all: and she is the Magna Mater of the western mythologists.
De'vi is called also Antargati or Antargata, because she resides within the body, or in the heart, and thereby gives strength and courage. This is the Goddess of Victory in India, and they have no other: it is declared in the Purânas, that she was called Antrast'hi (a title of the same import with the former) in the forests of Vîshâla-van on the banks of the river Tamasa in Chândraduṣṭ: from Antraṣṭ'hi the old Britons, or rather the Romans, made Andraṣṭe.

The Babylonian Goddess was called also the Queen of Heaven; and to this day a form of De'vi, with the title of Śverga-râdâni-dēvi, or De'vi, Queen of Heaven, is worshipped in India.

Rhea is from Hriyā-dēvi, or the bashful or modest Goddess.

Rakh is from Râdēśwara; a name of Lunûs, from one of his favourite wives called Raca: it signifies also the full orb of the Moon.

Nabû or Nebo is I'swara with the title of Nava or Naba, the celestial.

Nargal is from Anargarâśwara, that is, he who is independant.

Adram-melech is from Mîlbarm-ēswara; for I'swara, and Melech in the Chaldaen language, are synonimous.

Ad'harme'swara is thus called, because he punishes those, who deviate from the paths of justice and rectitude.

Anam-melech is from Anam-ēswara, or I'swara, who though above all, behaves to all with meekness and affability.
Nimrod is from Nima-Rudra, because Rudra or Mahadeva gave him half of his own strength.

Vahni-stha’n called also Agni-st’hán, is said in some Puránás to be in Cusba-duip, and in others to be on the borders of it. It includes all the mountainous country, from Phrygia to Herat. Vahni-st’hán and Agni-st’hán are denominations of the same import, and signify the country or seat of fire, from the numerous Volcanoes and burning springs, which are to be found all along this extensive range of mountains. The present Azar-Baïjân is part of it, and may be called Vahni-st’hán proper. Azar, in the old Persian, signifies fire, and Baïjân a mine or spring. This information was given to me by Mr. Duncan, Resident of Benares, who was so kind as to consult on this subject with Medhi-Ali-Khan, one of the Aumils of the Zemindary of Benares. He is a native of Khorassan, and well acquainted with the antiquities of his own country, and of Iran in general. According to him the principal Baïján, or spring of fire, is at a place called Baut-Cubeb (a) in Azar-Baïjân. Vahni-st’hán is called also Vahni-vyápta, from the immense quantity of fire collected in that country. There are many places of worship remaining throughout Iran, still resorted to by devout pilgrims. The principal are Balk and the Pyraem near Herat. Hinglaz or Ancloje near the sea, and about eighty miles from the mouth of the Indus: it is now deserted; but there remain twenty-four temples of Bhavani. This place however is seldom visited on account of the difficulties attending the journey to it.

Ganga’-waz near Congo on the Persian Gulph; another place of pilgrimage, where are many caves with springs in the mountains.

(a) It is vulgarly called Baku.
The Sib of Calyana-Raya and Govinda-Raya, two incarnations of Vishnu, is in the centre of Busfora on the banks of the Euphrates, and there are two statues carefully concealed from the sight of the Mussulmans.

Anaya’sai-devi-stha’ân has been already mentioned, and the great juâlah-muchî is the designation of the springs of Naphtha near Baku.

There is also another Hindu place of worship at Babarein (El Katif), and another at Astrachan where the few Hindus, who live there, worship the Volga, under the name of Surya-muchî-Ganga; the legends relating to this famous river are to be found in the Purânas, and confirm the information of the pilgrims, who have visited these holy places. There are still many Hindus dispersed through that immense country; they are unknown to the Mussulmans, and they pass for Guèbris, as they call them here, or Parsîs. There is now at Benares a Brahmou of the name of De’vi-da’s, who is a native of Mejâbed; he was introduced lately to my acquaintance by Mr. Duncan, and he informed me, that it was supposed, there were about 2000 families of Hindus in Khorassan; that they called themselves Hindû; and are known to the Mussulmans of the country, under that appellation.

This, in my opinion, accounts for the whole country to the south of the Caspian sea, from Khorassan and Arrokbage, as far as the Black Sea, being called India by the ancients, and its inhabitants in various places Sindi: It is implicitly confirmed by the Puranâs, in which it is said that the Suryamuchî-Gângâ or Volga, falls into the Sea of Sindi. The Hindus near Baku and at Astrachan call it the new sea, because they say it did not exist formerly. They have legends about it, which however, my learned friend Vidhya-na’th could not find in the Puranâs.
According to the pilgrims I have consulted, there are about twenty or thirty families of Hindus at Balk, and Eusebius informs us, that there were Hindus in Bactriana, in his time. There are as many families at Gán-gáwáx or Congo; about one hundred at Bussora; and a few at Babarein: These informed Puráná-puri a Yóyi, and famous traveller, called also Urd’bwa-bábu because he always keeps his hands elevated above his head, that formerly they corresponded and traded with other Hindus on the banks of the river Nilá, in the country of Misr; and that they had once a house or factory at Cairo; but that on account of the oppression of the Turks and the roving Arabs, there had been no intercourse between them for several generations. There are no Hindus at Anáyésádé or Corcoor, but they compute a large number in the vicinity of Baku and Derbend. The Shrefts at Sámákbé are Banyans or Hindus according to the Dictionary of Commerce, and of Trevoux, as cited in the French Encyclopedia (a).

The Cubánts, who live near Derbend, are Hindus, as my friend Puráná-puri was told, at Baku and Asráshan, in his way to Moscow; and their Bráhmins are said to be very learned; but as he very properly observed, this ought to be understood relatively on a comparison with the other Hindus in Persia who are extremely ignorant.

His relation is in a great measure confirmed by Strahlenberg, who calls them Cuba and Cubateen, and says that they live near Derbend and are a distinct people, supposed to be Jews, and to speak still the Hebrew language.

The Sanscrit characters might easily be mistaken for the black Hebrew

(a) ad vocem Churafi.
letters by superficial observers or persons little conversant in subjects of this nature.

The Arani, figuratively called the daughter of the Sami' tree, and the mother of fire, is a cubic piece of wood about five inches in diameter, with a small hole in the upper part. A stick of the same sort of wood is placed in this cavity, and put in motion by a string held by two men, or fixed to a bow. The friction soon produces fire, which is used for all religious purposes, and also for dressing food. Every Brahmen ought to have an Arani; and when they cannot procure one from the Sami' tree which is rather scarce in this part of India, they make it with the wood of the Asoatt'ba or Pippala tree. This is also a sacred tree, and they distinguish two species of it, the Pippala called in the vulgar dialects Pipal and the Chalat-Palaśba. The leaves of this last are larger, but the fruit is smaller and not so numerous as in the former species. It is called Chalat-palaśba from the tremulous motion of its leaves; it is very common in the hills, and the vulgar name for it is Pópala, from which I suppose is derived the Latin word Populus; for it is certainly the trembling Poplar or Aspen tree.

The festival of Semiramis falls always on the tenth day of the Lunar month of Aswina, which this year coincided with the fourth of October. On this day lamps are lighted in the evening under the Sami tree; offerings are made of rice and flowers, and sometimes strong liquors; the votaries sing the praise of Sami'-ra'ma'-de'vi and the Sami tree, and having worshipped them, carry away some of the leaves of the tree, and earth from the roots, which they keep carefully in their houses, till the return of the festival of Semiramis in the ensuing year.
ON THE ANDAMAN ISLANDS.

By Lieut. R. H. Colebrooke.

The Andaman islands are situated on the eastern side of the bay of Bengal*, extending from north latitude 10° 32' to 13° 40'. Their longitude is from 92° 6' to 92° 59' east of Greenwich. The great Andaman, or that portion of the land, hitherto so called, is about one hundred and forty British miles in length, but not more than twenty in the broadest part. Its coasts are indented by several deep bays, affording excellent harbours, and it is intersected by many vast inlets and creeks, one of which has been found to run quite through, and is navigable for small vessels. The little Andaman is the most southerly of the two, and lies within thirty

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* It is perhaps a wonder, that islands so extensive, and lying in the track of so many ships, should have been, till of late years, so little known; that while the countries by which they are almost encircled, have been increasing in population and wealth, having been from time immemorial, in a state of tolerable civilization; these islands should have remained in a state of nature, and their inhabitants plunged in the grossest ignorance and barbarity.

The wild appearance of the country, and the untractable and ferocious disposition of the natives, have been the causes, probably, which have deterred navigators from frequenting them, and they have justly dreaded a shipwreck at the Andaman, more than the danger of founding in the Ocean; for although it is highly probable, that in the course of time, many vessels have been wrecked upon their coasts; an instance does not occur of any of the crews being saved, or of a single person returning to give any account of such a disaster.
leagues of the island Carnicobar. Its length is twenty-eight miles, by seventeen in breadth, being more compact, but does not afford any harbour, although tolerable anchorage is found near its shores. The former is surrounded by a great number of smaller islands.

The shores of the main island, and indeed of all the rest, are in some parts rocky, and in a few places are lined with a smooth, and sandy beach, where boats may easily land. The interior shores of the bays and creeks, are almost invariably lined with mangroves, prickly fern, and a species of wild rattan; while the inland parts are covered with a variety of tall trees, darkened by the intermixture of creepers, parasite plants, and underwood; which form altogether, a vast and almost impervious forest, spreading over the whole country. The smaller islands are equally covered with wood; they mostly contain hills of a moderate height, but the main island is distinguished by a mountain of prodigious bulk, called from its shape the saddle peak; it is visible in clear weather, at the distance of twenty-five leagues, being nearly two thousand four hundred feet in perpendicular height. There are no rivers of any size upon these islands, but a number of small rills pour down from the mountains, affording good water, and exhibiting in their descent over the rocks a variety of little cascades, which are overshadowed by the superincumbent woods.

