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the

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of

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CONTENTS.

I. Observations respecting the remarkable effects of Solar-Lunar Influence in the Fevers of India: with the scheme of an Astronomical Ephemeris for the purposes of Medicine and Meteorology, 1

II. Extract from a Journal, during the late Campaign in Egypt, 35

III. Of the origin of the Hindu Religion, 44

IV. Extract from the "Essence of Logic," proposed as a small Supplement to Arabic and Persian Grammar, and with a view to elucidate certain points connected with Oriental literature, 89

V. An Account of the Measurement of an Arc on the meridian on the Coast of Coromandel, and the length of a degree deduced therefrom in the latitude 12° 32', 137

VI. On the Hindu Systems of Astronomy, and their connection with History in ancient and modern times, 195

VII. An Essay on the Sacred Isles in the West, with other Essays, connected with that Work, 245

VIII. On the Vedas, or Sacred Writings of the Hindus, 377

IX. A Botanical and Economical Account of Bassia Butyracea, or East India Butter Tree, 499

X. Description of a species of Ox, named Gayal, 511

APPENDIX.

Introductory Remarks, intended to have accompanied Captain Mahony's Paper on Ceylon, and the doctrines of Buddha, published in the seventh volume of the Asiatic Researches, but inadvertently omitted in publishing that Volume, 529
I.

Observations respecting the remarkable Effects of Sol-Lunar Influence in the Fevers of India; with the Scheme of an Astronomical Ephemeris for the purposes of Medicine and Meteorology.

By Francis Balfour, Esq. M. D.*

Whilst the interesting and successful researches of the Asiatic Society are exciting the curiosity and expectation of the learned in every quarter of the world, it is natural for those who are prosecuting discoveries in medicine and meteorology to look towards India, for some information respecting the nature and peculiarities of the climate in which we live. Possessing, as we do, the peculiar advantages of a tropical situation, with a more extensive field, and greater convenience for making observations than any European nation ever enjoyed before, it is an expecta-

* Mr. Balfour is the author of the Paper in the Second Volume of the Asiatic Researches, entitled "Treatise on the introduction of the Arabic into the Persian, and language of Hindostan."
tion which they have reason to entertain, and which, on that account, and many other considerations, we ought, if possible, to gratify.

One of the most striking and interesting peculiarities of this climate is the wonderful connection that subsists between the paroxysms of fevers, and certain relative positions of the sun and moon; and as it is a peculiarity that leads to new ideas respecting the theory and treatment of the whole class of febrile diseases, and suggests Desiderata for meteorological research; and therefore presents to the physician and philosopher, one of the most important phenomena in nature, I have chosen it for the subject of this paper.

I. Of the Number and Importance of the Diseases that belong to the Class of Fevers.

As the terms fevers, febrile diseases, or class of fevers, cannot convey to those who have not professionally or regularly applied themselves to the study of medicine, any just or adequate idea of the great extent and magnitude of this subject, I have thought it expedient to take this occasion to observe, for their information, that the class of fevers or febrile diseases comprehends, not only the disorders that always receive the appellation of fevers, but a very great number of others that are never distinguished by this name, although the fever which accompanies them, constitutes the very essence of the disease. Diseases of this description, of which many are far more destructive to the human race than those expressly called fevers, are most of them included in the following catalogue.

The plague, putrid sore-throats, epidemic catarrhs, dysenteries, pleurisies, peripneumonies, cho-
INFLUENCE IN THE FEVERS OF INDIA, &c.

lies, cholera morbus, acute liver, the small-pox, measles, erysipelas, elephantiasis, rheumatism, gout, tooth-aches, ophthalmias, megrims, obstructions of the liver and spleen, diarrhoeas, consumptions, spitting of blood, and haemorrhoids; many species of hypochondriasis, insanity, epilepsy, tetanus and asthma; the state of teething in children, all local inflammations, external and internal, accompanied with fever of any kind, and all sores and ulcers, especially of the legs in warm climates. In short, all diseases attended with periodical exacerbations of fever, however obscure, &c. &c.

With whatever success, therefore, I may have acquitted myself in my researches respecting the class of fevers, it will appear from this explanation, that the object, at least, cannot, with truth, be represented as unimportant and useless. It cannot be unimportant and useless to investigate the nature of a class of diseases, by which the whole of the human race is sorely afflicted; and ultimately three-fourths of mankind are carried to the grave.

II. Of the effects of Sol-Lunar Influence in Fevers, denominated Continued, Remitting, and Intermitting.

A collection of all the observations I have made on this subject would be much too voluminous for a place amongst the researches of the Society. For my present object, it will be sufficient to state, as briefly as possible, the general conclusions that I have been led to draw from a view of the whole; and they are those that follow.

1st. Of the Paroxysms of Fevers.

In Bengal there is no room to doubt that the human frame is affected by the influence connect-
ed with the relative situations of the sun and moon. In certain states of health and vigour, this influence has not power to shew itself by any obvious effects; and in such cases its existence is often not acknowledged. But in certain states of debility and disease it is able to manifest itself by exciting febrile paroxysms: and the propensity or aptitude of the constitution, to be affected with febrile paroxysms in such cases, may be denominated the paroxysmal disposition.

From the great variety that appears in the violence and repetition of paroxysms, in different cases, at the same juncture of time, when the exciting power must act equally on all, it must be inferred, that the paroxysmal disposition exists in different cases in various degrees of propensity.

It appears also, from the history of fevers, that there is a disposition in all of them, which gradually increases and advances to a state in which it becomes ripe, or prepared for that remarkable change which terminates in a solution of the fever; and is denominated a crisis. This tendency in fevers may be called the critical disposition; which distinguishes itself in different cases, and at different times by various degrees of maturity.

The constitutions that prevail in different kinds of fever discover obvious peculiarities with respect to the progress and maturation of the critical disposition. But that which is most important, and most material for the object of the present explanation, is a peculiarity that shews itself in the critical disposition of the common typhus. In cases of this fever, which is that which prevails in crowded cities, and in jails, ships, and hospitals, in all countries at all seasons, and is by far the most com-
It is well established by experience, that the fever being once commenced, the paroxysms are very rarely disposed to cease in less than four days, and seldom so soon; and are not in general inclined to continue more than twenty-one.

The laws that regulate the progress and maturation of the critical disposition, in that constitution which prevails in remitting and intermittent fevers, which are generally attended with large secretions of bile, and are the endemic fevers of warm climates, have not been as yet ascertained by any precise rules respecting their duration. But it appears to me that, whenever there are free discharges of bile, there is always a greater tendency towards a crisis or solution of the fever, than when there appears but little or none, which is generally the case during the height of the typhus; and until some approach towards a crisis either perfect or imperfect has taken place: and the peculiar paroxysmal, as well as the critical disposition in the typhus, and in remitting and intermittent fevers, giving occasion to forms of different type and duration, may perhaps be connected with different states of the liver peculiar to each.

2d. Of the Types of Fevers.

Of Perfect Types.

Febrile paroxysms universally discover a tendency to appear and disappear in coincidence with those positions of the sun and moon that regulate the rising and falling of the tides.

The diurnal and nocturnal increase of sol-lunar power acting on constitutions, in which the propensity of the paroxysmal disposition is complete
and perfect, produces paroxysms every twelve hours in coincidence with the periods of the tides*; and constitutes *types, which, on account of this regular coincidence, I have denominated perfect.

Of Imperfect Types.

The diurnal and nocturnal increase of sol-lunar power acting on constitutions in which the propensity to paroxysm is incomplete or imperfect, has power only to produce paroxysms in coincidence with every second, third, or fourth period of the tides, or others more remote; constituting *types, which, on account of this irregular coincidence, I have called imperfect.

By the discovery of this simple and universal principle, we are able to unfold the whole mystery of types; and to explain all the diversities that have appeared under the distinctions of continued, remitting, and intermitting fevers. Fevers, hitherto denominated continued fevers, and supposed from the obscurity of their remissions to have none, are all of them to be considered as nothing else than fevers of a perfect type, in which two daily remissions may always be discovered, by attending to the remissions of sol-lunar influence, especially those of the morning; and fevers having paroxysms every twelve hours with obvious remissions, whether denominated continued or remitting fevers, are also evidently fevers of a perfect type.

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* I express myself in this manner for the sake of brevity, meaning that the paroxysms occur in coincidence with the positions of the sun and moon that occasion the tides. The tides, it is well known, do not coincide with those exactly, but follow them a considerable time after.
Fevers in which the paroxysms do not succeed each other in twelve hours (and which have been hitherto denominated intermitting fevers when the remissions were complete, and remitting fevers when they were not) all belong to the class of imperfect types.

For the purpose of illustrating these explanations respecting types, I have constructed Table I.

3d. Of the Durations and Crises of Fevers.

Of the durations and crises of Fevers of a Perfect Type.

Febrile paroxysms shew themselves more frequently during the period of the spring tides than at any other time, and as these advance become more violent and obstinate; and on the other hand, tend no less invariably to subside and terminate during the neaps.

By the concurrence of the remarkable and sudden remission in the power of sol-lunar influence at the commencement of the neaps with critical dispositions in a state of perfect maturity, all the different perfect types, produced in the manner I have explained, are brought to a final termination or perfect crisis; and are thus limited to fevers of different durations.

The operation of this law is explained in Table II, which exhibiting examples of the different durations of perfect types, with the manner in which they are formed, unfolds at one glance, the dark and once impenetrable secret of crisis; and accounts for all the diversities that may appear in their duration at different times.
An application of these principles enables us to explain in a similar and consistent manner the formation of crises that have been called imperfect. It is obvious that whenever the remission in the power of sol-lunar influence at the commencement of the neaps acting equally on all, produces in some cases perfect crises, and in others crises that are imperfect, that the latter must be referred to the immature and unprepared state of the critical disposition to concur completely in that event. And although perfect crises, owing to the cause which I now mention, do not always take place at such junctures, yet no fever, as far as my experience goes, ever passes the commencement of the neaps without some evident abatement or remission in the degree of its violence; or without exhibiting some evident approaches towards a solution or crisis; and they are approaches such as these, in which the critical disposition concurs only partially and incompletely with the remission of sol-lunar power, that constitute those changes in the state of fevers that have been hitherto denominated imperfect crises.

This explanation respecting the nature of imperfect crisis being premised, I have now to observe, that although Table II, exhibits only such forms of perfect types as terminate by a final and perfect crisis on the commencement of the neaps, it will now be well understood, that all fevers do not terminate finally and completely at this juncture; but that in many cases, the crises being imperfect, the paroxysms continue to return for some time in a more moderate degree, and generally postponing with the periods of the tides, subside, and at last disappear gradually and imperceptibly. The imperfect crises of perfect types, such as these which I have just described, being less distinctly marked
INFLUENCE IN THE FEVERS OF INDIA, &C. 9

in their form, I have not attempted to represent them by any diagram.

Of the Durations and Crises of Fevers of an Imperfect Type.

For the same reason I have not attempted to reduce, to a synopsis or table, the durations and crises of imperfect types; and because I am perfectly satisfied that the same principles are equally applicable to explain the whole.

III. The preceding Theory extended to the whole Class of Febrile Diseases.

In prosecuting this analysis, we have obtained the knowledge of three very important principles in the pathology of fevers.

1st. That the paroxysms of fevers are produced by the action of sol-lunar influence.

2dly. That there is, however, a certain state of the human constitution, denominated the paroxysmal disposition, required to concur with the exacerbations of sol-lunar power in exciting and reiterating paroxysms, in such a manner as to form fevers.

3dly. That in the course of the disease there takes place in the constitution a certain state, denominated the critical disposition, which tending gradually to maturity, at length concurs with certain remissions of sol-lunar power in producing a crisis; by which salutary change the tendency to paroxysm is diminished or removed, so as to bring fevers to an end after certain intervals of time.
In my explanation of this theory, I have hitherto confined myself as much as possible to examples of the typhus, and of the endemic, remitting, and intermitting bilious fevers of this country; particularly those without local affection; and such therefore as are strictly denominated fevers. I now mean to extend it to every disease that is distinguished by febrile paroxysms, returning in coincidence with the periods of increased sol-lunar power, whether with or without local affection; and as there is no disease of the numerous list detailed at the beginning of this paper, excepting the plague*, catarrhal fevers, and one or two more, in which I have not myself distinctly observed the coincidence of concomitant fever with the exacerbations of sol-lunar influence; the whole of that catalogue, and many others, though not generally distinguished by the appellation of fevers, are to be considered as nothing more than so many different modifications of fever; in which the peculiar constitution of each is variously affected by the action of sol-lunar power, and in such a manner as to produce the great variety of febrile forms that daily appear.

The exacerbation and remission of febrile paroxysm in coincidence with the rising and falling of sol-lunar power constitutes the general and distinguishing character of fever or febrile disease;

* In several of the cases of the plague, recorded by Dr. Patrick Russel, the febrile paroxysms returned obviously every twelve hours in coincidence with the periods of the tides; and his predecessor and relation, the author of the Natural History of Aleppo, says positively "that the generality of fevers there, and indeed almost all acute diseases, are subject to exacerbations "once or twice in twenty-four hours." Vide Doctor Millar’s Observations on the prevailing Diseases of Great Britain, page 203.
and although the lowest degree of this power acting on paroxysmal dispositions in a high state of propensity, may happen to produce febrile paroxysms at an unusual period, such instances, though apparently exceptions, are no argument against the truth or principles of the general law: but are consistent with it in every respect.

Combining therefore the operation of the principles we have obtained from this analysis, we are enabled to construct a theorem, which serves to explain in a new, but satisfactory manner, the whole class of febrile diseases.

**THEOREM.**

*The fluctuating force of sol-lunar influence coinciding and co-operating in all its various stages and degrees, with the various modifications of the paroxysmal disposition, excites febrile paroxysms to attack on all the days of the neaps and springs, and supports and reiterates them, according to various types, until the commencement of different neaps; at which junctures the maturity of the critical disposition happening to concur with the periodical decline of sol-lunar influence, these paroxysms then subside and come to a termination or crisis: and thus form different successions of paroxysms constituting fevers of various length or duration.*

It has been observed, respecting the various forms of durations, that some are apt to occur more frequently than others. To search for a solution of this question amidst the chaos of the incorrect and mutilated history that has been accumulated on the subject of fevers, would be unsatisfactory and useless. It will be far more profitable to
observe their course with attention in future, when the laws that directs it are explained and understood, and I have no doubt that any physician who will carefully attend to the diurnal and nocturnal returns of the tides, and will constantly hold before him the prevailing tendency of fevers to appear at the commencement, and during the period of the springs; and on the other hand their prevailing tendency to subside and terminate at the commencement and during the period of the neaps; together with the observations that have been made respecting the propensity of the paroxysmal, and the maturity of the critical disposition, will soon obtain more information respecting the phenomena of fevers; and be able to form more just and certain judgments and prognostics respecting every event, than if he were to study the history of medicine, as it is now written, for a thousand years. In short there is no revolution or change in the course of fevers that may not be explained by these general principles, in a manner that is consistent with the laws of the human constitution, and those of the great system of revolving bodies, which unite together in producing them.

Before I conclude this article, I must also recommend to every practitioner who wishes to emancipate himself from the beaten track, to attend carefully to the appearance of the urine; for I can assure them, from the experience of many years attentive observation, that there is to be observed, in the fevers of India, a constant and regular fluctuation in the colour and consistence of the urine in fevers. That is to say, regular diurnal and septenary changes in its character, coincident and correspondent with the exacerbations and remissions of sol-lunar influence.
The periodical fluctuation in the state and appearance of eruptions, sores, and ulcers in this country, being always connected with the periodical changes of a concomitant fever, an attention to these will be no less instructive than to those of the urine; and if the periodical changes of each were regularly and accurately delineated and expressed in colours with a pencil, by a judicious and careful observer, they would form a record in medicine and surgery of a new kind; which I have no doubt, would place the whole of this doctrine upon the basis of ocular demonstration, and afford to the most incredulous and inattentive perfect conviction of its truth.

IV. Deviations from the prevailing tendencies of Fevers during the periods of the Springs and Neaps.

Although the general theorem, which I have advanced in the preceding pages, describe the prevailing tendencies of fevers during the springs and neaps, it is necessary to observe, that those tendencies are liable to frequent and remarkable deviations from the various stages that the moon may happen to occupy on her own orbit; by which her distance from the earth may be considerably increased or diminished; and consequently her power.

From observations lately made at the General Hospital at Calcutta by Mr. James Howison, Doctor John Campbell, and Doctor John Fullarton, it appeared that the moon during the period of her greatest horizontal parallaxes had sufficient power to suspend, in a very conspicuous manner, the common tendency of the neaps to produce a remission of fever. And when the greatest horizontal parallaxes happen to coincide with the power of sol-lunar influence during the springs, we may
reasonably infer that the power of exciting and supporting paroxysms must then be considerably raised above its usual force.

Besides the deviations that may arise from this cause, it is also reasonable to suppose, that the state of febrile paroxysms must be occasionally affected by every other change or perturbation of the moon's influence; but these are less remarkable, and have not been as yet ascertained by accurate observation.

V. Of the state of Fevers in India, during the Equinoctial Periods.

I am now come to take notice of the remarkable appearances observed in fevers about the vernal and autumnal equinoxes. On this subject I have received from others very little information; but I have not been inattentive myself to those periods; and can pronounce with confidence, although my observations have not been recorded with regularity, that fevers are apt to occur more frequently, and with greater violence about both of those periods, than during the intervals either of summer or winter.

From these observations I was induced many years ago to advance, that the power of sol-lunar influence was considerably greater during the equinoctial periods than during the intervals either before or after them. It has therefore lately afforded me considerable satisfaction to discover in De La Lande's astronomy, that De La Place has determined, from a very large collection of observations made by De La Lande himself, that the tides at Brest, about the time of the equinoxes,
rise at a medium two feet higher than at the time of the solstices*. This discovery is agreeable to the general law of attraction; and it is not to be supposed that the influence of the sun and moon under the tropics, acts with a force inferior to that which produces this difference in the height of the tides on the northern shores of Europe.

How far sol-lunar influence affects the fevers of the higher latitudes of the globe, is a question that does not come within the scope of this enquiry. The annexed table, however, extracted from Dr. Currie, of Liverpool's medical reports on the effects of the water, &c. page 230, points so strongly to this subject; and is so immediately connected with the present article, that I could not resist the temptation of giving it a place; conceiving that it may become a stronger inducement to observation than any admonition or exhortation that I could offer.

Dr. Currie's table was formed by him to shew the number of typhus fevers admitted into the Liverpool dispensary in the course of seventeen years: and the admissions in that space of time amounted to no less than 48,367.

The great majority of patients admitted in the months of the spring and autumn, which I have denominated the equinoctial periods, compared with those admitted in the months of summer and winter, which I have called the inter-equinoctial intervals, cannot fail to attract the notice of every observer.

Without attending to fractions, we obtain from the facts established in this record, the following statement of admissions.

For the mean of the equinoctial period, ... 12,980
For the mean of the inter-equinoctial intervals, ... 11,232
For the common mean of those periods and intervals, ... 12,091
For the rise of the equinoctial mean, above the common mean, ... 889, say $850 = \frac{1}{14}$
For the fall of the inter-equinoctial mean, below the common mean, ... 859, say $850 = \frac{1}{14}$

Those facts, expressed in other terms, amount to these;

1st. That whilst the temperature of the season in the spring was passing from cold to hot the number of typhus fevers rose about $\frac{1}{14}$ above the common standard.

2dly. That whilst the temperature of the season in the autumn was passing from hot to cold, the number of typhus fevers rose in like manner about $\frac{1}{14}$ above the common standard.

3dly. That during the months of summer, when the heat of the season is greatest, the number of typhus fevers fell beneath the common standard about $\frac{1}{14}$;—and

4thly. That during the months of winter, when the heat of the season is least, the number of typhus fevers fell in like manner below the common standard in the same proportion, about $\frac{1}{14}$. 
INFLUENCE IN THE FEVERS OF INDIA, &c. 17

That the number of fevers should increase equally during the transition from cold to hot, as from hot to cold, and under the two opposite extremes of permanent heat and permanent cold, should equally diminish, are facts that are no doubt curious. At present, however, I mean only to suggest, that, if the theory of sol-lunar influence should ever be admitted in Europe, those phenomena, apparently so very repugnant, may all be reconciled and referred to one common cause, without involving the smallest inconsistency or contradiction.

VI. Testimonies respecting the effects of Sol-Lunar Influence in the Fevers of India.

As it is impossible on this occasion to detail at full length the various observations and arguments from which I have been led to adopt this theory, it is necessary to state, that it has not been taken up rashly; that it is now submitted to this Society after the observation and reflection of thirty years; and that it is confirmed, in its most essential points, by the concurring observations of a large body of respectable gentlemen, whose names are contained in the following list. And it is flattering to me to add, that Lord Teignmouth, who was then Governor General, conceiving that the correspondence of those gentlemen on this subject promised to be publicly useful, ordered my treatise, containing their letters, to be printed and circulated at the expense of government.

Besides establishing unquestionable evidence of the general influence of this law in Bengal, these testimonies serve also to correct a very erroneous notion advanced respecting sol-lunar influence by Doctor Lind, by shewing that its effects in fevers
are no less manifest at the distance of many hundred miles from the highest reach of the tides, than at Calcutta, and other parts of Bengal, to which the tides flow daily. The distances marked in the column, appropriated to that purpose, are very nearly the number of miles in a direct line between the places where the observations were made, and the utmost reach of the tides at the springs. Doctor Lind's theory made me anxious to ascertain these distances with precision; and the Military Surveyor General was so obliging as to direct it to be done at his office.

<table>
<thead>
<tr>
<th>CORRESPONDENTS.</th>
<th>Resident in India.</th>
<th>Stations.</th>
<th>Distance from high water.</th>
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</thead>
<tbody>
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<td>Lieutenant L. Hook,</td>
<td>10</td>
<td>Rammagur,</td>
<td>865</td>
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<td>Lieutenant A. Black,</td>
<td>13</td>
<td>Sylhet,</td>
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<td>Captain R. Ogle,</td>
<td>24</td>
<td>Cooch-Behar,</td>
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<td>Major James Pringle,</td>
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<td>Lieutenant Robert Cumming,</td>
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<td>Lieutenant S. Sinclair,</td>
<td>14</td>
<td>Ditto,</td>
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<td>Mr. Adam Burt, Assistant Surgeon,</td>
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<td>Captain George Wood,</td>
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<td>Mr. James Wilson, Surgeon,</td>
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<td>Rohilcund,</td>
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<td>Colonel George Deare,</td>
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<td>Captain Richard Grueber,</td>
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The information sent to me by those gentlemen, was all of it received in the space of a few months, in consequence of a circular letter, requesting observations on this subject, and on any side of the question, from those who might be inclined to give it. Several of those gentlemen I had never seen in my life; and with many I had the honor only of a slight acquaintance. Had I continued longer to collect testimonies, I am confident, that notwithstanding the diffidence and reluctance with which people commit themselves upon a topic of this kind, that I might have obtained in direct proof of sol-lunar influence, a much larger body of evidence than is to be found in any single record in direct proof of the tides of the sea.

The order for printing and circulating my treatise on sol-lunar influence, along with my correspondence on this subject, at the expense of government, is contained in the following letter.

To Doctor FRANCIS BALFOUR.

PUB. DEPT.

Sir,

The Governor General being always disposed to encourage the servants of the Company, in instances of publications that promote science, or are calculated to do a general service, directs

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<tr>
<th>CORRESPONDENTS</th>
<th>Resident in India</th>
<th>Stations</th>
<th>Distance from high-water, Miles</th>
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<td>Major Dickson,</td>
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<td>Cooch-Behar,</td>
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me to inform you, that the expense of your publication, entitled "a Treatise on Sol-lunar Influence," will be defrayed by government.

You will therefore be pleased to circulate copies of this work to the different parts of the country where you think it will be useful; and likewise transmit twenty copies to this office, to be forwarded to the Honorable Court of Directors.

I am, Sir, &c.

(Signed) C. SHAKESPEAR, Sub-Secretary.

CALCUTTA, COUNCIL CHAMBER,
the 7th April, 1794.

To accumulate testimonies of the remarkable effects of sol-lunar influence in India is now almost superfluous. In the western parts of India it is no less generally acknowledged than in Bengal: and I shall conclude this article with an extract from a letter which I received some months ago, from a gentleman high in the medical line at Bombay; and no less so in the opinion of the public. His name however I forbear to publish, not having previously asked for his permission.

"BOMBAY, 6th May, 1801.

"The influence of the moon on the human body, has been observed in this part of India by every medical practitioner. It is universally acknowledged by the doctors of all colours, of all castes, and of all countries. The people are taught to believe it in their infancy; and as they grow up, they acknowledge it from experience. I suppose that in the northern latitudes this power of the moon is far less sensible than in India; and perhaps less so in Bengal than in our neighbourhood. We here universally think that the state
of weakly and diseased bodies, is much influenced by the motions of the moon. Many people know the very day on which their intermittent fevers will make their appearance; and every full and change increases the number of the patients of every practitioner. It is no argument against this influence, that diseases appear during every day of the month. The human body is subject to alterations from a thousand external circumstances, and from many affections of the mind. These lay the foundation of disease at every period; but they do not overthrow the evidence of lunar influence: although they are apt to mislead with regard to effects that depend on that alone. That the human body is affected in a remarkable manner by the changes of the moon, I am perfectly convinced, although I cannot constantly pretend to see the operation of the general law; nor to account at all times for its perturbation; and agree in thinking that an attention to the power of the moon is highly necessary to the medical practitioner in India.*

VII. Of Securing and Extending our knowledge of Sol-Lunar Influence.

As those discoveries regarding the effects of solunar influence lead unavoidably to new ideas re-

* Having neglected to apply to the author of this letter for his permission to give his name to the public; and being very unwilling to deprive the doctrine of lunar influence of the support, which it cannot fail to derive from such an evidence, I will now venture to discover, that he is no other than Doctor Helenus Scott, of Bombay. From the information of Doctor Hutton, who resided many years as Surgeon at Penang; and of Mr. James Lumsdaine, Surgeon for a number of years at Fort Marlbro'; I have now, also, the satisfaction to know, that solunar influence shews its effects in a very conspicuous manner in the prevailing diseases of those islands; and that an attention to its laws, is of great importance on conducting their cure,
pecting the nature and cure of fevers, it has become an object of real importance: first, to secure the knowledge we have already obtained of this principle; that it may not succumb to any illiberal attempt to suppress or smother it, by representing it as insignificant and useless; or by ascribing to it, the wild and groundless delusions of astrology: secondly, to render the road to future observation and further discovery more easy and accessible, by removing the almost unsurmountable obstacles that present themselves, in the intricacy and labour of astronomical investigations: and thirdly, to render our knowledge of it so precise and well defined, that it may assume the form and attributes of real science, by furnishing precepts for the purpose of applying it to the improvement of useful arts.

1st. To place this theory on a firm and secure foundation, I shall follow the example of the learned Abbe' Mann, in his observations on the flux and reflux of the atmosphere*: and shall assume it as a principle requiring no further demonstration than what it has already received from astronomy, that the influence of that attraction, which regulates the motions of the planetary system, is continually and without ceasing exerting itself, in a proportionable degree, on every particle of this globe; and that it cannot be otherwise.

The existence of sol-lunar influence being demonstrated by astronomy, its action on the human frame is no longer a matter of doubt; and the only question that we have to consider is, not whether that power does actually exist, but whe-

REMARKABLE EFFECTS OF SOL-LUNAR

er it manifests itself by the signs of any obvious effect or change in the human constitution.

With respect to this important question, I shall content myself with stating in a very few words, that all the observations I have made myself, together with those that have been communicated by other gentlemen, concur to prove, not merely that sol-lunar influence manifests itself by evident effects upon the human constitution, but that the attacks, exacerbations, remissions, postponings, and relapses, of the paroxysms of fevers, which comprehend the whole of the evidence that is necessary to constitute a complete demonstration, are, in a wonderful manner, coincident in time, and correspondent in degree, with the periodical changes that take place in the power of sol-lunar attraction. To reject, therefore, those accumulated proofs of its actual operation and efficiency, is to violate the principles and rules, by which we infer the existence of a connection or cause, in every question of philosophy, or common occurrence of life.

The proof of regular changes in the atmosphere corresponding with the revolutions of lunar attraction, being now established by the discovery of a regular diurnal, and a septenary flux and reflux in the mercury of the barometer, coincident with the diurnal and septenary revolutions of the same power, the theory of sol-lunar influence in fevers receives from this event all the support that can be derived from a fair analogy: and it may be inferred with reason, that changes such as these in the element in which we breathe and move, are not likely to take place without corresponding perturbations in the human frame.
The existence of a *diurnal* flux and reflux in the mercury of the barometer, is now sufficiently established by the observations of Father Boudier,* at Chandernagore; of Mr. Trail, Mr. Farquhar, and Colonel Peirce, at Calcutta; and those which appear in my treatise, on the barometer, inserted in the fourth volume of the * Asiatic* Researches; and on the Coast of Coromandel, by the observations of Doctor Roxburgh†. On the other side of the globe, they have been observed in *South America*‡; and the *West Indies*||; and also at different places in *Europe§*.

The proofs of a *septenary* flux and reflux, in the mercury of the barometer, is confirmed by the observations of Mr. Toaldo, Father Cotte, and others; but still more pointedly by those lately made in *England* by Mr. Howard, to be found in a paper read before the *Askesian Society* in *London*, and published in the seventh volume of the Philosophical Magazine.

Such is the support and security which the doctrine of sol-lunar influence in fevers derives from evidence *direct* and *analogical*. From the sublime discoveries of Lavoisier respecting the composition of the atmosphere it receives protection of another kind. In the present imperfect state of our knowledge regarding the component parts of at-

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* Traité de Meteorologie, par Le P. Cotte, page 343.
† Vide the Transactions of the Royal Society, Vol. ———
‡ Traité de Meteorologie, par Le P. Cotte, page 399.
|| Doctor Moseley’s Treatise on the Diseases of the West Indies, and Le P. Cotte.
§ At Berlin, by M. Changeux, *vide* Traité de Meteorologie, par Le P. Cotte, page 618, at Padua; by Mr. Toaldo and his Nephew, *vide* Traité de Meteorologie, par Le P. Cotte, page 616, &c. &c.
mospheric air, and the mode of their combination, who will presume to limit or define its connection with sol-lunar influence? Who will be so hardy and so regardless of his own reputation as to pronounce, without proof, that this influence has no power to produce any change whatever in the nature of this compounded fluid; in the smallest degree connected with useful knowledge; or necessary in any respect to be known?

2dly. For the purpose of removing the obstacles that arise from the intricacy and labour of astronomical investigations, in which those who are employed in the study and practice of medicine can have no leisure to engage, it will be sufficient to present a plain and simple idea of this power, with the common changes to which it is liable, abstracted from all the complicated circumstances by which those changes are produced: The consideration of which, though indispensibly necessary for the nicer purposes of astronomy, are by no means required for those of medicine and meteorology.

It was determined by De La Place*, in 1790, that the force of the moon to excite those perturbations that manifest themselves on the surface of our globe, by the elevation of the tides, is three, and that of the sun one. Assuming this as a foundation, we have only to conceive that those two quantities of power, sometimes assisting and sometimes counteracting each other according to the varying positions in which they are placed, produce the corresponding changes that are observed

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in the paroxysms of fevers; remembering, at the same time, that those are occasionally subject to certain perturbations of inferior consequence, from the attractions of the planets. To conceive this, is all that is required.

3dly. To render our knowledge of this principle sufficiently perfect, by giving it all the advantages of *numerical precision*, without which no physical principle can ever acquire the form and efficiency of science, it is necessary that all the various degrees of increase or decrease that sol-lunar influence is liable to undergo at various hours of the day and night, should be accurately ascertained, and expressed in numbers.

It is to attain this end that I am now led to propose the scheme of an *astronomical Ephemeris* for the purposes of medicine and meteorology, containing a column for the *horal variations* of sol-lunar power both day and night, ascertained and expressed with all the precision that can be obtained.

The perturbing force of the moon being found by De La Place to be three, and that of the sun one; and four, therefore, being the whole of the perturbing power with which they can act upon this globe, we shall obtain by dividing this sum into forty parts or degrees, a scale sufficiently extensive and minute for expressing all the different degrees that can possibly occur.

By means of this *Ephemeris*, every phenomenon that appears being instantly and easily compared with the existing corresponding degree of sol-lunar power, certain general truths will at length be obtained, respecting its agency and interference in
the different processes of nature, and operations of art. We shall ultimately discover where it assists, where it counteracts, and where it produces no effects at all; precepts and cautions will thence arise to direct our conduct: and thus assuming the real character and office of science, it will become an instrument of improvement and perfection in the useful occupations of life. In our native country the respectable tradesmen, who are employed in the important national concerns, of supplying our fleets destined for distant voyages and warm climates, with wholesome and durable provisions, are often unaccountably disappointed in the quality of the different articles which they provide. Perhaps they may discover that all the days of the month are not alike favourable for the important processes of brewing, and baking, and of preserving meat. And perhaps abroad, the manufacturers of indigo, sugar, saltpetre, and opium, may find out hereafter, that the success of their different operations are not altogether unconnected with certain periods of time.

To those who are proficient in astronomy it will readily occur, that the construction of an Ephemeris, such as that which is proposed, is not merely speculative or impracticable. It will occur to them that there is no hour or division of the column appropriated to the variations of sol-lunar power, for which the precise degree or quantum of its force is not either ascertained by astronomical theorems already demonstrated, or readily deducible from such demonstrations. On those gentlemen, whose studies have qualified them, and whose zeal may incline them, from a sense of its utility, to complete the construction of this instrument, I must for the present rest my hopes. My own imperfect knowledge of astronomy, and the precarious state of my health, render me at this time totally unequal to such an exertion.
CONCLUSION.

In concluding this paper, I hope it will not be deemed disrespectful, if to prevent future mistakes, I should take this opportunity of declaring explicitly my own sentiments respecting the result and success of these investigations.

"Having discovered the laws of febrile paroxysms, and having marked their course and periods in a manner that was never explained or done before, I conceive that I have been able to unfold a history and theory of fevers entirely new; consistent with itself in every part, and with the other appearances of nature; perfectly conformable to the laws discovered by the immortal Newton; and capable of producing important improvements in medicine and meteorology."

Should these pretensions prove groundless and visionary, having submitted them to this Society, I shall at least obtain the credit of having sought investigation. If they be fair and just, the harmless vanity of proclaiming them will not obliterate all their merit.

EXPLANATION OF THE TABLES.

Of all the phenomena that occur in the contemplation of animal nature, it will be readily acknowledged, that the paroxysms of fevers are the most interesting to mankind. The history of every age declares the dreadful desolations they have made in every country; and by far the greatest portion of the human race continues to be swept away by this terrible disease.
REMARKABLE EFFECTS OF SOL-LUNAR

The cause, however, that produces these remarkable effects, and determines the paroxysms of fevers to appear in different cases in various order and succession, constituting fevers of different types; and that again which determines different types to come to an end after certain intervals of time, forming these into fevers of different durations, are questions which have hitherto defied the research of physicians; and cannot be explained, except by the laws of sol-lunar influence.

TABLE I.

Explains the Types of Fevers.

The different types that occur in fevers are formed by febrile paroxysms continuing to return in succession for a certain number of days, at an interval of twelve, twenty-four, and forty-eight hours; or some other larger multiple of twelve hours; and almost invariably in coincidence with the period of the tides. The types of fevers, therefore, are formed by the action of sol-lunar influence producing paroxysms in coincidence with the periods of the tides, at the intervals I have described; and differ from each other, only in so far as their paroxysms return in succession at intervals formed by different multiples of twelve hours.

To convey a general idea of this discovery, I have constructed Table I, observing that it applies to explain all the types that I have ever met with in India; and agrees perfectly with the types that are described by other authors. The first of these examples, from the perfect coincidence of its paroxysms with the period of the tides, I have called a perfect type; and all the others, from their imperfect coincidence with those periods, imper-
fect types. But as the paroxysms of the imperfect types, after the commencement of the neaps, are generally disposed to become less distinct in their form, and therefore not so easily reducible to the figure of a diagram, I have confined my representation of types to the period of the springs; when the paroxysms or fevers happen towards the middle of the day and night; and are most regular and distinct.