The soil is various in different parts of these islands*, consisting of black rich mould, white and dark coloured clays, light sandy soil, clay mixed with pebbles of different colours, red and yellow earth, but the black mould

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*I am indebted to Major Kyd and Captain Archibald Blair, for many of the subsequent remarks. The latter was employed by government in surveying these islands, and has the credit of having furnished the first complete and correct Chart of the Andamans.
ANDAMAN ISLANDS.

is most common. Some white cliffs are met with along the shores, which appear to have been originally clay, with a mixture of sand, hardened by time into the consistence of stone; but might be cut, and would probably answer for building. Near the southern extremity of the great island, where it is mountaneous and rocky, some indications of minerals have appeared, particularly of tin. There is also a kind of free stone, containing a yellow shining spar, resembling gold dust. Some of the hills bordering the coasts, exhibit blue shifous strata at their bases, with the Brescia or pudding stone; and some specimens of red ochre have been found, not unlike cinnabar.

The extensive forrests, with which these islands are overrun, produce a variety of trees fit for building, and many other purposes. The most common are the poon, dammer, and oil trees; red wood, ebony, cotton tree, and budlaum or almond tree; foondry, chingry and bindy. Alexandrian laurel, poplar, and a tree resembling the fattin wood; bamboos, and plas, with which the natives make their bows. Cutch affording the extract called Terra Japonica. The Melori, or Nicobar bread-fruit; aloes, ground rattans, and a variety of shrubs. A few fruit trees have been found in a wild state, but it is remarkable, that coconuts, so common in other tropical countries, are here almost unknown. Many of the trees afford timbers and planks, fit for the construction of ships, and others might answer for masts. A tree grows here to an enormous size, one having been found to measure thirty feet in circumference, producing a very rich dye, that might be of use in manufactures.

The only quadrupeds yet discovered in these islands, are wild hogs, monkeys and rats. Guanas, and various reptiles abound; among the

A  a  a  2
latter is the green snake, very venomous; centipedes, of ten inches long, and scorpions.

A variety of birds are seen in the woods; the most common are pigeons, crows, parroquets, king fishers, curlews, fish hawks and owls. A species of humming bird, whose notes are not unlike the cuckoo, is frequently heard in the night.

The principal caverns, and recesses, composing part of the coast, give shelter to the birds that build the edible nests; an article of commerce in the China market, where they are sold at a very high price. It has been thought, that these nests are formed from a glutinous matter, exuding from the sides of the caverns, where these birds, during nidification resort. It is not known whether they emigrate, but the period of their incubation takes place in December, and continues till May. Not more than two white spotless eggs, have been found in their nests, but they have been further supposed to breed monthly.

The harbours and inlets from the sea, are plentifully stocked with a variety of fish; such as mullets, soles, pomfret, rock fish, skate, gurnards, fardinas, roeballs, fable, shad, aloose, cockup, grobers, seer fish, old wives, yellow tails, snappers, devil fish, cat fish, prawns, shrimps, cray fish, and many others. A species resembling the whale, and sharks of an enormous size are met with. A variety of shell fish are found on the reefs, and in some places oysters of an excellent quality. Of the many madrapores, coralines, zoophites, and shells, none have yet been discovered but such as are found elsewhere.
The Andaman islands are inhabited by a race of men, the least civilized perhaps in the world; being nearer to a state of nature, than any people we read of. Their colour is of the darkest hue, their stature in general small, and their aspect uncouth. Their limbs are ill-formed and slender, their bellies prominent, and like the Africans they have woolly heads*, thick lips, and flat noses. They go quite naked, the women wearing only at times, a kind of tassel, or fringe round the middle; which is intended merely for ornament, as they do not betray any signs of bashfulness, when seen without it. The men are cunning, crafty, and revengeful; and frequently express their aversion to strangers, in a loud and threatening tone of voice, exhibiting various signs of defiance, and expressing their contempt by

* In this respect, they differ from all the various tribes, inhabiting the continent of Asia, or its islands. A story is somewhere told, of a ship full of African slaves, of both sexes, having been cast away at the Andamans; and that having put to death their masters and the ship's crew, they spread themselves over, and peopled the country. This story does not appear to have been well authenticated, nor have I ever met with the particular author who relates it. They have been asserted by some to be cannibals; and by others (vide Captain Hamilton's Voyage, and all the Geographical Dictionaries) to be harmless and inoffensive people, living chiefly on rice and vegetables. That they are cannibals has never been fully proved, although from their cruel and sanguinary disposition, great voracity, and cunning modes of lying in ambush, there is reason to suspect that in attacking strangers, they are frequently impelled by hunger; as they invariably put to death, the unfortunate victims, who fall into their hands. No positive instance, however, has been known of their eating the flesh of their enemies; although the bodies of some whom they have killed, have been found mangled and torn. It would be difficult to account for their unceasing hostility to strangers, without ascribing this as the cause; unless the story of their origin, as above-mentioned, should be true; in which case they might probably retain a tradition of having once been in a state of slavery. This in some degree would account for the rancour and enmity they show, and they would naturally wage perpetual war, with those whom they might suspect, were come to invade their country, or enslave them again.

It would appear that these islands were known to the ancients (see Major Rennell's Memoir, introduction Page xxix). They are mentioned, I believe, by Marco Polo; and in the ancient accounts of India and China, by two Mahomedan travellers, who were to those parts in the ninth century, translated from the Arabic by Eusebius Renaudot may be seen the following curious account. "Beyond these two islands (Nebulâs, probably Nisletâ) lies the land of Andamân; the people on this Coast eat human flesh quite raw; their complexion is black, their hair frizzled; their countenance and eyes frightful; their feet are very large and almost a cubit in length, and they go quite naked. They have no embarkations; if they had, they would devour all the passengers they could lay hands on, &c."
the most indecent gestures. At other times they appear quiet and docile, with the most insidious intent. They will affect to enter into a friendly conference, when after receiving with a show of humility, whatever articles may be presented to them, they set up a shout and discharge their arrows at the donors. On the appearance of a vessel or boat, they frequently lie in ambush among the trees, and send one of their gang, who is generally the oldest among them to the water's edge, to endeavour by friendly signs to allure the strangers on shore. Should the crew venture to land without arms, they instantly rush out from their lurking places, and attack them. In these skirmishes they display much resolution, and will sometimes plunge into the water to seize the boat; and they have been known even, to discharge their arrows, while in the act of swimming. Their mode of life is degrading to human nature, and like the brutes, their whole time is spent in search of food. They have yet made no attempts to cultivate their lands, but live entirely upon what they can pick up, or kill. In the morning they rub their skins with mud, or wallow in it like buffaloes, to prevent the annoyance of insects, and daub their woolly heads with red ochre, or cinnabar. Thus attired, they walk forth to their different occupations. The women bear the greatest part of the drudgery in collecting food, repairing to the reefs at the recess of the tide, to pick up shell fish; while the men are hunting in the woods, or wading in the water to shoot fish with their bows and arrows. They are very dexterous at this extraordinary mode of fishing, which they practise also at night, by the light of a torch. In their excursions through the woods, a wild hog, sometimes, rewards their toil, and affords them a more ample repast. They broil their meat, or fish, over a kind of a grid, made of bamboos; but use no salt, or any other seasoning.
ANDAMAN ISLAND.

The Andamaners, display at times, much colloquial vivacity, and are fond of singing and dancing; in which amusements, the women equally participate. Their language is rather smooth than gutteral, and their melodies are in the nature of recitative and chorus, not unpleasing. In dancing, they may be said to have improved on the strange republican dance, asserted by Voltaire to have been exhibited in England, "Ou dansant a la ronde, chacun donne des coups de pieds a son voisin, et en recoit autant." The Andamaners likewise dance in a ring, each alternately kicking and flapping his own breech, ad libitum. Their salutation is performed by lifting up a leg, and smacking with their hand the lower part of the thigh.

Their dwellings are the most wretched hovels imaginable. An Andaman hut may be considered the rudest, and most imperfect attempt of the human race, to procure shelter from the weather, and answers to the idea given by Vitruvius, of the buildings erected by the earliest inhabitants of the earth. Three or four sticks are planted in the ground, and fastened together at the top, in the form of a cone, over which, a kind of thatch is formed with the branches, and leaves of trees. An opening is left on one side, just large enough to creep into, and the ground beneath is strewn with dried leaves, upon which they lie. In these huts, are frequently found the sculls of wild hogs, suspended to the roofs.

Their canoes, are hollowed out of the trunks of trees, by means of fire, and instrumenos of stone, having no iron in use amongst them, except such utensils, as they have procured from the Europeans and sailors, who have lately visited these islands; or from the wrecks of vessels, formerly stranded on their coasts. They use also rafts, made of bamboos, to transport themselves across their harbours, or from one island to another.
Their arms have already been mentioned in part; I need only add that their bows are remarkably long, and of an uncommon form; their arrows are headed with fish bones, or the tusks of wild hogs; sometimes merely with a sharp bit of wood, hardened in the fire, but these are sufficiently destructive. They use also a kind of shield, and one or two other weapons have been seen amongst them. Of their implements for fishing, and other purposes, little can be said. Hand-nets of different sizes are used in catching the small fry, and a kind of wicker basket which they carry on their backs, serves to deposit whatever articles of food they can pick up. A few specimens of pottery ware, have been seen in these islands.

The climate of the Andaman islands, is rather milder than in Bengal. The prevailing winds are the south west and north east monsoons, the former commencing in May, and bringing in the rains; which continue to fall with equal, if not greater violence till November. At this time the north east winds begin to blow, accompanied likewise by showers, but giving place to fair and pleasant weather during the rest of the year. These winds vary but little, and are interrupted only at times, by the land and sea breezes. The tides are regular, the floods setting in from the west, and rising eight feet at the springs, with little variation in different parts. On the north east coast it is high water, at the full and change of the moon at 8° 33'. The variation of the needle is 2° 30' easterly.

Specimen of the Andaman Language.

<table>
<thead>
<tr>
<th>Andaman island, or native Country,</th>
<th>Mincopie</th>
<th>Ant, white in its winged state, Doughay.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ant, Ahooda,</td>
<td>Arrow'</td>
<td>Buttohie,</td>
</tr>
<tr>
<td>Arm</td>
<td>Pilie</td>
<td>Crow</td>
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</tr>
<tr>
<td>Bat</td>
<td>Vilvila</td>
<td>To cut</td>
</tr>
<tr>
<td>Bamboo</td>
<td>Otallie</td>
<td>Door</td>
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<tr>
<td>Bangle</td>
<td>Alai</td>
<td>To drink</td>
</tr>
<tr>
<td>Basket</td>
<td>Tetegay</td>
<td>Earth</td>
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<tr>
<td>Black, white</td>
<td>Cheegheoga</td>
<td>Ear</td>
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<tr>
<td>Blood</td>
<td>Cochengohee</td>
<td>To eat</td>
</tr>
<tr>
<td>Bead</td>
<td>Tahee</td>
<td>Elbow</td>
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<tr>
<td>To Beat</td>
<td>Ingo taheya</td>
<td>Eye</td>
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<tr>
<td>Belly</td>
<td>Napoy</td>
<td></td>
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<tr>
<td>To bind</td>
<td>Totoba oto go-</td>
<td>Finger</td>
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<td></td>
<td>fey toha</td>
<td>Fire</td>
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<tr>
<td>Bird</td>
<td>Lohay</td>
<td>Fish</td>
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<tr>
<td>To bite</td>
<td>Moepaka</td>
<td>Fish-hook</td>
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<tr>
<td>Boat</td>
<td>Locsay</td>
<td>Fleh</td>
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<tr>
<td>Boar</td>
<td>Stohee</td>
<td>Foot</td>
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<tr>
<td>Bow</td>
<td>Tongie</td>
<td>Friend</td>
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<tr>
<td>Bow-string</td>
<td>Ceha</td>
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<tr>
<td>Breast</td>
<td>Gectahie</td>
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<tr>
<td>Bone</td>
<td>Gectongay</td>
<td>Goat</td>
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<tr>
<td>Charcoal</td>
<td>Weheee</td>
<td>To go</td>
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<tr>
<td>Chin</td>
<td>Pitang</td>
<td>Grass</td>
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<tr>
<td>Cold</td>
<td>Choma</td>
<td>Hair</td>
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<tr>
<td>Coco-nut</td>
<td>Bollarey</td>
<td>Hand</td>
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<tr>
<td>Cotton cloth</td>
<td>Pangapec</td>
<td>Head</td>
</tr>
<tr>
<td>To cough</td>
<td>Ingotalley</td>
<td>Honey</td>
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<tr>
<td>English</td>
<td>Colloquial</td>
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<tr>
<td>Hot</td>
<td>Hooloo</td>
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<tr>
<td>House</td>
<td>Beaday</td>
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<tr>
<td>Jack Fruit</td>
<td>Abay</td>
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<tr>
<td>Jackall</td>
<td>Omay</td>
<td></td>
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<tr>
<td>Iron, or any Metal</td>
<td>Dohie</td>
<td></td>
</tr>
<tr>
<td>Kiss</td>
<td>Itolie</td>
<td></td>
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<tr>
<td>Knee</td>
<td>Ingolay</td>
<td></td>
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<tr>
<td>To laugh</td>
<td>Onkeomai</td>
<td></td>
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<tr>
<td>Leaf of a tree</td>
<td>Tongolie</td>
<td></td>
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<tr>
<td>Leg</td>
<td>Chigie</td>
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<tr>
<td>Man</td>
<td>Camolan</td>
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<tr>
<td>Moon</td>
<td>Tabie</td>
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<tr>
<td>Musqueyto</td>
<td>Hohenangee</td>
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<tr>
<td>Mouth</td>
<td>Morna</td>
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<tr>
<td>Nail</td>
<td>Mobejedanga</td>
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<tr>
<td>Neck</td>
<td>Tohie</td>
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<tr>
<td>Net</td>
<td>Botolee</td>
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<tr>
<td>Nose</td>
<td>Mellee</td>
<td></td>
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<tr>
<td>Paddle or Oar</td>
<td>Mecal</td>
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<tr>
<td>Pain</td>
<td>Alooda</td>
<td></td>
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<tr>
<td>Palm</td>
<td>Doiay</td>
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<td>Paper</td>
<td>Pangpoy</td>
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<tr>
<td>Pike</td>
<td>Woobalay</td>
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<tr>
<td>To pinch</td>
<td>Ingee genecha</td>
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<tr>
<td>Plantain tree</td>
<td>Cholelee</td>
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<tr>
<td>Pot</td>
<td>Bootchoohie</td>
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<tr>
<td>To pull</td>
<td>Totobatigeooa</td>
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<tr>
<td>Rain</td>
<td>Oye</td>
<td></td>
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<tr>
<td>Red</td>
<td>Gheallop</td>
<td></td>
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<tr>
<td>Road</td>
<td>Echollee</td>
<td></td>
</tr>
<tr>
<td>To run</td>
<td>Gohabela</td>
<td></td>
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<tr>
<td>To scratch</td>
<td>Inkahey aha</td>
<td></td>
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<tr>
<td>Seed</td>
<td>Keetongay</td>
<td></td>
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<tr>
<td>Sheep</td>
<td>Neena</td>
<td></td>
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<tr>
<td>Smoke</td>
<td>Boleenee</td>
<td></td>
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<tr>
<td>To sing</td>
<td>Gokobay</td>
<td></td>
</tr>
<tr>
<td>To sit down</td>
<td>Gongtohee</td>
<td></td>
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<tr>
<td>Shadow</td>
<td>Tangtohee</td>
<td></td>
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<tr>
<td>To sleep</td>
<td>Comohah</td>
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<tr>
<td>To sneeze</td>
<td>Oh-cheka</td>
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<tr>
<td>To spit</td>
<td>Inkahoangy</td>
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<tr>
<td>To swim</td>
<td>Quaah</td>
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<tr>
<td>To swallow</td>
<td>Beebay</td>
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* It may appear surprising that they should have names for animals that are not found in their Islands. This circumstance may tend to confirm the story of their origin.*
ANDAMAN ISLANDS.

Sky, - - - Madamo,
Star, - - - Chelobay,
Stone, - - - Woolay,
Sun, - - - Ahay.

To take up, - - - Catoha,
Thigh, - - - Poye,
Teeth, - - - Mahoy,
Tongue, - - - Talic,

Thunder and light- { Maufay-Mac-
ning, } { ce-}.

To wash, - - - Inga doha,
Wasp, - - - Bohomakee,
To walk, - - - Boony-jaoa,
Water, - - - Migway,
To weep, - - - Oana-wannah,
Wind, - - - Tomjamay,
Wood, - - - Tanghee.
View of the Volcano on Barren Island, Bear East One Mile Distant
On Barren Island and its Volcano

By Lieut. R. H. Colebrooke.

About fifteen leagues to the eastward of the Andaman islands, lies an island which navigators, from its appearance have justly called Barren. On the 12th of May 1787, Captain Kyd and myself, being on board the Trial Snow, on a voyage to Pulo Penang, Barren island in sight, bearing SSW seven leagues distant, saw a column of smoke, ascending from its summit, and by the help of our glasses, plainly perceived it to arise from a hill nearly in its center, around which, appeared an extensive valley, or crater; but being becalmed, we could not approach nearer to examine it.

The following account of this remarkable island, is given by Captain Blair, in his report of the survey of the Andaman islands.

"I left that coast, March the 21st, and landed on Barren island on the 24th. — The volcano was in a violent state of eruption, bursting out immense volumes of smoke, and frequently showers of red hot stones. Some were of a size to weigh three or four tons, and had been thrown some hundred yards past the foot of the cone. There were two or three eruptions..."
tions, while we were close to it; several of the red hot stones, rolled down the sides of the cone, and bounded a considerable way beyond us. The base of the cone is the lowest part of the island, and very little higher than the level of the sea. It rises with an acclivity of 32° 17′ to the height of 1800 feet nearly, which is also the elevation of the other parts of the island.

"From its present figure, it may be conjectured, that the volcano first broke out near the center of the island, or rather towards the north-west; and in a long process of time by discharging, consuming, and undermining has brought it to the present very extraordinary form, of which a very correct drawing by Lieutenant Wales, will impress a distant idea.

"Those parts of the island, that are distant from the volcano, are thinly covered with withered shrubs, and blasted trees. It is situated in latitude 12° 15′ north, and fifteen leagues east of the northernmost island of the Arcipelago*, and may be seen at the distance of twelve leagues in clear weather. A quarter of a mile from the shore, there is no ground with 150 fathoms of line.

REMARK.

From the very singular and uncommon appearance of this island, it might be conjectured that it has been thrown up entirely from the sea, by the action of subterranean fire. Perhaps, but a few centuries ago, it had not reared itself above the waves; but might have been gradually emerging from the bottom of the ocean, long before it became visible; till at length it

* The easternmost cluster of the Andaman islands.
reached the surface, when the air, would naturally assist the operation of the fire that had been struggling for ages to get vent, and it would then burst forth. The cone or volcano would rapidly increase in bulk, from the continual discharge of lava, and combustible matter; and the more violent eruptions which might have ensued at times, when it would throw up its contents to a greater elevation and distance, might have produced that circular, and nearly equidistant ridge of land, we see around it.