1st. Days are represented by the divisions of the horizontal lines of the table.

2dly. The paroxysms of fevers are represented by dots placed above and below these lines.

3dly. Single dots above the line represent single paroxysms happening towards the middle part of the day, and are pointed out by the letter d (for diurnal) placed at their beginning on the left.

4thly. Single dots below the line represent single paroxysms happening towards the middle part of the night, and are pointed out by the letter n (for nocturnal) placed at their beginning on the left.

5thly. Two dots in one division, the one above, the other below the line, denote a diurnal and nocturnal paroxysm on the same day.

6thly. The different successions of dots on the different horizontal lines of the table, proceeding from the beginning of the line on the left to its termination on the right, exhibit examples of various successions of paroxysms; constituting specimens of different febrile types that occur daily in the course of nature.
TABLE II.

Explains the Durations and Crises of Fevers.

Fevers of all the different types that are produced in the manner described in Table I. are limited to forms of different durations, by the remarkable remission which takes place in the power of sol-lunar influence on the commencement of the neaps; and which brings them at these junctures to a termination, or crisis, whenever the state of the body is sufficiently disposed to concur in that event. This is illustrated by the variations produced in the duration of perfect types as exhibited in this table; which will also serve, without any other diagram, to give an idea of the variations produced in a similar manner in the durations of types that are imperfect.

1st. Days are represented by the divisions of the horizontal lines of this table.

2dly. The paroxysms of fevers are represented by dots placed above and below these lines.

3dly. Single dots above the lines represent single paroxysms happening towards the middle part of the day, and are pointed out by the letter d (for diurnal) placed at their beginning on the left.

4thly. Single dots below the line represent single paroxysms happening towards the middle part of the night, and are pointed out by the letter n (for nocturnal) placed at their beginning on the left.

5thly. Two dots in one division, one above the line, the other below, denote a diurnal and nocturnal paroxysm on the same day.

6thly. The successions of dots on the different horizontal lines of the table, proceeding from the beginning of the line on the left to their termination on the right, represent the different successions of paroxysms that occur in fevers of a perfect type, (or what are commonly called con-
influenced fevers,) which ceasing on the commencement of the neaps, constitute different durations of perfect types; and those will serve also to give an idea of the variety that may be produced in a similar manner in the duration of types that are imperfect; commonly called remitting and intermitting fevers.

7thly. Although single paroxysms will appear from the disposal of the dots in this table to be confined to the neaps, and double paroxysms to the springs, it must however be understood, that this is not always rigidly or invariably true; and they are represented here in this manner, only to denote their general and prevailing tendency and course; which must always be liable to certain deviations, not only from uncommon perturbations in the state of sol-lunar influence itself; but also from the usual and regular action of this influence happening to exert itself upon extraordinary degrees of paroxysmal propensity.

8thly. The daily postponing of the paroxysms cannot be easily represented on a fixed or immovable diagram of this kind. But the effects which it has of shifting their accessions from night to morning, about the middle of the neaps, is denoted by shifting the single dots, that represent the paroxysms at this time, from the nocturnal to the diurnal side of the line. The postponing of the paroxysms is a phenomenon that has been too little attended to in the history of fevers.

EXPLANATION of TABLE III.

This is the second Table in Doctor Currie's Medical Reports on the effects of water, &c. arranged agreeably to the doctrine of sol-lunar influence.
In order to accommodate it to this idea, the column of the January and February admissions are removed from the left to the right-hand side of the Table; so as to bring all the three months of the winter interval together, and to preserve the natural order in which the admissions followed each other, the whole of these two columns is raised one step higher: so that the January and February admissions of 1781, are brought upon the same line with those of December 1780, and therefore follow them, in this Table, as they really occurred; and so also with all the rest.

By this arrangement the admissions of January and February 1780, are thrown out of their proper place at the top of their respective columns, but are inserted at the bottom; and thus fill up the vacancies that were occasioned by raising the columns in the manner described; and by this means the amount of these columns is preserved the same as in the original Table.

The elevation, however, of the January and February admissions above the lines in which they stood in the original Table, makes a small alteration in each of the annual amounts; but as that does not alter the sum total, nor affect, in the smallest degree, the present question, it is of no consequence.
Illus. Paroxysms at various intervals, in

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In which the Interval between each Paroxysm is

- 12 hours, and called a *Perfect Type*.
- 24 hours, 48 hours, 24 hours, and called *Imperfect Types*.
- 36 hours, 48 hours, 48 hours, 72 hours,
- &c.
### TABLE I.

Illustrates the Formation of the different Types of Fevers, by the succession of their Paroxysms at various intervals, in coincidence with the Periods of the Tides.

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| PAROXYSMS. | 1. A Type formed by a Diurnal and Nocturnal Paroxysm returning every day | 24 hours, |
|            | and called a Perfect Type. | 12 hours, |
|            | 2. A Type formed by a Diur. and Noct. Par. every 3d day, and a Noct. Par. the intermediate day | 24 hours, |
|            | 3. A Type formed by a Diur. and Noct. Par. every 3d day, the intermediate day free | 48 hours, |
|            | 4. A Type formed by a Diurnal Paroxysm only returning every day | 48 hours, |
|            | 5. A Type formed by a Nocturnal Paroxysm only returning every day | 24 hours, |
|            | 6. A Type formed by a Diurnal and Nocturnal Paroxysm returning alternately every day | 36 hours, |
|            | 7. A Type formed by a Diurnal Paroxysm returning every 3d day | 48 hours, |
|            | 8. A Type formed by a Nocturnal Paroxysm returning every 3d day | 48 hours, |
|            | 9. A Type formed by a Diurnal Paroxysm returning every 4th day | 72 hours, |
|            | &c. &c. &c. |

N.B. The 1st is a Type common in Bengal, in the Typhus and beginning of Remitting Fevers. The 2d is the Triple Tertian of Cleghorn, page 142. The 3d is the spurious simple Tertian of Cleghorn, page 140. The 4th is the common Quotidian everywhere. The 5th is also a Quotidian which I have seen often in Bengal. The 6th is the double Tertian of Cleghorn, page 141. The 7th is the true simple Tertian of Cleghorn, page 140. The 8th is another Tertian which I have seen often in Bengal. The 9th is the common Quartan everywhere. &c. &c. &c.
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Using Fevers of 22 Days Duration.

Less Common Durations.
**Table II.**

Illustrates the formation of the different **Durations** of Fevers by the Ceasing of their **Paroxysms**, in coincidence with the Commencement of the **Neaps**.

<table>
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<th>NEAPS</th>
<th>SPRINGS</th>
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<td>Days 1 2 3 4 5</td>
<td>1 2 3 4 5</td>
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**Least Common Durations.**

**Constituting Fevers of Days Duration.**

**Common Durations.**

**Less Common Durations.**

$&c. &c.$
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TABLE III.

Demonstrates the Periodical Increase and Decrease of Fevers, in coincidence with the Equinoctial Periods and Interequinoctial Intervals, at Liverpool in England.

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II.

Extract from a Journal, during the late Campaign in Egypt.

By Captain C. B. Burr.

About three miles to the westward of Ginnie, on the opposite side of the Nile, are situated the ruins of the ancient temple of Isis, now better known to the Arabs by the name of Dendera; being a corruption of Tentyris, which name was once borne by a city, of which the present temple is all that remains to denote its former splendour. That part which still exists, is surrounded by such heaps of rubbish, broken walls, and fragments of an Arab village, long since mouldered on its parent ruins, that little is perceptible in approaching, except five clumsy pillars forming part of a detached temple at some distance from the gate, with which it is in a right line, though now separated by a tank, filled by the inundation of the Nile. These columns are connected at their base by a stone wall in which there appear to have been eight, one at each corner, and one on either side of an entrance in front and rear of the building; which is about forty feet long, and possessing nothing worthy attention.

Beyond this, on the summit, and partly buried in the mound of rubbish, is a gateway much ruined on the side we approached from, but whose internal face is an object of peculiar admiration: its high state of preservation, the excellence of its sculpture, the simplicity of the style, the excellent execution of the figures, chiefly female, the hieroglyphics, and other ornamental parts, excited my surprise beyond what I had expected or thought.
possible. It is probably rather an advantage to the temple, its being so surrounded with ruins as to be secreted till you approach sufficiently near, to receive a more perfect impression of its beauties. The rubbish, however, with which it is choked up, confines the sight too much, and almost precludes the possibility of viewing the building with so good an effect as would arise from a greater choice of situation on the part of the spectator. Passing this gateway, the passage through which is also beautifully sculptured, we reached on the right hand a temple, surrounded by a gallery still entire, though almost buried; the whole ornamented with a variety of figures, surrounded with hieroglyphics, which doubtless explain the meaning of the various objects, some human, others of a less definite nature; the workmanship is in very great preservation, but the gallery so filled as to prevent our standing erect, though the body of this temple, into which we descended, was near thirty feet in height, covered with large slabs of stone. The entrance to this edifice is through a corridor supported on pillars almost buried in the ruins.

The grand temple, retired from the gateway about fifty yards, presents a front of one hundred and forty feet at the base; at least what is now the ter-plain: and about sixty feet in height, the rest being invisible. This part is in the most perfect state; the fillet, torus, and almost every ornamental part, save what the bigotry of the Arabs has induced them to deface, being in excellent preservation. In the centre an entrance of nineteen feet leads into a peristyle divided by three rows of columns on either side of twenty-two and a-half feet circumference, the front row connected to each other, at their bases, by a wall; which, from a part that has been cleared
away by the Savans to ascertain the elevation of the building; exceeds ten feet in height; from the top of this to the entablature of the columns, the space is left open; within are nine pillars to the right and left, (tallying in size and design with those in front,) that support the roof of the peristyle; which is ornamented in the most beautiful style, with a vast variety of figures, and representations of aquatic scenes. Many groups of men and beasts are here represented; some perfectly of a terrestrial and familiar nature, others allegorical, amongst which is a fine figure of a bull butting at the new Moon. The dresses, the utensils, canoes, and many of the articles of the domestic oeconomy of the ancient Egyptians, are herein represented in the most minute and pleasing manner; and the entire state of these figures, not only in shape, but colouring, conveys the most perfect idea of the habits of the times. A vast resemblance exists in the dresses with those at present worn in India; the cholie of the women, the moond, and many others, claiming a direct comparison. It has often struck me, and never more forcibly than in contemplating this temple and its sculptures, that there must have existed a much greater affinity in the customs of, and of course a more friendly intercourse amongst, the nations of the East formerly, when they pursued one system of worship, than since the introduction of Christianity and Mahometanism; which, by generating the most rooted and inveterate prejudices, have estranged the affections of mankind from those, whom no political difference could ever have affected. Of this we had an example even amongst the present inhabitants, who, regarding us as infidels, hate us, though we came as friends. Their dislike, however, they found it prudent to conceal; but they were not equally reserved with respect to the Hindoos, whom they often expressed their abhorrence of. This detestation of Paganism has in-
duced them, and doubtless been their sole motive for taking so much pains, to mutilate every figure of Isis, whose features are chiselled out; and many of the other figures, whose situations were not so elevated as to preserve them from the destructive contact of the Arab, have suffered almost perfect annihilation. All beyond it, however, are extremely perfect, and the whole ceiling, with one or two trifling exceptions, is entire; the capitals of the pillars are square, each face having had a representation of Isis's head on it, which, though so roughly handled, the turban has in no instance been destroyed, and the colouring of it, the bandeaus, and other decorations, are still in the greatest perfection. The stone of which the temple is built is a kind of freestone. As this would not receive either polish or paint, figures and hieroglyphics, with which every part of the peristyle, both internally and externally, is covered, have, in the interior, been plastered over with a fine cement, which has not only received a polish that has stood the test of ages, but has retained the brilliancy of the tints, particularly the blue, in a manner almost incredible. The mystic symbol of the winged Orb, of which reiterated representations decorate the ceiling of the central division of the peristyle, extending entirely across, bears the brightest hues; the same mysterious type adorns the entablature over the entrance, and the interior face of the same part of the gateway; the walls are covered with various sculptures, representing different parts of the history of Isis, one or two of the principal figures in each, being evidently the same, though each compartment into which the wall is divided, represents some separate event: but above the head of Isis, on each of the sides of each column, the two central front ones excepted, is the Deity's birth, without variation, all most elegantly executed, and exact counterparts of each
other. The interior length of this peristyle is one hundred and twenty-three feet, and sixty-four deep; the walls, at either end, near nine feet thick, decreasing externally as they ascend; the slabs of stone forming the roofs, are over the centre columns, twenty-five feet long, about six broad, and extremely thick.

Hence, by a large portal of elegant architecture, we entered the vestibule, the roof of which, considerably lower than that of the peristyle, is supported by six pillars, three on either side; their decorations much mutilated: the little that is visible, shews them to be fluted. This room is about half the length and breadth of the outer one, but being nearly filled with rubbish, we passed through another large door, into a room of the same length and height, but narrow enough to admit of large slabs reaching across without the intervention of pillars. Apertures are cut in the ceiling to admit air and light; and a passage or door, to the right and left, leads to other parts of the temple. Facing the door where we had entered, is another which led into a third room rather larger, and lighted in like manner from above; from these there are four doors leading to different parts of the building, to the right and left; and a portal facing that by which we had entered, which led us into a dark recess about thirty feet long, and twenty-five broad, whose roof in like manner consisted of transversal slabs. This probably was the great sanctuary, at the further extremity of which was a hole, through which we were enabled to descend into a vault, which, like the rest of the apartments, is nearly filled with earth. We, however, ascertained by our lights, that the floor above was formed of numerous small slabs of stone cemented to each other, and destitute of any other support than what they derived from the judicious manner in which they were united.
turning hence, after visiting some rooms to our right, we went through a passage to the left that led to an apartment, where we in vain endeavored to maintain our ground against a host of bats, that finally obliged us to resume the course of this passage, which led by many steps of easy ascent, and many windings round their centre, to the summit of the temple; in approaching which it branches off to the right and left, the latter opening to a corridor, within which was a sanctuary, through the floor of which a perforation afforded light to a part of the temple which had not fallen under our observation. On the ceiling of this corridor, which is about twenty feet long, and half that breadth, is a curious female figure sculptured in relief, represented in a bent, extended posture. The limbs, though disproportioned, are particularly beautiful: it is in the highest preservation, and worthy peculiar attention. By some steps projecting from the rear of the peristyle, we ascended to its summit, whence we commanded a fine view of the country, Ginnie, our camp, and the meanderings of the river; in our rear was a spacious burial ground; beyond an extensive desert. The intervening distance to the Nile was covered with rushes, and a thorny weed which gave the country a verdant appearance, and supplied the place of a luxuriant cultivation. The numerous villages, each shaded by its grove of dates, afforded a faint conception of an Indian scene, but the sterility of the neighbouring deserts that bounded the contracted landscape, forbade the indulgence of the pleasing comparison.

On the slabs are cut the names of several French travellers, who visited the place in 1779, and one of a democrat, dated the year eight.

Leaning over the temple, I discovered, on the
THE LATE CAMPAIGN IN EGYPT.

fillet, a Greek inscription in a state of great preservation, which I transcribed, and afterwards revised from below; unfortunately the information it conveys is trifling, and the obliteration of a part prevents its being of that utility I had at first anticipated.

Though we had ascended by the stairs, the mound of ruins on one side presented a more ready descent; and industriously profiting of the moment, we lost no time in completing our observations.

The French have been digging round, and within the temple, in different places, to ascertain its dimensions, and we were indebted for our access to many of the rooms, to the pains taken by them to discover their entrances; for which purpose they have removed a great deal of rubbish. The whole exterior of the temple is in perfect preservation, except the defacement which many of the figures within reach have suffered. On the south and west faces are some very elegant spouts for carrying off water, issuing from the mouths of couchant lions, decorated with rams-horns. The whole summit of the temple is disfigured by heaps of rubbish, and fragments of walls, as also the mounds which surround it, which probably owe their existence to a colonade, or some range of buildings with which it was enclosed, and which are now buried. To the southeast, at some hundred yards distance, is a ruined gateway boasting little beauty; it is situated at the foot of the eminence on which the temple is built, and being almost beyond the range of the present ruins, might have belonged to some other edifice. Some wretched Arabs, who employ themselves in digging amongst the ruins, brought us a few Roman coins, which we purchased.

Though we had been several hours in contem-
plating the beautiful monument before us, yet we had conceived but an inadequate idea of its varied perfections; so many objects occurred to arrest our attention, each discovering some peculiar attraction, that it would have afforded ample occupation during our remaining stay at Ginnie, to have bestowed on each the consideration they merited; a circumstance which greatly damped the anxiety I had before felt to visit Thebes, where such an infinity of matter presents itself to the inquisitive traveller.

Our Indian followers, who had attended us, beheld the scene before them with a degree of admiration bordering on veneration, arising not only from the affinity they traced in several of the figures to their own deities, but from their conviction of its being the work of some Ráceshas, who they conceived had visited the earth to transmit to an admiring posterity a testimony of supernatural talents.

I shall dismiss this subject by observing, that though the contemplation of these surprising monuments of the genius of the ancient Egyptians creates a high idea of their civilization, and respect for their antiquity and progress in arts, it is obvious they are greatly indebted to a beneficent providence, which by placing them in a temperature, where the frequent and sudden transitions of climate seldom if ever occur, has given to their works a permanence they could never have derived from the combined power and art of man; though it must be allowed, that, notwithstanding the apparent aridity of the atmosphere, owing to the almost perpetual absence of rain, the exhalations* from the circumjacent in-

* It is an opinion in Egypt, that the fall of these dews, not only averts the plague, but cures those who are affected with it.

N. B. Sonini, in vol. III, of his Travels in Egypt, gives very correct delineations of some of the most remarkable sculptures of this temple.
undation are so great as to occasion, at one period of the year, a humidity little inferior to that which would proceed from actual immersion; and which in their consequences would equally affect that brilliancy of colouring which has stamped a characteristic pre-eminence on these chef d'œuvres.

TO ROBERT HOME, Esq.

Secretary to the Asiatic Society.

SIR,

THE ingenious and learned author of the inquiry into the life and writings of Homer speaks of abstracted mythology, as the result of great search and science: being a comparison of the harmony and discord; the resemblance and dissimilitude, of the powers and parts of the universe, it often consists of their finest proportions and hidden aptitudes, set together and personated by a being acting like a mortal.

It is from this and similar observations of this instructive writer, and from the history of the Heavens by the Abbe Bluche, that I have been led to investigate the mythology of India; and to apply their mode of reasoning to a system which has generally been considered as a heap of wild and extravagant fable.

In fact we must view the images of India in the light of hieroglyphics, and endeavour to develop the allusion: this is the object of the accompanying attempts; but I only offer my conjectures; I insist upon no hypothesis.

If these essays should be deemed acceptable by
the Society, it will be an inducement to me to continue the research.

I am, Sir, your obedient Servant, J. D. PATERSON.

DACCA, the 4th January, 1803.

III.

Of the Origin of the Hindu Religion.

BY J. D. PATERSON, ESQ.

The Hindu religion appears to me to have been originally a reform of existing systems, when the arts and sciences had arrived at a degree of perfection; that it was intended to correct the ferociousness and corruption of the times, and to reduce mankind to an artificial order on a firmer base of polity; that it was the united effort of a society of sages, who retained the priesthood to themselves, and rendered it hereditary in their families, by the division of the people into separate casts; that it was supported by the regal authority, which, while it controlled, it supported in return: that it was promulgated in all its perfection at once as a revelation of high antiquity, to stamp its decrees with greater authority; and that it was founded on pure Deism, of which the Gayatri, translated by Sir WILLIAM JONES, is a striking proof; but to comply with the gross ideas of the multitude, who required a visible object of their devotion, they personified the three great attributes of the deity.

The first founders of the Hindu religion do not appear to have had the intention of bewildering their followers with metaphysical definitions; their description of the deity was confined to those attributes which the wonders of the creation so loudly attest: his almighty power to create; his provi-
In fact, no idea of the deity can be formed beyond this: it is simple, but it forces conviction upon the mind. This simplicity, however, was destroyed when they attempted to describe these attributes to the eye by hieroglyphics; perhaps letters had not then been invented, in which case they could have no other mode of instruction than by signs and emblematical figures.

In order to impress on the minds of men a sense of their total and absolute dependance on him, by whom they live, and from whom they have their being, they invented the hieroglyphical figures of Brahma——Vishnu——Siva.

As emblematical of Creation——Preservation——Destruction.

These are referred to Matter——Space——Time.

And painted them Red——Blue——White.

In contrast to the black night of eternity.

To represent substance.

To represent colour.

In the apparent colour of space.

Brahma had originally five heads, alluding to the five elements; hence in one of the forms given to Siva, as the Creator, he is likewise represented with five heads. But the introduction of images soon led the mass of mankind to consider these personified attributes as real distinct personages; and as one error brings with it many others in its train, men separated into sects, each selecting one of the triad, the particular object of their devotion, in
preference to, and exclusive of the others: the followers of Vishnu and Siva invented new symbols; each to ascribe to their respective divinity the attribute of creation. This contention for pre-eminence ended in the total suppression of the worship of Brahma, and the temporary submission of Vishnu to the superiority of Siva; but this did not last long; the sects raised crusades against each other; hordes of armed fanatics, under the titles of Sanyasis and Vairagis, enlisted themselves as champions of their respective faith; the former devoted their lives in support of the superiority of Siva, and the latter were no less zealous for the rights of Vishnu: alternate victory and defeat marked the progress of a religious war, which for ages continued to harass the earth, and inflame mankind against each other.

Plutarch has said of the Egyptians, that they had inserted nothing into their worship without a reason, nothing merely fabulous, nothing superstitious (as many suppose); but their institutions have either a reference to morals, or to something useful in life; and many of them bear a beautiful resemblance of some facts in history, or some appearance in nature; perhaps in the commencement to lead mankind into superstition was not intended nor foreseen; it is a weed that springs up naturally when religion is blended with mystery, and burdened with perplexing ceremonials. The mass of mankind lost sight of morality in the multiplicity of rites; and as it is easier to practise ceremonies than to subdue the passions, ceremonies gradually become substitutes for real religion, and usurp the place of morality and virtue.

This seems to have been the case with the religions of Egypt and India.
In the course of investigating the ceremonies of the Hindus, and in attempting to develope their meaning, it will be found necessary to compare them with the ceremonies and rites of Egypt: the resemblance is striking; they mutually serve to explain each other; and leave no doubt in my mind of their connexion, or rather identity.

The annihilation of the sect and worship of Brahma, as the Iswara or supreme lord, is allegorically described in the Castechand of the Scanda Purân, where the three powers are mentioned as contending for precedence. Vishnu, at last, acknowledges the superiority of Siva; but Brahma, on account of his presumptuous obstinacy and pride, had one of his heads cut off by Siva, and his puja abolished.

The intent of this fable is evidently to magnify the sect of Siva above those of Brahma and Vishnu; and if, instead of the Devathas themselves, (who are described as the actors in this allegorical drama) we substitute the contending sects, the fable will appear not destitute of foundation in historical fact.

Of the Vahans, or Vehicles of the Gods.

When the symbolical worship was introduced, the vehicles of the new deities were necessarily allegorical: the Vahans of the three supreme personified attributes were purity, truth, and justice; the first was typified by the Suwan, which, clothed with unspotted whiteness, swims amidst the waters, as it were distinct from, and unsullied by them, as the truly pure mind remains untainted amidst the surrounding temptations of the world.
Garu'da and Aru'na are two brothers, the one remarkable for his strength and swiftness, the other (Aru'na) is described as imperfect, and, on account of his defects, destined to act as charioteer to the Sun. Aru'na is the daeen, the morning twilight, which precedes the Sun: Garu'da is perfect light, the dazzling full blaze of day, the type of truth, the celestial Váhan of Vishnu.

Justice, typified in the sacred bull, is the Váhan of Si'va. The Bull, whose body is Paraméśwara, and whose every joint is a virtue; whose three horns are the three Védas; whose tail ends where Ad'herma, or injustice begins.

Of Osiris, Horus, Typhon, and Brahma, Vishnu, and Si'va.

If we consider the Egyptian Osiris not as a name, but as a title of supremacy, which each sect, as their doctrines became in turn the established religion of the country, applied exclusively to the object of their worship; and if we consider it as the same with the Sanscrit Iswara (the Supreme Lord), it will greatly illustrate the identity of the religions of Egypt and Hindostan, by a close coincidence of historical fact. The three great attributes of the Deity had in course of time been erected into distinct Deities, and mankind had divided into sects, some attaching themselves to Brahma, some to Vishnu, and others to Si'va. The contention of schismatics from the same stock, is always more inveterate than where the difference is total, the sect of Brahma claimed exclusive pre-eminence for the object of their choice, as being the creative power, the Iswara, or Supreme Lord. The two other sects joined
against the followers of Brahëma, and obtained so complete a victory as to abolish totally that worship; the sect of Sîva, being the most powerful, rendered theirs the established religion, and claimed for Sîva, in his turn, the exclusive title of Is'wara. The sect of Vishnu, or Heri, at length emerged from its obscurity, and, in concert with the followers of the Sacti, or female power, destroyed and abolished the sect and worship of Sîva; thus Vishnu, or Heri, became the Is'wara, and his worship the established religion. This seems to have been the case in Egypt; for, if we substitute the name of Osiris for Brahëma, Horus for Vishnu or Heri, Typhon for Sîva, and Isis for the female principle, the history agrees in all its parts. A proof of the identity of Sîva and Typhon is the title of Babon. Mr. Bryant says, that "Babon was thought to have been the same as Typhon, by some esteemed a female, and the wife of that personage." One of the titles of Sîva is Bhuban, or rather Bhuvan-Is'wara, the Lord of the Universe; his consort, in this character, is styled Bhuvan-Is'wari', which may have occasioned the uncertainty mentioned by Mr. Bryant, with respect to the sex of that Deity, since Bhuvan (world), or the Universe, is a part of the title of either.

The Sun is one of the forms of Heri, or Vishnu; Osiris and Horus are both supposed to have been the Sun. The Indian expedition of Osiris coincides with the adventures of Ra'ma, one of the incarnations of Vishnu. The four months sleep of Horus tallies with the four months sleep of Vishnu.

The sacred Bull, the vehicle of Sîva, was the emblem of justice, and peculiarly sacred to him amongst the Indians; and the living animal itself

Vol. VIII.
was venerated at Memphis and Thebes, under the
names of Apis and Mnevis. The Phallos of Osiris
was an object of worship, and it is known to be the
hieroglyphic of S'tva: and lastly, Osiris, like
Brahma, is described as a great lawgiver.

If the conjecture I have set out with in this article,
be considered with attention, it will account for the
mixed character of the Grecian Bacchus.

The word Surá in Sanscrit signifies both wine and
true wealth; hence in the first C’hand of the Rá-
máyan of Valmí’c it is expressly said, that the Dé-
vatás, having received the Surá, acquired the title
of Suras, and the Daityas that of Asura from not
having received it. The Veda is represented as that
wine and true wealth; and the Dévatás as enjoying
it in a superior degree, being termed Suras: the
prince, or supreme leader of the Suras, became in
the Grecian Deity (by a confined translation of the
word), the god of wine and drunkards.

Bacchus, or Osiris, was represented by an equi-
lateral triangle; S’tva has the same hieroglyphic: the
worship of Bacchus was the same as that which
is paid to S’tva; it had the same obscenities, the
same bloody rites, and the same emblem of the ge-
nerative power.

In Bacchus may be traced the characteristics of
each of the personages in the Indian triad; and this
may be accounted for by supposing the Greeks to
have been deceived by the title Osiris; they, con-
sidering it as the name of an individual, mingled
the characters and adventures of all the three in one
personage. Bacchus may possibly be derived from
a title of Vrihaspati, Vá’c-I’s’a, the lord of
speech, which might be applied to Brahmas the
husband of Saraswati, the goddess of speech. The Greeks called him Bromios, as Sir William Jones says, without knowing why; and he was styled by the Romans, Bruma: his feasts were celebrated for several days at the winter solstice; from him they were called Brumalia, and the winter solstice itself Bruma.

The crescent of Siva may have suggested the horns of Bacchus; and his army of Satyrs, and victories in India, shew the resemblance of this part of his character to Vishnu as Rama, who, with his army of monkeys, overran the peninsula of India.

It was a common practice with the Greeks to disguise their own ignorance of the purport of a foreign word, by supplying a word of a similar sound, but different meaning, in their own language, and inventing a story to agree with it: thus Meru, or the north pole, the supposed abode of the Dévatás, being considered as the birth-place of the God, gave rise to the fable of Bacchus's second birth from the thigh of Jupiter, because Meros, a Greek word approaching Meru in sound, signifies the thigh in that language. Siva is described as taking the form of a Sinh, in the battle of Durga and Mahishasura; he seizes the monster with his claws and teeth, and overthrows him, while Durga, with her spear, finishes the conquest by his death. Thus Bacchus, under the same form, is described as destroying the giant Rhæcus.

Rhæcum retorsisti Leonis
Unguibus horribilique Mala.

The Hindu sacrifices to Durga and Ca'li resemble those of Bacchus. When the stroke is given, which severs the head of the victim from its body, the cymbals strike up, the Sanc'ha or Buccinum is blown,
and the whole assembly, shouting, besmear their faces with the blood; they roll themselves in it, and, dancing like demoniacs, accompany their dances with obscene songs and gestures. The Abbé Pluche mentions the same particulars of the assistants in the sacrifices of Bacchus. The winnowing fan, the Mystica vannus iacchi, is always used in the rites of Cā'ī, Cā'ī', and Durgā'; but the Hindus at present affix no other idea of mystery to it, than its being an appendage to husbandry; they use it as a tray, on which they place, before the image of the Deity, the Sesamum or Til, the Mundir, with its lamp, and all the other articles used in the ceremony. A tray could serve the purpose; but on all solemnities the rituals prescribe exclusively the use of this van or fan, which they call Surp.

Of Vishnu, as the Creative Power.

The Vaishnavas, in order to appropriate the creative principle to Vishnu, make Brahma, whom they acknowledge as the immediate agent of creation, to derive his origin from a Lotos, which sprang out of the navel of Vishnu whilst sleeping upon the vast abyss of primeval waters; thus Vishnu becomes superior to Brahma, as being the cause, first, of his existence, and secondly, of all created things through his agency. The Argha is a vessel of copper used by the Brahmins in their puja; its shape is intended to represent the universal Mother, but in the centre of it is an oval rising embossed, and by this the Vaishnavas assert, is meant the navel of Vishu, from which all things originally sprang; and by the mystic union of these two principles of production, it is intended to describe them as identically one. The Sāivas, however, insist, that this Omphalic rising is meant as the emblem of the
Ling; hence Śīva’s title of Aṛghanāṭh, and in the Agama, Argha-I’sā, both meaning the Lord of the sacred Vessel Argha.

Vishnu is represented, in the tenth Avatār, as the destroying power, thus ascribing to him the attribute of Śīva.

Vishnu is represented by the Vaishnavas with four arms, and in each hand he bears a symbol. These symbols seem intended to unite the three great attributes in him, and to express his universal supremacy. The Lotos typifies his creative power, (in allusion to the Lotos which sprang from his navel). The Sanc’ha typifies his attributes of preservation, and the mace that of destruction; while the Chacra expresses his universal supremacy, as Chacra-Varti, or Lord of the Chacra, when applied to a monarch, indicates universal empire; applied to a Pundit, the possessor of the whole circle of Science.

Of Śīva, as the Creative Power, and Bhava’ni. Of Ca’l—and—Ca’lī.

When the personified attributes of the Deity ceased to be considered as mere hieroglyphics; when mankind began to view them in the light of distinct persons, and attaching themselves to the worship of one or of the other exclusively, arranged themselves into sects, the worshippers of Śīva introduced the doctrines of the eternity of matter. In order to reconcile the apparent contradiction of assigning the attribute of creation to the principle of destruction, they asserted, that the dissolution and destruction of bodies was not real, with respect to matter, which was indestructible itself, although its modifications were in a constant succession of mutation; that the power which continually operates these changes, must necessarily unite in itself
the attributes of creation and apparent destruction: that this power, and matter, are two distinct and co-existent principles in nature; the one agent, the other patient; the one male, the other female; and that creation was the effect of the mystic union of these principles.

The hieroglyphic of this union was worshipped under a variety of names, Bhava and Bhava'ni', Mahade'va and Maha'Ma'ya', &c. Thus the attribute of creation was usurped from Brahma, by the followers of Siva, to adorn and characterize their favorite Deity.

This seems to have been a popular worship, for a great length of time. Two sects, however, sprang up out of it: the one personified the whole universe, and the dispensations of providence in the regulation thereof, into a Goddess; this sect retained the female symbol only, and denominated themselves Sacta, as worshippers of the Sacti, or female power, exclusively, which they called Pracriti; and which we, from the Latin, term nature.

The other sect insisted, that there was but one, eternal, first cause; that every thing existing, derived its existence from the sole energy of that first cause (Niranjen).

In order, therefore, to express their ideas of the absolute independence of this supreme power upon any extra co-operation, they took for their symbol the male emblem, unconnected with that of the female; a third sect likewise arose, which intended to reconcile the idea of the unity of godhead with that of the existence of matter and spirit; they, therefore, contended, that the union of those two principles was so mysteriously intimate as to form but one being, which they represented by a figure
half male and half female, and denominated Haragauni, and Ardhanarishwara. It is probable that the idea of obscenity was not originally attached to these symbols: and it is likely, that the inventors themselves might not have foreseen the disorders which this worship would occasion amongst mankind. Profligacy eagerly embraces what flatters its propensities, and ignorance follows blindly wherever example excites: it is, therefore, no wonder that a general corruption of manners should ensue, increasing in proportion as the distance of time involved the original meaning of the symbol in darkness and oblivion. Obscene mirth became the principal feature of the popular superstition, and was, even in after times, extended to, and intermingled with, gloomy rites and bloody sacrifices. An heterogeneous mixture, which appears totally irreconcileable, unless by tracing the steps which led to it. It will appear that the ingrafting of a new symbol, upon the old superstition, occasioned this strange medley. The sect of Vishnu was not wholly free from the propensity of the times to obscene rites; it had been united in interest with that of Siva, in their league against the sect of Brahma, as was expressed by an image, called Harheri, half Siva and half Vishnu. This union seems to have continued till the time when an emblem of an abstract idea, having been erected into an object of worship, introduced a revolution in religion, which had a violent and extended effect upon the manners and opinions of mankind.

It was then that a gloomy superstition arose, which spread its baneful influence with rapidity amongst mankind; which degraded the Deity into an implacable tyrant; which filled its votaries with imaginary terrors; which prescribed dreadful rites; and exacted penances, mortifications, and expiatory sacrifices. In short, it was the worship of Cal
and Ca'Ll', introduced by the sect of Si'va, which caused a total separation of the sect of Vishnu, and introduced those religious wars which, in distant ages, seem to have distracted mankind; and of which traces are, even at this day, to be found.

With a view to unite the three great attributes of creation, preservation, and destruction in one symbol, the S'aivas personified the abstract idea of time (Ca'L), which may, figuratively, be said to create, preserve, and destroy. They therefore distinguished artificial time and eternity with peculiar emblems, in which the attribute of destruction, the characteristic of Si'va, evidently predominates. The personified Sacti, or energy of each of these allegorical personages, was decorated with corresponding emblems. The contemplation of the distinctions of day and night; of the light and dark divisions of the month; of the six months night and six months day of the Gods (occasioned by the apparent obliquity of the Sun's path); and lastly, the contrast of the visible creation with eternal night, suggested the idea of painting Ca'L white and Ca'Ll black.