If this conjecture should gain credit, we may suppose, not only many islands, but a great portion of the habitable globe, to have been thrown up by volcanos, which are now mostly extinguished. Many hills and islands, now clothed with verdure bear evident marks of having once been in this state. A ground plan of Barren island, would so exactly resemble some of the lunar spots, as seen through a good telescope, when their shadows are strong; that I cannot help thinking, there are also many more volcanos in the moon, than have yet been discovered by a celebrated modern astronomer*. Those remarkable valleys, or cavities discernible on her disk, have many of them, a single hill in their center, and are surrounded by a circular ridge of a similar appearance.

Query. May not the moon be surrounded by an atmosphere of pure air, which differing essentially in its properties, from the atmosphere of our earth, might account for some of the phenomena of her appearance to us? An atmosphere of this sort, might be so transparent, as not to refract the rays of light in a sensible degree, or to produce the least change, in the appearance of a star, passing through it when an occultation is observed. At the same time, it would increase, in a high degree, the inflammability, and

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*Herschell.
combustion of matter, so as to produce volcanos; and if we suppose the moon to have neither seas, nor vegetation on her surface; the sun's light would be more strongly reflected, than from the earth, where the rays are liable to absorption, by water and vegetables.
XXIX.

EXTRACT from a Diary of a journey over the Great Desert, from Aleppo to Buffora, in April 1782.—Communicated by Sir William Dunkin, and published with a view to direct the attention of future travellers, to the ruins described in it.

APRIL 16.

Set off at five in the morning; encamped at five in the evening; the day intensely hot; the soil in general sandy; some few shrubs and bushes, but now quite brown, and so dry, that with the least touch they fall to powder; many stalks of lavender and rosemary; and in very dry red sand several scarlet tulips; other sorts new to me, one of a singular kind, in colour and smell like a yellow lupin, but in figure like the cone of a fir-tree, from ten to twelve inches long.

After about two hours in this sort of country, the ground appeared more verdant and firm, we then came to some very extraordinary ruins, our Sbaikb had seen, but never had approached them before; we prevailed on him, he called the place Castrubuoin, another Arab called it Calmay, our Armenians who interpreted for us in very bad Italian, called it Castruo duo fratelli, (I try to give the names from their mode of pronouncing,) what we first saw was a square each side about 400 yards long. The walls forty feet high, yet...
entire in many places; at each angle there is a circular tower, two others in each of the sides, they rise much higher than the walls; the towers and the walls constructed with very large blocks of cut stone, to what use the hollow of the square had been applied, I could form no conjecture; in it immense blocks of cut stone, and segments of arches of different dimensions, tumbled together in monstrous heaps; near to the gateway, by which we entered, two arches remain perfect, a third nearly so; they were probably carried all along the inside of (but distinct at least twenty feet from) the wall. These arches spring from very slender pillars, each pillar a single shaft; the arches are nearly semicircular of the same beautiful white stone as the pillars; about a quarter of a mile from this square, there is another, which appears to be a fourth part less; the entrance into this is under the loftiest as well as the widest arch of stone I ever saw; I had no means of measuring, which I much regretted; I cannot draw, which I regretted much more; the proportions of the pillars and of the arch which they support, conveyed to me something more just and beautiful than I can describe; the inside of the arch is richly ornamented with sculpture, at the sides, there are niches I suppose for statues; the outer face of the building is composed of great blocks of stone as the greater square, and in many places yet entire, appear to be as well chiseled and jointed as the best constructed marble building I ever saw, even at Venice; the height of the wall seems to be equal to that of the greater square; the thickness which from some breaches quite through may be observed, from seven to eight feet all through of the same stone with little if any, cement: the number and disposition of the towers the same as in the other, but in this where the towers rise above the wall, they are more ornamented; two circles or bands of sculpture at equal distances appear relieved from the body of each tower; but as all the tops are broken off, I could not guess how they had been closed. The
sculpture on the inside of the great arch of entrance, and on many of the
fragments of prostrated pillars appear like those in Mr. Woot's plates of the
ruins of Palmira; over the entrance arch on the inside are some remains of
an inscription in Arabick, but so defaced, that our Shaikh who reads and
writes Arabick, could not make out one word. All along the inside of this
square, arches formed of the finest brick are constructed; they project from
the wall about thirty feet, and are about twenty feet high over the arches,
and close up to the wall is a platform of earth perfectly level and now covered
with rich and verdant herbage; no vestige of buildings appear in the
hollow of this square, but many fragments of pillars lie in ruins, some are
of brick, and so cemented, that it must be as difficult to separate their parts
as if they were solid blocks of stone. There are no openings in the walls
from which any thing could have been discharged; in the towers there are
openings, at regular distances, which seem to have been designed to admit
light only; not for any hostile purpose. Equidistant from each of the
squares, is a building of the same sort of stone, about fifteen feet square;
though it appears to have been much higher, it is still considerably more
lofty than the other buildings; the stairs by which this was ascended, appear perfect from about twelve feet above the ground, what were lower, now
a heap of rubbish; there does not remain the appearance of any communica
tion between this and the other buildings; all the interjacent ground is
level and now verdant; no stream or well appears nearer than the well we
stopt at yesterday, about six hours from hence; if this district could be sup
plied with water, it would be rich indeed; for several miles onward, we
thought we discovered the remains of trenches or cuts for the conducting of
water over the plain. The Arabs were entirely ignorant respecting these ex
traordinary buildings; when, or by whom erected, or when destroyed. The
Shaikh hurried us away very much disflatisfied, that we had lost so much time,
he swears he never will come near it again; the distance from *Aleppo* is six
days easy journey. The *Shaikh* says, that we are now about forty miles from
*Palmyra*, which is on our right, and about fifty from the *Euphrates*, on our
left. No person at *Aleppo*, gave me any hint of such a place. The gentle-
men of our factory at *Busfora* had never heard of it.
XXX.

PROSOPIS ACULEATA. KÖNIG.

TSHAMIE of the HINDUS in the Northern CIRCARS.

By Doctor Roxburgh.

THIS grows to be a pretty large tree, is a native of most parts of the coast, chiefly of low lands at a considerable distance from the sea, and may be only a variety of P. Spicigera, for the thorns are in this sometimes wanting, flowers during the cold, and beginning of the hot seasons.

Trunk tolerably erect, bark deeply cracked, dirty ash colour.
Branches irregular, very numerous, forming a pretty large shady head.
Prickles scattered over the small branches, in some trees wanting.
Leaves alternate, generally bipinnate, from two to three inches long; pinnæ from one to four, when in pairs opposite, and have a gland between their insertions.
Leaflets opposite, from seven to ten pair, obliquely lanced, smooth, entire, about half an inch long, and one-sixth broad.
Stipules none.
Spikes several, axillary, filiform, nearly erect.
Bracts minute, one-flowered, falling.
Flowers numerous, small, yellow, single, approximated.
Calyx below, five toothed.
Filaments united at the base. Anthers incumbent, a white gland on the apex of each, which falls off soon after the flower expands. Style crooked. Stigma simple.

Legume long, pendulous, not inflated.

Seeds many, lodged in a brown mealy substance.

The pod of this tree is the only part used, it is about an inch in circumference, and from six to twelve long; when ripe, brown, smooth, and contains besides the seeds a large quantity of a brown mealy substance, which the natives eat, its taste is sweetish, and agreeable, it may therefore be compared to the Spanish Algaroba or locust tree. (Ceratonia Siliqua. Linn.)

NOTE.

In compliance with Dr. Koenig's opinion, I have called this a Pro-sopis, though I am aware that the antheral glands, give it a claim to the genus adenanthera.
To the Honourable Sir John Shore, Baronet,

Governor General, and President of the Asiatick Society.

Dear Sir,

I have had from Mr. Goldingham, one of the honourable Company's astronomers at Fort St. George, a person of much ingenuity, and who applies himself to the study of antiquities, some drawings taken from the cave on the island of Elephanta. They are the most accurate of any I have seen, and accompanied with a correct description. This gentleman argues ably in favor of its having been an Hindu temple, yet I cannot assent to his opinion. The immense excavations cut out of the solid rock at the Elephanta, and other caves of the like nature on the island of Salsette, appear to me operations of too great labor to have been executed by the hands of so feeble and effeminate a race as the aborigines of India have generally been held to be, and still continue. And the few figures that yet remain entire, represent persons totally distinct in exterior from the present Hindus, being of a gigantic size, having large prominent faces, and bearing some resemblance to the Abyssinians, who inhabit the country on the west side of the red sea, opposite to Arabia. There is no tradition of these caves having been frequented by the Hindus as places of worship; and at this period, no pujab is performed at any of them, and they are scarcely ever visited by the natives. I recollect particularly that Ragonath Row, when at Bombay, did not at all hold them in any degree of veneration.

I flatter myself that you, Sir, will agree with me in thinking the accompanying memoir deserving of being inserted in our proceedings.
MR. GOLDINGHAM acquaints me, that he has paid two visits to some curious remains of antiquity, about thirty-five miles southerly of Madras, commonly known by the name of the Seven Pagodas. He promises to transmit to me his remarks on these curiosities, with copies of the inscriptions, which are in characters unknown to the people of the district. He declares himself highly ambitious of the favor of being admitted into our Society; and I shall be much gratified in being instrumental to his obtaining that favor, from a conviction, that he will greatly add to our stock of information, and prove an useful member.