To Si'va they have given three eyes; probably to denote his view of the three divisions of time, the past, the present, and the future. A crescent on his forehead portrays the measure of time by the phases of the Moon. A serpent forms a necklace to denote the measure of time by years. A second necklace, formed of human skulls, marks the lapse and revolution of ages, and the extinction and succession of the generations of mankind. He holds a trident in one hand, to shew that the three great attributes are in him assembled and united. In the other hand is a kind of rattle, called 'damaru, shaped like an hour glass: I am inclined to think, it was really, at first, intended as such; since it agrees with the character of the Deity; and a sand
gherī is mentioned, in the Sastra, as one of the modes of measuring time, and of ascertaining the length of a gherī.

In the hieroglyphic of the Mahā Pralaya, (or grand consummation of all things, when time itself shall be no more,) he is represented as trodden under foot by Maha' Ca'li', or Eternity.

He is there deprived of his crescent, trident, and necklaces, to shew that his dominion and powers are no more. He is blowing the tremendous horn, which announces the annihilation of all created things.

Maha' Ca'li', black and dreadful, is encompassed by symbols of destruction: two of her hands seem employed in the work of death: of the other two, one appears pointing downwards, alluding to the universal havoc which surrounds her: while the other, pointing upwards, seems to promise the regeneration of nature, by a new creation.

When the Sun begins his southern declination, the night of the Gods begins: that is, when their supposed abode, Meru, (the north pole) begins to be involved in a night of six months: and, as this period may be considered as a type of Mahā Pralaya, the worship of Maha' Ca'li' is celebrated at the commencement thereof.

Maha' Ca'li' is represented without a crescent, (the artificial measure of time,) because it is unnecessary to her character as the hieroglyphic of eternity. But the belief of the Hindus in successive destructions and renovations of the Universe, accounts for her wearing a Mund Mālā, or necklace of skulls, as emblematical of those revolutions.

Maha' Ca'L, as represented in the caverns of
Elephanta, had eight arms. In one hand he holds a human figure; in another a sword, or sacrificial axe; in a third he holds a basin of blood; and with a fourth he rings over it the sacrificial bell: two other arms are broken off; but with the two remaining he is drawing behind him a veil, which extinguishes the sun, and involves the whole Universe in one undistinguished ruin. One of the titles of this tremendous Deity is Bhairava, the horrific, but his principal designation is Ca'\l Agni Rudra.

If the contemplation of the grand consummation of all created things struck the mind of the initiated Brāhmen with awe; the uninformed mass of people would not be less affected with the dreadful appearance and implacable character of this Deity. To appease and reconcile so tremendous a Being would naturally become an object of the greatest necessity and anxiety; the personified metaphor of all-devouring time, presented to their eyes a divinity delighting in blood and slaughter; the zeal of worshippers increased in proportion to their terrors. The unenlightened mind dwells with disturbed and anxious attention upon horrors of its own creation; and superstition takes its form and colour from the objects which excite it: hence arose those bloody rites, those consecrated cruelties, and those astonishing penances, which not only obtained in India, but pervaded almost every part of the ancient world. Thus a new superstition was grafted upon the old, as much adapted, by its vain terrors, to degrade the human mind, as the former had been to corrupt it.

If it was intended to instruct mankind in the hieroglyphic language of former ages, and to shew them how absolutely necessary it was, to make a sacrifice of their vices and depraved appetites, before they could render themselves acceptable to the Deity, could any way be more natural than to typify
those vices by animals whose propensities are analogous to them; and by the allegorical slaughter of them before the altar of the Deity, to denote the sacrifice required. To the uninformed multitude such an hieroglyphic would seem to prescribe the actual sacrifice of the animal. The emblematical apparatus of Ca'Li and Ca'Li' would confirm them in the error; and when once the idea was admitted, that the blood of animals was acceptable to the Deity, fanaticism would soon demand human victims. Humiliation and presents appease earthly princes; but the divinity of fanaticism was supposed to require more costly offerings, and the severest mortifications which inventive zeal could suggest; a false pride, and vain ambition of displaying superior sanctity, excited an emulation amongst the deluded zealots, which steeled the heart against pain, and supported the sufferers under all their self-inflicted torments. This artificial insensibility acquired the reputation of inspired fortitude; and the admiration of ignorant multitudes repaid the fanatic for his voluntary tortures.

Such were the disorders which arose out of the worship of emblematical Deities.

The doctrines of the Saivas seem to have extended themselves over the greatest portion of mankind; they spread amongst remote nations, who were ignorant of the origin and meaning of the rites they adopted; and this ignorance may be considered as the cause of the mixture and confusion of images and ideas which characterised the mythology of the ancient Greeks and Romans.

In fact, foreign nations could only copy the outward signs and ceremonies: they could not be admitted beyond the threshold of the temple; the adytum was impenetrable to them. Ca'Li and Ca'Li'
assumed various names: Ca'ł became Cronos, Moloch, Saturn, Dis, Pluto, and Typhon; Ca'lı' became Hecate, Proserpine, and Diana, who was worshipped with bloody sacrifices at Taurus. It was to the barbarians that the Greeks were referred, by their own writers, to learn and understand the names and origin of their Deities.

St'va, in his character of the Creative Power, became the Zeus Triophthalmos, Jupiter, and Osiris; his consort, Bhavana', became Juno, Venus, Cybele, Rhea, the Syrian Goddess, the armed Pallas, Isis, Ceres, and Anna Perenna. This multiplication of Deities arose from the ignorance of foreign nations as to the source of the superstition which they adopted, and the original meaning of the symbols; they supplied their want of information by fables congenial to their own national character and manners: hence arose those contradictions, which made their mythology a labyrinth of confusion.

When the Saivas intended to ascribe particularly, to the object of their worship, the benefits arising from any operation of nature, they decorated the image with suitable emblems, and assigned to the Deity a corresponding title.

For instance, S'ancara, (which signifies the benefactor,) is a title of one of those forms of St'va or Ca'ł. To him the gratitude of the Saivas attributed the blessings which are derived from the waters of the Ganges, which rolls its fertilizing stream through various countries, bestowing life and happiness on millions of created beings.

They therefore adorned the image of Ca'ł with emblems applicable to the mountain whence that stupendous river flows.
As this beneficial stream makes its way from the tops of that mountain through the creepers and underwood, which seem to obstruct its passage to the plains, it is represented to flow from the head of the Deity, through his jat'á, or clotted hair: and as tigers, elephants, and serpents, infest the skirts of the mountains, he is surrounded with serpents, his lower clothing is the skin of the elephant, and he is seated on that of the tiger. He is likewise called Ní'Í-Cant'ha (blue neck), from the appearance which the clouds assume when arrested in their course by the overtopping summit of the mountain.

He has likewise the title of Giri Is'wara, or lord of mountains; and this union of the attributes of Si'vá with those of the mountain, is more distinctly pointed out in his marriage with Parvati, a derivative from parvat, a mountain.

As the image of Si'vá, in this character, was an object of local veneration, its worship was probably confined to the banks of the Ganges. Had it reached the nations of Europe, he would have been considered as a distinct and separate divinity, and ranked amongst the river Gods. This symbol is admitted by the Vaishnavas: but in order to ascribe this estimable gift to Vishnu, and to assert his superiority over Si'vá, they insist that the river first flowed out of Vaicunhat'ha (the heaven of Vishnu), from the feet of Vishnu; that when it had descended upon the mountain Cailás, it was received by Si'vá, and placed on his head amongst his plaited locks.

On Jagán-Ná'th, &c.

The temple of Jagán-Ná'th is a famous resort for pilgrims of all sects, for it is revered by all, it is a converging point where all the contending parties unite in harmony with each other.
secret spring of this concurrence of sentiment in
sects, otherwise so irreconcilable to each other?
What is intended by a representation, so extraor-
dinary, of the Deity of the place: a figure that re-
sembles nothing in the heavens above, or the earth
beneath, or in the waters under the earth.

These questions will naturally arise upon a view
of the accompanying drawing, taken from a large
picture brought from the temple, in possession of
Raja Paras'u Ram.

It is a representation of the Sna'n Jatra, when
the images, stripped of their ornaments, are bathed.
But it is this unadorned condition of the image
that leads to the discovery of the mystery.

The Pranaca, or mystical character which re-
presents the name of the Deity, is thus expressed

By making a cypher thereof in this man-
ner, filling them up, and giving a body
to the central and connecting part of the cypher, you have

From this cypher, they have made three distinct
Idols; probably, to prevent the original allusion
from being too obvious to the multitude. Subha-
dra's place is, however, always between the other
two, for she represents the connecting participle of
the cypher; the propriety of her being so situated
is therefore evident; and as the actual connection
is dissolved, by the separation of the figures into distinct idols, we see the reason of her being represented without arms.

**Crishna**, as **Parameśwara**, is **Jagan-Na'ṭh**, or Lord of the Universe; his half brother is **Bal-Rām** (a terrestrial appearance of **Sī'va**); and **Subhadra'** is a form of **Devi**.

To me it appears a stroke of refined policy, in the first founders of the temple, to present, as an object of worship, the personification of the triliteral word which is held in reverence alike by all sectaries; and to give it a title which each sect might apply to the object of its particular adoration. The intention of the foundation was evidently to render the temple a place of pilgrimage open to all sects, and to draw an immense revenue from the multifarious resort of devotees. The ornaments and apparel with which they cover the image, conceal the real figure from the multitude, and give it an air of mystery: the fascination of mystery is well understood by the **Brahmens**.

**Jagan-Na'ṭh** and **Bal-Rām** have both the same form, to shew their identity, and their faces have the respective colours of **Vishnu** and **Sī'va**. Considered in this point of view, this temple may be considered as the rallying point for the three great sects. It is upon this principle, that **Jagan-Na'ṭh** and **Bal-Rām** appear sometimes with the attributes of **Ganēś'ā**, to shew that it is one and the same Deity who is worshipped under so many names and forms.

**On Crishna.**

When the **Vaishnavas** separated themselves from the **Saivas**, they introduced a new symbol of the Sun, under the name of **Crishna**, as a contrast to the horrid rites of **Cāli**, which had so disgusted them.
Crishna, being an incarnation of Vishnu, is depicted with the same characteristic complexion of dark azure, to identify the Deity in the symbol.

The Earth is represented as a Cow, the cow of plenty; and as the planets were considered by the Hindus to be so many habitable Earths, it was natural to describe them by the same hieroglyphic; and as the Sun directs their motions, furnishes them with light, and cherishes them with his genial heat, Crishna, the symbol of the Sun, was pourtrayed as an herdsman, sportive, amorous, and inconstant.

The twelve signs are represented as twelve beautiful Nymphs; the Sun's apparent passage, from one to the other, is described as the roving of the inconstant Crishna. This was probably the groundwork of Jayade'va's elegant poem, the Gita Gó-vinda. It is evidently intended by the circular dance exhibited in the Rásijátrá. On a moveable circle, twelve Crishnas are placed alternately with twelve Go'pi's, hand in hand, forming a circle; the God is thus multiplied to attach him to each respectively, to denote the Sun's passage through all the signs; and, by the rotary motion of the machine, the revolution of the year is pointed out.

Crishna obtains a victory on the banks of the Yamuná over the great serpent Cáliyá Nága, which had poisoned the air, and destroyed the herds in that region.

This allegory may be explained upon the same principle as the exposition given of the destruction of the serpent Python by the arrows of Apollo. It is the Sun which, by the powerful action of its beams, purifies the air, and disperses the noxious vapours of the atmosphere.
Both in the Padma and Garuda we find the serpent Cāliya, whom Crīshṇa slew in his childhood, among the Deities “worshipped on this day; as the Pythian snake, according to Clemens, “was adored with Apollo at Delphi.”

Perhaps this adventure of Crīshṇa with the Cāliya Nāga, may be traced on our sphere, for we find there Serpentarius on the banks of the heavenly Yamuna, the milky way, contending as it were with an enormous serpent, which he grasps with both his hands.

The identity of the Apollo Nomios and Crīshṇa is obvious: both are inventors of the flute; and Crīshṇa is disappointed by Tulasi in the same manner as Apollo was deluded by Daphne, each nymph being changed to a tree; hence the Tulasi is sacred to Crīshṇa, as the Laurus was to Apollo.

The story of Naśēda visiting the numerous chambers of Crīshṇa’s seraglio, and finding Crīshṇa everywhere, appears to allude to the universality of the Sun’s appearance at the time of the Equinoxes, there being then no part of the Earth where he is not visible in the course of the twenty-four hours.

The Demons, sent to destroy Crīshṇa, are perhaps no more than the monsters of the sky, which allegorically may be said to attempt in vain to obstruct his progress through the Heavens.

Many of the playful adventures of Crīshṇa’s childhood are possibly mere poetical embellishments to complete the picture.

Perhaps the character of Crīshṇa should be regarded in a two-fold light; in one as the symbol of Vol. VIII.
the Sun, in the other as an allegorical representation of the rise and progress of the doctrines of the persecuted Raishnavas, from the infancy of the sect till its full establishment. Cansa is represented as a S'iva; he appears to have persecuted the sect of Vishnu: but that oppressed sect seems to have multiplied under persecution, till the increase of their power enabled them to overthrow their oppressors; and, finally, to establish the doctrines of Vishnu upon the ruins of Siva.

Of Cartice'yA, the supposed Mars of India.

He is represented as a warrior with six faces: he is armed with arrows and spears, and he is drawn riding upon a peacock. I suppose this figure to be an emblem of the sun, invented by the worshippers of the Ling, when they first separated into a distinct sect; or, in the hieroglyphical language of the Brahmens, when he was produced from the seed which Maha'de'va shed upon the Earth, after he had been separated from Bhava'nyt, with whom he had been in strict union a thousand years. My supposition, however, contradicts the present received opinions of the Hindus; for they do not consider Ca'rtice'yA as the Sun. But, if we examine the figure, we shall find that it can only be applied to the Sun; and it will be found to agree in all its parts.

The Hindus divide the year into six Ritus, or seasons, in each of which the Sun appears with a different aspect. There are six stars in the lunar constellation, Criticá; and, as he derives his name from that Naeshatra, those stars are represented as his nurses, one for each month. Probably the symbol was invented either when the Sun was itself in that lunar constellation, or in the month Cárctica,
when the Moon was full in Critica. His arrows and missile weapons represent his rays; the Apollo of the Greeks had also his bow and quiver of arrows. The worship of Ca'rtice'ya takes place on the last day of Cár'tica, as preparatory to military expeditions, which ought to commence, according to Menu, in the month Agraháyana, the Sun being more propitious at that period for such undertakings.

The setting Sun seems followed by the host of Heaven; but how can this be expressed in a single hieroglyphical figure? It was done by giving him a peacock for his Váhan, or vehicle, in which the tail of this beautiful bird, studded with eyes, and expanded behind the God, pourtrays the firmament spangled with stars. The Egyptians sometimes represented the Sun in the character of a warrior, and he is said to have been addressed as such in the mysteries. But Ca'rtice'ya is not now considered by the Hindus as the Sun: to account for this, I suppose, that whenever any new sect arose amongst the Hindus in former ages, the leaders invented new symbols, exclusively peculiar to themselves, with a view to render their separation from the parent stock more complete, and to mark their worship with distinguishing characters. This practice would give rise to various and different representations of the same object; and, in course of time, as the heat of religious animosities cooled, these various symbols would come to be considered as separate Divinities, and be all blended in one mass of superstition. Thus the Sun, under the name of Ca'rtice'ya, becomes the god of war; and, under the name of Crishna, the shepherd god of Mat'hurá and Vrindávana. The Sun is now separately worshipped under the names of Súrya and Aditya.
Of Indra, the Emblem of the Visible Heavens.

I am led to believe, that many of the fables, inserted in the Purāṇas, were invented, either after the real meaning of an hieroglyphic had been lost, to conceal that ignorance, or purposely to mislead the mass of people, and prevent too curious and close an inquiry.

Indra is described, like Argus, covered with eyes; to account for this, the fable relates, that Indra, having seen the beautiful wife of a certain Rishi*, was anxious to be more intimate with her; but the watchful husband prevented the intercourse, by arriving unseasonably for the god; the enraged saint uttered an imprecation, and wished that the god might be covered all over with representations of what had been the object of his desires; the curse took immediate effect. The god, full of shame, repented, and, by his entreaties, at last prevailed on the holy man to mitigate the curse, by changing the marks of his shame to as many eyes.

I consider this fable as an instance of the foregoing observation: for Indra is a personification of the atmosphere and visible Heavens; and, of course, the eyes with which he is covered describe the stars. The rain-bow is the bow of Indra. The water-spout is the trunk of his elephant; thunder, lightning, and rain, and every phenomenon of the atmosphere, belong to his department; and, like the Jupiter of the Greeks and Romans, he has his Heaven, a mansion of sensual delights and enjoyment.

Of Jupiter and Europa, and Jupiter and Leda.

The Hindus have eight representations of female figures, which, except in sex, exactly resemble the

* Ahilyā', wife of Gótamā.
Deity, of which each is a Sacti, or power, with the same attributes and vehicle: Mahe'swari is the Sacti of Mahe'sa, or Siva; Brahmí, or Brahma'; Na'ravani, of Nara'vena; Aindrí, of Indra; Caumári, of Cartice'ya; Va'ra'hi, of Vishnu, in the Váráha Avatar; Na-rasinhí, of Vishnu, in the Narasinha Avatar; and Apara'jita', a form of Bhava'ni, the female principle: this last may be the aphrodite of the Greeks. It is probable that the representation of Mahe'swari, or a female Siva, riding on a white bull, may have given rise to the story of Europa's rape: and the representation of Brahmí, or the female Brahma', with the swan, may, in like manner, have occasioned the fable of Jupiter and Leda. These explanations were, perhaps, invented by the Greeks to account for symbols, of the meaning of which they were ignorant.

ANNA PERENNA.

The Romans themselves were ignorant of the history of this goddess, and the origin of her rites, although she was an object of their veneration and worship. From whence did this ignorance proceed? Was it that the memory of the institution was lost in its remote antiquity? Or was it an adoption of a foreign ritual, without adverting to its origin?

According to some authors, she was the daughter of Belus, and sister of Dido, who fled to Battus, king of the isle of Malta, after the death of her sister, when Hierbas, king of the Getuli, attempted to take Carthage. Not finding herself safe with Battus, on account of the threats of Hierbas, she fled to Laurentum in Italy, where Æneas was settled: he met her on the banks of the Numicius, and received her into his palace,
treating her with the respect due to her quality. Lavina considered her as a rival, and sought her destruction; but Anna being admonished of this in a dream, fled to the river Numicius, whereof she was made a Nymph, as she told those who sought for her, and ordered them to call her in future Anna Perenna, because she should for ever remain under those waters.

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placidi sum Nympha Numici:
Amne perenne latens Anna Perenna vocor.
OVID, Fast. Lib. 3d, Vers. 653.

The Albans instituted rejoicings on the banks of the river, with dancing and feasting; and the Romans, in imitation of them, did the same on the banks of the Tiber. The dances and sports were very indecent and lascivious. Ovid has described these festivals, which were celebrated on the 15th March: they sacrificed to her for long life; amnare et perennare.

It is probable that this legend was a popular tradition, merely local, peculiar to the Romans and Albans; but it was not the sole conjecture, for, according to Ovid, some supposed her to be the Moon, some Themis, and others Io; some imagined she was the daughter of Atlas, and some took her for Amalthea, who nursed Jupiter in his infancy; while others conceived her to be an old woman of Bovilla, who was supposed to have fed the people of Rome, in very ancient times, when oppressed by famine, in a miraculous manner, and to have then fled and disappeared in the holy Aventine Mount, and in gratitude for this relief this festival had been instituted by the Romans.

Amidst so many conjectures, perhaps we may at this distance of time discover the mystery at Be-
nares, in **Anna Pu'rn'a' De'ví**, the *Hindu* Goddess of Abundance, whose name is derived from **Anna** (food), and **Pu'rná** (abundant); let us regularly weigh each conjecture mentioned by Ovid, rejecting only the local story of the deified sister of **Dido**, and we shall find none that is inapplicable to the *Hindu* goddess. 1st. The **Diana** of the Romans was represented with a crescent on her forehead; it was her characteristic mark. The *Hindu* goddess, as being the consort of **Śiva** or **Cāl**, is decorated in like manner; this may account for her being considered as the Moon. 2dly. The attributes of **Themis**, whether she is considered as **Ceres**, which was the supposition of **Clemens of Alexandria**, in his description of her obscene mysteries; or as the goddess of justice, piety, and virtue, as described by **Diodorus Siculus**, are equally applicable to **Anna Pu'rn'a' De'ví**; the conformity of her name and office to the attributes of **Ceres** is strikingly apparent. But, if **Themis** is justice, piety, and virtue personified, the character will equally suit the consort of the god of justice, **Vrisha Is'wara**, and the lord of the sacred bull, **Dherma Ra'ja**. 3dly. That she was **Io**, the daughter of **Inachus**, under the form of a cow, is a supposition which will not be found inapplicable to **Anna Pu'rn'a' De'ví**, when it is known that the Earth, symbolized as a cow of plenty, is one of the forms of the *Hindu* goddess. 4thly. That she was the daughter of **Atlas**, **Maia**, who was beloved by **Jupiter**, is a conjecture for which a foundation may be traced in the *Hindu* goddess. Might not the name of **Maya** or **Maha Maya** (the beloved consort of **Śiva**) have given rise to this conjecture; the *Hindu* term being applied to signify the mother, the great mother? 5thly. The image of **Anna Pu'rn'a'** is represented sitting on a throne, giving food, with a golden ladle.
to an infant Siva, who stretches out his little hand to receive it. Is not the resemblance particularly striking between this representation and the character of Amalthea, who nursed Jupiter when an infant? Lastly, the tradition of her being the old woman of Bovilla, which Ovid himself seems inclined to adopt, is equally applicable to Anna Pu'rna' Devi, who, according to the Puranas, under the form of an old woman, miraculously fed Vyasa'samuni, and his ten thousand pupils, when reduced to the extremities of distress and famine by the anger of Siva, because Vyasa had presumed to prefer Vishnu to him.

It may not, therefore, be an unfounded conjecture, that the consort of Siva is the point in which all those opinions meet, and that they were founded on confined and confused traditions of the goddess of abundance.

*Description of Anna Pu'rna' Devi, from the Annapada' Cripa'.*

She is of a ruddy complexion, her robe of various dies, a crescent on her forehead; she gives subsistence; she is bent by the weight of her full breasts; Bhava, or Siva (as a child), is playing before her, with a crescent on his forehead; she looks at him with pleasure, and seated (on a throne) relieves his hunger; all good is united in her; her names are Annada', Anna Pu'rna' Devi, Bhava'ni, and Bhagavati.

*EXTRACTS.*

Sunt quibus haec luna est, quia mensibus impleat annum: 657
Pars Thessin, Inachiam pars putat esse hoven.
Invenies, qui te Nymphen Atlantida dicant;
Teque Jovi primos, Anna, dedisse cibos. 660
Hae quoque, quain referam, nostras pervenit ad aures
Fama: nec a vera dissidet illa side.
THE HINDU RELIGION.

Plebs vetus, et nullis etiamnum tuta tribunis,
Fugit; and in sacri vertice montis abit.
Jam quoque, quem secum tulerant, defecerat illos
Victus, et humanis usibus apta Ceres.
Orta suburbanis quedam fuit Anna Bovillis
Pauper, sed mundae sedulitatis, anus.
illa, levii mitr’ canos redimita capillos,
Fingebat tremula rustica liba manu.
Atque ita per populum fumantia mane solebat
Dividere. Hæc populo copia grata fuit.
Pace domi facta signum posuere Perennae,
Quod sibi defectis illa tulisset opem.

Ovid, Fast. Lib. 3d.

Of the Four Months Sleep of Horus and Vishnu.

The Abbé Pluche (to whose ingenious work I am so much indebted), mentions two hieroglyphics, one taken from the Isisac table, and the other described upon a Mummy. They both relate to the sleep of Horus.

The one represents a couch, in the form of a lion, with Horus swaddled up and sleeping on it. Beneath the couch are four jars: an Anubis is standing by the side of the couch; and an Isis at the head of it, in the act of awakening Horus.

When Anubis, or the Dog Star, rose heliacally, the Egyptians considered it as a warning to them of the approach of the inundation, during which the operations of husbandry were suspended; this suspension was deemed a period of rest: to express that inaction, Horus was described as swaddled up, unable to use his arms, and sleeping upon this lion-formed couch. Anubis is putting him to rest, because the rising of the Dog Star proclaimed that cessation of labour. The four jars denote the four months. When, by the operations of nature, the water has subsided, and the river has been reduced
within its banks, labour is resumed, and Horus is awakened by Isis, or personified nature.

In the other hieroglyphic, we have the same couch with Horus swaddled up, but in the act of turning himself: there are only three jars under this couch, to denote, that this action of turning himself to sleep, on his other side, takes place at the commencement of the third month. This interpretation I have given, because what follows, respecting the sleep of Vishnu, seems to justify it. Let us therefore turn to the Hindu representation of the four months sleep of Vishnu or Heri.

On the eleventh day of the enlightened half of the lunar month, Asárh, Vishnu begins his repose on the serpent, Sésa. On the same day of the bright half of the lunar month, Bhádra, he turns on his side; and on this day the Hindus celebrate the Jal Yátrá, or the retiring of the waters. On the eleventh day of the bright half of the lunar month, Cárítica, he is awakened, and rises from his sleep of four months.

The allusion will be made perfectly clear, when it is known that water is considered as one of the forms of Vishnu.

The water, rising till it covers the winding mazes of the river's course, is personified by Vishnu sleeping upon the serpent Sésa, whose hundred heads are the numerous channels which discharge the waters into the sea. As long as it continues to rise, he sleeps on one side. When the inundation, having risen to its height, begins to subside, he turns on the other side. When the waters have run off, and the winding banks of the river are completely cleared of the swollen waters of the inundation, he
Egyptian Hieroglyphics.
is said to have arisen from his sleep, being invoked, and awakened with this *Mantra*, or incantation.

"The clouds are dispersed, the full moon will appear in perfect brightness, and I come in hope of acquiring purity, to offer the fresh flowers of the season; awake from thy long slumber, awake "Lord of all Worlds."

Let us compare the *Hindu* legend with the *Egyptian* hieroglyphic, and I think no doubt can remain of the identity of Horus and *Vishnu*, or *Heri*; and if this position be admitted, we shall find ourselves in possession of the Key to the *Egyptian*, *Grecian*, and *Roman* mythology.

**Of the Durga' Puja'.**

The Abbé Pluche mentions an *Egyptian* hieroglyphic from the *Isiac* table. Horus, armed with an arrow, is slaying a river horse, or *Hippopotamia*, which is surrounded with the leaves of the Lotos, and other aquatic plants. He says, "By this monster, which dwells in the Nile, and comes out of it to lay waste and devour whatever it meets with, we can understand nothing but the inundation." Horus is the same with *Heri* or *Vishnu*. If the *Saivas* admitted in this country a similar victory over the inundation, they would substitute *Siva*, or his consort, for the *Vaishnava* symbol *Horus*.

The sphinx, an emblem of the Sun's passage through *Leo* and *Virgo*, would suggest the idea of decorating *Ca'li*, like the armed *Pallas*, as *Virgo*, attended by her *Sinh*, or Lion, who is *Siva* himself in that form; and they ascribe to her a victory over the monster *Mahish A'sura*, a giant, with the head of a buffalo; this animal delights in water; and, when he comes out of it, is as destruc-
tive, by laying waste and devouring the harvest, as the Hippopotamos; the latter animal not being a native of Hindostan, it was natural to supply its place with one which had similar characteristics. If the Hindu religion was brought from Egypt into India, the importers of it would see the same phenomenon of the annual rising of the river; but they would observe, that in this country it was accompanied with heavy rains, thunder, lightning, and storms of wind, an apparent war of the elements. Hence the buffalo-headed symbol of the inundation was erected into a giant, at the head of a vast army, warring against the Gods: the novelty of these phenomena, to the first comers, would suggest to them this poetical personification. The title borne by Ca'li, in this character, is Durga', or rather Durgati Na's'iní, the remover of difficulties; as she is a form of Ca'li, she has the same bloody rites.

The Abbé mentions the Canopus, as a jar or pitcher of water, intended to make the people acquainted with the exact progress and increase of the inundation: he adds, that they used to mark these jars with the figure T, or a small cross + to express the increase and swelling of the river. Canob is the Egyptian word, which is rendered Canopos by the Greeks; the information, which this seems intended to convey, was so particularly necessary to the Egyptians, that it is no wonder it should, in course of time, cease to be considered as a mere sign, and acquire a place amongst the Deities themselves. The word Canob, by the analogy of the Sanscrit language, becomes Cumbh, which signifies a jar or vase; it gives name, in the Hindu Zodiac, to the sign Aquarius. This Cumbh, G'hát'a, or jar, is the principal object in the celebration of the Hindu worship. It is considered as almost the
Deity itself. It cannot be dispensed with; while the image of Durga may be omitted entirely. The Vaishnavas use the sacred jar, which they mark with several crosses in this manner + . The Saivas mark the jar with a double triangle, thus $ \star $ : one triangle signifies Siva, uniting in himself the three great attributes: the other triangle is his consort, with the same character and attributes. The worshippers of the Sacti, or female principle, mark the jar with this figure \( \frac{1}{2} \). These marks are called jantra: they are, in fact, hieroglyphic characters; and there is a vast variety of them. The above are only mentioned here, because of their use in this Pujâ, and as they distinguish three principal sects of the Hindus.

This coincidence between the Hindu ceremonies and the Egyptian figures, is remarkably striking. They appear to me to explain each other: and we can scarce doubt of the identity, when we consider that this ceremony takes place at the autumnal equinox, at which time the season of storms and inundation is over, and they are supposed to have been subdued, during the Sun's passage through the signs Leo and Virgo.

On the Hu'li of the Hindus; and the Hilaria of the Romans.

The Romans celebrated the Hilaria at the vernal Equinox, in honour of the Mother of the Gods. It was a festival which was continued for several days, with great display of pomp and rejoicing: it began the eighth day before the Calends of April,
or the 25th of March; the statue of Cybele was carried about in procession, and the attending crowds assumed to themselves whatever rank, character, or dress, their fancy led them to prefer: it was a kind of masquerade, full of mirth and frolic. In fact, it was the Earth, under the name of Cybele, which was worshipped at the commencement of that genial season, when she receives from the Sun those vivifying rays, which are so adapted to the production of fruits and flowers. Let this ceremony be compared with the Hindu celebration of the Huli, at the same period of the year. The epithet of Purple is constantly given to the spring by the Roman poets, in allusion to the blossoms, which nature, as it were in sport, scatters over the Earth with such variety and profusion. The Hindus design the same idea in the purple powder (Abir), which they throw about at each other with so much sportive pleasantry: the objects of worship with the Hindus are the Earth and Fire; that genial warmth, which pervades all nature at that period of the year: the licentiousness of the songs and dances, at this season, was intended to express the effects of that warmth on all animated objects.

The Hindus have likewise their masquerading processions, in which Gods and Goddesses, Rajas and Rasis, are represented; and the ceremonies are concluded, by burning the past or deceased year, and welcoming the renovation of nature.

Of the Vastu Puja of the Hindus, and the Vesta of the Romans.

On the last day of Paush, the Hindus make sweetmeats, with Til, or sesamum: it is therefore called Tiliasancrant. It is the day when landholders worship the Earth and Fire. The sect of Siva sacrifice a sheep to the Earth; and the Vaishnavas offer up
their bloodless oblations to fire. The ceremony is called the Vāstū Pūjā. Vāstū is the habitable Earth. A great Rājā was called Vāṣṭu Pūrūsh; the expression is used by a raiat to his zemindar, as a title of the highest respect. I think, that, in the name of the ceremony, and in the objects of worship, may be traced the Goddess Vēstā of the Romans: the Goddess of Nature, under whose name they worshipped the Earth and Fire.

The Fable of Bīr Bhadr, invented by the Sāivas to exalt their Opinions and Sect.

This fable, I conceive, is descriptive of an attempt to abolish the worship of the male and female symbols; of the struggles of the contending sects; and (as it is the nature of fanaticism to increase and spread in proportion to the opposition raised against it) of the final establishment and extension of that worship. It seems a story invented by the Saivas, to shew the imbecility of their opponents, and to exalt their own doctrines.

Dacsha celebrated a yajnya, to which he invited all the Dēvatās, except his son-in-law, Sīva. His consort, the Goddess, being hurt at this exclusion, went into the assembly, and remonstrated, but in vain; she expired with vexation upon the spot. Sīva, upon hearing this, throws his Jetā, or plaited hair, upon the ground, and from that produces Bīr Bhadr, a furious being, armed with a trident, who immediately attacks, and disperses the whole assembly; puts a stop to the sacrifice; and cuts off the head of Dacsha. Sīva took up the body of his deceased consort, and placing it upon his head, in a fit of madness, danced up and down the Earth, threatening all things with destruction. Viṣhnu, at the request of the other Dēvatās, with his Chacra, cut the body of Sātī into fifty-one pieces, which Sīva,
in his frantic dancing, scattered in different parts of the Earth. Each place where a part fell became a place of worship, dedicated to the female Power: and the frenzy of Śiva subsiding, he ordained, that the linga should likewise be worshipped at each of those places; and Dacsha, on condition of embracing the doctrine of Śiva, was restored to life, degraded with the head of a goat instead of his own. I should imagine that the furious Bir Bhadr, produced by Śiva, was a vast body of fanatics, raised by the Brahmens of that sect, who might, at that time, have been both popular and powerful; probably this was a vast body of fanatic Sannyasis, interested in the dispute by personal motives, as well as instigated by their Brahmens.

The attempt to abolish the worship failed, and served to establish it firmer, and extend it farther than ever. The Gods themselves are represented as the actors, instead of their votaries; but it may allude to some commotion that really happened. Probably the heads of those sects, which had introduced this symbolic worship, were alarmed at the progress of it, and at the effects produced on the morals of the people: they wished to abolish it when it had taken root too deeply; and as they had introduced it, Śiva is described as the son-in-law, and Sati as the daughter of Dacsha.

On the Veneration paid to Kine.

This superstition appears to me to have arisen from the humanity of the first legislators, to prevent the horrid practices which were prevalent in the ancient world, and which exist to this day in Abyssinia: I mean the savage custom of devouring the flesh of the living animal, torn from it while roaring with anguish, and expiring in protracted agony. To eradicate a practice so detestable, and dreadfully cruel, they might
consider difficult, if not impossible in the then existing state of society, without interweaving the preservation of so useful an animal, with the indispensable duties of religion. They therefore rendered it sacred.

The Bull was made the emblem of Justice, the vehicle of Śiva; and the Cow, a form of Bha'vani, and the emblem of the Earth. A mere civil institute, might have been deemed inadequate to work the intended reform. But an indispensable duty, enforced by all the sacred obligations of religion, was thought more likely to produce the effect; as having more hold upon the human mind: especially when that religion was promulgated as the immediate revelation of the Deity.

Mankind naturally rush into contrary extremes under the impulse of religious zeal; and the animal, which had been the subject of voracious cruelty, became the object of religious veneration and worship.

When these animals were thus exalted, the slaughter of them was considered as a sacrilege: it was a natural consequence. But superstition did not stop there; the dung came to be considered as pure; the Hindus use it diluted with water, and mixed with earth, to purify their shops and houses: the spot, on which they eat, is plastered with this composition; and the idols are purified by a mixture of the dung, urine, milk, curds, and butter of the animal; nay, a small quantity of the urine is daily sipped by some: every part of the animal is dedicated to some divinity with appropriate invocations; and what originated in policy, has ended in gross superstition. The horrid repasts of the antient world are frequently alluded to. It is said of Orpheus, Caribus et victu faedo deterruit: notwithstanding which, the Grecians are reproached by Julius Firmicus with perpetrating these horrid repasts, as part of the ceremony.
in the *Dionysiacs*—*Vivum laniant dentibus taurum*, crudeles epulas annuis commemorationibus excitantem; —and again—*Illic, in orgiis Bacchi, inter ebrias puellas et violentos senes, cum Scelerum Pompa procederet*, alter nigro amictu teter; alter, ostensu angue terribilis; alter, cruentus ore, dum viva Pecoris membra discerpit. *Jul. Firmic. De errore profarum Religionum.* This horrid custom was very antient; and I suppose, with Mr. Bruce, that the prohibitions in Deuteronomy were particularly levelled at this execrable practice; and this evidence, I think, strongly corroborates my supposition. The Egyptians seem to have extended this policy to sheep and goats: for the ram was worshipped at the vernal equinox, and the goat was worshipped at *Memphis*.