I CANNOT conclude an address to you, Sir, as the worthy successor of the gentleman who lately presided over our Society, with so much credit to himself and benefit to the public, without adverting to the memory of Sir William Jones, whose universal science, and ardent zeal for diffusing knowledge, I have had so many occasions to admire during the course of an acquaintance of twenty-five years.

I HAVE the honor to be with the greatest respect,

DEAR SIR,

Your most faithful and most obedient servant,

Calcutta, 29th July, 1795.

J. CARNAC.
XXXI.

Some Account of the Cave in the Island of Elephanta.

By J. Goldingham, Esq.

The Elephanta cave, which is situated in a small island in the harbour of Bombay, has deservedly attracted the attention of the curious; an elephant of black stone, large as the life, is seen near the landing place, from which the island probably took its name: the cave is about three quarters of a mile from the beach, the path leading to it lies through a valley, the hills on either side beautifully cloathed; and except when interrupted by the dove calling to her absent mate, a solemn stillness prevails; the mind is fitted for contemplating the approaching scene.

The cave is formed in a hill of stone, its massy roof is supported by rows of columns regularly disposed, but of an order different from any in use with us*; gigantic figures in relief are observed on the walls, these as well as the columns are shaped in the solid rock, and by artists it would appear possessed of some ability, unquestionably of astonishing perseverance. Several of the columns have been levelled, and the figures mutilated as I am informed by the Portuguese, who were at the trouble (and no small one) of dragging cannon up the hill, for the better execution of this exploit; destructive superstition seeks not for merit, she commits to the flames and

* See the sketch of one of the pillars.

D d d.
to destruction, members of a community most valuable, and structures doing honor to human ability.

The wall at the upper end of the cave is crowded with sculpture, the attention is first arrested by a grand bust, representing a being with three heads; the middle face is presented full, and expresses a dignified composure, the head and neck splendidly covered with ornaments. The face on the left is in profile, and the head dress rich, in one of the hands is a flower, in the other a fruit resembling a pomegranate; a ring like that worn by the Hindus at present is observed on one of the wrists; the expression of the countenance by no means unpleasant. Different is the head on the right; the face is in profile, the forehead projects, the eye stares; snakes supply the place of hair, and the representation of a human skull is conspicuous on the covering of the head, one hand, grasps a monstrous Cobra de Capella, (the hooded snake,) the other, a smaller, the whole together calculated to strike terror into the beholder, the height of this bust is about eighteen feet, and the breadth of the middle face about four; but the annexed drawing of this piece of sculpture will give a better idea of it perhaps than words.

Each side of this niche is supported by a gigantic figure leaning on a dwarf, as in the drawing.

A niche of considerable dimensions and crowded with figures on either side the former; in the middle of the niche on the right stands a gigantic figure, apparently female, but with one breast only; this figure has four arms, the foremost right hand is leaning on the head of a bull, the other grasps a Cobra de Capella, while a circular shield is observed in the inner left hand, the head is richly ornamented; on the right stands a male bear-
ing a pronged instrument resembling a trident, on the left is a female holding a mace or sceptre; near the principal, is a beautiful youth on an elephant; above this, is a figure with four heads, supported by swans or geese; and opposite is a male with four arms, mounted on the shoulders of another, having a sceptre in one of the hands; at the top of the niche small figures in different attitudes are observed, seemingly supported by clouds.

The most conspicuous of the group on the niche to the left is a male near seventeen feet in height, with four arms; on the left stands a female about fifteen feet high; the same circular rings worn by the present Hindu women, are observed on the legs and wrists of this figure, the hair bears a like correspondence in the mode of putting it up; the countenance is peculiarly soft and expressive of gentleness. In the back ground, a figure with four heads supported by birds, and one with four arms on the shoulders of another are also observed. Several smaller figures in attendance, one with the right knee bent to the ground in the attitude of addressing the principal, bears a cress exactly resembling that in present use. The herds of most of the small male figures have a whimsical appearance, being covered with an exact resemblance of our wigs.

On each side of these groups is a small dark room, sacred in ancient times perhaps to all but the unpolluted Brahmen; but bats, spiders, scorpions and snakes, are now in the possession.

Left of the last described group, and nearer the side of the cave, is another; a male is observed in the action of leading a female towards a majestic figure seated in the corner of the niche, his head covered like our judges on the bench; the countenance and attitude of the female highly expressive.
of modesty and a timid reluctance, a male behind urges her forward. Several smaller figures compose this group.

Curious it is to observe, all the female figures have ornaments round the wrists and legs, like those worn by the Hindu women at present, while the males bearing the same correspondence, have ornaments round the wrists only.

Opposite the last niche and fifty feet nearer the entrance, is another of equal dimensions enclosing a figure that forcibly arrests the attention; it is a gigantic half length of a male with eight arms, round one of the left arms a belt composed of human heads is seen; a right hand grasps a sword uplifted to sever a figure, seemingly kneeling (but too much mutilated to distinguish it properly) on a block held in the correspondent left hand; a Cobra de Capella rises under one arm; among the singular decorations of the head, a human skull is observed: Above are several small figures, represented in distress and pain. Many of the figures mutilated, as is the principal, whose aspect possesses a great degree of unrelenting fierceness.

Crossing to the other side of the cave near one of the small rooms before mentioned, a male sitting as the people of this country do at present is observed, a female in the same posture on his left, with an attendant on either side: at the feet of the male is the figure of a bull couchant, and in each corner of the niche stands a gigantic guard. Opposite is a correspondent niche, the figures being a good deal mutilated, and the situation dark, prevent these being properly discriminated; a sitting male-figure having an attendant on either hand is however perceived.
A niche filled with figures greatly defaced, is observed on each side the entrance; on one side is a male that had eight arms, which are all destroyed; in the back part is the figure with four heads supported by birds, and the other figure with four arms whimsically elevated. A large sitting figure is the principal in the opposite niche; a horse and rider in the back ground, the former caparisoned according to the present mode in this country.

On the left side and half way up the cave, is an apartment about thirty feet square enclosing the Lingam; an entrance on the four sides, and each side of either entrance is supported by a figure seventeen feet in height, each figure being ornamented in a different style.

The part of this surprising monument of human skill and perseverance hitherto described is generally called the great cave; its length is 135 feet, and breadth nearly the same. A plan accompanies this account, which however I cannot venture to pronounce perfectly correct, having mislaid a memorandum of particular parts, which were deduced, and with sufficient correctness perhaps from the general measures preserved. But there are compartments on both sides, separated from the great cave, by large fragments of rock and loose earth, heretofore probably a part of the roof. That on the right is spacious, and contains several pieces of sculpture, the most remarkable is a large figure, the body human, but the head that of an elephant. The lingam is also enclosed here. Above each of a line of figures, standing in a dark situation is a piece of sculpture, pointed out to me as an inscription, however (with the assistance of a torch) I found one an exact copy of the other, and with little resemblance of characters.

The compartment on the other side contains several sculptures, and
among the rest, a figure with an elephant’s head and human body. A deep cavity in the rock hereabouts contains excellent water, which being sheltered from the influence of the sun is always cool, and deservedly held in estimation by those whom curiosity leads here through a scorching atmosphere; a traditional account of the extent of this cavity, and the communication of its waters by subterraneous passages with others very distant, was given me by a native of the island, which would make a considerable figure in the hand of a poet.

Gigantic as the figures are, the mind is not disagreeably moved on viewing them, a certain indication of the harmony of the proportions; having measured three or four, and examined the proportions by the scale we allow the most correct, I found many stood even this test, while the disagreements were not equal to what are met with every day in people whom we think by no means ill proportioned.

The island wherein these curious remains of antiquity are situated, is about five miles and a half from Bombay in an easterly direction, its circumference cannot be more than five miles; a neat village near the landing place contains all its inhabitants, whom, inclusive of women and children number about one hundred; their ancestors they tell you having been improperly treated by the Portuguese, fled from the opposite island of Salset hither, cultivating rice and rearing goats for their support; in the same humble road do they continue; the islanders have no boat, they cut wood from the adjoining hills, which the purchasers remove in boats of their own; they are under our protection, and pay about fifty-six pounds annually to the government, the surplus revenue furnishes their simple clothing: By persevering in this humble path, these harmless people continue to rejoice.
in tranquillity under their banyan tree. The cave, they tell you, was formed by the Gods, and this is all they pretend to know of the matter.

Various have been, and are to this day, the conjectures respecting the Elephant cave. Those who attempt to deduce its origin from the Egyptians, from the Jews, or from Alexander the great, appear to me, with due deference, to give themselves much unnecessary trouble, which I shall further endeavour to shew as briefly as the subject will admit of, though at the same time it must be observed that resembling features are not wanting in the case of the Egyptians, and of the Jews, to lead towards such deductions, but these resemblances strike me as tending to the elucidation of a more interesting hypothesis, viz. that the systems of those people were copies of an original found in this part of the world.

The striking resemblance in several particulars of the figures in the cave to the present Hindu race, would induce those, who from history as well as from observation have reason to believe they have preserved the same customs from times immemorial, to imagine the ancestors of these people its fabricators, but those who are in a small degree acquainted with their mythology, will be persuaded of it, nor is a much greater extent of knowledge requisite, to enable us to discover it to be a temple dedicated principally to Siva, the destroyer or changer.