**REMARKS ON THE FOREGOING ESSAY.**

**BY H. T. COLEBROOKE, Esq.**

Several points, relative to the religious ceremonies of the *Hindus*, and their mythology, which the preceding Essay has touched upon, seem to require elucidation, independently of the purpose, for which they have been there mentioned. The following remarks are therefore subjoined, with a view of adding some information on those subjects.

P. 68. The eight *S'actis* or energies of as many Deities, are also called *Mātris* or mothers. They are named *Bra'hma*, &c. because they issued from the bodies of *Bra'hma* and the other gods respectively *.

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*RAYA MUCUTA* on the *Ameracosha.*
In some places, they are thus enumerated: Bra'hmi', Ma'he's'wari', Aindri', Va'ra'hi', Vaishn'avi', Cauma'ri', Cha'mun'da', and Charchica'. However, some authorities reduce the number to seven; omiting Cha'mun'da' and Charchica'; but inserting Cauve'ri'.

Prayers are addressed to the Mātrīs on various occasions; especially in the Cavachas, or defensive incantations. I shall cite two by way of example; and subjoin extracts from the Mārcan'd'ēya purāṇ'a, descriptive of these goddesses.

"May Brahma'ni', conferring the benefit of all benedictions, protect me on the east; and Na'ra'yan'i', on the south-east, for the sake of realising every wish Ma'he's'wari' too, on the south, rendering every thing auspicious; Cha'mun'da', on the south-east, discomfiting all enemies; and, on the west, Cauma'ri', armed with her lance and slayer of foes: on the north-west, Apa-ra'jita', the beauteous giver of Victory; on the north, Va'ra'hi', granter of boons; and on the north-east, Na'rasinhi', the banisher of terreur. May these mothers, being eight Deities and active powers, defend me."

Another incantation simply enumerates the same eight goddesses; and proceeds thus: "may these and all Mātrīs guard me with their respective weapons, on all quarters and on every point.

In the Dēvi māhātmya, the assembling of the Mātrīs to combat the demons is thus described. "The energy of each god, exactly like him, with the same form, the same decoration, and the same vehicle, came to fight against the demons. The Sācti of Brahma', girt with a white cord and bearing a hollow gourd, arrived on a car yoked with swans; her
title is Brahmanî. Ma'he's'wari' came riding on a bull, and bearing trident, with a vast serpent for a ring, and a crescent for a gem. Cauma'ri' bearing a lance in her hand, and riding on a peacock, being Ambicâ in the form of Ca'rtice'ya, came to make war on the children of Diti. The S'acti named Vaishn'avi' also arrived, sitting on an eagle, and bearing a conch, a discus, a club, a bow, and a sword, in her several hands. The energy of Hari, who assumed the unrivalled form of the holy boar, likewise came there, assuming the body of Va'ra'hi'. Na'rasinhi' too arrived there embodied in a form precisely similar to that of Nrisinha, with an erect mane, reaching to the host of stars. Aindri' came, bearing the thunderbolt in her hand, and riding on the king of elephants, and in every respect like Indra, with a hundred eyes. Lastly, came the dreadful energy named Chandica', who sprung from the body of Devi', horrible, howling like a hundred shakals: she, surnamed, Apara'jita', the unconquered goddess, thus addressed Is'âna, whose head is encircled with his dusky braided locks.

The story, which is too long for insertion in this place, closes with these words: 'Thus did the wrathful host of Mátrîs slay the demons.'

In the Utiara Calpa of the same Purâna, the Mátrîs are thus described, 'Cha'mun'dâ' standing on a corpse, Va'ra'hi sitting on a buffalo, Aindri' mounted on an elephant, Vaishn'avi' borne by an eagle, Ma'he's'wari' riding on a bull, Cauma'ri' conveyed by a peacock, Brahmî carried by a swan, and Apara'jita' revered by the universe, are all Mátrîs endowed with every faculty.'

It may be proper to notice, that Cha'mun'dâ Charchica', and Chan'dica', are all forms of Pa'rvatî. According to one legend. Cha'-
Yiun'da' sprung from the frown of Pa'rvatí, to slay the demons Chan'da and Mun'da. According to another, the mild portion of Pa'rvatí issued from her side, leaving the wrathful portion, which constitutes Ca'lí or the black goodess.

Cauve'rí is the energy of Cuve'ra; the deformed god of Riches. Na'ra'yaní, mentioned by Mr. Paterson, and also in the prayers or incantations above cited, is the same with Vaish'návi.

P. 69. Anna-pu'rn'a' de'ví, or the goddess who fills with food, is the beneficent form of Bháva'ní; and very similar to Lacshmí or the goddess of abundance, though not the same Deity. She is described, and her worship is inculcated, in some of the Timtras; but not in the Puránás, so far as I can learn, except in the Siva purán'à; and the legends, concerning her, are not numerous. She has a temple at Benares, situated near that of Vis'we's'wara.

In addition to Mr. Paterson's quotations, it may be observed, that Silius Italicus (Punic. 8, v. 28, 184) makes the nymph, who was worshipped in Italy, to have been Anna, the sister of Dido: and Macrobius says (Sat. 1, c. 12), sacrifices, both publick and private, were offered by the Romans to Anna perenna; ut annare, perennareque, commodé liceat.

Perhaps Anna-pu'rn'a' may bear affinity to An- nona. Certainly this term, either in its literal sense, or as a personification (Spence's Polymetis, dial. 10), is nearer to the Sanscrit anna, food; than to its sup- posed root annus, a year.

P. 74. The Jala yátrá, here mentioned, is not universally or generally celebrated; and accordingly it is not noticed in various treatises on the calenda.
of Hindu feasts and holidays. The Vishn'u d'hermōt-tara, cited in the Madana ratna, does indeed direct, that, on this day (11th Bhādra in the bright fortnight), a jar of water, with certain other specified articles, be given to a priest; and the Bhavishya requires, that Jana'rdāna, or Vishn'ū, be worshipped with appropriate prayers; but the ceremony, to which Mr. Paterson alludes, must be a different one; and, if I am rightly informed, a festival, which bears the designation mentioned by him (Jala yātrā), is celebrated at the temple of Jaganna'ṭha, and perhaps at some other places.

P. 77. At most festivals, no less than at that of Durgā', a jar of water is placed, and consecrated by prayers, invoking the presence of the deity or deities who are on that occasion worshipped: adding also invocations to Gangā and the other holy rivers. When the celebration of the festival is completed, the holy water, contained in the jar, is employed by the priests to sprinkle or to bathe the person, who commands and defrays the celebration.

Various yantras, or mystical figures and marks, are appropriated to the several Deities, and to the different titles of each Deity. Such figures are usually delineated on the spot, where a consecrated jar is to be placed. These yantras, which are supposed by superstitious Hindus to possess occult powers, are taught in great detail by the Tantras or A'gama Sāstra: but seem to be unknown to the Vēdas and Purāṇas.

P. 78. The Hōlica is said, in some Purāṇa, to have been instituted by the king Ambarīṣha (the great grandson of Bhacīrat'ha), according to instructions from Na'ṛeda, for the purpose of countering a female demon named D'ḥun'd'ha, whose
practice it was to destroy children. In its origin, this festival does not seem to have had any connexion with the vernal equinox, nor with the close of the year; but with the close of winter and the beginning of Vasanta, or the Indian spring. However, it now corresponds with the end of the lunar year, and the approach of the equinox.

P. 79. The Tila sančrānti, or day on which the sun passes from Dhanush into the sign Macara, is the festival of the winter solstice. It must have been so fixed, at the period when the Indian calendar for the solar year was reformed, and the origin of the ecliptick was referred to the first degree of Mēsha. It derives its name from the ordained use of tila or seed of Indian sesamum, six different ways, in food, ablutions, gifts, and offerings: or, according to a vulgar explanation, it is so called, because thence-forward the days increase at the rate of a tila or grain of sesamum in each day. A similar festival is regulated by the lunar month; and has several times shifted its day. It is kept on the twelfth of the bright half of Māgha, according to the Vishn'ū d'hermōttara; and on the eleventh, according to other authorities. Probably it once belonged to the first day of the lunar Māgha.

The Vāstu pūjā, as an annual ceremony, is peculiar to D'hadá and districts contiguous to that province: but is not practised in the western parts of Bengal; and, so far as I am informed, is altogether unknown in other parts of India. The word Vāstu signifies, not the habitable earth in general, but the site of a house or other edifices in particular.
IV.

EXTRACTS from the *Essence of Logic,* proposed as a small Supplement to Arabic and Persian Grammar; and with a view to elucidate certain Points connected with Oriental Literature.

By Francis Balfour, Esq.

INTRODUCTION.

Although the works of Aristotle were translated into Arabic many centuries ago, and there be no doubt that the system of logic generally ascribed to him constitutes, at this time, the logic of all the nations of Asia who possess the Mahommedan faith, yet I do not find that this point has been directly confirmed by translations from the Arabic or Persian into the languages of Europe. At least none that I know of have appeared in India.

The following extracts taken from a Persian translation of the *Tehzeeb ul Mantik,* or Essence of Logic, an Arabic treatise of considerable repute, seem to place this question beyond doubt, by their close coincidence in every point with the system referred to Aristotle.

To the logical system of this wonderful genius, modern philosophers of distinguished eminence, and amongst these, Lord Kames, have not hesitated to impute the blame of retarding the progress of science and improvement in Europe for two thousand years, by holding the reasoning faculty constrained and cramped by the fetters of syllogism.

From some of the extracts contained in this paper, it will appear, 1st. That the mode of reasoning by Induction, illustrated and improved by the great
Lord Verulam, in his Organum Novum; and generally considered as the cause of the rapid progress of science in later times, was perfectly known to Aristotle, and was distinctly delineated by him, as a method of investigation that leads to certainty or truth; and 2dly, that Aristotle was likewise perfectly acquainted, not merely with the form of Induction, but with the proper materials to be employed in carrying it on—Facts and Experiments.

We are therefore led to infer, that all the blame of confining the human mind for so long a time in chains by the forms of syllogism, cannot be fairly imputed to Aristotle; nor all the merit of enlarging it and setting it free, ascribed to Lord Verulam. The vast extent of Aristotle's learning and knowledge, and the singular strength and penetration of his mind having, naturally, encouraged him to undertake a complete analysis of all its powers, the doctrine of syllogism became, of course, a constituent and necessary part of his comprehensive system. And if succeeding philosophers attracted by its ingenuity and beauty, have deserted the substance in pursuit of the shadow, the pernicious consequences of this delusion, cannot, justly, be referred to him.

* Vide the Section of Induction.
† Vide the Section of the matter of Syllogism.
‡ On the 6th of July 1803, when this paper was delivered to the Asiatick Society, I had heard of Dr. Gillies's admirable exposition of the ethics and politics of Aristotle; but had never been fortunate enough to meet with it; or to know any thing of his sentiments on this question, until the 12th of November, when the accidental sale of a private library gave me an opportunity of purchasing it. From the perusal of this wonderful book, I have now the satisfaction to discover, that the conjectures which I had been led to draw from these scanty materials, are completely confirmed by the opinion of an author, who is probably better qualified than any preceding commentator on Aristotle's works to decide on this subject.—Vide Gillies's Aristotle, Vol. I. page 68. 76. 78, 79, &c.
The discussion of these points, being in some degree curious, and not altogether unconnected with the pursuit of Oriental literature, may not be unacceptable to this Society. But, taken in another view, I conceive that they may become in some respect useful. A scientific analysis of the reasoning faculty, delineating all its powers and operations, and affixing to each an appropriated form of expression, gives, naturally, to those who acquire it, a mode of thinking that is accurate and profound; and establishes amongst the learned a peculiar style, more precise and enlightened than that which is employed by the multitude in the common transactions of life.

By assisting the Oriental student to attain this degree of improvement, I have flattered myself that these extracts may become useful. This is the motive that first induced me to take the trouble of translating them into English; and they are now submitted to the Society, not as a part of metaphysical learning, but as a more advanced stage of grammar and syntax: and therefore as a Supplement that may contribute to form a more complete system of Arabic and Persian Philology. Whilst grammar and syntax teach only, generally the various forms of words and sentences, logic, proceeding further, may be considered as the art of selecting words and arranging sentences into all the forms that are required, for expressing with precision, the different steps and operations of the reasoning faculty: and therefore as the highest and most important degree of classical improvement.
بسم الله الرحمن الرحيم

منتخب تهذيب المنطوق

تفصيل ضبین

باب اول در تعريف مستقبل برچهار فصل است
فصل اول در دلالات
فصل دوم در معهوم
فصل سبیوم در كليات حيسه
فصل چهارم در تعریفات

باب دوم در حقیقت مستقبل برپنچ فصل است
فصل اول در تصریح
فصل دوم در تیاس
فصل سبیوم در استقرا
فصل چهارم در تبیین
فصل پنجم در تقسیم تیاس بهحسب مایه
In the Name of God, the Compassionate, the Merciful!

EXTRACTS FROM THE TEHZEEB UL MANTIK.

THE CONTENTS.

PART I. Of Definition.

Sect. I. Of Expression.

II. Of Ideas formed by the Intellect.

III. Of the Five Universal Ideas called Predicables.

IV. Of Different kinds of Definitions.

PART II. Of Demonstration.

Sect. I. Of Propositions.

II. Of Syllogism.

III. Of Induction.

IV. Of Analogy.

V. Of the division of Syllogisms according to their Matter.
فصل في مقدمة

مقدمة في لغة بيش كرده شده و در إسطلام
مقدمة أن جيزة است كه موتوف است بر أو
شروع در هر علم طريق بنائي و شناساي
و لعذا عادات اهل تصنيف بر ان جاري
شد ك بيش از شروع أول نصلي جدا
مبارنه و انا مقدمة نا مند و در ان سه
جيزة مذكور مشوش رسم العلم يعني تعريف
علم غايت العلم يعني تاجده علم موضوع
العلم يعني انبجه دران علم از عوارض ذاتي
أو بحث كند جنانچه بدن انسان در علم
طب و كله و كلام در علم نحنو ومعرفا
وحاجت در علم منطق

يس بدانكه علم يعني صورت حاصل در عقل
أز دو حال بيرون نيسست فقط حصول صورت
شي است در عقل يا حصول صورت شيء
در عقل باذعان يعني ايقاع نيسست است
اول تصور است و ثاني تصديقي اما
تصور خواه دك امر متعد ده باشد
جانچه تصور زيده و عبر يادرك جيزي
باشد يا نسبت غير تامه جنانچه تصور غالب
زيده يا با نسبت تامه باشد لينك جزييه
نباشد انشاهيه باشد جنانچه تصور اضر
يا نسبت جزييه باشد لينك غير انعائي
جانچه در صورت و هم و شك
THE PREFACE.

A PREFACE in common language is that which is put first. Technically it is that which is necessary to the explanation of any science with clearness and perspicuity. It has therefore become an established custom with authors, previously to the introduction of their subject, to appropriate the first chapter to this purpose, calling it a Preface. Under this head are comprehended three different articles; 1st, The nature or description of science; 2d, The end or use of the science; 3d, The subject of the science; or those of its essential parts that are to be investigated or considered; such as the human body in medicine, words and sentences in grammar, and definition and demonstration in logic.

Accordingly let it be understood, that knowledge, or images acquired by the mind, is of two kinds; either the simple impression of an object, or the production of an image by reflection, that is, by relation. The first is perception, the second intellect or judgment.

Perception is either the idea of a single object, such as the idea of ZEID; or of several objects, such as the idea of ZEID and OMA. Or it may be the idea of an object standing in a relation that is imperfect; for example, the slave of ZEID; or in a relation that is perfect, in which case it must not be connected with a predicate, but without one, such as the ezreb, (i.e.) beat thou. It may also be in construction with a predicate, provided that it imply no conclusion; as in the idea of conjecture and doubt.
اما تصديق جنانِی، اعتقاد اوردن با
این‌یعنی که زید قائم است یا اعتقاد اوردن
باصره که زید قائم نیست
و منفی میشود این هر دو ضرر ورت یعنی
بالبداهت بی تیم دلیل بطرف ضروری
یعنی بدفی و اکتساب بالنظر یعنی
نظیر پس چهار تسوت حاصل میشود تصویر
بدهی تصویر نظری یعنی
معلوم تصویر و
میکجول تصویر
تصديق بدهی و تصديق نظری یعنی
معلوم تصديقی و
میکجول تصديقی
اما معلوم تصویر جنانِیه تصویر حرارت و
برود و میکجول تصویر جنانِیه تصویر حقيقة
ملک و جن
و معلوم تصديقی جنانِیه تصديق
این‌یعنی که انتساب روش است
و میکجول تصديقی جنانِیه این‌یعنی که
عالم حادث است و صانع موجود است
و نظر در اصطلاح ایشان ملا حظه معتول
است براي تحصیل میکجول یعنی ملا
حظه معلوم تصویر است و معلوم تصديقی
برای اکتساب میکجول تصویر و میکجول
تصديقی و کاهی و اتعی میشود در نظر
مذكور حطا
Intellection or judgment consists in giving assent to some proposition, such as "Zeid is standing," or "Zeid is not standing."

Each of those, namely, perception and intellection, are necessarily divided into two kinds, viz. Those acquired by intuition without any previous argument or proof, and therefore called intuitive; and those acquired by investigation and reasoning, and therefore called demonstrable. We have therefore established four distinctions, viz. perceptions intuitive, and perceptions demonstrable: or in other words,

1. The known perceptible.
2. The unknown perceptible;

and intellection or truth intuitive, and intellection or truth demonstrable; in other words,

1. The known demonstrable.
2. The unknown demonstrable.

The idea of heat and cold, is an example of the known perceptible.

The idea of angels and genii, is an example of the unknown perceptible.

The proposition that the sun shines, is an example of the known demonstrable; and

The proposition that the world was created, and that there is a Creator, is an example of the unknown demonstrable.

In the language of logicians, examination or inspection is the contemplation of the thing known to obtain a knowledge of the thing unknown; that is to say, the contemplation of the known perceptible, and the known demonstrable to obtain a knowledge of the unknown perceptible and unknown demonstrable; and as mistakes often happen in this investi-
gation, there is indispensably required some general rule to preserve the mind from falling into an error in the process of thinking. This rule is logic.

From this discussion, therefore, it appears that the Nature of logic may be defined "A general rule which guards the mind against errors in thinking."

But in the language of logicians, thinking is an arrangement of certain things known, to obtain a knowledge of things unknown. Consequently the end or use of logic likewise becomes obvious and manifest.

There now remains to be examined, only the subject of logic; and this is the known perceptible and the known demonstrable, in such a form as to lead to the unknown perceptible and unknown demonstrable. The first of these is called definition; the second demonstration or proof. "The idea of an animal endowed with the faculty of speech," leading to the idea of man, is an example of definition. The proposition, "The world is liable to change, and every thing liable to change is created," leading to the conclusion "that the world was created," exhibits an example of demonstration.

**PART I. OF DEFINITION.**

**SECT. I. OF EXPRESSION.**

Expression in the technical language of logicians, is the existence of a thing in such general use, that there necessarily or irresistibly arises from the knowledge of that thing the knowledge of another thing. The first they call the Sign, the second the thing signified. If the sign be a word, they call it verbal expression; and if not a word, they call it expression not verbal; and these two together comprehend six different distinctions; 1. Assigned expression verbal; 2. Assigned expression not verbal;
دلالة غير لغزية و ضعية دلالات لغزية طبيعية دلالات لغزية عقلية أما دلالات لغزية و ضعية دلالات لغزية عقلية دلالات لغزية عقلية زيد بر ذات ما تشخص و دلالات غير لغزية و ضعية دلالات لغزية عقلية تدل على أربع يعني خط عقدت نصب اشارات تدل على دلالات أخر أبعن بر وعج صدر و دلالات غير لغزية طبيعة دلالات سعت نبض بر حبي يعني تب و دلالات لغزية عقلية دلالات لغزية عقلية دلالات لغزية عقلية دلالات لغزية عقلية دلالات دخل بر و وجد نار

و بر اينجا از هر كونه دلالاتها محكية مقصود دلالات لغزية و ضعية است واين بر سه كونه است مطلقات تقصم و التمزيم جراكه دلالات بر موضوع له يعني مدلول خون از سه حال بيرون نيست يا بر تبام موضوع له است جنانجه دلالات لغزية إنسان بر حيوان ناطف يا بر جز و موضوع له است جنانجه دلالات لغزية إنسان بر حيوان يا بر خراج موضوع له است جنانجه دلالات لغزية إنسان بر قابل علم و قابل صنعت الكتابة أول مطابقات است و ثاني تصن و ثالث الترلام
3. Natural expression verbal; 4. Natural expression not verbal; 5. Intellectual expression verbal; 6. Intellectual expression not verbal. The word Zeid appropriated to an individual, is an example of assigned expression verbal. The four signs, a line, a knot, a land mark, a signal, are examples of assigned expression not verbal. The exclamation oh! from a pain in the breast, is an example of natural expression verbal. The quickness of the pulse, indicating fever, is an example of natural expression not verbal. The word Deiz heard from behind a wall, and implying the existence of a speaker, is an example of intellectual expression verbal; and the sign of smoke, implying the existence of fire, is an example of intellectual expression not verbal.

But of all these different modes of expression, we mean, at present, to consider only that of verbal expression assigned, which is of three kinds; 1. That by conformity; 2. That by implication; and 3. That by association. Thus a verbal expression assigned, may denote its object by corresponding with the whole of its character; as the word insaun, man, denotes a living being endowed with speech. By expressing a portion of its object, as the word insaun (i.e.) man, implies an animal. By acting without or beyond its object, as the word insaun (i.e.) man, implies a being capable of science, and the art of writing. The first is agreement or conformity, the second implication, the third association.
ليكسي در دلالات التزامات للمزور صور است كله عبادة باشند. صوره تصور بصري نسبتاً عبي با عرفة صوره تصور جود نسبت بحاتم مديرك اينك في دلالات تصميم التزام صور است دلالات متابعة بر خلاف متابعة كه او اينها محتاج نبض جاويكه. دلاله تصميم والتزام خواهد بون دلاله متابعة صور است جاويكه دلاله متابعة است تصميم والتزام صور نبض و لفظ دال با لتابعة اكبر جردار و حزان دال است بر جزور معنى پس ان لفظ مركب است مر كيب يا نام است يعني مختطبة صحت و سكوت مي بحشد يا ناتص و نام بدر كونه است خبر جوانبيه ابطيل تائم و انشا جوانبيه اضرب و مركب ناتص بر بنجي كونه است تركيب اضائي جوانبيه عاملي زيد و تركيب تو صوغي جوانبيه رجل فاضل و تركيب تقيدي جوانبيه الرجل و في الدار و تركيب تعدادي جوانبيه خبيه عشر و تركيب امتزاجي جوانبيه علبك كه در اصل نام بت و باداشه است و بعد ان شهري بديين اسم مسبوم شده.
But in the case of expression by association, the association must either be intellectual—inferred, as for example, the idea of light associated with one that is blind; or founded on real knowledge, such as the idea of generosity connected with a Prince.

And it is further to be remembered, that conformable expression is necessary to implication and association, whilst these, on the contrary, are not required for conformable expression; to that wherever implication and association are expressed, there must also exist conformable expression; but where these is conformable expression it does not necessarily follow that these must be also implication or association.

If the terms of the conformable expression consist of parts, and these parts be conformable to portions of the sense, then that term is a compounded word; and the compound is either perfect, giving to the hearer complete satisfaction; or imperfect. Perfect compounds are of two kinds, viz. predicative, such as "Zeid is standing;" or insaun, such as ezreb, beat thou. Imperfect compounds are of five kinds, 1st, The composition of relation such as "the slave of Zeid;" 2nd, The composition of qualification, such as "an excellent man;" 3rd, The composition of confirmation, such as "the man in the house;" 4th, The composition of numbers, such as Hemseh Usher; and 5th, The composition of habit, use, custom, such as "Balbec," which originally is the name of a devil or king, and has now become the name of a city.
و أكر جنين نيست يعني حز و لفظ دال برجه و معنی نيست أن را مغرد كوب و مغرد بر سه كونه است اكر معنی أو مستقل است و بهيت خون دلالت ميكنند از يک زمانه از ازمنه ثلثه پس أن كله فعل است و اكر جنین نیست بلکه معنی مستقل است پس اسم است و اكر از هر دو بیرون است يعني نه دلالت میکنند برنامه و نه مستقل است پس حرف و ادات است.

و ازآن اسم برچند کونه است علم متواطی.

مشکل مشترک منقول حقيقة مسجاز جرااه از دو حلال بیرون نیست معنی او واحد است يا كنیر اكر واحده است پس مع تشخیص ان عند الواضع علم است جنانچه لغظ زید و عبر و غيرها وبدون تشخیص متواطی است اكر مساوی باشند افراد ان جنانچه غنم و بقر ومشکل است اكر متغافوت باشد باولیت و ولویت جنانچه و جون نسبت بواجع تعالی و میکن و اكر جنین نیست يعني كنیر است پس اكر وضع كره شده است براي هر واحده بر ابر جنانچه لغظ عین كه موضوع است براي ذات و زر و جسه و جمجم پس مشترک است و اكر بر ابر نیست بلکه أول براي پک معنی موضوع شده بعد ازدان بطرف معنی
But if the terms of conformable expression be not of this description; that is to say, if portions of the expression be not conformable to portions of the sense, it is then called simple or uncompounded; which is of three kinds; 1st. When the sense is affirmative, and at the same time expresses in its form one of the three tenses, it then constitutes that part of the speech called a verb. 2. If it do not express time, but merely some object, then it is a noun; and 3. If it express neither time nor any particular object, then it is a particle.

The noun is of several kinds; 1st. Appellations or proper names; 2nd. Generic names; 3rd. Unlimited or ambiguous terms; 4th. Synonimous terms; 5th. Technical terms; 6th. Literal terms; 7th. Metaphorical terms. 1. As a noun may express one or many, it is either singular, or plural. If it express one with an appropriation to a particular individual, then it is a proper name; such as the names Zeid and Omar, &c. 2. If it express one, without any appropriation to a particular individual, and all the individuals be equal or alike, then it is a generic name, such as a sheep, a goat, &c. 3. If it be variable with respect to priority or excellence as the word, nature, or existence with regard to the Creator and his creatures, then it is variable or ambiguous; 4. If the noun is common to many objects, and is appropriated to each of these alike, as the word Aeen which signifies self, gold, fountain, and the eye; then it is synonimous or equivocal; 5. But if it be not uniformly so, but being first used in one sense, and
ديكر منقول كشبه هم در أن مشهور كردية إنا منقول كوبندي و نسبت كره ميشون بطرف ناقل وأكر ناقل او وعرف عام است منقول عرفي كوبندي و أكر خاص است اصطلاحي كوبندي و أكر شرع است منقول شرعي كوبندي أكر جنيه نيست بلكة در هم دو معني مستقبل است نسبت باول حقيقة است ونسبت ثاني مجاج است جنيهجة لغة اسد كه نسبت بتعبوين صايل يعني شير حقيقة است ونسبت برجل سباح مجاج است

فصل دوم در دانستن مفهوم
بدانكه غرض منطقي مقصود بالذات ازمفهوم است بحث از دلالت و لفاظ شخص بالعرص بون كه اين و اسطه اناءه اتفافه افتادة است پس بدانكه مفهوم اكر نزديك بتتجوز عقل مينته باشد صدق أن بر كتيرين پس حجري است جنيهجة زيد و اكر جنيه نيست يعني نزديك بتتجوز عقل صدقان بر كتيرين مينته نيست پس كلي است اكر جه مينته باشد و جون انرادان جنيهجة شريك الباري يا ميكى معدوم الوجود باشد جنيهجة عنقنا يا يانته شده باشد واحد فقت مع امكان الغير جنيهجة شيس يا مع امتناع الغير جنيهجه و اجب الوجود يا كثير باشد انراد
afterwards converted to another, becomes current in its new acceptation, it is then metaphorical, and takes its character from the person who employs it. If the speaker be an illiterate common person, it is called a vulgar phrase; if he be a man of science, it is called a technical term; and if he belong to the law, it is called a law phrase. But if this be not the case, and a word be used indiscriminately in both ways, the first directly applicable to its original object, and the second to that to which it is transferred; such as the word lion, it constitutes, when signifying a fierce animal, the literal or 6th species of Noun, and when used to denote a hero, the 7th species, or figurative.

Sect. II. Of Ideas formed by the Intellect.

Be it known that the object of the logicians considered strictly is the thing comprehended by the understanding. Our discussion respecting expression and language was necessary to our design merely because this is the instrument or means by which that is conveyed or understood. Know then that an idea, which in the conception of the understanding, is not, true or applicable to the whole of the individuals of a class, is a particular idea; and that an idea that is applicable to the whole without restriction is an universal idea, even although it should exclude the existence of other constituent parts, for example "an equal to God," or though it should express a being having no existence, such as the Unca; or if there should be found a single being with the mere probability of another, such as the Sun; or with the impossibility of another, such as the Creator; or where
ان مع التنافش جمانية سبعة سيارة و عدم
تنافش معلومات باري
جون در ميان كلبي و جزي تغقرة حاصل
شد بس حالا بدانكه لدى ميان دو كلبي يكي
ازيني جهار نسبت متجهف ميشون تباين
تساوي عبوم خصوص مطلق عبوم خصوص
من وجه
تباين ان است كه از هر دو جانب تفاقا
كلبي باشد جمانية انسان و حكركة بک
جا صادق نيبايد این نسبترا در استان
ایشان تباين کویند و هر دو کلی را باهم
متباين
و تساوي ان است كه در هر دو جانب
صدق كلی باشد جمانیه انسان و ناطق
كه جايكه انسان است ناطق است و جايكه
ناطق است انسان نيز البته این نسبترا
تساوي کویند و هرود کلی را باهم تمساوي
و عبوم خصوص مطلق ان است كه ازيک
جانب صدق كلی باشد و از جانب ديگر
نه جمانیه انسان و حيونان جايكه انسان
است حيونان البته خواهد بود و جايكه
حیوان واست انسان ضرور نبست این نسبترا
عبوم خصوص مطلق کویند و هر دو کلی را
باهم عام خاص مطلق
و عبوم خصوص من وجه ان است كه در
هر دو از کسی جانب صدق کلی نباشد
جمانیه حیوان و اسون در بعضي متعلق
several individuals are included with a limitation, such as the wisdom of God.

Having ascertained the distinction between universal and particular ideas, then know that there are established, among universal ideas, the four following relations: 1. The relation of disagreement; 2. The relation of agreement; 3. Relation between the general and particular idea in one way; 4. The relation of the general and particular idea in no way.

1. The relation of contrariety or disagreement is that in which there is a general repugnance on both sides as between man and stone, which do not reciprocate or correspond in any point; this relation logicians call contrariety, and the two general ideas with regard to each other contraries.

2. The relation of agreement is that in which there is a perfect reciprocity and agreement, for example "man" and "an animal endowed with speech;" For where there is a man, there also is an animal endowed with speech. This is called the relation of agreement; and the general terms are called correspondent or reciprocal.

3. In the relation called *Amom Chisoos Mutlick*, the sense of the general idea is corresponding or reciprocal only in one way; and not in the other; for example "man," "and living animal," where there is a man there is of course a living animal. But the reverse of this is not necessary. This relation is called *Amom Chisoos Mutlick*, and both terms opposed to each other *Amom Chisoos Mutlick*.

4. And the relation of *Amom Chisoos min wajéh* is that in which there is no reciprocation between the terms in any way; such as "animal" and "black-
حيوان است و أسود نبيست و در بعضي مسجل
اسود است و حيوان نبيست اين نسبت ا عبوم
خصوص من وجه كونند و هر دو كلي را باهم
عام و خاص من وجه

پس حاصل كلام اين است كه در اول از
هر دو جانب كليه ماده اقتراف است و در
ثاني از هر دو جانب كليه ماده اجتياع و
در ثالث از يك جانب كليه ماده اجتياع است
و در يك مسجل ماده اقتراف و در اربع از هر
دو جانب در مسجل ماده اجتياع است و در
بعضي مسجل ماده اقتراف

و نيز بداانكه كاهي كفته ميشون جزيبي
براي اخض يعني هرحه مندرج تحتت عام
است انرا جزي كونند لينك اول جزي حقيقى
است و ثاني جزي اضافي پس على هذى
التقدير انسان جزي اضافي است نسبت
بحيوان و حيوان جزي اضافى نسبت جسم
نامي و جسم نامي جزي اضافي نسبت
بحسم مطلقه على هذى القياس هرحه مندرج
تحت مفهوم عام است نسبت بان جزي
اضافي تواند بون
ness;" For sometimes there is an animal without blackness, and sometimes blackness without an animal, This is called Amom Chisoos min wojéh, and the terms in relation to each other Amom Chisoos min wojéh.

The result is this, that in the first, the basis of the universal is disjunction on both sides; In the second, the basis of the universal is conjunction; In the third, the basis of the universal is conjunction on one side, and disjunction on the other; and in the fourth, there is on both sides, in certain points disjunction and certain points conjunction.

Let it also be remembered that sometimes the term Juzzi is used for Achuz a portion, that is to say that whatever is ranked under a general idea is called Juzzi. But the first, viz. Achuz, is called a real portion, and the second Juzzi izausi, that is, a related part. According to this rule, therefore, man with regard to animal is a related part; and animal is a part with regard to Jism naumi or body defined; and body defined is a related part with regard to body in general, accordingly whatever is arranged under a general idea may be called Juzzi izausi, or a related part.
فصل ثامن در دانستن كليات حيه ملكية

و كليات هبكي بينه كونه اند جنس نوع
فصل خاصه عرض عام جراكه هثر مفعوم كلي
كه هست ًاز دو حال بيون نيست داخلي
ماهيته است ياخر ماهيت اكر داخلي ماهيت
نمز ًاز دو حال بيون نيست تهام ماهيت
افراف خود است يان جز و ماهيت اكر تهام
ماهيته افراد خرن است جنانجه انسان كه
تهام ماهيت زيد و عبر و بكر و غيره است
پس انز نوع كويش اكر تهام ماهيت افراد
خود نيست بللكه جز و ماهيت است ان نيز ًاز
هر دو حال بيون نيست جامع است جميع
مشترکات مختلف الحقيقية را يا جامع
نیست اكر جامع است جنانجه حیوان كه
جامه است در ميان انسان و فرس و بقر كه
باهم مختلف الحقيقة اند پس انز انسن
کوئند لیکن در اینجا دفع نازل است
هیبن حیوان است كه در یک مکات كن
توانده بود و در یک مکات نوع و وتمتیته
سوال كند در حقيقة انسن و فرس و در
جارب ان حیوان واقع شود پس در این صورت
جنس است جراكه اینجا مفعوم حیوان نست
بانسان جزو ماهیت است و هم جامع است
در ميان انسن و فرس كه باهم مختلف
الحقيقة اند و تتمیه سوال كند از
حقيقه فرس و بقر و غنم و غيره پس
Sect. III. Of the five Universals called Predicables.

The universals or predicables are altogether of five kinds, viz. genus, species, difference, peculiarity, accident. For every universal is reducible to one of two kinds; it is either inherent in the form, or not inherent in the form. If it be inherent in the form, this also is of two kinds. It either includes the whole form or character of the individuals under it; or it is only a part of the form; if it include the whole form of the individuals under it, such as "man," which includes the whole form of Zeid, Omar, or Beckar, &c. then it is called a species. If it be not the whole form of the individuals, but only a portion, this also is of two kinds. It either comprehends the whole of the different individuals, or it does not; if it comprehend the whole, like Heywaun, animal, which comprehends man, horse, and goat, varying in their character from each other, then they call it a genus, but here there is a nice distinction; for "animal" which is in one place a genus, in another way becomes a species. For example, when it is asked what is the nature of man or horse, and it is answered that they are animals, then, in this case, it is a genus: because here the idea of animal with regard to man is only part of his character, and at the same time comprehends man and horse, which vary in their nature from each other. But when the question is put respecting the nature of horse, goats, and sheep, &c.
فصل إسهال در تعريضات

بدانكه غرض از بحث تصورات دانستن
معلوم تصوري بون بابین حیثیت که موصل
است بطرف مسئول تصوري و این را معرف
کویند پس چون از جزای معرف که کلیات
اند خیسه فارغ شد حالا معرف را که مقصود
بالذات از تصورات همین است کفته میشود
in this case animal is a species; for the thing understood by animal is not a part of the character, but the whole of the character of horse, goat, and sheep. But if it be a portion of the character in such a manner as not to include the different associates, but to exclude them, then it is a difference, for example, nautik, speaking; which is not the whole, but part of the character of man, which they abstract.

These three are called zautiant, inherent or essential. Whatever is not essentially inherent in the character or nature, is likewise reducible to two kinds; it is something exclusively appropriated to one object only, or it is not exclusively appropriated to one object only. If it be exclusively or peculiarly appropriated like laughter, which is the peculiar property of man alone, then they call it chauseh, a peculiar property or peculiarity. If it be not peculiarly appropriated, such as the colour yellow and red, then it is called aurizé aun or common accident.

Sect. IV. Of the Different Species of Definition.

Let it be remembered, that our object in discussing the subject of ideas was to obtain a knowledge of the known perceptible, in such a manner or form as might lead to a knowledge of the perceptible unknown, and this they call maurif, that is, a definition; and, therefore, since its constituent parts, which are the five universal ideas or predicables, have been just now described, a definition, which in reality consists of those, is of course, already explained.
معروف هر لحيان است كه حيال لحيان شدة
قرار برای اینکه ناپایه تصور ان شی حاصل
شور چنانچه معروف انسان حیوان ناطق
که و شرط است در معروف اینکه مساوی
باشد برای معروف يعني انجیه تعريف ان
کرده ميشود لازم است که با او نسبت
مساوات منتظف إلاشند و نیز لازم است که
معروف انجیه تعني و اضع نر و روشنتر
باشد پس تعريف بالا عم صحیح نبست
مثال تعريف انسان بحیوان و باخص نیز
روانست مثال تعريف حیوان انسان چراکه
در میان هر دو نسبت عیوم خصوص مطلق
است مساوات نبست و شرط این است که
مساوات باشد و نیز جایز نبست که تعريف
به چیز یکه مساوی معروف باشد در علم
هیچچنین جایز نبست به چیز یکه لخفي از
معروف بود چراکه شرط این شده كه معروف
مساواي و انجیه میباید

پس جون تعريف معروف و شرایط ان معلوم
شد اکنون بدانکه معروف هيه چهار كونه است
حد تمام حن ناپای رسم تمام رسم ناپای اکر
جبنا ناپای و ناصح ناپای اکر
معروف انسان حیوان ناطق یض حس حذ تمام
است و اکر جبنا نبعد و ناصح ناپای
The *maurraf* or the *thing defined* is that respecting which every circumstance is collected that can tend to give a proper idea of it; take, for example, *heirwann nautik*, a *speaking animal*, as the definition of "*insaun,*," that is *Man*; and, in defining, the definition must correspond with the thing defined, that is to say, the description with regard to the thing described must stand in the relation of *mussawant mut-tahukuk*, real correspondence. It is likewise required that the definition should be more perspicuous, that is, more clear and obvious, and for this reason defining by a term that is more general than the thing defined is not proper; such, for example, as the description of *Man* by the term *animal*. Neither is it admissible to define by a term that is less general; such as the description of *animal* by the word *Man*; because the relation between *animal* and *man*, is that of *Anom Chusoose Mutluk*, and not that of *Mussawant* or perfect agreement, which is required; nor is it allowable to define by means of a thing equally known, or less known than the thing defined, because it is required that the description should correspond, and be at the same time more clear.

The nature of definition and its requisites being now understood, let it be remembered that definitions may all be referred to four different kinds, viz.

1. *Huddi Taun* or perfect definition.
2. *Huddi Nauki* or imperfect definition.
3. *Resimi Taun* or perfect indication or designation.
4. *Resimi Nauki* or imperfect indication or designation.

1. If the definition consist of the nearest genus and the nearest difference, then it is a perfect definition, such as *Heirwann Nautik*, the definition of man.  
2. If it consist of the remote *genus* and the nearest
بود يا فقط فصل تريب بود يس ناقص است
Chronique تعریف انسان جسم نامی ناطق
باشند جنونی تعریف حیوان صاحبک به
رسوم تمام است و اکر به جنس بیغ و خاصه
بوه يا فقط بخاصه بود يس رسم ناقص است
Chronique تعریف انسان جسم نامی صاحبک
باشند تعریف فقط و تعریف صرف بعضی عام
معنی نداشتند اند چراکه غرض از تعریف استیاز
و معرف است از ماسواي او و این فايده
از عرض عام حاصل نیست و کاهی رخصت
دیگر خواه است در ناقص خواه حد ناقص
باشند خواه رسم ناقص تعریف بلغظ اعما مثال
تعریف لغظی و تعریف لغظی انست که
معنی لغظی نا معلوم است لغظی دیگر
بای تفسیر و توصیف او اورده شد جنونی
کویند الغضفر هوا الاست يعني غصنفر بعینی
شیر است و هیحنی قسم در تعریف لغظی
کاهی بلغظ اعما هم اکتفا کرده میشود
جنونی کسی كه نیستاند بیرسید که درد
چه چیز است کویند کی است هیجین
اکر در نود ناقص يا رسم ناقص لغظ اعما و اردن
شده رخصت داده اند
difference, or the nearest difference alone, then it is an imperfect definition, such as Jism Naumi Nautik for man, or Nautik alone. 3. If the description consist of the nearest genus, and the property or peculiarity, such as Herwaun Sauhuk, a creature that laughs, for man, it is a perfect mark or designation. 4. And if it consist of the remote genus and peculiarity, or of the peculiarity alone, then it is an imperfect mark or description, such as Jism Naumi Sauhuk, a piece of laughing substance, or Sauhukie, laughing, only, as a designation of man.

And further, designation by common accident is not conceived to be good; because the object of definition is the discrimination of the thing defined from others; and this is not obtained from common accident. Sometimes in the Huddi Naukis and Risimi Naukis, Indication by a more common word or verbal description is admitted. That is the real meaning of a word not being well understood, another word is employed to explain and elucidate; for instance they say Ulrruzfur hooul assad to explain Ruzfur, which also means a lion. And in like manner in verbal description the designation is effected by an expression more common, as for example, when a person who does not know it asks "what is pain" they will say it is a thing common to all; and thus, in the Huddi Naukis and Reşimi Naukis, if a more common word be used, it is allowed.
باب دوم: حديث القسم الأول في قضية

تعد الأحكام غرض من التسهيلات الدينية

لا يوجد أي نص واضح يمكن قراءته بشكل طبيعي من الصورة المقدمة.
PART II. OF DEMONSTRATION.

SECT. I. OF PROPOSITIONS.

Let it be remembered, that the object of considering truths, is to obtain a knowledge of truth known in such a manner as to lead us to the knowledge of truth unknown; and this they call syllogism and reasoning: and since a syllogism is composed of propositions, a previous knowledge of these is required of course.

A proposition is a sentence containing either a truth or an untruth; that is to say, in the language of logicians, it is a compound or affirmation containing what is true or false; such as Zeid is standing, in contradistinction to an expression, such as Azreb, which does not convey any assertion. In short, the thing predicated is called a proposition, and if that proposition affirm something of another thing, as in the preceding example, or deny any thing of another thing, as in the example Zeid Kauim Naist, Zeid is not standing," then these are absolute propositions, and the first is called an absolute affirmative, and the second an absolute negative, and the subject of which the affirmation is made, corresponding to mubtida in grammar is called Mozooey; as Zeid in the sentence Zeid Kauim: and the thing spoken or proposed respecting the Mozooey is called Muhmool; such is Kauim he is standing, in the sen-
جناحچه در اصطلاح نحو خبر
و اینچه دال بر نسبت است انرا رابط
کویند جناحچه در اصطلاح نحو حضر و
استعاره کرده اند برای این لفظ هو يعني
رابط در زيد قايم ومثل ان مثلان در لفظ
مذكور نبست و ضرور است که برای رابط
کلام چسري میبايد پس لازم در این مقام
استعاره کرده اند بلغظ هو يعني کویند که
برای رابط کلام هو در اینجا مستحب است
و اکر اینچینين نباشد جناحچه کلمه است
پس ان قضیه شرطه کویند جناحچه ان
کانت الشهش طالعة فانهار موجود يعني
اکر باشد انتاب روشن پس روز موجود است
اینچینين قضیه را قضیه شرطه، و نام داشته
میشوند جز أول يعني انکانت الشهش طالعة
در اصطلاح ایشان مقدم جناحچه در اصطلاح
نحو خبر و نام داشته میشوند جز تلای
فانهار موجود در اصطلاح ایشان تلای
جناحچه در اصطلاح نحو خبر
بعد از این بدانئه قضیه حبلیه بحسب
موضوع برجنده تقسم منقسم میشوند

فصل دوم در بيان قیاس
تیاس قولی است که ترکب دانه شده
است از قسمه ها اینچینين قول که لازم
tence Zeid Kauim, corresponding in the language of syntax to the term Chabber.

That which expresses the connection between the subject and predicate is called Raubit or copula. In grammar they make use of the word Hoo for this connection; and something similar being required for connecting the words “Zeid Kauim” they have, for this purpose, substituted the pronoun Hoo, which is understood without being expressed.

But if the thing predicated be not affirmative or negative of something ascribed to something, as in the preceding examples, then such a proposition is denominated conditional, as for example, “If the sun shine, then it must be day.” The first member of this sentence, “If the sun shine,” logicians call Mokuddem, that is, the antecedent; which corresponds to the term “shirt” the condition in syntax, and the second part of the proposition “Then it must be day,” is denominated tauli, that is, the consequent; which corresponds to the term Chabber in syntax.

This being premised, know that an absolute or categorical proposition admits of various distinctions arising from the nature of the Mozoseh or subject, &c. &c.

Sect. II. Of Syllogisms.

A syllogism is a sentence composed of propo-
است برای ذات او قولی دیکر بداتکه چون
از بحث تقصیه هاکه ذاکستن حججت موقوف
بران بود فارغ شد اگون در بحث حججت
شرع کرد و حججت دلبل اوردن از حال
چیزی است برای اثبات حال چیزی و ان
بر سه کونه قباص استقا تبیهال اما قیاس
ان است که دلبل ارد از حال کلی بر حال
چیزی که این چیزی داخل ان کلبست پس
شريک ان حال خواهند بود این یارم دلبل
معنید یقین است چنانچه الاعلم متنغير و
گل متنغير حادث پس نتیجه حاصل خواهد
شد که الاعلم حادث بداتکه قول مولف که
از ذات او قولی دیکر لازم میبايد انرا قیاس
کویند و قولی دیکر که از او پیده میشورد
انرا نتیجه نامنه

و هر دو طرف نتیجه يعني موضوع و
محبس نتیجه که در قیاس مذکور اند
انرا ماده نتیجه خوانند و ترتيب که در
میان انها واقع است انرا هیت نامید
فومند پس اگر نتیجه اندرون قیاس
بیان و هیت خول مذکور است ان قیاسا
قیاس استثنای کویند چراکه مستقبل است
بر کلیه استثنای يعني لنکی چنانچه کلبا
کانت الشپس طالعه فالنهار موجود لنکی
الشپس طالعه پس نتیجه حاصل خواهد
شد که النهر موجود که اندرون قیاس بهاده
و هیت مذکور اند و اگر چنین نباشد
sitions, and in such a manner, that there necessarily arises from this composition another sentence. Know then that having finished our investigation of propositions on the previous knowledge of which all reasoning or demonstration depends, I shall now consider demonstration:—Demonstration or reasoning is the process of inferring something from the state of one thing to prove the state of another; and this is of three kinds, viz. Syllogism, Induction, and Analogy. Syllogism is that in which an inference is drawn from a general rule or class to a subordinate part or individual belonging to that class; which must of course partake of its general nature or character. This species of argument affords certainty or truth. Take, for example, "The world is changeable, and every thing liable to change was created;" thus they obtain the conclusion that the world did not exist from eternity, that is, was created. Be it then understood, that two sentences combined, from the nature of which there necessarily arises a third, constitute what is called Kasawz or syllogism: and the third sentence thus obtained is called Noteejah, that is, the conclusion.

The subject and predicate contained in the conclusion of the syllogism described is called the Maddeh, that is, the matter of the conclusion; and the order in which they are placed constitutes what is called Heiyet, that is, the form or figure. If the matter and figure of the conclusion appear in the premises of the syllogism, then that syllogism is called conditional, because the conditional particle Leikin must be included in it. Take, for example, "whenever the sun shines day must exist;" but the sun shines, which gives the conclusion—"Then day exists," which is materially and formally contained in the preceding syllogism. But if the conclusion be not materially and formally expressed in the premises
يعني نتيجة در قياس به هیت خون مذكور
نماذج انرا قیاس اقترانی کویند خواه حبلی
باشد خواه شرطی

موضوع مطلبی يعني موضوع نتیجه از
قياس حبلی نام داشته میشود اصغر و مربوط
نتیجه از حبلی نام داشته میشود اكبر و
قصیده که در ای اصغر است انرا اصغری کویند
و انچه در ای اكبر است انرا اکبری کویند و
انچه در میان موضوع و محصول نتیجه
مکرر واقع شده است انرا حد اوسط و اوسط
کویند

فصل سیم در استقراء

بتدانکه استقراء بیدا کردن جزینات است
برای ثبات کردن حکم بر کلی بتدانکه هیکی
حجبت و دلیل بر سد کووند است اول قیاس
دوم استقراء سیموم تبیین اول قیاس چنانچه
کنست اما استقراء ایست که یکلی ار از
حال جزینات براي اثبات حکم کلی که بر
تهامی ان جزینات ثابت است و ایین استقراء بر
دو کووند قسمت مبایده استقراء نام و استقراء ناقص

اما استقراء نام انست که تهامی جزینات
انرا مال حصل نکرده حکم بر کل نبایند
چنانچه کل حیوان اما ناطق و غير ناطق
و کل ناطق حساس و كل غير ناطق
حساس که نتیجه میدهد کل حیوان حساس
of the syllogism, then it is denominated \textit{uktarami}, that is, simple or categorical: whether it be absolute or conditional.

The \textit{subject} considered in the conclusion of a simple syllogism is called \textit{Asrur}, that is, the minor; and the thing predicated of the subject is called \textit{Akbar}, that is, the major; and the proposition which contains the minor is called \textit{Sururi}, minor proposition; and the proposition which contains the major, is called \textit{Akkuri}, or major proposition; and the term with which the subject and predicate of the conclusion are both compared is called the middle term or \textit{Huddi Osit}, or \textit{Osit}, &c. &c. &c.

\textit{N. B.} From the various modes in which the middle term may be placed, there arises a division of syllogism into four different \textit{forms} or \textit{figures}, or \textit{Ash-karl}, which are again subdivided and branched out into a great many subordinates.

\textbf{Sect. III. Of Induction.}

Be it known that \textit{Induction} is the process of collecting particulars for the purpose of establishing a general rule respecting the nature of the whole class.

Argument, or reasoning, is supposed, as we formerly observed, to be of three kinds, \textit{Syllogism}, \textit{Induction}, and \textit{Analogy}; and syllogism has been just now discussed. Induction is of two kinds, viz. perfect and imperfect.

It is \textit{perfect} induction when the general rule is obtained from an examination of all the parts. For example, all animals are either endowed with speech, or not endowed with speech. But those endowed and those not endowed are both sentient, therefore all animals are sentient. This is an example
افترا استقرا تام كوبنند و اين قسم استقرا مفيد يعنى است
اما استقرا ناقص اتكه اكر جزينات اتراك
اتصغي نهایت و بعد از ان حكم ان كل
ان جزينات نهایت قنانچيه كوبنند كل حيوان
متتحرك جيده الا سغل عند المضغ يعنى
هر حيوان كده يست متتحرك دندان زرين
أو نزديك حايدين جراكه انسان و بقر و غنم
و غيران كه از قسم حيوان فرض كنیم
هي جنين است و اتراك استقرا ناقص كوبنند
جراكه اين قسم استقرا مفيد يقين نبيرون
و احتوال است كه بعضي از اينها قنان
باحشند كه جيده اسفل نزديك مضغ حركت
نهایتي قنانچيه اين معنى مسبوع شد در
تبلسم يعنى نهيل
بدانكه در قسم از دليل كه تيسى و استقرا
است بيان ان كاذبها باتي ماتن تبئيل

فصل چهارم در تبئيل
و تبئيل بيان مشاركت جزي است برای
جري در علت و موجب حكم تا انكه تابت
شول نسبت ان حكم در او قنانچه كوبنند
نبيذ يعني غوره حرام است و علت حريمت
در خبر سكر است و سكر در غوره هم موجود
است بيان نبئت شن كه غوره نيز حرام باشد
عهد و تريذيد است
of perfect Induction, which produces certainty.

It is imperfect induction when a number of individuals of a class being overlooked or excluded, a general rule is thus established respecting the whole. For instance, if it should be assumed that all animals move the under jaw in eating, because this is the case with man, horse, goats, and sheep, this would be an example of imperfect induction, which does not afford certainty: because it is possible that some animals may not move the under jaw in eating, as it is reported of the Tamsukh or Nehung, the crocodile.

Having considered the first two modes of reasoning, there still remains to be explained Analogy.

**Sect. IV. Of Analogy.**

Analogy is the unfolding of an affinity or resemblance between two subordinate parts of the same class, differing in their nature and properties, so as to establish a general law and axiom respecting both; take, for example, the general rule, that "grapes are prohibited because wine is," which conclusion is obtained thus. The cause of the prohibition of wine is intoxication; but intoxication exists also in the grape; therefore it is proved that the grape likewise is prohibited. The instruments of this process are analysis and selection, &c. &c.
فصل بنجم در تقسيم قياس بحساب ماده

بداية تياس جنانچه بحساب صورت ذو قسم است اتراني و استثنائي جنانچه.

كذشت هفچین بحساب ماده يعني با اعتباراً جوانی پرینچ کونه میشد اول اطرافي

دوم جدای سیو اخطابی چهارم شعری

بنجم سفسطی

و قياس اطرافي مرکب میشد از پنجات

بيوني بهدهايات و اصول ان شش است اول

اوليات و اوليات اترا کويندن کد فقط ملا حظه

موضوع و محصول و نسبت کافی باشد

پرای حكم جنانچه عدال اعظم مین ليجر

دوم مشاهدات و مشاهدات اترا کويندن

که در ان حكم کرده شده باشد بو اسطره

حس اکر حس ظاهر باشد انرا حسابات کويندن

جنانچه الشیش مضمیه و التار محترقته و

اکر حس باطن باشد انرا جدیدات کويندن

جنانچه لنا جوعا و عطشا

و سیو تجر بیات است و تجر بیات انرا

کویندن که دران حکم کنند عقل بنکرار تجر

به جنانچه السبقونا مشهلب

چهارم متونات و متونات انرا کويندن

که دران حکم کنند عقل بو اسطره استباع

از جماهیر که مصالح داند احتیال انرا بر

کذب جنانچه محبت عليه السلام و عیسی

عليه السلام نبی خدا است
Sect. V. Syllogism divided according to their Matter.

Let it be observed, that as syllogisms have been divided according to their figure or form into absolute and conditional, so are they likewise distinguished according to their matter or constituent parts, into five different classes, viz. the demonstrative, the casuistical, the rhetorical, the poetical, the sophistical.

I. The demonstrative are composed of truths, that is to say, perceptions, the different species of which are six.

1. Intuitive or self-evident truths; to obtain which the bare inspection of the subject and predicate, and the relation in which they stand to each other is sufficient: for example, "a whole is larger than a part."

2. Evidences, obtained by means of sensation which are called Hisiaut if they be external, such as "the sun shines, the fire burns; and Judinaut, if they be internal; as, for example, "hunger and thirst."

3. Experiences, which are the conclusions formed by the understanding from repeated trials; as, for example, "that Scammony is a Cathartic."

4. Traditions, which are the conclusions which the understanding forms from the reports of a number of people; and which cannot be supposed to be false, such as the mission of the prophet Mahommed, and Jesus Christ.
ينجم حديثات و حكيديات ان است
ك حكم كره شد در او بو اسطه حاس
طبيعت و حدان. سرت انتقلت است از
مبابي بحلوب مثالا نور القبر مستغاد من
نور الشمس

شنم فقريات و ان است ك حكم كرده شد
در او بو اسطه انك ان و اسطه غاياب نبيشور
ا نذي تنزدي ك تصور اطراف مثلا انك اربع
نوج است دوم تياس جدلی است و مركب
ميشور ا من مشهورات و مسليات اما مشهورات
ان قضية هاست ك دران راي كل مطابق
باشد جنانهه العلم حسن و الجهل تقبع
اما مسليات ان قضية هست ك تسليم
کنند از حاسم و بناي كلام نهند جهت دنع
حاسم

سيوم تياس خطابی است و مركب ميشور
ار مغبورات و متنوونات اما مقبوال ان قضيه
هست ك اخد از كسانیكه در حقن ايشان
حسن اعتقاد داشت مثل انيبا و اوليا
اما مظنو نان ان قضية هست ك حكم كره
ميشور در ايشان بحكم رايی تجویز نقصن
انچنان فلان شارف لانه موطف باليل
جهان تياس شری است و ان مركب
ميشور امنتخبات جنانهه العسل يا توتية
سالیه
5. Conjectures, which are opinions founded on notions respecting quality and motion; and formed by inferring an effect from a supposed principle or cause: such, for example, as "That the light of the moon is derived from the light of the sun."

6. The general properties of matter, that is, such as are obvious without the intervention of any latent intermediate idea, for example, "four is an even number."

N. B. In the original here follows the distinction of demonstration or proof into reasoning à priori dénominated Berhaun Lemni, and reasoning à posteriori dénominated Berhaun Amni.

II. The casuistical or disputative, which are,

1. Current and prevailing opinions agreeable to the ideas of the multitude, such as "learning is good, and ignorance bad."

2. Malicious insinuations artfully expressed to conceal the motive.

III. The rhetorical, which are composed,

1. Of propositions taken for granted upon some respectable authority, such as that of the prophets and fathers.

2. Of presumptions or suspicions grounded on the frequency of some improper practice; such as that of a person being a thief from his going abroad in the night.

IV. The poetical, which are founded on fiction. Honey, for example, they make a liquid ruby.
پنجم تیاس سفسطی است و ان مرکب میشود از و هیبات و مشبهات
اما و هیبات ان قضیه هاست که حکم میکند بایشان در غیر امور محسوسه مثل کل موجود مشار الیه و مشبهات ان قضیه‌ها اند در اصل و مشتبه بصفه مینبايند چنانچه کهی صورت فرسرا که منقوش است بر دیوار و فرس است و هر فرس صحال است نتیجه میدهد که این صورت صحال است.
V. The sophistical, are composed,

1. Of vague language without specifying any precise object, such as the vague expression "The person to whom we allude."

2. Quibbles, which, though absolutely false, exhibit some appearance of truth; as if I should say, that "the figure of the horse which is painted on the wall is a horse;" that "every horse neighs;" and, consequently, that "the figure on the wall must also neigh."
V.

An Account of the Measurement of an Arc on the Meridian on the Coast of Coromandel, and the Length of a Degree deduced therefrom in the Latitude 12° 32'.

By Brigade Major WILLIAM LAMBTON.

IN a former Paper which I had the honour to communicate to the Asiatick Society, I gave a short sketch of an intended plan for establishing a series of connecting points commencing from the Coromandel Coast, and extending across the Peninsula; but that Paper was only meant to convey a general idea of the principles on which the work was to be conducted; a more circumstantial and scientific account, it was thought, would be more to the purpose, when I had the means of putting the plan in execution, and detailing the particulars. Since that time I have received a most complete apparatus, which has enabled me to proceed on the scale I originally proposed, and what is here offered is the beginning of that work, being the measurement of an arc on the meridian, from which is deduced the length of a degree for the latitude 12° 32' which is nearly the middle of the arc.

The triangles here mentioned are those only, from which the arc is obtained, and the base line, the foundation to the whole, is a measured line near the Sea Coast, an account of which is here subjoined.
SECTION I. An account of the Base Line.

Some time had been taken up in examining the country best suited for this measurement, and at length a tract was found near St. Thomas's Mount, extremely well adapted for the purpose, being an entire flat, without any impediment for near eight miles, commencing at the race ground, and extending southerly. This being determined on, and the necessary preparations made, it was begun on the 10th of April, and completed on the 22nd of May, 1802.

I had expected a small transit instrument from England, for the purpose of fixing objects in the alignment, and for taking elevations and depressions at the same time; but that instrument not having arrived, I thought it unnecessary to wait, particularly as the ground was so free from ascents and descents; I therefore used the same apparatus as I had formerly done, viz. the transit circular instrument and the levelling telescope fixed on a tripod with an elevating screw in the center. In all horizontal directions, this telescope fully answers the purpose, and as there has been no deviation from the level to exceed 26' 30" excepting in one single chain, and those cases but very few, I feel entirely satisfied as to the accuracy of the whole measurement.

The chain which was made use of is the one I formerly had, and I was fortunate enough to receive another from England, made also by the late Mr. Ramsden, and this having been measured off by the standard in London, when the temperature was 50° by Fahrenheit's thermometer, it afforded me an advantage of correcting for the effects of expansion, a circumstance in which I was by no means satisfied in the former measurement. In order, therefore, to have a standard at all times to refer to, I have reserved the new chain for that purpose, and used the
old one only as a measuring chain, by which means I can always determine the correction for the wear.

By referring to the annexed table; it will appear that there are only four angles of depression, and two of elevation, taken in the whole length of the base; the rest are all horizontal measurements, and many of them consist of a great number of feet before it became necessary either to sink or elevate the coffers; when that was done, great care was taken to mark the termination of the preceding measurement; and for that purpose a small tripod was used in the shape of a T, with three iron feet to run into the ground; the straight side of which T was placed in the line. Another small T was made with its top also parallel to the line, and fixed upon the large one so as to slide to the right or left, and upon that again was a long piece of brass made to slide out at right-angles to the top of the T; in the middle of this brass a mark was made, which was brought to a plumb line let fall from the arrow, and the height from the brass to the arrow was noted down; when the succeeding chain was laid, which was to commence the new level or hypothenuse, the arrow was then brought, so that a plumb line freely suspended, would coincide with the mark on the brass slider. The height of that chain above the brass was likewise taken, by comparing those two heights the elevation or depression of the new commencement was determined, and those differences noted in the seventh and eighth columns of the table. The differences of the two aggregates contained in those columns, when applied to the ascents and descents, will therefore shew how much one extremity of the base is above the other. The height of the chain at the commencement and termination of the whole was of course taken from the ground.

All the other particulars respecting this measurement are nearly the same as that in the Mysore coun-
try, a full account of which has been published in a
former volume of the Asiatic Researches. Some lit-
tle alterations have been made in the coffers; that
is, they were all of the same length, and the whole
together about ninety-six feet, so as to give room
for the pickets with the brass register heads. Their
sides continued to the ends, and their depth on each
side was the same, for the purpose of being turned
every day that they might fall into a curve by their
own weight and that of the chain. I also used tripods
with elevating screws in the center, for supporting
the coffers, making no other use of pickets than for
the drawing and weight posts, and for carrying the
register heads. The top of each stand on tripod was
a thick circular piece of wood fixed firmly to the
end of the elevating screw, and a slip of board was
fastened across the circular top, screwed into the
center, and allowed to turn round. When the ends
of two coffers were placed on the top piece, this slip
of board was admitted into the under part of each,
and prevented their sliding off, a precaution that was
very necessary on account of the high winds.

The point of commencement of the base was had
by dropping a plummet, from the arrow of the chain
suspended by a silken thread. A long but small
bamboo picket had been driven into the ground till
its top was level with the surface, and the cavity of
the bamboo was such as just to receive the plummet,
and when the first chain was in the coffers, drawn
out by the weight at the opposite end, it was adjusted
by the finger screw at the drawing post in such a
manner that the plummet might hang suspended over
the cavity of the bamboo, while the thread was ap-
p lied to the arrow. This was done within the ob-
servatory tent, that the plumb line might hang freely
without being disturbed by the wind. The bamboo
picket was preserved with great care during the time
I was observing for the latitude, and was then pro-
ected under the frame of the zenith sector. When the tent was removed, a large bamboo flag-staff was erected, whose cavity covered the picket, and in that state it remained until the measurement was completed.

At the termination of the base, being the end of a chain, one of the large hooped pickets was driven into the ground till its top was on a level with the coffers and under the arrow of the chain. The opposite end being adjusted by the finger screw, the arrow at the leading end was nearly the center of the picket. A mark was made, and a small round headed nail was driven in till it was level with the surface. The chain was again applied, and the arrow cut the center of the nail. The picket had been driven upwards of two and a half feet into very hard clay.

But that those extremities may be preserved, in case they may hereafter be referred to, I erected small masses of hewn stone eight feet square at the bottom and four at the top, the axis of those masses being made to pass through the points of commencement and termination, and in order that this might be correctly done, the following method was used.

I marked out the foundation of the building, so that the picket might be as nearly in the center of it as possible. The earth was dug about a foot deep, reserving a space round the center untouched. After the foundation was brought to a level with the surface, the first tier of stones was laid, being one foot in height. The inner part was then filled up with stones and mortar, taking particular care at the same time that the center was not touched. The next tier of stones was then laid, which was six feet square and one foot high. This also was filled in with great care, and some cement and bricks put gradually round the picket. After that the last tier was laid which was four feet square and also one foot high.
When these stones were firmly fixed small silken threads were drawn across each other in the diagonals of the square. A plummet (pointed) was then suspended from the point of intersection of those threads, and they were so moved that the point of the plummet coincided with the center of the nail in the picket. The position of these threads being determined, marks were inserted in the stone. The cavity was then filled up, and a square thick stone was fixed in the middle of the mass, having a circular place of about four inches diameter, sunk half an inch deep, and whose center was marked by a point. This point, by moving the stone and again applying the silken threads was brought to coincide with the point of intersection, and then it was firmly fixed and pointed.

Precisely the same kind of building was erected at the beginning of the base, but in place of having a picket in the center, four large hooped ones were driven into the ground, forming a square of about ten feet, the small bamboo picket being intended as the center. Silken threads were then drawn across from the diagonal pickets, and so moved, that the plummet first used, suspended from the point of intersection of the threads, might drop into the cavity of the bamboo. That being adjusted, lines were drawn on the tops of the pickets where the threads had been extended. The building was then erected, and the center both of the second and last tier, was marked by the intersection of those threads when applied to the marks on the pickets.

Such has been the mode of defining the extremities of the line. The buildings are well built of stone and some brick, and will remain for years, if not injured by acts of violence. They are intended to receive an instrument on the top, and the points are points of reference if it should ever be thought necessary to have recourse to them.
Expansion of the Chains and Their Comparative Lengths.

As I wished to be satisfied with respect to the expansion of each of the chains, and their comparative lengths, I made a course of experiments for both purposes. I had accordingly the coffers arranged near the ground, that the drawing and weight posts might be driven deep and firmly fixed. Both the chains were then put into the coffers, and the comparisons made as follows:

April 10, at six P. M. the temperature by a mean of five thermometers was 85°.6.

Three comparisons were made, and the old chain exceeded the new one, nine divisions of the micrometer screw.

April 10, at six A. M. the temperature by a mean of five thermometers was 79°.

Four comparisons were made, and the old chain exceeded the new one nine divisions. Therefore at the commencement, the old chain exceeded the new one in length, nine divisions of the micrometer.

May 23. After the base was completed, the temperature by a mean of five thermometers, was 86°.

By a mean of five comparisons, the old chain exceeded the new one 10.65 divisions.

24. The temperature by a mean of five thermometers was 84°.

And a mean of six comparisons, gave the excess of the old chain above the new one — — 11.08 do.

25. The temperature was 87°.

And a mean of two comparisons, gave — — 11.00 do.

Mean 10.86 do.
Hence it appears, that at the conclusion of the base, the old chain was longer than the new one, 11 divisions of the micrometer very nearly, so that it had increased from being in use, 2 divisions, or \( \frac{3}{103} \) inches.

These experiments were made with great attention, and when either chain was stretched out by the weight, it was carefully brought into a line in the coffers.

As I had reserved the new chain for a standard, and knowing the temperature at which it had been measured off in London, I considered it an object to determine its rate of expansion and contraction compared with the thermometers which had been in use in measuring the base, since these were but common ones, and might probably differ from those made use of by General Roy and others, who had determined the expansion of metals by the pyrometer; and I was further induced to do this, from seeing the great variation among them, when the degree of heat became above one hundred, which it generally was in the coffers every day before I left off. To avoid those irregularities arising from the expansions being checked by the resistance from the pressure on the coffers, I chose the times of sunrise, and from one to two o'clock, P.M. for making the observations. Sunrise in India is generally the coolest time of the twenty-four hours, and the chain had during the night, on account of the uniform state of temperature, full time to free itself from any resistance. At the hottest part of the day likewise there is a considerable time when the thermometers are nearly stationary, which will afford time for the resistance in the coffers to be overcome, and it is necessary to pay particular attention to this circumstance, for the chain will be perceived to lengthen often for nearly half an hour after the thermometers are at their highest.
I had made a great many experiments prior to the measurement, but found great irregularity, partly from not attending sufficiently to the above circumstance, and partly from the unsteadiness of the drawing post, notwithstanding it was driven deep into very hard ground, and secured, as I thought, by having large stones pressed close on each side of it. To remedy this latter inconvenience, I had a staple driven into a brick wall, into which the iron was fixed with the adjusting screw for the chain, after which I perceived a perfect coincidence with the arrow and mark on the brass head, except what arose from the trifling expansion and contraction of the iron which held the chain. I then began a new course of experiments on both the chains, and the results were as follows:

**Experiments for determining the expansion of the new Chain.**

<table>
<thead>
<tr>
<th>Month</th>
<th>TIME</th>
<th>Mean of 5 Thermometers</th>
<th>Change of Temperature</th>
<th>No. divisions</th>
<th>Total expansion and contraction</th>
<th>Total due to 1°</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 4</td>
<td>2 P.M.</td>
<td>116.4</td>
<td>33.4</td>
<td>51</td>
<td>245157</td>
<td>.00734</td>
<td>Weather clear and windy during the whole of these experiments.</td>
</tr>
<tr>
<td>5</td>
<td>☄ rise.</td>
<td>83</td>
<td>40.8</td>
<td>64</td>
<td>307648</td>
<td>.00754</td>
<td></td>
</tr>
<tr>
<td>2 P.M.</td>
<td>123.8</td>
<td>41.3</td>
<td>64</td>
<td>307648</td>
<td>.00744</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>☄ rise.</td>
<td>82.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>☄ rise.</td>
<td>80</td>
<td>39.1</td>
<td>60</td>
<td>288420</td>
<td>.00737</td>
<td></td>
</tr>
<tr>
<td>2 P.M.</td>
<td>119.1</td>
<td>37.7</td>
<td>57</td>
<td>273999</td>
<td>.00727</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>☄ rise.</td>
<td>81.4</td>
<td>40.5</td>
<td>63</td>
<td>302841</td>
<td>.00747</td>
<td></td>
</tr>
<tr>
<td>2 P.M.</td>
<td>121.9</td>
<td>42.2</td>
<td>66</td>
<td>317262</td>
<td>.00752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>☄ rise.</td>
<td>79.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean 00.742
Experiments for determining the expansion of the old Chain.