The bust is doubtless a personification of the three grand Hindu attributes of that being, for whom the ancient Hindus entertained the most profound veneration, and of whom, they had the most sublime conceptions. The middle head represents Brahma, or the creative attribute; that on the left Vishnu, or the preserving; and the head on the right Siva, or the destructive or changing attribute.
The figure with one breast, has been thought by most to represent an Amazon; it however appears to me, a representation of the consort of Siva, exhibiting the active power of her lord; not only as Bawani or courage, but as Isani or the goddess of nature considered as male and female, and presiding over generation, and also as Durka; here we find the bull of Iswara (one of Siva's names), and the figure bearing his trisul or trident. The beautiful figure on the elephant, is, I imagine, Camara, or the Hindu God of Love; the figure with four heads supported by birds is a representation of Brahma, and that with four arms mounted on the shoulders of another is Vishnu.

The two principal figures in the niche to the left, represent perhaps, Siva, and his Goddess as Parvati; here as before, we observe Brahma and Vishnu in the back ground.

The terrifick figure with eight arms has been much talked of; some will have it to represent Solomon threatening to divide the harlot's child; others, with more reason on their side, suppose it to represent the tyrant Cansa, attempting the life of the infant God Krishna, when fostered by the herdsman Ananda: to me, the third attribute, or the destroyer in action, appears too well represented to be mistaken; the distant scene, where the smaller figures appear in distress and pain, is perhaps the infernal regions. The figure about to be destroyed, does not seem to me an infant, but a full grown person; if indeed the destroyer was of the human size, the figure in question would bear the proper proportion as an infant, but as he is of enormous magnitude, a human being full grown would appear but an infant by the side of him; and thus it is, I imagine, that people have been deceived: a case, by no means uncommon in circumstances like the present.
The sitting male and female figures, having a bull couching at the feet of the former, are Siva, and his Goddess, and thus, are they represented in the pagodas of the present day.

No person can mistake the figure with the human body and elephant's head, for any other than Gane'sa, the Hindu God of Wisdom, and the first born of Siva, and thus is he represented at present.

From what has been advanced, it will appear incontestible, I imagine, that this is a Hindu Temple; whence the Lingam is a testimony sufficient of Siva's having presided here, without the other evidences, which the intelligent in the Hindu mythology will have discovered in the course of this account.

To deduce the era of the fabrication of this structure is not so easy a task, but it was no doubt posterior to the great schism in the Hindu religion, which according to the Puranas, I learn, happened at a period coeval with our date of the creation; be this as it may, we have accounts of powerful princes, who ruled this part of the country of a later date, particularly of one who usurped the government in the ninetieth year of the Christian era famed for a passion for architecture, many worse hypothesis have been, than one which might be formed, of his having founded the cave, but I am led to imagine no certain conclusions on this dark subject could be drawn from the sources of information open at present.
An Account of the present state of Delhi. — By Lieutenant W ill i a m F r a n k l i n.

The once celebrated city of Delhi, the capital of Muslim sovereignty in Hindostan, and, in more early times, the seat of Hindu dominion over northern India, has employed the pen of many different authors, Asiatick and European, though of the latter in a less degree than might have been expected.

The following account of the present state of this ancient city is extract ed from a journal of observations made during an official tour through the Deccan, and the adjacent districts, in company with Captain Reynolds, of the Bombay establishment, appointed by the Bengal government to survey that part of the country in the year 1793.

It cannot be supposed to contain much new information on things already described by others; but as a faithful statement of the actual condition of the once flourishing metropolis of a great kingdom now in ruins, it may be acceptable, and in this hope it is offered, with deference, to the Society; who will judge whether it be deserving of more general diffusion by publication with their more important researches.
The extent of the ruins of old Delhi cannot, I suppose, be less than a circumference of twenty miles reckoning from the gardens of Shalimar, on the north west, to the Kuttub Minar on the south east; and proceeding from thence along the heart of the old city by way of the mausoleum of Nizam-u-deen, on which stands Humainoon's tomb, and the old fort of Delhi on the banks of the Jumna, to the Ajmere gate of Shab Jehanabad.

The environs to the north west are crowded with the remains of spacious gardens and country-houses of the nobility, which were formerly abundantly supplied with water by means of the noble canal dug by Ali Mirdan Khan, and which formerly extended from above Paniput quite down to Delhi, where it joined the Jumna; fertilizing in its course a tract of more than ninety miles in length, and beflowing comfort and affluence on those who lived within its extent. This canal, as it ran through the suburbs of Mogul Parab, nearly three miles in length, was about twenty five feet deep; and about as much in breadth, cut from the solid stone-quarry, on each side, from which most of the houses in the neighbourhood have been built. It had small bridges erected over it at different places, some of which communicated with the garden-houses of the nobility.

In the year of the Hegiree 1041, (A.C. 1631-2) the Emperor Shah-Jehan founded the present city and palace of Shab Jehanabad, which he made his capital during the remainder of his reign. The new city of Shab-Jehanabad lies on the western bank of the Jumna, in latitude 28° 36' North. The city is about seven miles in circumference, and is surrounded on three sides by a wall of brick and stone; a parapet runs along the whole with loop holes for musquetry, but there are no cannon planted on the ramparts; the city has seven gates; viz. Labore gate, Ajmere gate, Turkoman
gate, Delhi gate, Moor gate, Cabul gate, and Cashmere gate; all of which are built of free stone, and have handsome arched entrances of stone, where the guards of the city keep watch. Near the Ajmere gate is a Madrissa, or college, erected by Ghazi-u-deen Khan, nephew of Nizam-ul-Mool-luck; it is built of red stone, and situated at the centre of a spacious quadrangle, with a stone fountain; at the upper end of the area is a handsome mosque built of red stone, inlaid with white marble. The apartments for the students are on the sides of the square, divided into separate chambers, which are small, but commodious. The tomb of Ghazi is in the corner of the square, surrounded by a shrine of white marble, pierced with lattice-work. The college is now shut up, and without inhabitants.

In the neighbourhood of the Cabul gate, is a garden called Tees Huzzari Baug, in which is the tomb of the Queen Malka Zemani, wife of the Emperor Mohummed Shah, a marble tablet placed at the head of the grave, is engraved with some Persian couplets, informing us of the date of her death, which happened five years since Au. Hegiree 1203. Near this tomb, is another of the Princess Zeebul Nissah Begum, daughter of Aurungzebe. On a rising ground near this garden, from whence there is a fine prospect of Shah Jahanabad, are two broken columns of brown granite, eight feet high and two and a half in breadth, on which are inscriptions in an ancient character.

Within the city of new Delhi, are the remains of many splendid palaces, belonging to the great Omrahs of the Empire. Among the largest are those of Kummer-u-deen Khan, Vizier to Mohummud Shah; Ali Mirdan Khan, the Persian; the Nabob Ghazi-u-deen Khan; Sefdur Jung's; the garden of Coodeeah Begum, mother to Mohummud Shah; the palace of Sadut Khan; and that of Sultan Darah Shekoah.
All these palaces are surrounded with high walls, and take up a considerable space of ground. Their entrances are through lofty arched gateways of brick and stone, at the top of which are the galleries for music; before each is a spacious courtyard for the elephants, horses, and attendants of the visitors. Each palace has likewise a Mahal or Seraglio adjoining, which is separated from the Dewan Khana, by a partition wall, and communicates by means of private passages. All of them had gardens with capacious stone reservoirs and fountains in the centre; an ample terrace extended round the whole of each particular palace; and within the walls were houses and apartments for servants and followers of every description, besides stabling for horses, Feel Khannas, and every thing belonging to a nobleman's suite. Each palace was likewise provided with a handsome set of baths, and a Teb Khana under ground. The baths of Sadut Khan, are a set of beautiful rooms, paved and lined with white marble: they consist of five distinct apartments, into which light is admitted by glazed windows from the top of the domes. Sefdur Jung's Teb Khana consists of a set of apartments, built in a light delicate manner; one long room, in which is a marble reservoir, the whole length, and a small room, raised and ballustraded on each side, both faced throughout with white marble.

Shah Jahanabad is adorned with many fine mosques, severals of which are still in perfect beauty and repair. The following are most worthy of being described, and first, the Jama Musjed, or great cathedral. This mosque is situated about a quarter of a mile from the royal palace, the foundation of it was laid upon a rocky eminence, named Fujula Pabar, and has been scarped on purpose. The ascent to it is by a flight of stone steps thirty-five in number, through a handsome gateway of red stone. The doors of this gateway are covered throughout, with plates of wrought
bells, which Mr. Bernier imagined to be copper. The terrace on which
the mosque is situated, is a square of about fourteen hundred yards of red
stone; in the centre is a fountain lined with marble, for the purpose of per-
forming the necessary ablutions previous to prayer. An arched colonade of
red stone surrounds the whole of the terrace, which is adorned with octa-
gon pavilions at convenient distances, for fitting in. The mosque is of an
oblong form, two hundred and sixty-one feet in length, surrounded at top
by three magnificent domes of white marble, intersected with black stripes,
and flanked by two Minarets of black marble, and red stone alternately, ri-
sing to the height of a hundred and thirty feet. Each of these Minarets has
three projecting galleries of white marble, and their summits are crowned
with light octagon pavilions of the same. The whole front of the Jama
Musjed is faced with large flabs of beautiful white marble, and along the
cornice are ten compartments, four feet long and two and a half broad,
which are inlaid with inscriptions in black marble in the Nuskebi charac-
ter, and are said to contain great part, if not the whole, of the Koran. The
inside of the mosque is paved throughout with large flags of white marble,
decorated with a black border; and is wonderfully beautiful and delicate:
the flags are about three feet in length by one and a half broad. The walls
and roof are lined with plain white marble; and near the Kibla is
a handsome taak or niche, adorned with a profusion of freeze work.
Close to this is a mumber or pulpit, of marble, having an ascent of four
steps, and ballustraded. The ascent to the Minarets is by a winding stair
case of a hundred and thirty steps of red stone, and at the top you have a
noble view of the King's palace, and the whole of the Guttub Minar, the
Kurrun Minar, Humainoon's tomb, the palace of Feroze Shah, the
fort of old Delhi, and the fort of Loni, on the opposite side of the Jumna.
The domes are crowned with cullifes, richly gilt, and present a glittering
appearance from a distance. This mosque was begun by Shah Jehan, in the fourth year of his reign, and completed in the tenth: the expenses of its erection amounted to ten lacks of rupees; and it is in every respect worthy of being the grand cathedral of the empire of Hindostan.