<table>
<thead>
<tr>
<th>Month</th>
<th>TIME</th>
<th>Mean of 5 Thermometers</th>
<th>Change of Temperature</th>
<th>No. divisions</th>
<th>Total expansion and contraction</th>
<th>Total due to 1°</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>June S.</td>
<td>0 rise.</td>
<td>83,5</td>
<td>26,8</td>
<td>42</td>
<td>201894</td>
<td>0,00749</td>
<td>Cloudy weather and high winds during the whole of these experiments.</td>
</tr>
<tr>
<td>2 P.M.</td>
<td>110,3</td>
<td>25,1</td>
<td>40</td>
<td>192280</td>
<td>0,00766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0 rise.</td>
<td>85,2</td>
<td>24,8</td>
<td>39</td>
<td>187473</td>
<td>0,00755</td>
<td></td>
</tr>
<tr>
<td>1 P.M.</td>
<td>110</td>
<td>80,2</td>
<td>27,9</td>
<td>42</td>
<td>201894</td>
<td>0,00724</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0 rise.</td>
<td>108,1</td>
<td>24,8</td>
<td>38</td>
<td>182666</td>
<td>0,00736</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0 rise.</td>
<td>83,3</td>
<td>28</td>
<td>42</td>
<td>201894</td>
<td>0,00721</td>
<td></td>
</tr>
<tr>
<td>2 P.M.</td>
<td>111,3</td>
<td>31,3</td>
<td>46</td>
<td>221122</td>
<td>0,00706</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0 rise.</td>
<td>80</td>
<td>83,5</td>
<td>110</td>
<td>85,2</td>
<td>27,9</td>
<td>42</td>
</tr>
</tbody>
</table>

It appears from these results, that the expansion due to 1° of the thermometer is less than what has been allowed by experiments made in England, but this might arise from the thermometers, as they were such as could be purchased in the shops, and therefore most probably of the best kind. Great care, however, was taken to watch the moment when they stood the highest, and though they varied from one another considerably at that time, yet that variation was generally the same in equal temperatures.

The reductions from the hypothenuses to bring them to the horizontal level, were made by numbering the feet from the old chain as they were measured, viz. by calling 32 chains 3200 feet, which would be 3200, 115 feet by the new chain; but this would produce no sensible error in the versed sign of a very small angle, and on that account these decimals were not taken into the com-
putation, which was thought less necessary, since the whole deduction did not amount to three inches. Neither was any notice taken of the different heights of the hypothenuses or levels one above another, as that difference was too trifling to affect a length of thirty or forty chains. The base has therefore been considered at the same distance from the center of the earth, before it was reduced to the level of the sea, and the perpendicular height of the south extremity, which I have considered as nearly the general height, has been taken for that purpose. That perpendicular height was obtained by comparing the south with the north extremity, and the height of the latter was determined by observations made at the race-stand and on the sea-beach, where allowance has been made for the terrestrial refraction. The following is the manner in which it has been determined:

On the top of the race-stand, the under part of the flag on the beach was observed to be depressed 9' 30"; and at the beach, the top of the race-stand was elevated 7' 15". When the instrument was on the platform of the race-stand, the axis of the telescope was on a level with the top of the railing, which was observed from the beach. But at the beach the axis of the telescope was four feet below the part of the flag which had been observed.

The horizontal distance from the station on the stand to that on the beach is = 19208 feet. Then as 19208 : 4 :: Rad : tan. 43", which must therefore be added to the observed depression of the flag—Hence 9' 30" + 43" = 10' 13" is the depression of the axis of the telescope on the beach, observed from the race-stand.

Now the station on the beach is nearly at right angles to the meridian, therefore, by allowing
609.57 fathoms to the degree, 19208 feet will give an arc of 3° 9' very nearly, which is the contained arc. And the difference between the depression and elevation being 2' 58'', we have $\frac{3\cdot 0\cdot 9\cdot 5\cdot 8\cdot 9}{2} = 5''$, 5 for the terrestrial refraction. Hence, since the observed elevation of the stand, plus half, the contained arc would give the angle subtended by the perpendicular height of the stand above the telescope at the beach, were there no refraction, we shall have $7' 15'' + \frac{3\cdot 0''}{2} - 5''$, 5 = 8' 44'' for the true angle subtended by the perpendicular height, which being taken as tangent, to the horizontal distance and radius, we have $R : \tan. 8' 44'' :: 19208 : 48,797$ feet the height required. But the axis of the telescope on the beach was determined by levelling down to the water, to be 21,166 feet above the sea. Which, added to the above, give 69,963 feet for the perpendicular height of the top of the stand above the level of the sea.

Now the top of the race-stand was determined by levelling to be 31,25 feet above the north extremity of the base; which taken from the other, leaves 38,713 for the north extremity of the base above the sea, which extremity being, by the table, 22,96 feet above the south extremity, we shall have 15,753 feet from the perpendicular height of the south extremity of the line above the level of the sea; and from this height the length of the base has been reduced.

The angles of elevation and depression were taken by the circular instrument, from a mean of several observations, and the error of collimation was corrected by turning the transit over, and the horizontal plate half-round. But the weather was rather dull during the whole of these operations.
TABLE.

Containing the particulars of the measurement of a base line near *St. Thomas's Mount*, commencing in latitude 13°00′29″59 N. and extending 40006.4418 feet South Westerly, making an angle with the meridian 0°10′36″. The first column contains the number of the hypotenuse, or measured distances. The second the length of each in feet. The third the angles of elevation and depression (which each hypotenuse makes with the horizon). The fourth the quantities to be subtracted from the respective hypotenuse to reduce it to the horizon. The fifth the perpendicular ascents and descents to each hypotenuse. The sixth the commencement in inches of every hypotenuse above or below the termination of the one preceding; and the seventh contains the mean temperature during the respective measurement.

<table>
<thead>
<tr>
<th>No. of the hypotenuse</th>
<th>Length of each in feet</th>
<th>Angles of elevations and depressions</th>
<th>Deductions from each hypoten.</th>
<th>Perpendicular.</th>
<th>Commencement from the last</th>
<th>Thermometers</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>above in.</td>
<td>below in.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>600</td>
<td>19 40</td>
<td>.00984</td>
<td>8,4325</td>
<td>25.5</td>
<td>86.6</td>
<td>Commenced the 10th April, 1802.</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
<td>26 00</td>
<td>.430</td>
<td>3,7815</td>
<td>2.5</td>
<td>84.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2100</td>
<td>26 30</td>
<td>.06237</td>
<td>10,1878</td>
<td>2.37</td>
<td>94.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>300 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.37</td>
<td>84</td>
</tr>
<tr>
<td>5</td>
<td>600 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.75</td>
<td>90.4</td>
</tr>
<tr>
<td>6</td>
<td>100 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.75</td>
<td>95.3</td>
</tr>
<tr>
<td>7</td>
<td>400 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.13</td>
<td>82.2</td>
</tr>
<tr>
<td>8</td>
<td>500 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.0</td>
<td>91</td>
</tr>
<tr>
<td>9</td>
<td>100 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
<td>93.2</td>
</tr>
<tr>
<td>10</td>
<td>400 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.25</td>
<td>93.3</td>
</tr>
<tr>
<td>11</td>
<td>300 do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.25</td>
<td>84.9</td>
</tr>
<tr>
<td>12</td>
<td>300 0 20 30</td>
<td>.00534</td>
<td></td>
<td>1,7890</td>
<td>10.0</td>
<td>90</td>
<td>In the water.</td>
</tr>
<tr>
<td>13</td>
<td>100 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.5</td>
<td>96</td>
</tr>
<tr>
<td>14</td>
<td>100 0 02 30</td>
<td>.14088</td>
<td>5.3062</td>
<td></td>
<td></td>
<td>107.4</td>
<td>} Bank of a Tank.</td>
</tr>
</tbody>
</table>
### MEASUREMENT OF AN ARC ON THE O5

<table>
<thead>
<tr>
<th>No. of the hypotenuse</th>
<th>Length of each in feet</th>
<th>Angles of elevations and depressions</th>
<th>Deductions from each hypoten.</th>
<th>Perpendicular.</th>
<th>Commencement from the last</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>100</td>
<td></td>
<td></td>
<td>40,87</td>
<td>105,8</td>
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</tr>
<tr>
<td>17</td>
<td>200</td>
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<td>11,75</td>
<td>82,2</td>
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<tr>
<td>18</td>
<td>200</td>
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<td></td>
<td>14,12</td>
<td>83,4</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>500</td>
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<td>6,12</td>
<td>89,2</td>
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</tr>
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<td>21</td>
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<td>87,5</td>
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</tr>
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<td>93,7</td>
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<tr>
<td>26</td>
<td>500</td>
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<td>10,62</td>
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<tr>
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<tr>
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<td>11,37</td>
<td>88,9</td>
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</tr>
<tr>
<td>36</td>
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<td></td>
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</tr>
<tr>
<td>38</td>
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<td>90,1</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>900</td>
<td>04 50 .00320</td>
<td>4,4991</td>
<td>1,8</td>
<td>96,9</td>
<td>The 2 chains in the Chingle-pet road.</td>
</tr>
<tr>
<td>40</td>
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<td></td>
<td></td>
<td>11,4</td>
<td>90,5</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>800</td>
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<td>7</td>
<td>93,7</td>
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<tr>
<td>42</td>
<td>1400</td>
<td></td>
<td></td>
<td>6,7</td>
<td>93,4</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>1100</td>
<td></td>
<td></td>
<td>2,8</td>
<td>90,9</td>
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</tr>
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<td>3</td>
<td>93,4</td>
<td></td>
</tr>
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<td>45</td>
<td>600</td>
<td></td>
<td></td>
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<td>88,7</td>
<td></td>
</tr>
<tr>
<td>46</td>
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<td>10,2</td>
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<td>7,2</td>
<td>93,1</td>
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<td>48</td>
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<td></td>
<td></td>
<td>7,2</td>
<td>90,4</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>2200</td>
<td></td>
<td></td>
<td>5,6</td>
<td>91,8</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>800</td>
<td></td>
<td></td>
<td>7,3</td>
<td>97,3</td>
<td></td>
</tr>
</tbody>
</table>

| 40000                 | .25593 9,8053 25,1908 | 181,16 272,06 | 90,8          | Completed the 22nd May, 1802. |

North above the south extremity 22,96 feet in perpendicular height.
At the commencement, the old chain (with which the measurement was made) exceeded the new one by nine divisions of the micrometer, equal to \( \frac{0.0043\times0.008}{12} \) feet. Therefore \( 100 + \frac{0.0043\times0.008}{12} \times 400 \) will be the measures in lengths of the new chain, equal \( 40001,4420 \)

At the conclusion, the old chain exceeded the new one by eleven divisions, consequently it had increased by wear two divisions of the micrometer = 0.0008 feet. Hence \( \frac{0.0043\times0.008}{2} \times 400 = 0.1600 \) feet, is the correction for the wear, which add \( +0,1600 \)

Whence the apparent length of the base, will be 400,016020 lengths of the new chain, \( 40001,6020 \)

The sum of all the corrections in column fourth for obtaining the horizontal distances, is 0.2359 feet, which must therefore be deducted \( -0,2359 \)

And this will give the apparent horizontal length of the base, in terms of the new chain 400,013661 lengths, or \( 40001,36661 \)

The mean temperature for the whole base is 90°, 8 and the new chain was measured off when the thermometer stood at 50° hence to reduce the whole horizontal length to the standard temperature of 62°, the equation will be expressed by

\[
400,013661 \times \left( \frac{62°}{8-50°} \right) \times 0.0001 \left( \frac{62°}{8-50°} \right) \times 90.12^\circ \\
\]

400,013661 feet, or 5,1162 feet which must be added, \( +5,1162 \)

Hence the whole horizontal distance corrected for 62° will be, \( 40006,4823 \)
Which reduced to the level of the sea will be, \( 40006,4413 \)
Note, the quantity +,0074 inches is the expansion of the chain due to 1° of the thermometer as determined by my own experiments detailed in the annexed memoir. By General Roy's experiments with the pyrometer, it was +,00763 inches.

The quantity +,01237 inches is the expansion of 100 feet of brass due to 1° of the thermometer.

By the experiments I made in the Mysore the expansion of the old chain was +,00725 inches due to 1°. By these experiments it is +,00737 inches, but I give the preference to the latter on account of the chains being fixed to the wall.

The radius of curvature for reducing the base to the level of the sea, is assumed at 3448748 fathoms being the radius to the meridional circle on which one degree is computed to be 60191 in the latitude of 13°:

Section II.—Observations for determining the Angle which the Base Line makes with the Meridian.

At the North end of the base latitude . . . . . . . . . . . 13° 00 29", 59 N. September 24th, on the evening the polar star when at its greatest Eastern elongation was observed to make an angle North Easterly with the base line produced, . . . . 1° 35' 08", 7 The apparent polar distance of the star at that time was 1° 44' 40" 2 with which and the above latitude, the computed azimuth was, . . . . . . . . . . . 1 47 25, 7
Therefore the line when produced
Northerly will make an angle with the meridian North Easterly,... 0 12 17, 0

September 26th, on the evening
the angle North Easterly with the base line produced was,... 1 35 13, 1

The apparent polar distance on that day was, 1° 44' 39" 8
which will give the azimuth,... 1 47 25, 2
Therefore the angle between the line and meridian will be,... 0 12 12, 1

September 30th, on the evening the angle was observed,... 1 35 06, 7

The apparent polar distance for that day being 1° 44' 38" 1 the azimuth will be,... 1 47 23, 5

Hence the angle by this observation is,... 0 12 16, 8

At the South end of the base—Latitude. ... 12 53 52, 8

October 7th. In the morning, the polar star when at its greatest western elongation, was observed to make an angle N.Westerly with the base line produced... 1 59 36, 9

The apparent polar distance at that time was 1° 44' 35,7, and this with the above latitude will give the azimuth,... 1 47 18, 2
Therefore the angle which this line produced, makes with the meridian North Easterly,... 0 12 18, 7
And the mean of these four is... 0 12 16,15

The last observation was made under the most favourable circumstances, it being just day light;
the flag-staff at the north extremity of the line was observed immediately after the star; and the morning being perfectly clear, no unsteadiness or uncertainty arose from the effects of the vapour, which had occasioned the difference between the angles on the 24th and 26th.

When the observation was made on the 30th, a blue light was fixed at the south end of the base.

Section III.—Commencement of the operations from the base. The large theodolite.

After the completion of the base line, there remained nothing of importance to be done until I received the large instrument, which arrived in the beginning of September. I had however made an excursion down the sea coast, as far as Pondicherry, for the purpose of selecting the properest stations for determining the length of a meridional arc. This and the measurement of a degree at right-angles to the meridian I considered as the first object of this work: I accordingly lost no time in proceeding to accomplish these desiderata.

The instrument above alluded to was made by Mr. Cary, and is in most respects the same as that described by General Roy in the Philosophical Transactions for the year 1790, with the improvements made afterwards in the microscopes, and in an adjustment to the vertical axis, by which the circle can be moved up or let down by means of two capstan screws at the top of the axis. These are mentioned in the Philosophical Transactions for 1795, in the account of the trigonometrical survey. By sinking the circle on the axis, it is better adapted for travelling, and when the microscopes are once adjusted to minutes and seconds,
on the limb of the instrument, the circle can always
be brought back to the proper distance from them.
Great attention however is necessary in bringing
the axis down, so that the wires in each microscope
being fixed at opposite dots on the limb, they may
coincide with the same dots when the circle is
turned half round, or made to move entirely round,
and in a contrary direction to what it had been
moved before; which latter method has been re-
commended by the maker. This circumstance re-
specting the axis should be most scrupulously at-
tended to before the adjustment of the micrometers
begin, so that when by arranging the lenses in such
a manner that ten revolutions of the micrometer
may answer to ten minutes on the limb, and there-
fore one division to one second, the circle can
always be brought to its proper height, by trying
the revolutions of the micrometer.

It has however been found from experience,
that unless in cases of very long and troublesome
marches, it is not necessary to sink the axis. The
carriage being performed altogether by men, there
is not that jolting which any other mode of con-
veyance is subject to, and as I found, that a con-
siderable time was taken up in adjusting the axis
before the revolutions of the micrometers could be
brought to their intended limits. I therefore laid
it aside, unless under the circumstances above men-
tioned.

The semicircle of the transit telescope is gradu-
ated to 10' of a degree in place of 30', which was
the case with the semicircle described by General
Roy, and the micrometer to the horizontal micro-
scope applied to this semicircle, making one revo-
lution in two minutes, and five revolutions for ten
minutes on the limb; and the scale of the micro-
An arc on the meter being divided into sixty parts, each part is therefore two seconds of the circle.

A number of experiments have been made for determining the error of the semicircle, and to ascertain the place of the fixed wire in the horizontal microscope, so as to divide the error. It has appeared in the event, that the telescope being in its right position, (that is, when the limb and microscope were on the left hand,) and the fixed wire placed at Zero on the semicircle, when the circle or limb of the theodolite was turned 180° in Azimuth, and the telescope turned over, the fixed wire was then distant from Zero on the opposite part of the arc by a mean of a great many observations 2' 57", the half of which is therefore the error. This half was carefully set off from Zero by the moveable micrometer wire, and the fixed one brought to coincide with it. On the right application of this error, there will be 1' 28", 5 to add to the elevations and subtract from the depressions. The observations for determining this quantity were repeated at different times, and under the most favourable circumstances; the adjustments of the whole instrument being frequently examined, and the level applied to the telescope, reversed at most of the observations. For the line of collimation, as these corrections depend on having a well-defined object, I fixed a bamboo upwards of a mile distant from the observatory tent, and tied round it several narrow stripes of black silk, one of which was near the horizontal wire when the axis of the telescope intersected the staff after being brought to a level by the bubble. Then the instrument being adjusted, and the telescope directed to the bamboo, being perfectly level, and the wire of the micrometer in the piece brought to the intersection of the cross wires, the angular distance to the
mark on the bamboo was measured by the runs of that micrometer, and the wire brought back to the point of intersection of the other wires. The circle was then turned half round and the telescope reserved or put again into the same Ys. The levelling adjustment was then made, and the angular distance from the intersection of the wires to the black mark again taken, half the difference between which and the former was of course the error of collimation. This error was repeatedly reduced till it became very small, half by the finger screw of the clamp to the semicircle, and half by the adjusting screws to the levelling rods. After that, the remaining error was repeatedly examined and found to be 2°.36 to be subtracted from the elevations and added to the depressions when the telescope is in the ordinary position, or when the semicircle and microscope are on the left hand; but vice versa when in the contrary position. These errors of the semicircle and line of collimation being opposite, the result from comparison will be, "That when elevations or depressions are taken with the semicircle, 1°26" must be added to the former, and subtracted from the latter."

And that when the elevations and depressions are taken by the micrometer in the eye piece 2°.36 must be deducted from the elevations and added to the depressions.

The micrometer in the focus of the eye-glass of the transit telescope is the same in all respects as the one mentioned by General Roy, that is to say, the circle or scale is divided into one hundred divisions, and there is a nonius fixed to the upper part of the telescope, which defines the revolutions of the micrometer as far as ten for the elevations and ten for the depressions. The following experiments
have been made with the same marked bamboo, for ascertaining the value of these divisions, and it has been found that seven revolutions and 61.4 divisions are equal to ten minutes on the limb of the semicircle, so that one division is equal to \( \frac{7}{788} \) of a second.

**TABLE**

Of experiments for determining the valuation of the revolutions and divisions on the micrometer in the eye-piece of the telescope.

<table>
<thead>
<tr>
<th>Month</th>
<th>Micrometer Divisions</th>
<th>No. of seconds</th>
<th>Value of 1 Division</th>
<th>Month</th>
<th>Micrometer Divisions</th>
<th>No. of seconds</th>
<th>Value of 1 Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 26</td>
<td>d</td>
<td>783.5</td>
<td>0.788</td>
<td>Nov. 26</td>
<td>d</td>
<td>1000</td>
<td>0.780</td>
</tr>
<tr>
<td>994,5</td>
<td>787</td>
<td>0.782</td>
<td></td>
<td>780</td>
<td>0.787</td>
<td></td>
<td></td>
</tr>
<tr>
<td>994</td>
<td>787</td>
<td>0.777</td>
<td></td>
<td>794</td>
<td>0.794</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005</td>
<td>794</td>
<td>0.794</td>
<td></td>
<td>788</td>
<td>0.788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>0.788</td>
<td></td>
<td>788</td>
<td>0.788</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hence one second will be equal to 1,269 divisions.

One minute \( \ldots \ldots \ldots \ldots \ldots 75,72 \) ditto.

Ten minutes \( \ldots \ldots \ldots \ldots \ldots 757,2 \) ditto.

**SECTION IV.**

Angles taken with the large theodolite between 27th September 1802, and 13th of April, 1803.

**At the North End of the Base.**

<table>
<thead>
<tr>
<th>Between</th>
<th>And</th>
<th>Observed Angles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>South end of the base,</td>
<td>Mount station,</td>
<td>91 09 04</td>
</tr>
<tr>
<td>\textit{Perumbauk} hill,</td>
<td></td>
<td>09 47 58,9</td>
</tr>
<tr>
<td>\textit{Perumbauk} hill, Mount station,</td>
<td></td>
<td>81 21 05,2</td>
</tr>
</tbody>
</table>
### AT THE SOUTH END OF THE BASE.

<table>
<thead>
<tr>
<th>Between</th>
<th>And</th>
<th>Observed Angles</th>
</tr>
</thead>
<tbody>
<tr>
<td>North end of the base</td>
<td>Mount station</td>
<td>11 19 32,5</td>
</tr>
<tr>
<td>Mount station</td>
<td>ditto</td>
<td>102 37 14,8</td>
</tr>
</tbody>
</table>

### AT THE MOUNT STATION.

| North end of the base | South end of the base | Perumbauk hill | 88 06 38,2 |
| South end of the base | ditto | 10 35 12,9 |
| Perumbauk hill | Mungot station | 92 30 03,6 |
| Mungot station | Mullapode hill | 63 30 18,2 |

### AT PERUMBAUK HILL.

| North end of the base | South end of the base | 56 15 26 |
| Mount station | 10 32 16,8 |
| South end of the base | ditto | 66 47 42 |
| Mungot station | 36 58 15,1 |
| Coonooxaucum hill | 59 43 12,9 |
| Mullapode hill | 42 52 13,9 |
| Mullapode hill | Coonooxaucum hill | 16 50 59 |

### AT MUNGOT STATION.

| Perumbauk hill | Coonooxaucum hill | 88 03 47,6 |
| Mullapode hill | 79 08 56,4 |
| Mullapode hill | Tandray station | 124 40 24,2 |
| Mannoor station | 75 25 54,8 |
| Mount station | Perumbauk hill | 50 31 41,7 |
| Mullapode hill | Mannoor station | 49 14 29,4 |
### Measurement of an Arc on the

**At Mullapode Hill.**

<table>
<thead>
<tr>
<th>Between</th>
<th>And</th>
<th>Observed Angles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perumbauk hill,</td>
<td>Coonoowaucum hill,</td>
<td>139 29 07,8</td>
</tr>
<tr>
<td>Coonoowaucum hill</td>
<td>Munnoor station,</td>
<td>81 21 03,0</td>
</tr>
<tr>
<td>Tandray station,</td>
<td>ditto,</td>
<td>52 53 20,0</td>
</tr>
<tr>
<td></td>
<td>Mungot station,</td>
<td>28 17 36,7</td>
</tr>
</tbody>
</table>

**At Munnoor Station.**

| Mungot station,              | Coonoowaucum hill,         | 100 27 11,4     |
| Mungot,                      | Mungot                      | 49 34 32,4      |
|                              | Mullapode,                 | 44 15 34,9      |
|                              | ditto,                     | 93 50 05,9      |
|                              | Coonoowaucum hill,         | 50 52 39        |

**At Tandray Station.**

| Mungot station,              | Munnoor station,           | 60 18 30,7      |
| Mungot,                      | Mullapode,                 | 27 02 00,1      |
|                              | ditto,                     | 33 16 30,8      |
|                              | Urrumbaucum hill,          | 94 00 01,7      |
|                              | Poonauk hill,              | 80 48 38,8      |

**At Urrumbaucum Hill.**

| Mullapode hill,              | Tandray station,           | 43 02 50        |
| Poonauk hill,                |                            | 111 52 28,9     |

**At Poonauk Hill.**

| Mullapode hill,              | Urrumbaucum hill,           | 39 25 15,6      |
| Tandray station,             |                            | 27 13 47,4      |
| Maumdoor hill,               |                            | 49 19 0,46      |
### AT POONAUUK HILL.

<table>
<thead>
<tr>
<th>Between</th>
<th>And</th>
<th>Observed Angles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allacoor hill,</td>
<td>Padree station,</td>
<td>23 52 57,5</td>
</tr>
<tr>
<td></td>
<td>Urrumbaucum hill,</td>
<td>32 18 50,7</td>
</tr>
<tr>
<td>AT ALLACOOR HILL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poonauk hill,</td>
<td>Padree station,</td>
<td>91 22 13</td>
</tr>
<tr>
<td></td>
<td>Urrumbaucum hill,</td>
<td>110 08 22,3</td>
</tr>
<tr>
<td>AT PAUDREE STATION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poonauk hill,</td>
<td>Allacoor hill,</td>
<td>64 44 52,1</td>
</tr>
<tr>
<td>AT MULLAPODE HILL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poonauk hill,</td>
<td>Tandray station,</td>
<td>71 39 26,3</td>
</tr>
<tr>
<td></td>
<td>Urrumbaucum hill,</td>
<td>28 42 12,6</td>
</tr>
<tr>
<td></td>
<td>Maumdoor hill,</td>
<td>53 02 19</td>
</tr>
<tr>
<td>Tandray station,</td>
<td>Urrumbaucum hill,</td>
<td>42 57 07,9</td>
</tr>
<tr>
<td>Perumbaucum hill,</td>
<td>Mowbray's house,</td>
<td>35 17 00</td>
</tr>
<tr>
<td></td>
<td>Maumdoor hill,</td>
<td>45 48 00,5</td>
</tr>
<tr>
<td>AT MAUMDOOR HILL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mullapode hill,</td>
<td>Poonauk hill,</td>
<td>72 38 40</td>
</tr>
<tr>
<td></td>
<td>Carrangooly hill,</td>
<td>69 50 21,5</td>
</tr>
<tr>
<td>Carrangooly hill,</td>
<td>Woritty hill,</td>
<td>44 46 21,6</td>
</tr>
<tr>
<td>AT CARRANGOOLY HILL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mullapode hill,</td>
<td>Maumdoor hill,</td>
<td>64 21 44,1</td>
</tr>
<tr>
<td>Maumdoor hill,</td>
<td>Woritty hill,</td>
<td>80 37 28,3</td>
</tr>
<tr>
<td>Permacoil hill,</td>
<td>ditto,</td>
<td>28 33 28,6</td>
</tr>
<tr>
<td></td>
<td>Vellingcaud hill,</td>
<td>36 40 28,2</td>
</tr>
<tr>
<td>AT WORITTY HILL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrangooly hill,</td>
<td>Maumdoor hill,</td>
<td>54 36 13,1</td>
</tr>
<tr>
<td></td>
<td>Permacoil hill,</td>
<td>109 25 09,4</td>
</tr>
<tr>
<td>Permacoil hill,</td>
<td>Coonum hill,</td>
<td>17 46 10,8</td>
</tr>
</tbody>
</table>

Vol. VIII.
### AT PERMACOIL HILL.

<table>
<thead>
<tr>
<th>Between</th>
<th>And</th>
<th>Observed Angles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woritty hill,</td>
<td>Carrangooly hill,</td>
<td>42 01 25,1</td>
</tr>
<tr>
<td>Coonum hill,</td>
<td>...</td>
<td>134 51 00,6</td>
</tr>
<tr>
<td>Coonum hill,</td>
<td>1st flag on red hill,</td>
<td>53 13 11,6</td>
</tr>
<tr>
<td>Vellungcaud hill,</td>
<td>Carrangooly hill,</td>
<td>28 58 23,4</td>
</tr>
<tr>
<td></td>
<td>New station on red hill,</td>
<td>98 29 08,8</td>
</tr>
<tr>
<td>Mooratan station,</td>
<td>ditto ditto,</td>
<td>15 57 39,8</td>
</tr>
<tr>
<td></td>
<td>Chengcaud station,</td>
<td>42 57 14,4</td>
</tr>
<tr>
<td>Mylum station,</td>
<td>ditto ditto,</td>
<td>29 29 41,3</td>
</tr>
</tbody>
</table>

### AT VELLUNGCAUD HILL.

<table>
<thead>
<tr>
<th>Permacoil hill,</th>
<th>Carrangooly hill,</th>
<th>114 21 15,4</th>
</tr>
</thead>
<tbody>
<tr>
<td>New station on red hill,</td>
<td>37 15 17,4</td>
<td></td>
</tr>
</tbody>
</table>

### AT THE NEW STATION ON RED HILL.

<table>
<thead>
<tr>
<th>Permacoil hill,</th>
<th>Vellungcaud hill,</th>
<th>44 15 33,8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mooratan station,</td>
<td>...</td>
<td>99 25 04,4</td>
</tr>
</tbody>
</table>

### AT MOORATAN STATION.

<table>
<thead>
<tr>
<th>Chengcaud station,</th>
<th>Permacoil hill,</th>
<th>85 13 36,0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trivandepoorum hill,</td>
<td>64 42 38,5</td>
<td></td>
</tr>
<tr>
<td>1st Coonum hill,</td>
<td>1st flag on red hill,</td>
<td>81 48 30</td>
</tr>
<tr>
<td>Chengcaud station,</td>
<td>54 33 15</td>
<td></td>
</tr>
<tr>
<td>New station on red hill,</td>
<td>...</td>
<td>64 37 21,4</td>
</tr>
</tbody>
</table>

### AT THE FIRST FLAG ON RED HILL.

<table>
<thead>
<tr>
<th>Coonum hill,</th>
<th>Permacoil hill,</th>
<th>38 54 56,4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station near Mooratan,</td>
<td>76 26 03,1</td>
<td></td>
</tr>
</tbody>
</table>

### AT COONUM HILL.

<table>
<thead>
<tr>
<th>Permacoil hill,</th>
<th>Woritty hill,</th>
<th>27 22 53,3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st flag on red hill,</td>
<td>87 51 51,8</td>
<td></td>
</tr>
</tbody>
</table>
Meridian on the Coast of Coromandel.

Between And Observed Angles.

1st flag on red hill, . . . Station near Mooratan, 21 45 26,9
Chengcaud station, . . . ditto, . . . . 76 02 09,3

At Mylum Station.

Permacoil hill, Chengcaud station, . 129 25 52,8
Mooratan station, . 73 09 50,7
Woritty hill, . . . . 46 21 11,4

At Chengcaud Station.

Permacoil hill, Mylum station, . 21 04 26,9
Mooratan station, . 51 49 03,6
Trivandepoorum hill, ditto, . . . . 66 08 35,2
Coonum hill, ditto, . . . . 49 24 35,75

At the Station of Observation at Trivandepoorum Hill.

Mooratan station, . . . Chengcaud station, 49 08 53,9
Referring light near Trip-numbaucum, Polar star, west elongation,

February 3, . 11 29 43,25
4, . 44,9
5, . 44,33
7, . 40,5
9, . 42,2
10, . 39,6
11, . 43,67

Referring light near Trip-numbaucum, Blue light on Mooratan station, . . 7 57 45,36

M 2
The angles in general have been taken three and four times, and every time that the object was observed, both microscopes were read off thrice, and two separate field books kept for making out the angles. What are here recorded, are the means taken from the two books. In case a difference in those angles, noticed at the time, left any reason to suspect an error in the instrument, the division between the dots was carefully examined, as well as those to the right and left, and if any error was discovered, allowance was made accordingly.

**SECTION V. **

**Triangles.**

*North End of the Base from the South End of the Base 40006,4.*

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>North end of the base,</td>
<td>91°09'04.0&quot;</td>
<td>-.03</td>
<td></td>
<td></td>
<td>91°09'04.2&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South end of the base,</td>
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<td>-.02</td>
<td></td>
<td></td>
<td>11°19'32.6&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mount station,</td>
<td>77°31'23.0&quot;</td>
<td>-.03</td>
<td></td>
<td></td>
<td>77°31'23.2&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>179°59'59.5&quot;</td>
<td>.08</td>
<td>-.58</td>
<td></td>
<td>180°00'00&quot;</td>
<td>8046.7</td>
</tr>
<tr>
<td></td>
<td>Mount station from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40965.8</td>
</tr>
<tr>
<td></td>
<td>North end of the base,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>South end of the base,</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>North end of the base,</td>
<td>9°47'58.9&quot;</td>
<td>-.01</td>
<td></td>
<td></td>
<td>9°47'58.8&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South end of the base,</td>
<td>113°56'47.2&quot;</td>
<td>-.08</td>
<td></td>
<td></td>
<td>113°56'47.2&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perumbakk hill,</td>
<td>0°00'00&quot;</td>
<td></td>
<td></td>
<td>.07</td>
<td>56°15'14&quot;</td>
<td>439718</td>
</tr>
<tr>
<td></td>
<td>Perumbakk hill from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>818903</td>
</tr>
<tr>
<td></td>
<td>North end of the base,</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>South end of the base,</td>
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</table>
**North end of the Base from Perumbauk Hill 43971,8.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>North end of the</td>
<td></td>
<td></td>
<td></td>
<td>81 21 05,1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>base,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perumbauk,</td>
<td>10 32 16,8</td>
<td>0,02</td>
<td>10 32 16,8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mount station,</td>
<td>88 06 38,2</td>
<td>0,03</td>
<td>88 06 38,1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>180 00 00,2</td>
<td>0,08</td>
<td>+1 180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mount station from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>North end of the base,</td>
<td></td>
<td></td>
<td></td>
<td>8046,7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perumbauk hill,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43395,4</td>
</tr>
</tbody>
</table>

**South End of the Base from Mount Station 40965,8.**

<table>
<thead>
<tr>
<th></th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South end of the base,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mount station,</td>
<td>102 37 14,8</td>
<td>0,06</td>
<td>102 37 14,7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perumbauk hill,</td>
<td>10 35 12,9</td>
<td>0,02</td>
<td>10 35 12,9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 0 0</td>
<td>0,01</td>
<td>-</td>
<td>60 47 32,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Perumbauk from</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>South end of the base,</td>
<td>8189,2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mount station,</td>
<td>43395,5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It appears from examining the above triangles, that there is a difference in the distance from the north end of the base and Mount station, by the first and second triangles, and also a difference in the distance from the south end of the base to Perumbauk hill. It may be necessary to notice here, that there was great difficulty in taking all these angles, on account of the very thick vapour which constantly floated near the surface of the flat where the base line runs, almost immediately after daylight, to very near the time of sun-setting. All the angles, and particularly at the north and south end of the base line, have been repeatedly taken, and the only time when the flag-staff appeared distinctly, was in the morning of the 7th of October.
when I observed the polar star at the south end of the base line.

It was discovered, that at Perumbauk hill, there had been an error in reading off the south end of the base, most probably of 10" from the micrometers, as all the angles which had a reference to that point, exceeded what they ought to have been by ten or twelve seconds. In consequence of this disagreement, I chose to take the supplemental angle in the second and fourth triangles, after the other angles had been corrected. The distance of the north end of the base from Perumbauk, as determined in the second triangle, being taken as a base in the third triangle, wherein the three angles have been observed to determine the distance from Perumbauk to the Mount, and from the north end of the base to the Mount, it appears that the latter distance comes out within 0,4 of a foot to what had been brought by the first triangle; and that, the distance from the south end of the base to Perumbauk hill, derived from the second and fourth triangles, differ only 14 of a foot. The distance from the Mount to Perumbauk being that from which all the operations are to commence, I wished to be as particular as possible in determining it, and the results from the third and fourth triangles make it 43495,4 and 43495,5, differing only one-tenth of a foot.

Mount station from Perumbauk Hill 43496,4.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Mount station,</td>
<td>92 30 03,6</td>
<td>0&quot;</td>
<td></td>
<td>0&quot;</td>
<td>92 30 03,4</td>
<td>56292,1</td>
</tr>
<tr>
<td>5</td>
<td>Perumbauk hill,</td>
<td>36 58 15,1</td>
<td>-18</td>
<td></td>
<td></td>
<td>36 58 15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Mangot station,</td>
<td>50 31 41,7</td>
<td>-08</td>
<td></td>
<td></td>
<td>50 31 41,6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>180 0 0,4</td>
<td>-34</td>
<td>+1</td>
<td></td>
<td>180</td>
<td>33886,8</td>
</tr>
</tbody>
</table>

Mangot station from |
{Perumbauk hill, - - } |
{Mount station - - }
### Meridian on the Coast of Coromandel.

Perumbauk Hill from Mungot Station 56292,1.

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff. Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perumbauk Hill</td>
<td>42 52 13,9</td>
<td>−16</td>
<td>42</td>
<td>52 13,3</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Mungot Station, Mungot Station</td>
<td>79 08 56,4</td>
<td>−25</td>
<td>79</td>
<td>08 55,7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mullapode Hill</td>
<td>57 58 51,5</td>
<td>−17</td>
<td>57</td>
<td>58 51</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>180 0 01,8</td>
<td>−58</td>
<td>59</td>
<td>1,4</td>
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</tr>
</tbody>
</table>

Mullapode hill from Perumbauk hill, Mungot station, 65205,2.

Perumbauk Hill from Mullapode Hill 65205,2.

<table>
<thead>
<tr>
<th></th>
<th>Observed Angles</th>
<th>Diff. Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perumbaucum hill,</td>
<td>16 50 59</td>
<td>+3</td>
<td>16</td>
<td>50 59,5</td>
<td></td>
</tr>
<tr>
<td>7. Mullapode hill, Coonoowaucum hill,</td>
<td>139 29 7,8</td>
<td>−9</td>
<td>139</td>
<td>29 07,0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>23 39 53,5</td>
<td></td>
</tr>
</tbody>
</table>

Coonoowaucum hill from Perumbauk hill, Mullapode hill, 105354,6, 47088,5.

Mullapode Hill from Coonoowaucum Hill 47088,5.

<table>
<thead>
<tr>
<th></th>
<th>Observed Angles</th>
<th>Diff. Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullapode hill,</td>
<td>81 21 03,0</td>
<td>−2</td>
<td>81</td>
<td>21 02,8</td>
<td></td>
</tr>
<tr>
<td>8. Coonoowaucum hill,</td>
<td>0 0 0</td>
<td>−10</td>
<td>47</td>
<td>46 18,3</td>
<td></td>
</tr>
<tr>
<td>Manoor station,</td>
<td>50 52 39,0</td>
<td></td>
<td>50</td>
<td>52 33,9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>180 0 00,0</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Manoor station from Mullapode hill, Coonoowaucum hill, 44944,4, 60006,6.

M 4
### MEASUREMENT OF AN ARC ON THE

**Mullapode Hill from Mungot station 45109,5.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Mullapode hill, Mungot station, Munnoor station,</td>
<td>81 10 56,5</td>
<td>-21</td>
<td>49 14 29,4</td>
<td>-13</td>
<td>49 34 32,4</td>
<td>179 59 58,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>49 14 29,4</td>
<td>-13</td>
<td>49 34 32,4</td>
<td>-14</td>
<td>49 34 32,4</td>
<td></td>
</tr>
</tbody>
</table>

**Munnoor station from**

- **Mullapode hill**, - 44944,3
- **Mungot hill**, - 58633,6

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Mullapode hill, Mungot station, Tandray station,</td>
<td>28 17 36,7</td>
<td>+0,04</td>
<td>124 40 24,2</td>
<td>-0,6</td>
<td>27 02 00,1</td>
<td>180 0 01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>124 40 24,2</td>
<td>-0,6</td>
<td>27 02 00,1</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Tandray station from**

- **Mullapode hill**, - 81731,9
- **Mungot station**, - 47105,3

### Mullapode Hill from Munnoor station 44944,3.

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Mullapode hill, Munnoor station, Tandray station,</td>
<td>52 53 20</td>
<td>-2</td>
<td>93 50 59</td>
<td>-3</td>
<td>33 16 30,8</td>
<td>179 59 56,7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>93 50 59</td>
<td>-3</td>
<td>33 16 30,8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tandray station from**

- **Mullapode hill**, - 81732,7
- **Munnoor station**, - 65325,7
In the quadralateral formed by Mullapode hill, Mungot hill, Munnoor station, and Tandray station, the side Mullapode and Tandray is common to the tenth and eleventh triangles, the first of which gives it 81731.9 feet, and the latter 81732.7 feet, the mean of which is 81732.3 feet, which becomes the base for extending the triangles westerly. These results appear to be sufficiently correct, since the bases on which the two triangles have been formed, were derived from the different sides of the triangle Perumbauk hill, Mungot hill, and Mullapode hill, viz. one from the side Mullapode hill and Mungot hill, the other from the side Mullapode hill and Perumbauk hill, on which was computed the side Mullapode hill and Coonoorvaucon hill, and from that again the side Mullapode hill and Munnoor station, which, however, came out the same as when obtained from the distance Mullapode hill and Mungot hill.

It will also appear that in the triangle computed on the base Mungot hill and Munnoor station, that each of the sides, Munnoor station and Tandray station, and Mungot and Tandray become common to the triangles, Mullapode hill, Munnoor and Tan-
dray and Mullapode hill, Mangot and Tandray, each to each, and that in the first case, there is a difference of \( \frac{1}{10} \) and in the second of \( \frac{5}{6} \) of a foot. These circumstances will, I conceive, prove the operations to be sufficiently satisfactory.

**Mullapode hill from Tandray station 81732,3.**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Mullapode hill,</td>
<td>42 57 07,9</td>
<td>–4</td>
<td></td>
<td>42 57 08,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tandray station,</td>
<td>94 00 01,7</td>
<td>–8</td>
<td></td>
<td>94 00 01,6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urrumbaucum,</td>
<td>43 02 50</td>
<td>–4</td>
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<td>43 02 50,2</td>
<td></td>
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</tr>
<tr>
<td></td>
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<td>179 59 59,6</td>
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Urrumbaucum from \{ Mullapode hill, - - 119444,7 \}

Tandray station, - - 81587,1

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<td>Tandray station,</td>
<td>80 48 43,7</td>
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<td>80 48 44,4</td>
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<td>27 31 47,4</td>
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<td>27 31 50,4</td>
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Poonauk hill from \{ Mullapode hill, - - 174555,7 \}

Tandray station, - - 167839,7

**Poonauk hill from Urrumbaucum hill 90339,4.**

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<td>32 18 51</td>
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<td></td>
<td>Urrumbaucum,</td>
<td>0 0 0</td>
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<td>37 32 47</td>
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<td></td>
<td>Allicoor hill,</td>
<td>110 8 22,3</td>
<td>–5</td>
<td></td>
<td>110 8 22</td>
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<td>0,67</td>
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Allicoor hill from \{ Poonauk hill, - - 58638,4 \}

Urrumbaucum hill, - - 51436,9
### Meridian on the Coast of Coromandel.

**Poonauk hill from Allicoork hill 58638,4.**

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<th>Sphere. Excess</th>
<th>Error</th>
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<th>Distances in feet</th>
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<td>16.</td>
<td>Poonauk hill, Allicoork hill, Paudree station</td>
<td>23 52 57,5</td>
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<td>23 52 57</td>
<td>91 22 13</td>
<td>91 22 13</td>
<td>64 44 51</td>
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<td></td>
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<td>64 44 51</td>
<td>—0,08</td>
<td>64 44 51</td>
<td>180 2,6</td>
<td>37 + 2</td>
<td>180</td>
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**Mullapode hill from Urrumbaucum 119444,7.**

| 17. | Mullapode hill, Urrumbaucum, Poonauk hill | 28 42 12,6 | —3 | 28 42 12,0 | 111 52 33,6 | —1,9 | 111 52 32,3 | 39 25 15,6 | —8 | 39 25 15,1 |
|     | Poonauk hill | 180 1,8 | 2,4 | 180 | 180 | 0,9 | 180 | 174554,3 |

**Mullapode hill from Poonauk hill 174555.**

| 18. | Mullapode hill, Poonauk hill, Maundoor | 58 02 19 | —1,5 | 58 2 18 | 49 19 4,6 | —1,5 | 49 19 3,5 | 72 38 40 | —1,9 | 72 38 38,5 |
|     | Maundoor | 180 00 3,6 | 4,9 | 180 | 180 | —1,3 | 180 | 138685,5 |
|     | Maundoor from Mullapode hill, Poonauk hill | 155157,2 |
Measurement of an Arc on the Maumdoor Hill from Mullapode 138685.5.

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<td>69 50 19.5</td>
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<td>Mullapode hill</td>
<td>45 48 0.5</td>
<td>-1</td>
<td></td>
<td>45 48 58.5</td>
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<td>64 21 44.1</td>
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<td></td>
<td>64 21 42</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>180 6.1</td>
<td>3.4</td>
<td>+2.7</td>
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Carrangooly hill from { Maumdoor hill, - - | 110182.4  |
                    { Mullapode hill, - - | 144405.4  |

Carrangooly hill from Maumdoor hill 110282.4.

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<td>80 37 28.3</td>
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<td></td>
<td>Maumdoor hill</td>
<td>44 46 21.6</td>
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<td></td>
<td>44 46 20.5</td>
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<td>Wooritty hill</td>
<td>54 36 13.1</td>
<td>-1.7</td>
<td></td>
<td>54 36 12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>180 00 03</td>
<td>2.5</td>
<td>+1.5</td>
<td>180</td>
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Wooritty hill from { Carrangooly hill, - - | 95282.8  |
                   { Maumdoor hill, - - | 133481.5  |

Wooritty hill from Carrangooly hill 95282.8.

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<td>21</td>
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<td>109 25 09.4</td>
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<td>109 25 07.7</td>
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<td></td>
<td>Carrangooly hill</td>
<td>28 33 23.6</td>
<td>-2.2</td>
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<td>28 33 27.8</td>
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<tr>
<td></td>
<td>Permacoil hill</td>
<td>42 01 25.1</td>
<td>-1.3</td>
<td></td>
<td>42 01 24.5</td>
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<td></td>
<td></td>
<td>180 00 3.1</td>
<td>1.4</td>
<td>+1.7</td>
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Permacoil hill from { Wooritty hill, - - | 68041.5  |
                    { Carrangooly hill, - - | 134236.4  |
Canangooly hill from Permocoi] hill 134236,4.

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<th>Splitter Excess.</th>
<th>Error</th>
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<th>Distances in feet</th>
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<td>22</td>
<td>Carrangooly</td>
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<td>28,2</td>
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<td>36 40</td>
<td>26</td>
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<td>Permocoi] hill</td>
<td>28 58</td>
<td>23,4</td>
<td>-0,1</td>
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<td>28 58</td>
<td>22</td>
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<td></td>
<td>Vellungcaud</td>
<td>114 21</td>
<td>15,4</td>
<td>-1,2</td>
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<td>114 21</td>
<td>12</td>
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<td></td>
<td>180 00</td>
<td>07,0</td>
<td>1,4</td>
<td>+5,6</td>
<td>180 00</td>
<td>00</td>
</tr>
</tbody>
</table>

Vellungcaud from { Carrangooly hill, Permocoi] hill, - - || 71374,2

Permocoi] hill from Vellungcaud hill 88004,7.

| | | ° | ' | "       | ° | ' | "          | ° | ' | "          |           |
| 23 | Permocoi] hill | 93 29 | 03,5    | -9  | | 98 29 | 08        |           |
|     | Vellungcaud     | 37 15 | 17,4    | -3  | | 37 15 | 17        |           |
|     | New station,    | 0 0 0 | | | | 44 15 | 35        |           |
|     |                |       | | | | 1,6  | | 180 00 | 00       |           |

New station on red hill from { Permocoi] hill, Vellungcaud hill, - - || 76334,1

Wooritty hill from Permocoi] hill 68041,5.

| | | ° | ' | "       | ° | ' | "          | ° | ' | "          |           |
| 24 | Wooritty hill, 17 46 | 10,3  | +1  | | 17 46 | 09        |           |
|     | Permocoi] hill | 134 51 | 00,6  | -9  | | 134 50 | 58,5      |           |
|     | Coonum hill,    | 27 22 | 53,3  | +3  | | 27 22 | 52,5      |           |
|     |                | 180 00 | 4,2    | _3,7 | +3,7        | 180 00 | 00       |           |

Coonum hill from { Wooritty hill, Permocoi] hill, - - || 104887,5

45150,5
### Measurement of an Arc on the Permacoil Hill from Coonum Hill 45°150,5

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<td>25.</td>
<td>Permacoil hill,</td>
<td>53 13 11,8</td>
<td>—,2</td>
<td></td>
<td>53 13 11,5</td>
<td>87 51 51,5</td>
<td></td>
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<tr>
<td></td>
<td>Coonum hill,</td>
<td>87 51 51,8</td>
<td>—,3</td>
<td></td>
<td>87 51 51,5</td>
<td>38 54 57</td>
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<tr>
<td></td>
<td>1st Flag on red</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td>180 00 00</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>hill,</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>hill from</td>
<td>{Coonum hill,</td>
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<td>57567,7</td>
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### Permacoil Hill from Wooritty Hill 68041,5

|     | Permacoil hill,   | 102 06 30,9     | —,50  |               | 102 06 30,9 | 31 32 18,3              |                  |
|     | Wooritty hill     | 0 0 0           |       |               | 31 32 18,3 | 46 21 11,3              |                  |
|     | Mylum station,    | 46 21 11,4      | —,13  |               | 46 21 11,3 |                        |                  |
|     | Mylum station     |                 |       |               |                  |                        |                  |
|     | Mylum station from| {Permacoil hill,|                   | 49184,8 |                  |                  |
|     |                   | {Wooritty hill,  |                   | 91939,0 |                  |                  |

### Permacoil Hill from Mylum Station 49184,8

|     | Permacoil hill,   | 72 26 53,3      | —,34  |               | 72 26 53 | 73 09 50,4              |                  |
|     | Mylum station,    | 73 09 50,7      | —,34  |               | 73 09 50,4 | 34 23 16                |                  |
|     | Mooratan station, | 0 0 0           |       |               | 34 23 16 | 180 00 00               |                  |
|     | Mooratan station  |                 |       |               |                  |                        |                  |
|     | from              | {Permacoil hill,|                   | 83351,9 |                  |                  |
|     |                   | {Mylum station,  |                   | 83030,3 |                  |                  |
**MERIDIAN ON THE COAST OF COROMANDEL.** 175

Coonum hill from first Flag on red hill 57567,7.

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<td>21 45 27</td>
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<td>1st Flag on red hill</td>
<td>76 26 03,1</td>
<td>-1</td>
<td></td>
<td>76 26 03</td>
<td>81 48 30</td>
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<td>Mooratan station</td>
<td>81 48 30</td>
<td>-1</td>
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<td>81 48 30</td>
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<td></td>
<td></td>
<td>0,29</td>
<td></td>
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Mooratan station from \{ Coonum hill, - - - 56538,5 \}

\{ First Flag on red hill, 21559,1 \}

Permacoil Hill from the new station on red hill 76334,1.

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<td>29</td>
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<td>15 57 38</td>
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<td>New station</td>
<td>99 25 04,4</td>
<td>-28</td>
<td></td>
<td>99 25 2,4</td>
<td>64 37 19,6</td>
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<td>Mooratan station</td>
<td>64 37 21,4</td>
<td>-04</td>
<td></td>
<td>64 37 19,6</td>
<td></td>
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<tr>
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<td>180 0 0 5,6</td>
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<td>0,42 + 5,18 180 0 0</td>
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Mooratan station from \{ Permacoil hill, - - 83348,4 \}

\{ New station on red hill, 23231,9 \}

Permacoil hill from Mooratan station 83350,15.

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<tr>
<td>30</td>
<td>Permacoil hill</td>
<td>42 57 14,4</td>
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<td>42 57 16,2</td>
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<td>Mooratan station</td>
<td>85 13 36</td>
<td>-6</td>
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<td>85 13 37,6</td>
<td>51 49 06,2</td>
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<td>Chengcaud station</td>
<td>51 49 04,4</td>
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<td>51 49 06,2</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>179 50 54,8</td>
<td>1,4</td>
<td>-6,6</td>
<td>180 0 0 0</td>
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Chengcaud station from \{ Permacoil hill, - - 105668,2 \}

\{ Mooratan station, 72254,7 \}
MEASUREMENT OF AN ARC ON THE

Coonum hill from Mooratan station 56538,5.

<table>
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<th>Stations</th>
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<th>Spher. Excess</th>
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<th>Angles for calculation</th>
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<td>31</td>
<td>Coonum hill, Mooratan station, Chengcaud station</td>
<td>0 0 0</td>
<td>-2</td>
<td>-2</td>
<td>76 02 09,5</td>
<td>54 33 15</td>
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<td></td>
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<td>54 33 15</td>
<td></td>
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<td>49 24 35,5</td>
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<tr>
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<td>49 24 35,5</td>
<td></td>
<td></td>
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<td>180 00 00,0</td>
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Chengcaud station from \{ Coonum hill, - - - \} Mooratan station, - 60654,3

Mooratan station from Chengcaud station 72253,8.

<table>
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<th>Diff.</th>
<th>Spher. Excess</th>
<th>Error</th>
<th>Angles for calculation</th>
<th>Distances in feet</th>
</tr>
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<tbody>
<tr>
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<td>Mooratan station, Chengcaud station, Trivandepoorum</td>
<td>64 42 38,5</td>
<td>-5</td>
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<td>64 42 35</td>
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<td>66 8 35,2</td>
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<td>49 8 53</td>
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<td></td>
<td>180 00 7,6</td>
<td>1,4</td>
<td>+6,4</td>
<td>180 00 00</td>
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Trivandepoorum from \{ Mooratan station, - - - \} Chengcaud station, - 87360,7

86367,6

The angles have been taken with much care, and I believe with as much accuracy as the nature of such a process admits of; difficulty, however, very frequently arose from the haziness of the weather, which rendered the objects at the very distant points extremely dull, and occasioned some irregularity in the angles. Whenever that happened, the observations were often repeated, and in case any one, in particular, was different from the other so much as ten seconds, it was rejected till the three angles of the triangle had been observed. If the sum of these angles was near what it
ought to be, no further notice was taken of it; but should the sum of the three angles be nearer the truth by taking it into the account, and that there appeared an irregularity in the other two observed angles, I have made it a rule to take each observed angle as a correct one, and divide the excess or defect between the other two, and then compute from the given side the other two sides; and after doing the same thing with each of the angles successively, a mean of the sides thus brought out was taken, which, to certain limits, will always be near the truth. I then varied the selection of the observed angles, rejecting such as I had reason to doubt; and by correcting them, and computing the two required sides of the triangle, those which gave the sides nearest to what had been brought out by the other method, were adopted, let the error be what it would. This, however, has rarely happened; and when it did, great precaution was used; and no angle was rejected without some reason appeared to render it doubtful.

In correcting the observed angles to obtain those made by the chords, I have used the formula given by the Astronomer Royal, in his demonstration of M. De Lâmbre's problem, which appears in the Philosophical Transactions for 1797. The spherical excess is of course had from the well known method of dividing the area of the triangle in square seconds, by the number of seconds in the arc equal to radius, where the number of feet in a second may be had by using the degree as has been commonly applied to the mean sphere, or the mean between the degree on the meridian and its perpendicular. This being of no further use than to check any error that might happen in computing the corrections for the angles.

In converting the sides of the triangles into arcs,
the length of a degree has been computed for every ten degrees from the meridian to its perpendicular on an Ellipsoid, whose diameters were in the ratio of one to 1,0067, which is derived from taking the degree on the meridian, in latitude 50° 41' to be 60851, and the degree perpendicular thereto 61182, in the same latitude. These data would give the meridional degree, in latitude 13°, to be 60191, and the degree perpendicular equal 60957, which, however, is not the case; but no sensible error will arrive in making those corrections from taking the arcs a few seconds more or less than the truth.

SECTION VI.

Reduction of the distances to the meridian of Trivand- deporum, for determining the length of the terrestrial arc.

The sides of the great triangles, from which the arc is derived, falling very nearly in the same meridian, and not more than 16363.3 feet west from the meridian of Trivandeporun, the south extremity of the arc, there required no reference to any hypothesis of the earth’s figure for getting the exact distance between the parallels, so that the latitude of a point where a great circle falling from the station of observation near Paudree, will cut the meridian of Trivandeporun at right angles, may be determined with sufficient accuracy by computing spherically, and the distances, when reduced to the meridian, (the distance from Trivandeporun to Coonum hill excepted,) may be considered as the chords of arcs on the meridian, and therefore the arcs themselves may be had, by allowing 60494 fathoms to the degree, as had been obtained from the sum of those reduced distances, the sum therefore of all these arcs will make the whole meridional arc, which is a nearer approximation to the truth.
MERIDIAN ON THE COAST OF COROMANDEL. 179

Seeing that a line drawn from the station of observation at Paudree, to the station at Maumdoor hill, would fall nearly in the direction of the meridian, that distance has been computed, by taking the sides Poonauck hill to Maumdoor hill, and Poonauck hill to Pādree, and using the internal angle at Poonauck hill, corrected for the chords. This, however, was scarcely necessary, except for showing the arrangement of the points.

The following table will shew the arrangement of the sides, and their reduction to the meridian of Trivandeporum.

<table>
<thead>
<tr>
<th>Stations at</th>
<th>Stations referred to</th>
<th>Bearings referred to the meridian of Trivandeporum</th>
<th>Distances</th>
<th>Distances from the parallels of the meridian</th>
<th>Perpendicular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trivandeporum, Coonum hill, Wooritty hill, Maumdoor,</td>
<td>5 31 50,3 N.W.</td>
<td>125129,1</td>
<td>12059,9 W.</td>
<td>124547,5 N.</td>
<td></td>
</tr>
<tr>
<td>Paudree station,</td>
<td>0 03 18,4 N.W.</td>
<td>104887,5</td>
<td>108,3 W.</td>
<td>104887,4 N.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>52 45 21,9</td>
<td>95282,8</td>
<td>75851,4 E.</td>
<td>57666,0 N.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 50 51,2 N.W.</td>
<td>133481,5</td>
<td>4303,5 W.</td>
<td>133412,5 N.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 02 09,7 N. E.</td>
<td>211512,1</td>
<td>3824,4 E.</td>
<td>211477,5 N.</td>
<td></td>
</tr>
</tbody>
</table>

THE NORTINGS REDUCED TO ARCS.

| Trivandeporum to Coonum hill, | 124548,77 |
| Coonum hill to Wooritty hill, | 104887,47 |
| Wooritty hill to Maumdoor hill, | 133413,15 |
| Maumdoor hill to Paudree station, | 211478,57 |

Length of the terrestrial arc, 574327,96

Or fathoms, 95721,3266

N 2
Observations by the Zenith Sector for the latitude of Paudree station, and the station near Trivandrum; and the length of the celestial arc.

The zenith sector, with which these observations have been taken, was made by Mr. Ramsden, and is the one alluded to by General Roy, in the Philosophical Transactions for 1790, being then unfinished. The radius of the arc is five feet, and the arc itself is of that extent to take in nine degrees on each side of the zenith. It is divided into degrees, and smaller divisions of 20' each, which are numbered. Each of these last is again subdivided into four, of 5' each. The micrometer which moves the telescope and arc, is graduated to seconds, and one revolution moves the arc over $1' 10'' 08'''$, but the scale being large, a small fraction of a second can be easily defined. The construction, and improvements to the zenith sector, are so well known, that a minute description of it here would be unnecessary. It will therefore suffice to say, that as far as so delicate an instrument can be managed in a portable observatory, or travelling tent, which never can offer the advantages of a fixed, well contrived building, I have every reason to be satisfied with it.

The time I commenced observing at Paudree station was during the heavy part of the monsoon, which occasioned frequent interruptions: and although I had intended observing by at least three fixed stars, I only succeeded to my satisfaction in one, which was Aldebaran. With that star I had a fortunate succession for about sixteen nights; some few of those observations being less favourable than the others, were rejected, and the rest, from which the latitude was determined, appear in the following table, arranged in the order in which they were taken.
During the time I was at Trivandeporun, near Cuddalore, the weather was settled and serene, and the nights perfectly clear, so that I had an unlimited choice of stars, but having been successful with Aldebaran, I chose that star for determining the length of the arc.

As I consider the celestial arc more likely to be erroneous than any terrestrial measurement, I have thought it necessary to give some account of the manner of observing and of adjusting the instrument, for after two years experience, I have found, that notwithstanding the great powers of the zenith sector, extreme delicacy and attention are requisite to render the observations satisfactory. The following method of adjustment I have always practised. After having brought the vertical axis nearly to its true position by the adjusting screw at the bottom, or so that the wire of the plummet would bisect the same dot when the telescope was moved to the opposite side, or half round on the axis, I then examined whether the dot at the centre of the horizontal axis was bisected, and whether the wire moved in the vertical plane clear of the axis; for unless it be perfectly free, all the observations will be false. When I had bisected the dot, I either took out the microscope and looked obliquely, or did the same by a magnifying glass, and by that means I could discover the smallest parallax. If it admitted being brought nearer to the axis, it was done; but I found from experience, that it was more eligible to leave the wire at a sensible distance than to bring it very near. Having satisfied myself in this particular, I examined with the microscope again in front, moved the wire freely in the vertical plane, and then bisected the dot. The telescope was then moved, so that the wire was brought over the dot zero on the arc, and the same precaution used with respect to the wire mov-
ing free of the arc; and here, as well as above, I found it best to allow a sensible distance between the wire and the arc.

The microscope by which the upper dot in the horizontal axis is examined, being fixed by the maker, the axis of vision is of course at right angles to the vertical plane, and will meet that plane in the centre of the axis, but the lower microscope is moveable, and requires care to fix it so as to have the wire in the axis of vision, and be free from the effects of parallax, this I have done by moving it along the brass plate in front of the arc, till the wire appeared free from curvature, and then adjusted the dot. In these late observations, I have generally made the final adjustment by the light of a wax taper, for the wind being sometimes high and troublesome, I found there was much irregularity in the observations, until I adopted that method. I therefore closed the doors and windows of the observatory tent, so as to have a perfect stillness within. The distance of the wire from the axis and the arc is likewise better defined by a taper by noticing the shadow in moving the light to the right and left.

In fixing the instrument for the star, great care was taken to have it placed in the meridian, which was done by a mark at near the distance of a mile, (generally one of my small flags), the polar star, having been previously observed by the large theodolite for that purpose. The telescope was then moved in the vertical till the wire of the plummet was at the nearest division on either limb to the zenith distance of the star, which could always be nearly known. The micrometer, having been put to zero, was firmly screwed, and the dot on the limb carefully bisected, the instrument was turned half round; the adjustment examined and correct-
ed, if necessary. That being done, the degrees and minutes, &c. on the arc were noted down, as was also the particular division on the micrometer scale, at which the index stood, and the fractional part of a division in case there were any. In this state every thing remained to within fifteen or twenty minutes of the time the star was to pass, when I repaired to the tent, and again examined whether the wire bisected the dot; if it did not, the instrument was again adjusted to the same dot, and the horizontal axis also examined by the upper microscope, all this being done, the sector was placed in the meridian.

When the star entered the field of view, the micrometer was moved gently till the star was near the horizontal wire, but not bisected till it came near the vertical, that the micrometer might not be turned back, but continue moving in the same direction. This I did to avoid any false motion in the micrometer screw, and I was led to this precaution by the repeated experiments I had made in examining the divisions on the arc, for it sometimes happened after moving the arc over one of the divisions till the wire bisected the next dot; and then turning it back again, that the index of the micrometer was not at the same second, but had passed over it perhaps one, and sometimes two seconds; but by moving over the next five minutes in the same direction, the number of revolutions and seconds were always what they ought to be, to some very small fraction. This anomaly, however, only happened in some situations of the screw, and to avoid any errors arising therefrom, I adopted the above method.

The zenith distance of the star being now had, on one part of the arc or limb, after the same process had been gone through the next night, with regard to the adjustment, the zenith distance was
taken on the other part of the arc, by turning the instrument half round on its vertical axis. The mean of these two was therefore the true observed zenith distance, and half the difference was the error of collimation. For applying these to the purpose in question, the mean of the zenith distances being corrected for refraction, the declination of the star for each of these nights, was corrected for nutation, aberration, &c. to the time of observation, and the mean of the two taken for determining the latitude.

In this manner has the whole series of observations been continued, by turning the sector half round every night, for the purpose of observing on opposite parts of the arc, and each compared with its preceding and succeeding one. In pursuing this method, it was unnecessary to notice the error of collimation for any other purpose than as a test to the regularity of the observations; for until they became uniform, no notice was taken of the zenith distances, concluding that there had been some mismanagement, or some defect in the adjustment.

The following tables contain the observations by the star Aldebaran, for determining the length of the arc.

**Observations at the station near Paudree.**

<table>
<thead>
<tr>
<th>Day of the month</th>
<th>Mean of the zenith distance on each arc</th>
<th>Mean of the corrected declinations</th>
<th>Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 23d and 24th,</td>
<td>2 46 32, 5</td>
<td>16 06 20,70</td>
<td>13 19 48,20</td>
</tr>
<tr>
<td>24th and 25th,</td>
<td>2 46 32,46</td>
<td>16 06 20,69</td>
<td>13 19 48,23</td>
</tr>
<tr>
<td>25th and 26th,</td>
<td>2 46 31,78</td>
<td>16 06 20,63</td>
<td>13 19 48,90</td>
</tr>
<tr>
<td>30th and 1st Dec.</td>
<td>2 46 31,60</td>
<td>16 06 20,61</td>
<td>13 19 49,01</td>
</tr>
<tr>
<td>Dec. 1st and 2d,</td>
<td>2 46 32,60</td>
<td>16 06 20,60</td>
<td>13 19 48,0</td>
</tr>
<tr>
<td>2d and 3d,</td>
<td>2 46 32,90</td>
<td>16 06 20,58</td>
<td>13 19 47,68</td>
</tr>
<tr>
<td>12th and 13th,</td>
<td>2 46 30,96</td>
<td>16 06 20,39</td>
<td>13 19 49,43</td>
</tr>
<tr>
<td>13th and 14th,</td>
<td>2 46 28,57</td>
<td>16 06 20,36</td>
<td>13 19 51,79</td>
</tr>
<tr>
<td>Error of collima. applied.</td>
<td>27th,</td>
<td>2 46 29,71</td>
<td>16 06 19,64</td>
</tr>
</tbody>
</table>

Mean 13 19 49,018
Observations at the station near Trivandeporum.

<table>
<thead>
<tr>
<th>Day of the month.</th>
<th>Mean of the zenith distance on each arc.</th>
<th>Mean of the correct declinations.</th>
<th>Latitude.</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 10th and 11th,</td>
<td>4 21 27,14</td>
<td>16 06 18,00</td>
<td>11 44 50,86</td>
</tr>
<tr>
<td>11th and 13th,</td>
<td>4 21 24,04</td>
<td>16 06 17,93</td>
<td>11 44 53,89</td>
</tr>
<tr>
<td>13th and 14th,</td>
<td>4 21 23,04</td>
<td>16 06 17,87</td>
<td>11 44 54,83</td>
</tr>
<tr>
<td>14th and 15th,</td>
<td>4 21 25,10</td>
<td>16 06 17,83</td>
<td>11 44 52,73</td>
</tr>
<tr>
<td>15th and 16th,</td>
<td>4 21 26,73</td>
<td>16 06 17,79</td>
<td>11 44 51,06</td>
</tr>
<tr>
<td>16th and 17th,</td>
<td>4 21 25,00</td>
<td>16 06 17,75</td>
<td>11 44 52,15</td>
</tr>
<tr>
<td>24th and 25th,</td>
<td>4 21 24,17</td>
<td>16 06 17,44</td>
<td>11 44 53,27</td>
</tr>
<tr>
<td>25th and 26th,</td>
<td>4 21 25,17</td>
<td>16 06 17,40</td>
<td>11 44 52,23</td>
</tr>
<tr>
<td>26th and 27th,</td>
<td>4 21 25,04</td>
<td>16 06 17,37</td>
<td>11 44 52,33</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td></td>
<td></td>
<td><strong>11 44 52,59</strong></td>
</tr>
</tbody>
</table>

Latitude of the station near Paudree 13 19 49,02 — 
Latitude of the station near Tri-\(\text{vandeporum}\) . . . . . . . . . . \(\text{f}11 44 52,59\)

Difference of latitude, nearly. 1 34 56,43

The latitude of a point where a great circle passing through Paudree station, and cutting the meridian of Trivandeporum at right angles, will be 13° 19' 49",02 —, from which deduct the latitude of the station at Trivandeporum, equal 11° 49' 52",59, will leave 1° 34' 56",43, or 1°,58233 nearly; by which divide the number of fathoms in the terrestrial arc = 95721,3266, &c. we shall have 1° = 60494 fathoms, nearly, for the degree in the middle of the arc, or latitude 12° 32' nearly.

**APPENDIX.**

Since the account of the meridional arc was made out, I have completed the measurement of a degree perpendicular to the meridian in latitude 12° 32' nearly, which is derived from a distance of fifty-five miles and upwards, between Carangoohy and Curnatighur; two stations nearly east and
Measurment of an Arc on the west from each other; and the following triangles have been made use of to obtain that distance.

**Distance, Carangooly from Permacoil 134236,4.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Stations</th>
<th>Observed Angles</th>
<th>Diff.</th>
<th>Spher. Excess</th>
<th>Error</th>
<th>Angles for computation</th>
<th>Distances in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carangooly,</td>
<td>38 00 53,47</td>
<td>-0,74</td>
<td></td>
<td>38 00 53</td>
<td>208418,2</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Permacoil,</td>
<td>103 08 39,05</td>
<td>-2,04</td>
<td></td>
<td>103 08 27,5</td>
<td>131803,9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maillacherry</td>
<td>38 50 42,44</td>
<td>-1,71</td>
<td></td>
<td>38 50 39,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Droog,</td>
<td>180 00 05,06</td>
<td>4,08</td>
<td>+1,88</td>
<td>180 00 00,0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Carangooly from Maillacherry Droog 208418,2.**

|     | Carangooly,      | 30 44 38,7      | -1,3  |               | 30 44 37,0 | 291189,3               |
| 34  | Maillacherry     | 105 42 14,3     | -5,1  |               | 105 42 09,0 | 154625,8               |
|     | Droog,           | 43 33 15,1      | -1,0  |               | 43 33 14,0 |
|     | Curnatighur,     | 180 00 03,1     | 7,4   | +0,7          | 180 00 00,0 |

The distance from Curnatighur to Maillacherry has also been brought out from a northern series of triangles derived from the side of Poonauk hill and Maundoor hill, of the great triangle Maundoor, Poonauk, and Mullapode hill: the triangles are Poonauk, Maundoor and Hanandamulla; Hanandamulla, Maundoor, and Telloor; Telloor, Hanandamulla and Curnatighur; Curnatighur, Telloor and Maillacherry Droog. Upon the distance from Curnatighur to Maillacherry as a base, the distance from Curnatighur to Carangooly has been computed, and differs only two feet from that derived from the side Carangooly and Maillacherry Droog: but there was some variation in the angles taken at Poonauk hill, which renders it doubtful, for the present, which to select; I have therefore relied on the single distance given in the thirty-fourth triangle.
Of the Polar Star Observations at Carangooly and Curnatigur, and the Length of a Degree, perpendicular to the Meridian, deduced therefrom, for the Latitude of $12^\circ 32'$ nearly.