Not far from the palace is the mosque of Roshun-a-Dowlah, rendered memorable to the Delhians for being the place where Nadir Shah saw the massacre of the unfortunate inhabitants. The cause assigned by historians for this inhuman act is, that a sedition broke out in the great market, in which two thousand Persians were slain. Nadir, on hearing of the tumult, marched out of the fort at night with a small force to the Musjid of Roshun-a-Dowlah; where he was fired upon in the morning from a neighbouring terrace, and an officer killed close by his side. He instantly ordered an indiscriminate slaughter of the inhabitants, and his squadrons of cavalry, pouring through the streets, before the afternoon put to death a hundred thousand persons of all descriptions. "The King of "Persia," says the translator of Ferishta, "sat during the dreadful scene, "in the Musjid of Roshun-a-Dowlah: none but slaves durst come "near him, for his countenance was dark and terrible. At length the un- "fortunate Emperor, attended by a number of his chief Omras, ventured "to approach him with downcast eyes. The Omras who preceded Mo- "hummad, bowed down their foreheads to the ground. Nadir Shah "sternly asked them what they wanted; they cried out with one voice, "Spare the city." Mohummad said not a word, but tears flowed fast "from his eyes; the tyrant for once touched with pity, sheathed his "sword and said, "For the sake of the prince Mohummad, I forgive." Since this dreadful massacre, this quarter of Delhi has been but very thinly inhabited. The mosque of Roshun-a-Dowlah is situated at the en-
trance of the Chandey Choke, or market; it is built of red stone, of the common size, and surmounted by three domes richly gilt.

Zeenul-al Muzzafir, or the ornament of mosques, is on the banks of the Jumna, and was erected by a daughter of Aurungzebe, of the name of Zeenut al Nissa'h. It is of red stone with inlayings of marble, and has a spacious terrace in front of it, with a capacious reservoir faced with marble. The princess who built it, having declined entering into the marriage state, laid out a large sum of money in the above mosque, and, on completing it, she built a small sepulchre of white marble, surrounded by a wall of the same in the west corner of the terrace. In this tomb she was buried in the year of the Hegira 1122, corresponding with the year of Christ 1710. There were formerly lands allotted for the support and repairs of this place amounting to a lack of rupees per annum; but they have all been confiscated during the troubles this city has undergone. Exclusive of the mosques above described, there are in Shab Jehanabad and its environs above forty others; but as most of them are of inferior size, and all of them of the same fashion, it is unnecessary to present any further detail.

The modern city of Shab Jehanabad is rebuilt and contains many good houses, chiefly of brick. The streets are in general narrow, as is usual in most of the large cities in Asia; but there were formerly two very noble streets, the first leading from the palace gate through the city to the Delhi gate, in a direction north and south. This street was broad and spacious, having handsome houses on each side of the way, and merchants shops well furnished with the richest articles of all kinds. Shah Jehan, caused an aqueduct to be made of red stone, which conveyed the water along the
whole length of the street, and from thence into the royal gardens by means of a reservoir under ground. Some remains of the aqueduct are still to be seen; but it is choked up in most parts with rubbish. The second grand street was likewise from the palace to the Labour gate lying east and west; it was equal in many respects to the former; but in both of them the inhabitants have spoiled their appearance by running a line of houses down the centre, and across the streets in other places, so that it is with difficulty a person can discover their former situation without a narrow inspection. The bazars in Delhi are but indifferently furnished at present, and the population of the city miserably reduced of late years: the Chandny Choke is the best furnished bazar in the city, though the commerce is very trifling. Cotton cloths are still manufactured, and the inhabitants export indigo: their chief imports are by means of the northern caravans which come once a year, and bring with them from Cabul and Cashmere shawls, fruit, and horses; the two former articles are procurable in Delhi at a reasonable rate. There is also a manufactory at Delhi for beedree hooka bottoms. The cultivation about the city is principally on the banks of the Jumna, where it is very good; the neighbourhood produces corn and rice, millet, and indigo. The times are very large and fine. Precious stones likewise are to be had at Delhi, of very good quality, particularly the large red and black cornelians, and peerozas are sold in the bazars.

The city is divided into thirty-six mohauls or quarters, each of which is named either after the particular Omrah who resided there, or from some local circumstance relative to the place. It appears that the modern city of Shah Jahanabad has been built principally upon two rocky prominences, the one where the Jama Masjid is situated, named Sujula Pabar; and the other, the quarter of the oil sellers, called Bejula Pabar: from both of these
eminencies you have a commanding view of the remainder of the city. Ancient Delhi is said by historians to have been erected by Rajah Delu, who reigned in Hindooslan prior to the invasion of Alexander the Great; others affirm it to have been built by Rajah Pettourah, who flourished in a much later period. It is called in Sanscrit Indraput, or the abode of Indra, one of the Hindu deities; and it is also thus distinguished in the royal diplomas of the chancery office. Whether the city be of the antiquity reported, is difficult to determine: but this much is certain, that the vast quantity of buildings which are to be found in the environs for upwards of twenty miles in extent, as well as their grandeur, and style of architecture, prove it to have once been a rich, flourishing, and populous city.

On the 11th of March, we were presented to the King Shah Allum, after entering the palace, we were carried to the Dewauun Kbanab, or hall of audience for the nobility, in the middle of which was a throne raised about a foot and a half from the ground. In the centre of this elevation was placed a chair of crimson velvet, bound with gold clasps, and over the whole was thrown an embroidered covering of gold and silver thread: a handsome Samianab, supported by four pillars incrusted with silver, was placed over the chair of state. The King at this time was in the Tusbeah Kbanab, an apartment in which he generally sits. On passing a skreen of Indian connaughts, we proceeded to the front of the Tusbeah Kbanab, and being arrived in the presence of the King, each of us made three obeisances in turn, by throwing down the right hand pretty low, and afterwards raising it to the forehead, we then went up to the Musnud, on which his Majesty was sitting, and presented our nuzzers on white handkerchiefs; each of our names being announced at the time we offered them: the King received the whole and gave the nuzzers to Mirza Akber Shah, and
two other princes, who sat on his left hand. We then went back with our faces towards the presence: made the same obeisance as before; and returned again to the Musnud. After a flight conversation, we were directed to go without the enclosure, and put on the Kbelauts which his Majesty ordered for us; they consisted of light India dresses; a turban, jammah, and kummerbund, all cotton, with small gold sprigs. On being cloathed in these dresses, we again returned to the Tusbeah Kbanah, and after a few minutes stay, previous to which Captain Reynolds received a sword from the King, we had our dismission, and some servants were ordered to attend us in viewing the palace.

The present King, Shah Allum, is seventy-two years of age; of a tall commanding stature, and dark complexion; his deportment was dignified, and not at all diminished by his want of sight, though he has suffered that cruel misfortune above five years. The marks of age are very strongly discernible in his countenance: his beard is short and white. His Majesty appeared at our introduction to be in good spirits; said he was happy at our arrival; and desired we would visit his palace, and the fort of Selim Gbur. He was dressed in a rich kheem-khaub, and was supported by pillows of the same materials.

I imagined I could observe in his aspect a thoughtfulness, as if sufficiently well acquainted with his present degraded situation, and the recollection of his former state.

The palace of the royal family of Timur, was erected by the Emperor Shah Jehan at the time he finished the new city. It is situated on the western bank of the Jumna, and is surrounded on three sides by a wall of
red stone. I suppose the circumference of the whole to be about a mile. The two stone figures mentioned by Bernier at the entrance of the palace, which represented the Rajah of Chitore, and his brother Potta, seated on two elephants of stone, are not now to be seen; they were removed by order of Aurungzebe, as favoring too much of idolatry; and he enclosed the place where they stood with a screen of red stone which has disfigured the entrance of the palace. The first object that attracts attention after entering the palace, is the Dewaun Aum, or public hall of audience, for all descriptions of people. It is situated at the upper end of a spacious square, and is a noble building, but at present much in decay. On each side of the Dewaun Aum, and all round this square, are apartments of two stories high, the walls and front of which in the times of the splendor of the Empire, were adorned with a profusion of the richest tapestry, velvets, and silks; the nobles vying with each other in rendering them the most magnificent, especially on festivals, and days of public rejoicings, when they presented a grand sight. These decorations have however been long since laid aside, and nothing but the bare walls remain. From the Dewaun Aum, we proceeded through another handsome gateway to the Dewaun Khas beforementioned. The building is situated at the upper end of a spacious square, and elevated upon a marble terrace about four feet high. The Dewaun Khas in former times has been adorned with excessive magnificence, and though stripped and plundered by various invaders, still retains sufficient beauty to render it admired. I judge the building to be a hundred and fifty feet in length by forty in breadth. The roof is flat, supported by a great many columns of fine white marble, which have been richly adorned with inlaid flower-work of beautiful stones: the cornices and borders have been decorated with a great quantity of frieze and sculptured work. The ceiling was formerly incrusted with a work of rich foliage of silver throughout the whole
extent, which has been long since taken off and carried away. The delicacy of the inlaying in the compartments of the walls is much to be admired, and it is matter of heartfelt regret to see the barbarous ravages that have been made in picking out the different cornelians, and breaking the marble by violence. Around the interior of the Deoan Khan, in the cornice, are the following lines engraved in letters of gold, upon a white marble ground

"If there be a paradise upon earth, this is it—tis this, 'tis this."

The terrace on which the Deoan Khan is built is composed of large beautiful slabs of white marble, and the building is crowned at top with four pavilions or cupolas of the same materials.

The royal baths built by Shah Jehan, are situated a little to the northward of the Deoan Khan, and consist of three very large apartments surmounted by white marble domes. The inside of the baths is lined, about two thirds of the way up, with marble, having a beautiful border of flower-worked cornelians and other precious stones, executed with taste. The floors are paved throughout with marble in large slabs, and there is a fountain in the centre of each with many pipes: large reservoirs of marble, about four feet deep, are placed in different parts of the walls; the light is admitted from the roof by windows of party coloured glasses; and capacious stones with iron gratings are placed underneath each separate apartment. There is a noble mosque adjoining, entirely of white marble, and made after the fashion described above. In the Shah Baug, or the royal gardens, is a very large octagon room, which looks towards the river
Jumna. This room is called Shab Boorj, or the royal tower; it is lined with marble; and from the window of it, the late heir apparent Mirza Juwan Bukht, made his escape in the year 1784, when he fled to Lucknow; he descended by means of a ladder made with turbans, and as the height is inconsiderable, effected it with ease. A great part of this noble palace has suffered very much by the destructive ravages of the late invaders. The Robillas in particular, who were introduced by Gholam Kauder, have stripped many of the rooms of their marble ornaments and pavements, and have even picked out the stones from the borders of many of the floorings; adjoining is the fortress of Selim Gbur which you reach by a stone bridge built over an arm of the Jumna. The fort is now entirely in ruins; at the eastern end of it we were shewn the sally-port, from which Gholam Kauder Khan made his escape with all his retinue, when the place was besieged by the Mahrattas in 1788. The river Jumna running directly underneath this bastion, the tyrant crossed it immediately, and fled to Meerut in the Dooab.

The Gentur Munter, or observatory, in the vicinity of Delhi has been described by former travellers. It was built in the third year of the reign of Mohummed Shah, by the Rajah Jeyising, who was assisted by many persons celebrated for their science in astronomy from Persia, India, and Europe; but died before the work was completed, and it has since been plundered and almost destroyed by the Jeits under Juwaher Sing.

I will only add a short account of the royal gardens of Shalimar. These gardens, made by the Emperor Shah Jehan, were begun in the fourth year of his reign; and finished in the thirteenth; on which occasion, according to Colonel Dow, the Emperor gave a grand festival to his
court. These gardens were laid out with admirable taste, and cost the enormous sum of a million Sterling: at present their appearance does not give cause to suppose such an immense sum has been laid out upon them; but great part of the most valuable and costly materials have been carried away. The entrance to them is through a gateway of brick; and a canal, lined with stone, having walks on each side with a brick pavement, leads up to the Dewan Khanah, or hall of audience; most part of which is now fallen down: from thence, by a noble canal having a fountain in the centre, you proceed to the apartments of the Haram, which embrace a large extent of ground. In the front is an Ivan, or open hall, with adjoining apartments; the interior of which are decorated with a beautiful border of white and gold painting, upon a ground of the finest chunam. At the upper end of this Ivan was formerly a marble throne raised about three feet from the ground all of which is removed. On each side of this Ivan, enclosed by high walls, are the apartments of the Haram, some of which are built of red stone and some of the brick faced with fine chunam, and decorated with paintings of flowers of various patterns. All these apartments have winding passages which communicate with each other and the gardens adjoining by private doors. The extent of Shalimar, does not appear to have been large. I suppose the gardens altogether are not above a mile in circumference. A high brick wall runs around the whole, which is destroyed in many parts of it, and the extremities are flanked with octagon pavilions of red stone. The gardens still abound with trees of a very large size, and very old. The prospect to the southward of Shalimar towards Delhi, as far as the eye can reach, is covered with the remains of extensive gardens, pavilions, mosques, and burying places, all desolate and in ruins. The environs of this once magnificent and celebrated city appear now nothing more than a shapeless heap of ruins, and the country round about is equally forlorn.
XXXIII.

Botanical Observations on the Spikenard of the Ancients, intended as a Supplement to the late Sir William Jones's papers on that Plant.—By William Roxburgh, M. D.

Valeriana Jatamansi.

Generic Character.

Flowers triandrous, leaves entire, four-fold, the inner radical pair petiol'd, and cordate; the rest smaller, sessile, and sub-lanceolate; seeds crowned with a pappus.


November 6th, 1794. I received from the Honourable C. A. Bruce, Commissioner at Coos-Beybar, two small baskets with plants of this valuable drug; he writes to me on the 27th September, (so long had the plants been on the road,) that he had, the day before, received them from the Deb Rajah of Bootan, and further says, that the Booteabs know the plant by two names, viz. Jatamansi, and Pampé or Paumpé.

I need scarce attempt to give any further history of this famous odoriferous plant than what is merely botanical, and that with a view to
help to illustrate the learned dissertations thereon, by the late Sir William Jones, in the 2d and 4th volumes of these researches, and chiefly by pointing out, the part of the plant known by the name, Indian nard or Spikenard; a question on which Matheolus, the commentator of Dioscorides, be- 
flows a good deal of argument; viz. whether the roots, or stalks, were the parts esteemed for use, the testimony of the ancients themselves on this head being ambiguous. It is therefore necessary for those who wish for a more particular account of it; to be acquainted with what that gentleman has published on the subject.

The plants now received, are growing in two small baskets of earth, in each basket there appears above the earth between thirty and forty hairy; spike-like bodies, but more justly compared to the tails of Ermines, or small Weasels*; from the apex of each, or at least of the greatest part of them, there is a smooth lanceolate, or lanceolate-oblong, three or five-nerved, short-petiol'd, acute, or obtuse, slightly ferrulate leaf or two shooting forth. Fig. 1. represents one of them in the above state, and on gently removing the fibres, or hairs which surround the short petiols of these leaves, I find it consists of numerous sheath, of which one, two or three of the upper or interior ones are entire, and have their fibres connected by a light-brown coloured membranous substance as at b, but in the lower exterior sheathes, where this connecting membrane is decayed, the more durable hair-like fibres remain distinct, giving to the whole appearance of an Ermines tail,

* The term spica, or spike, is not so ill applied to this substance, as may be imagined; several of the Indian grasses, well known to me, have spikes almost exactly resembling a single straight piece of nardus, and when those hairs, (or flexible arista like bristles,) are removed, Pliny's words, "frutexradice pingui et craffa are by no means inapplicable. See Fig. 2, from a. to b.
this part, as well as the root itself, are evidently perennial*. The root itself, (beginning at the surface of the earth where the fibrous envelope ends,) is from three to twelve inches long, covered with a pretty thick, light-brown coloured bark, from the main root, which is sometimes divided, there issues several smaller fibres. Fig 2, is another plant with a long root, here the hair-like sheaths, beginning at a. are separated from this the perennial part of the stem, and turned to the right side; at the apex is seen the young shoot, marked 6, which is not so far advanced as at Fig. 1. ccc show the remains of last year's annual stem. When the young shoot is a little further advanced than in Fig. 2, and not so far as in Fig. 1, they resemble the young convolute shoots of monocotyledonous plants.

June 1795. The whole of the abovementioned plants have perished, without producing flowers, notwithstanding every care that could possibly be taken of them. The principal figure in the drawing marked Fig. 3, and the following description, as well as the above definition, are therefore chiefly extracted from the engraving and description in the second volume.

* The above described perennial hairy portion of the plant, is clearly the Indian spikenard of our shops, but whether the narbus of the ancients, or not, I leave to better judges to determine; however I believe few will doubt it after having read Sir William Jones's dissertations thereon, and compared what he says with the accompanying drawings of the perennial hairy part of the stem of this plant, which are taken from the living plants immediately under my own eyes, the drawing of the herbaceous, or upper part of the plant, is out of the question in determining this point, and only refers to the place the plant bears in our Botanical Books. While writing the above, I desired an Hindu servant to go and buy me from their apothecaries shops a little Jatamans, without saying more or less: he immediately went and brought me several pieces of the very identical drug, I have been desiring; a drawing of one of the pieces is represented at Fig. 4, and agrees not only with those I have taken from the living plants, but also exceedingly well with Garcia's ab. Orta's figure of the narbus indica which is to be found at page 129, of the fourth edition of Clusius's Latin translations of his history of Indian drugs published in 1693.
of these researches, and from the information communicated to me by Mr. Burt, the gentleman who had charge of the plants that flowered at Gaya, and who gave Sir William Jones the drawing and description thereof.

DESCRIPTION of the PLANT.

ROOT, it is already described above.

STEM, lower part perennial, involved in fibrous sheaths, &c. as above described; the upper part herbaceous suberect, simple, from six to twelve inches long.

LEAVES four-fold, the lowermost pair of the four radical are opposite, sessile, oblong, forming as it were a two valved spathe; the other pair are also opposite petiol’d, cordate, margins waved, and pointed; those of the stem sessile, and lanceolate, all are smooth on both sides.

CORYMB terminal, first division trichotomous.

BRACTSawl’d.

Calyx scarce any.

COROL one petal’d, funnel-shaped, tube somewhat gibbous. Border five-cleft.

STAMENS, filaments three, project above the tube of the corol; anthers incumbent.

PISTIL, germ beneath. Style erect, length of the tube. Stigma simple.

PERICARP, a single seed crowned with a pappus.

THE END OF THE FOURTH VOLUME.
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