As the method of determining the difference of longitude of two places, by taking the angle with the meridian and each station reciprocally, requires very great accuracy, I have thought it necessary to give an account of the observations for that purpose, and to state at the same time, the difficulty of taking them, particularly at Curnatigur, whose great height subjected it to a constant haziness, whereby the blue lights at Carangooly were repeatedly fired without effect, appearing too faint to be seen when the wires of the telescope were illuminated: some nights, however, were favourable, when the whole of the lights were distinctly seen; but the anxiety, which occurs on such occasions, will sometimes cause irregularities in the angles; a few on that account, when the lights expired before the observations were thought sufficiently satisfactory, have been rejected. Those which appear in the following account, are such as I have deemed good, though there is a greater difference among them than I could have wished. But as I had no positive reason for setting them aside, I have accordingly used them; and have endeavoured to lessen the error, by increasing the number of observations, at Carangooly, between the polar star, at its greatest western elongation, and the referring lamp at Sallawauk.

March 20, in the evening, 0 34 48,4
21, 52,9
22, 52,8
23, 48,8
25, 50,2
26, 48,0
27, 46,9
29, 45,4
Between the Lamp at Sallawauk and the Blue Light at Curnatighur.

March 30, ... 84° 38' 24",0
    ... 23°,55

April 4, ... 19°,2
    ... 20°,0
    ... 22°,62

Mean ... ... 84° 38' 21",87

TABLE. Containing the apparent Polar Distances of the Star, and the apparent Azimuths for the Nights of Observation; and also the Angles between the referring Lamp and the Meridian of Carangooly.

<table>
<thead>
<tr>
<th>March 1803</th>
<th>Apparent Polar dist.</th>
<th>Latitude</th>
<th>Apparent Azimuth.</th>
<th>$\angle$ Star and Lamp.</th>
<th>$\angle$ Pole and Lamp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1 44 22,32</td>
<td>1 46 55,32</td>
<td>0 34 48,4</td>
<td>2 21 43,72</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>1 44 22,62</td>
<td>1 46 55,63</td>
<td>0 34 52,9</td>
<td>2 21 48,53</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>1 44 22,88</td>
<td>1 46 55,90</td>
<td>0 34 52,8</td>
<td>2 21 48,70</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>1 44 23,16</td>
<td>1 46 56,18</td>
<td>0 34 48,8</td>
<td>2 21 44,98</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>1 44 23,71</td>
<td>1 46 56,72</td>
<td>0 34 50,2</td>
<td>2 21 46,92</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>1 44 24,01</td>
<td>1 46 57,05</td>
<td>0 34 48,0</td>
<td>2 21 45,05</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>1 44 24,28</td>
<td>1 46 57,33</td>
<td>0 34 46,9</td>
<td>2 21 44,23</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>1 44 24,82</td>
<td>1 46 57,89</td>
<td>0 34 45,4</td>
<td>2 21 43,29</td>
<td></td>
</tr>
</tbody>
</table>

Mean ... ... 2 21 45,67

Observed angle between the lamp and Curnatighur, ... 84° 38' 21",87

Observed angle meridian of Carangooly and ditto, ... 87° 00' 07",54

Observations at Curnatighur, between the Polar Star, at its greatest eastern Elongation, and the referring Lamp at Maudimungalum.

May 14, in the morning, ... 82° 26' 25",6

15, ... ... ... ... ... ... ... ... ... ... ... ... ... 25°,2

16, ... ... ... ... ... ... ... ... ... ... ... ... ... 25°,6

20, ... ... ... ... ... ... ... ... ... ... ... ... ... 28°,29

21, ... ... ... ... ... ... ... ... ... ... ... ... ... 26°,1

3
Between the referring Light and the Blue Lights at Carangooly.

May 18, . . . . 8° 35' 34",50

Mean . . . . 8 35 38",26

TABLE. Containing the apparent Polar Distances of the Star, the apparent Azimuths for the Time of Observation, and also the Angles between the referring Lamp and the Meridian of Curnatighur.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13 1 44 36,4</td>
<td>12° 34' 38&quot;,37</td>
<td>1 47 10,76</td>
<td>82 26 25,6</td>
<td>84 13 36,36</td>
</tr>
<tr>
<td>15 1 44 36,78</td>
<td></td>
<td>1 47 11,15</td>
<td>82 26 25,2</td>
<td>84 13 36,35</td>
</tr>
<tr>
<td>16 1 44 36,96</td>
<td></td>
<td>1 47 11,34</td>
<td>82 26 25,6</td>
<td>84 13 36,94</td>
</tr>
<tr>
<td>20 1 44 37,68</td>
<td></td>
<td>1 47 12,05</td>
<td>82 26 28,29</td>
<td>84 13 40,37</td>
</tr>
<tr>
<td>21 1 44 37,85</td>
<td></td>
<td>1 47 12,25</td>
<td>82 26 26,1</td>
<td>84 13 38,35</td>
</tr>
</tbody>
</table>

Mean - - 84 13 37,67

Observed angle between the lamp and Carangooly, - + 8 35 38",26

Observed angle meridian of Curnatighur and Carangooly, 92° 49' 15",93

If the mean of all the angles be taken, the observed angle at Carangooly, between the meridian and Curnatighur, will be 87° 00' 07",54; and the observed angle at Curnatighur, between that meridian and the station at Carangooly, will be 92° 49' 15",93. In order, therefore, to correct these angles for spherical computation, it will first be necessary to ascertain the distance between the parallels of Carangooly and Curnatighur, so that the one being known, the other may be obtained.
Let PC and PG be two meridians, and let C and G be the stations at Carangooly and Curnatighur. Let Cs be a parallel of latitude at C, meeting the meridian of Curnatighur produced, and let CR be a great circle perpendicular to the meridian of Carangooly falling from that place, till it meet PG produced in R.

Now GCR is a spheroidal triangle, and the chord of the arc GC is given from the thirty-fourth triangle; and since the angle PGC is known, the angle CGR is known, being equal $180^\circ - \text{the observed angle at Curnatighur}$, or $87^\circ 10' 44'', 07$. — And by the same reasoning the angle GCR will be given, being equal the angle PCR ($90^\circ$) minus the observed angle at Carangooly, that is $2^\circ 59' 52'', 46$. — Hence, by first considering this as a plane triangle, and taking the angle at R, the supplement to the other two, the sides CR and GR may be obtained, and used as arcs for correcting the angles at C and G, which will then be $2^\circ 59' 52'', 2$ and $87^\circ 10' 43'', 79$ respectively, which are the angles made by the chords of the arcs CG and RG at C and G. Hence the supplement to these ($89^\circ 49' 24'', 01$) will be the angle at R made by the chords of the arcs RC and RG. From these data will be had $RC=290837,8$, and $RG=15228,74$ feet.
But to find the small space \(Rs\) on the meridian of \(Curnatighur\), between the perpendicular arc and parallel from \(Carangooly\), let the triangle \(CRs\) be taken as a plane one. Then if to the corrected angle \(CRs\) \((89^\circ 49' 24''.01)\) be added the supplement to the spherical excess in the triangle \(RCG\) \((0^\circ 5')\), we shall have \(89^\circ 49' 24''.51\) for the angle \(sRC\). Draw \(Rt\) parallel to \(sC\), meeting the meridian of \(Carangooly\), produced in \(t\). Then since the angles \(PtR\) and \(PsC\) are equal by construction; and the triangles \(sCR\), \(CRT\) considered as plane ones, the angle \(CRT\) is equal half the difference of the angles \(PCR\) and \(PRC\), that is \(=\frac{\gamma 0^\circ -(8.0^\circ 49' 24''.51)}{2}=0^\circ 5' 17''.74\). Hence is given the two angles \(CRs\), \(sCR\), and the side \(CR\), by which the small side \(Rs\) is had, equal to 448.02 feet, which, deducted from \(GR\), gives \(Gs=14780.72\) feet, equal to an arc of \(2' 26''.58\) on the meridian, and this is the difference of the latitudes of \(Carangooly\) and \(Curnatighur\). Hence if the latitude of \(Carangooly\) be \(12^\circ 32' 12''.27\), that of \(Curnatighur\) will be \(12^\circ 34' 38''.85\), and their respective complements will be \(77^\circ 27' 47''.73\) and \(77^\circ 25' 21''.15\). Hence in the triangle \(PCG\), on the spheroid, is given the two sides \(PG\) and \(PC\), the co-latitudes of \(G\) and \(C\), and the two observed angles \(PCG\) and \(PGC\).

Then as the tan. 77° 26' 34''.44 (half the sum of the sides \(PG\) and \(PC\)) to tan. 0° 1' 13''.29 (half their difference) so is tan. 89° 54' 41''.73 (half the sum of the angles), to tan. 2° 56' 10''.23 (the half

* When the polar star observations were made at \(Carangooly\), no double azimuths could be taken, and therefore the latitude of the place was necessary to compute the azimuths, in order to get the direction of the meridian. As I wished to deduce the latitude of \(Carangooly\) from that of the observatory at \(Madras\), the following method was used to obtain it.

Let \(P\) be the pole, \(PT\) the meridian of \(Trivandeporum\), \(O\) the observatory at \(Madras\); and let \(C\) be the station at \(Carangooly\), \(T\) that at \(Trivandeporum\), \(OM\) an arc of a great circle, perpendicular to \(PT\), falling from the observatory, and \(CM\) another perpendicular arc from \(Carangooly\). Then if the ratio of the earth's diameters be taken as 1 to 1,003567, and the degree on the me-
difference of the angles). Therefore 92° 50' 51".96 and 86° 58' 31",5, will be the angles at Curnatigheur and Carangoooly, such as would have been observed on a sphere, the latitudes and longitudes being the same. Then by using these angles, with the sides $PC$ and $PG$, and computing spherically, the angle $CPG$, or difference of longitude, will be 48° 47",75, with which, and the side $PC$, or co-latitude of Carangoooly, in the triangle $PCR$, right angled at $C$, the side $CR$ will be had equal 0° 47' 37",45.

Now the chord of this arc is the distance $CR$, equal 290837,8 feet, and therefore the arc itself is 290841 feet nearly. Hence 47° 37",45 : 290841:: 60' : 366355,08 feet, or 61059,2 fathoms nearly, which is the length of the degree perpendicular to the meridian at Carangoooly *

The ratio of the earth's diameters has been determined, by using the degree as brought out here, and the one in latitude 50° 41', as deduced from the measured arc between Greenwich and Paris, which is 60851 fathoms; and these two give the ratio of the polar to the equatorial diameters to be 1:1,003567, supposing the earth to be an ellipsoid.
POSTSCRIPT.

Since the above has been written, the triangles derived from the side Maumdoor and Poonauk, and brought down westerly as far as Woritty, have been computed, and it appears that the distance between Maumdoor and Woritty, which is common to both series, exceeds the former by 6,9 feet; so that the mean of the two, equal 133485,0 feet, has been taken for obtaining anew both the meridional and perpendicular arcs; the former of which is 574337,04 feet, and the latter 290848,5 feet; whence the degree on the meridian will be had 60495 fathoms nearly, and the degree perpendicular to the meridian at Carangooley 61061 fathoms nearly.

The difference of 6,9 feet is more than what I expected, but it has been occasioned by the great difficulty in getting the angles in the great triangle, Maumdoor, Mullapode, and Poonauk. But as it appears that the side Mullapode and Maumdoor has been in excess, and the side Poonauk and Maumdoor in defect, it must follow that the mean distance of Maumdoor and Woritty, brought out by triangles derived from these two sides, must be very near the truth.

Now this latitude has been made use of to find the latitude of Curnatiglur, and the same process has been followed for finding the length of a degree on the perpendicular in the latitude of Carangooley as is here given; and that degree taken, with the easting of the observatory from the meridian of Carangooley to compute the latitude a second time, which came out 12° 32' 12'',27, and is here applied for re-computing the perpendicular degree: but the difference is too trifling to affect the difference of longitude, and therefore the degree comes out the same.

It is scarcely necessary to notice, that the distance of the observatory from the meridian of Trivandepourum being so trifling, no spheroidal correction has been thought requisite for obtaining the latitude of the point M, and much less for that of C.
VI.

On the Hindu Systems of Astronomy, and their connection with History in ancient and modern times.

BY J. BENTLEY, ESQ.

In my last paper on the antiquity of the Sūrya Siddhānta, published in the sixth volume of the Asiatic Researches, I endeavoured to explain, in as simple a manner as possible, the principles on which the Hindu artificial systems of astronomy are founded. It was my intention to have postponed the present paper until I should procure several valuable works, which, through the assistance of my friends, I am endeavouring to collect from different parts, which would enable me to give a more perfect and satisfactory account of the ancient astronomy and history of India, than I can at present; but having lately, by chance, seen the first number of the Edinburgh Review, wherein the writer has thought proper to attack my last paper, I feel it incumbent on me to come forward as early as possible, to repel his observations, and to shew how little he is acquainted with the matters he pretends to review.

The Reviewer says—

"Mr. Bentley appears to be a mathematician of considerable industry and merit. In this disquisition he has supplied some instructive observations on the principles of the Hindu astronomy, and on the manner in which their cycles were or might have been formed; he has also exhibited useful formulæ, shewing their application in discovering the actual position of the heavenly bodies.

"His discussion relative to the antiquity of the
"Sūrya Siddhānta, involves points of the utmost importance; no less, indeed, than whether the whole of the Sanscrit literature shall be considered as the spurious production of a recent age, or genuine monuments of primeval times. We shall endeavour to do justice to his formidable attack on the Indian gymnosophists.

"The Sūrya Siddhānta is generally believed to be the most ancient astronomical treatise the Hindus have; and, according to their notions, was received by divine revelation 2,164,899 years ago. But the mean result of calculations, from ten different data afforded by that work, and on its own principles of assuming the position of the heavenly bodies to have been accurately observed at the time it was written, gives only 731 for the date of its composition, or the year of our Lord 1068. But, independent of all calculations, an astronomical work, entitled the Bhaswotee, was composed 700 years ago by Sotond, who, according to Hindu accounts, was a pupil of Vara'ha Mahā. The commentary on this treatise declares, that Vara'ha was the author of the Sūrya Siddhānta. Therefore any Hindu work, in which the name of Vara'ha is mentioned, must evidently be modern, and this circumstance alone totally destroys the pretended antiquity of many of the Purans and other books, which, through the artifices of the Brāhminical tribe, have been hitherto deemed the most ancient in existence. Now all the other astronomical works Mr. Bentley has seen, adopt the system in the Sūrya Siddhānta by Vara'ha*.

* This must be a misrepresentation of the Reviewer, see page 546, 547, of Vol. VI. where I have mentioned and described other systems. J. B.
"A work ascribed to Parasara, a philosopher, who is supposed to have lived before the Vedas were arranged in their present form, exhibits a still more manifest proof of forgery, since one of the formulæ it exhibits mentions the æra of Saca, which began Anno Domini 78."

After giving this outline, which is very defective in many respects, the Reviewer commences his attack as follows:

"It would be easy to shew, that the circumstances so forcibly stated, by no means justify the sweeping inference deduced by our author. Vara'ha Mihira was never considered as an ancient writer; and is supposed, by Sir William Jones, to have flourished A. D. 499. That he was the author of the Sūrya Siddhānta, rests on the single authority of the commentator of the Bhaswotee, a work which seems to have been composed in Siam; though we greatly wish Mr. Bentley had imitated Sir William Jones, on such occasions, by inserting the original passage. But on what authority does our author assume, that the Calpa, or cycle of Vara'ha, is that of Vara'ha Mihira, the modern astronomer? We find the Hindu cycles always distinguished by the names of different Deities. There is the De-vi Calpa, the Sūrya Calpa; the present is the Vishnu Calpa, and we entertain no doubt that the Vara'ha Calpa derived that designation from the Vara'ha Avatar, or incarnation of Vishnu, in the form of a Boar, as is the universal opinion of the natives. Now the name of Vara'ha Mihira unquestionably does not occur in the Purans, or in any work pretending to antiquity; and we have seen in what light we are to consider the Vara'ha Calpa."
That Vara'ha Mihira was the author of the Surya Siddhānta, does not rest upon the single authority of the commentator on the Bhaswotee, but on several undeniable facts,—it is clearly shewn by the other works of Vara'ha, which bear his name, one of which, the Jātacārnava, (Jatokarnovo) is compared with the Sūrya Siddhānta, at page 573, §. 72. Nay, the very circumstance to which the Reviewer himself alludes above, of Vara'ha being supposed to have flourished A. D. 499, ought to have led him to the same conclusion. For why is Vara'ha supposed to have flourished in A. D. 499? Because he had fixed the vernal equinox to the beginning of Aswini in that year, and settled the rate of precession to be from thence computed at 54" annually: Now this is absolutely the case in the Sūrya Siddhānta, as well as in all the other works of Vara'ha; and the same system, motions, and positions of the planets, given by that astronomer in those works which bear his name, are likewise the same in the Sūrya Siddhānta. But, independent of all these undeniable facts, there is not a Hindu astronomer, who has the smallest pretension to the knowledge of the history of astronomy in India, that does not know that Vara'ha was the real author of the Sūrya Siddhānta, and not only of that work, but also of the Brahma Siddhānta, the Sōma Siddhānta, the Vasiṣṭha Siddhānta, and the Paulastya Siddhānta, which are called the five Siddhāntas of Vara'ha Mihira; and in allusion to which, one or more single works have been written under the title of "Pancha Siddhānta," as supposed to contain the essential parts of the five Siddhāntas of Vara'ha.

The Hindus, in general, know very little about the time in which Vara'ha flourished. Some refer him to the era of Vicramaditya, or fifty-six years before Christ, while others, from the cir-
cumstances abovementioned, refer him to A. D. 499, which shew how little they know of the real time he lived in, which was between seven and eight hundred years ago.

With respect to the different systems of astronomy which have been framed from time to time, there are but three now generally known, all of them modern. The first is the Brah'hma Calpa, invented by Brah'hma Gupta, near 1300 years ago; the second, the Padma Calpa, said to have been invented by a person of the name of Sri Dhara Padma, or Sri Dhara Padma Na'bha, between eight and nine hundred years ago; and the third and last, the Vara'ha Calpa, invented by Vara'ha Mihira, between seven and eight hundred years ago. Hence it may be seen, that the different systems bear the names of their inventors, and not of the Deities; for there is no such Deity as Padma, though there is a system of that name; therefore it must be sufficiently obvious to every candid mind, that these real systems of the astronomers, were the basis on which the writers of Hindu romance, or modern Puranas, erected their ideal ones of the Brah'hma Calpa, the Padma Calpa, and the Vara'ha Calpa; the two first of which they fancifully represent as past, and assert that we are now in the third or last. But the truth is, that none of these artificial systems are yet expired (except in the idea of visionaries), nor will be for many millions of years to come. The number of years now elapsed of

the first, \[=1972948905\]
And there are yet to expire, \[=2347051095\]
The years elapsed of the Calpa of Vara'ha, \[=1955884905\]
And there remain yet to expire, \[=2364115095\]
As to the systems which were in use before the in-
vention of these modern ones, and by which the Hindus regulated their history in ancient times, I shall notice them in their proper place.

I have nothing to do with visionary dreams of antiquity, nor with the ideal systems of the Edinburgh Reviewer, my object is truth. The Edinburgh Reviewer says, there is the Devi Calpa, the Surya Calpa, and the Vishnu Calpa; yes, and a great many more, which he will find in the Tantras and other books of the Hindus; as the Gan'esa Calpa, the Pitri Calpa, the Santi Calpa, &c. But are these astronomical systems? And if they are, upon what authority does he give them as such? For he does not vouchsafe to inform his readers where he found them. I am afraid the Reviewer has mistaken the sense of the word Calpa, which he will find to have many meanings. The Hindu astronomers whom I have consulted on the subject, and who certainly are the best judges in matters of this nature, positively deny that there are any such systems as mentioned by the Reviewer; that, on the contrary, they imply nothing more nor less than the particular form of worship directed for each Deity, &c.* and are to be found, in that sense only, in the Tantras, &c. Hence the reader may easily see in what light the Devi Calpa, the Surya Calpa, and the Vishnu Calpa, of the Reviewer, are to be considered.

No astronomical system can possibly have a name before it is invented: and whether such system is called by the name of its inventor, or whether fancy or caprice may call it by the name of any Deity, flower, mountain, or any thing else, still this can make no difference whatever with

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* Some writers of romance may have adopted these names as so many systems, but they have nothing to do with real history or astronomy.
respect to the antiquity of the time in which the system was framed. If, therefore, the time in which any system was framed be known, (either from that of the inventor, or from the positions of the planets or other data, given in such system,) then I say, that any book in which the name of that particular system is mentioned, cannot possibly be older than the time the system was framed and obtained its name.

That system which is contained in the Sûrya Siddhânta (though originally invented by Varâ'ha Mihira), is now most certainly called the Calpa of Varâ'ha, or of the Boar; but whether that system obtained its present name from the inventor, or whether fancy has had any share in it since, still this can make no difference, as it can neither increase nor diminish the antiquity of the system; which, from computations founded on undeniable principles, I have shewn and demonstrated to be only between seven and eight hundred years old; and this I maintain to be true, whether Varâ'ha Mihira was the inventor of the system or not.

Now since this system, called the Calpa of Varâ'ha, or of the Boar, has been framed only between seven and eight hundred years, it follows indubitably that any work in which the Calpa is mentioned, cannot possibly be older than the time of its invention, but may be considerably less.

It was not necessary that the name of Varâ'ha Mihira should occur in the Purânas, to prove them modern; for, putting Varâ'ha and his system altogether out of the question, yet still the names, not only of the princes in whose reigns he lived, but also of several others, down to the last Mahomedan conquest, with the years of each reign, are to be found in some of the Purânas; a most certain proof, that these works are not the genuine
monuments of primeval times, as imagined by the Reviewer.—The Reviewer again says:—

"The mention of the era of Saca, in a work attributed to Para'sara, is only decisive against the passage; for we are satisfied, no work of great antiquity can exist in a country where the art of printing is unknown, free from interpolation. The institutes of Timur are now acknowledged to be genuine, and written under the direction of that conqueror, though they are found to contain an account of his own death. Some copyist of the Crisi Parasara was acquainted with an useful formulae which he injudiciously inserted in what he considered its proper place: did our limits permit, we could distinctly prove, from considerations unconnected with astronomy, that the high antiquity attributed to the Hindu records is founded on evidence of a nature almost conclusive."

It would appear then, if my pandit, or any other Brâhmen, should take it into his head to compose a book, and father it on some ancient philosopher, or Rishi, but, from ignorance or inadvertence, he should introduce some modern expressions into it, that, according to the notions of the Reviewer, the words by which the forgery would be detected are to be considered as interpolations only, and the rest of the work genuine, though a downright imposition. It seems the Reviewer is not aware of the difference between the style of the ancients and that of the moderns, by which we can in some measure form an opinion whether a work is forged or not. Neither does he seem to be aware that, if an ancient work is interpolated by some modern copyist, several other copies ought to be found free from the interpolation.

Para'sara is supposed to have lived near 3000 years ago, and from that time to the era of Saca
there were about 1300 years, during which a great number of copies of the Crishi Parásara might have been written in different parts of India; yet no copy has been ever yet seen, that does not contain the passages alluded to. But independent of this fact, (which is a strong proof of the whole being a modern forgery) the style of Paraśara, according to Sir William Jones, resembles that of the Veda, whereas that of the Crishi Parásara has not the most distant similitude; and, according to the information which I received respecting it, was composed by a pandit, not a great many years ago, at Nuddea. We know to a certainty, that books have been ushered into the world under different titles, as if written by different people, and at different periods immensely distant from each other, though composed by one person only. Of this we have an instance in the five Siddhántas of Varāha.

The most candid part of the Hindus, indeed, will acknowledge, that literary forgeries are thus frequently committed; yet, at the same time, they endeavour to palliate it by saying, that men are under the necessity of doing so, in consequence of the depravity of the age we live in, which can relish nothing but what is supposed to bear the stamp or appearance of antiquity. Hence, they say, learned men are sometimes under the necessity of fathering their works on the sages of antiquity, to obtain a due respect and attention to their precepts, which, otherwise, would not be attended to. And with respect to modern names or expressions occurring in such books, they are considered by the generality of the Hindus, rather as indubitable proofs of the gift of prophecy, which they firmly believe their ancient sages possessed, than as marks of forgery or interpolation. Hence every species of literary imposition may be committed without the smallest danger of detection.
With respect to those considerations unconnected with astronomy, from which the Reviewer says he could distinctly prove, "that the high antiquity attributed to the Hindu records is founded on evidence of a nature almost conclusive," we wish he had stated those weighty considerations, or told us where we might find them; for the astronomers and others now engaged in investigating the antiquities, arts, and sciences of India, are unwilling to take his ipse dixit for it; particularly as he had but the moment before totally destroyed the credibility of those very records he would wish to support, by saying, that "no work of any great antiquity can exist in a country where the art of printing is unknown, free from interpolation." How is it possible then, that they are to be considered as ancient records, when every line of them may be interpolated? who can pretend to judge of those parts which are genuine, and those which are not? for certainly it is not necessary that a part that is interpolated should have any date or mark annexed to it, by which it might be known; therefore the authenticity of works so interpolated, must be as fully to all intents and purposes destroyed, as if the whole were an actual forgery.

The Reviewer should only judge for himself,—for that evidence which he may think is of a nature almost conclusive, may be no evidence at all to others. And I am afraid, that unless his gymnosophists find a better advocate in their cause, their pretensions to superior antiquity, to arts, and to sciences, must soon fall to the ground.—Lastly, the Reviewer says,

"By exhibiting the mean result only, we have given Mr. Bentley's argument an advantage to which it is not entitled; the individual results from each of the ten data vary from 300 to 1100
years for the age of the Sūrya Siddhānta. Hence "the only legitimate inference that can be deduced, "is either that the heavenly bodies were so inaccu-
rately observed by the author as to furnish no ba-
sis for calculation, or that the observations were "made at a period prodigiously anterior to that as-
sumed by Mr. Bentley. The first alone is admis-
sible, and in that we are disposed to acquiesce."

Lest, however, his readers should not be inclined to admit of such a conclusion, he endeavours to throw a suspicion on the whole thus:

"But when it is recollected how many collations, "researches, and ingenious conjectures have been "requisite to restore Greek and Roman writers to "their pristine sense, some enquiry would be ne-
cessary respecting the manuscript used by Mr. "Bentley, and the certainty of comprehending "his text, which he interprets differently from his "instructors. At present Mr. Bentley is involved "in the following dilemma, either that the obser-
vations of the heavenly bodies contained in the "Sūrya Siddhānta are wholly erroneous, or that they "were not made at the period he conjectures."

The Reviewer had it fully in his power to have ascertained the fact, whether the copy of the Sūrya Siddhānta, in my possession, was correct or not, by merely referring to a paper of Mr. Davis, in the second volume of the Asiatic Researches, page 232. He might have calculated the places of the planets from the numbers there exhibited, and compared them with those given by me; which would have shewn him whether I deviated from my instructors or not. If he found that I had committed a mater-
rial error, or deviated from truth, he would then have been justified in exposing it to the world. On the other hand, if he found that it was right, it would have been equally his duty to have candidly
acknowledged it. For, as Pope very justly says, respecting the moral qualities of a good Critic:

Tis not enough wit, art, and learning join;
In all you speak, let truth and candour shine.

It is much to be lamented, that the very reverse of this is but too often the case, and that men suffer their judgment to be biassed by their prejudices.

By exhibiting the mean result of ten different operations *, viz. 731 years for the age of the Sūrya Siddhānta, the Reviewer conceived he did me more justice than I was entitled to; and therefore, to counteract it, as he thought, instead of giving the whole of the different results, from which his readers would be enabled to form a just opinion, he makes choice of the two extreme results, as differing most from the mean, and concludes from thence, that either the heavenly bodies were so inaccurately observed by the author as to furnish no basis for calculation, or that the observations were made at a period prodigiously anterior to that given by me.

Now, it must be immediately apparent to any man of common sense, that by taking the two extreme results only, no other inference could, consistently with truth, be drawn from thence, but that the work must have been written at some period between these extremes; the mean of which

\[
\frac{1105 + 340}{2} = 722 \text{ years.}
\]

In computations, depending on a number of observations, it is well known that astronomers reject such as are found to differ most from the mean results; for in all cases some of the data, from their

* These were the results which the Reviewer ought to have given his readers.

| Moon's apogee, gave 605 years. | Jupiter, ...... 875 years. |
| Moon's node, ...... 580 —. | Saturn, ...... 805 —. |
| Sun's apogee, ...... 1105 —. | Mars's aphelion, 641 —. |
| Venus, .......... 860 —. | Length of the year, 736 —. |
| Mars, ............ 340 —. | |
| Moon, ............ 759 —. | Mean age, 731 —. |
nature, will be more erroneous, and less to be depended on than others. Had the *Edinburgh Reviewer*, therefore, adopted this plan, and rejected the extremes, 1105 and 340, as too incorrect, no fault whatever could be found with him for so doing; for the remaining eight results would still have been more than sufficient to answer the purpose required.

But his views, as may be easily seen, were to endeavour, if possible, to discredit any investigation that should in the smallest degree tend to open the eyes of the public with respect to the true antiquity of *Hindu* books; and therefore he asserts, that the heavenly bodies must have been so inaccurately observed by the author, as to furnish no basis for calculation, or that the observations were made at a period prodigiously anterior to that assigned by me. Why did he not point out what these errors were, that his readers might judge of the truth or falsehood of his assertions?

But in order to shew the fallacy of the Reviewer's argument, let us endeavour, if possible, to ascertain the quantity of the errors from the years only, on which the Reviewer grounds his notions.

The years are obtained by dividing the error in the position of the planet, at a certain instant, by the error in the mean annual motion, which, by its gradual accumulation, is supposed to have caused the error in position. Therefore, suppose we denote the error in position by \( x \), and that in the mean annual motion by \( y \); and that \( \frac{\varepsilon}{y} = 110.5 \); it is required from thence, to determine the quantities \( x \) and \( y \), which the *Edinburgh Reviewer* would wish to make his readers believe, must be so extraordinarily great as to leave no basis for calculation: I say it is absolutely impossible, nor does the nature of the case admit of such an unjust inference. For
any two quantities whatever, whether large or small, that are in the proportion of 1 : 1105, will give the same quotient. Thus, suppose \(x=1105\) minutes, and \(y=1\) minute, then, \(\frac{1105}{1} = 1105\).

Again, suppose \(x=1105\) seconds, and \(y=1\) second, then, \(\frac{1105}{1} = 1105\), as before. Or, suppose \(x=221^{\circ}\), and \(y=0, 2^{\circ}\), then, \(\frac{221^\circ}{0^\circ} = 1205\), as before. Hence it evidently follows, that as 1105 may be deduced from any two quantities, however small, that are in the proportion of 1 : 1105, so may 340 from any other two quantities whatever, small or large, that are in the proportion of 1 : 340. It is, therefore, the height of absurdity to pretend to draw any conclusion relative to the supposed quantity of error from the years exhibited; and if we wish to shew the errors, it must be done by a direct computation, and not by ideal notions or sophistry.

The Reviewer perhaps conceived that all the results should come out exactly the same; if so, it is more than he had a right to expect from the most correct European tables extant. If we examine the second edition of La Lande's tables, we shall find that one of the data will give us 318 years for the age of it, and another 243 years: but would this be a sufficient ground to assert, that either the heavenly bodies were so inaccurately observed by the author as to furnish no basis for calculation, or that the observations were made at a period prodigiously anterior to that assigned to La Lande's second edition? The error from which the 243 years arise, only amount to about one minute and half, which may shew the Reviewer, that he is not to assume the quantity of the error from the number of years. There are, perhaps, no astronomical tables in existence, that do not contain errors, but these errors are always less at or near the time the work is written than at any distant period whatever. Therefore, to put this matter out of dispute, I shall exhibit, in the
following table, the errors in the *Sūrya Siddhānta* with regard to the places of the planets, &c. at different periods, by which may be known by inspection only, the period of time at or near which it was written.

**TABLE**

*Of the errors in the Sūrya Siddhānta, with respect to the places of the Planets, &c. at the under-mentioned periods.*

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<tbody>
<tr>
<td><strong>Moon</strong></td>
<td>5 52 34−</td>
<td>0 20 14−</td>
<td>0 01 02−</td>
<td>0 07 39+</td>
<td>3 43 37+</td>
</tr>
<tr>
<td>—— apogee</td>
<td>30 11 25−</td>
<td>4 52 53−</td>
<td>1 21 59−</td>
<td>2 09 56+</td>
<td>27 27 28+</td>
</tr>
<tr>
<td>—— node</td>
<td>23 37 31+</td>
<td>3 56 06+</td>
<td>1 12 01+</td>
<td>1 32 04−</td>
<td>21 13 29−</td>
</tr>
<tr>
<td><strong>Venus</strong></td>
<td>32 43 36−</td>
<td>3 33 41−</td>
<td>0 29 22+</td>
<td>4 32 25+</td>
<td>33 42 20+</td>
</tr>
<tr>
<td><strong>Mars</strong></td>
<td>12 05 42+</td>
<td>2 32 42+</td>
<td>1 13 08+</td>
<td>0 06 27−</td>
<td>9 39 27−</td>
</tr>
<tr>
<td>—— aphel.</td>
<td>9 47 00+</td>
<td>1 30 50+</td>
<td>0 21 55+</td>
<td>0 47 00−</td>
<td>9 03 11−</td>
</tr>
<tr>
<td><strong>Jupiter</strong></td>
<td>17 12 36−</td>
<td>1 48 56−</td>
<td>0 24 20+</td>
<td>2 38 36+</td>
<td>18 01 45+</td>
</tr>
<tr>
<td><strong>Saturn</strong></td>
<td>21 23 43+</td>
<td>2 50 09+</td>
<td>0 03 33−</td>
<td>2 54 05−</td>
<td>21 36 57−</td>
</tr>
<tr>
<td>Sun's apogee.</td>
<td>3 15 53+</td>
<td>0 05 45−</td>
<td>0 33 45−</td>
<td>1 01 45−</td>
<td>4 23 22−</td>
</tr>
</tbody>
</table>

**B.C. Before Christ. — A.C. After Christ.**

By comparing the errors given in the preceding table at the different periods, with each other, it will appear, that they were least between seven and eight hundred years ago; which clearly demonstrates that the *Sūrya Siddhānta*, was written at or near that time. For all astronomical works, whether founded on real or artificial systems, must necessarily give the positions of the planets nearer the truth, at, or about the time in which they were originally framed, than at any other distant period whatever either before or after.

With respect to the errors in the places of the planets as computed from the *Sūrya Siddhānta*, they are not to be attributed to incorrect observations;
for they principally arise from the nature of the artificial system adopted by the author, which did not admit of a nearer approach to truth; in order to explain which, it is necessary to be observed, that in the Hindu artificial systems, the astronomers fix on a point of time back as an epoch, at which they assume the planets, &c. to have been in a line of mean conjunction in the beginning of Aries in the Hindu sphere. But as no period can be found, at which the planets were actually in a line of mean conjunction, it must be obvious, that the motions requisite to give the mean places of the planets when the system is framed, commencing from any such assumed epoch of mean conjunction, must deviate more or less from the truth. For, the mean motions of such of the planets, as were actually passed the position assumed, will come out greater, and those that fell short of it less than the truth, in proportion to the differences between the real and assumed mean places.

Thus:—suppose $n$, to be the number of years expired from the assumed epoch of mean conjunction at the time the system is framed, and let $M$, be the real mean annual motion of a planet deduced from observations or otherwise; then $M \times n$, would be the mean place of the planet at the end of $n$ years from the epoch of assumed mean conjunction, provided the planet was in the position assumed. But if $M \times n$, was found to exceed or fall short of the real mean place of the planet at the end of $n$ years, then, it is evident, that the planet was not in the position assumed at the epoch, and the motion must be increased or diminished accordingly, so as to make it give the real mean position of the planet;—for instance, suppose that $M \times n$, fell short of the real position of the planet at the end of $n$ years, by the quantity $d$,—then, $M + \frac{d}{n}$, would be the
mean annual motion required; but if $M \times n$, exceeded the real mean place by the quantity $d$, then $M - \frac{d}{n}$, would be the motion required. Hence, it must be evident, that the mean annual motions deduced on these principles, must be always affected by the differences between the real mean places of the planets, and that assumed at the epoch.

The motions requisite to give the real mean places of the planets being ascertained, the astronomer in the next place assumes, at pleasure, any convenient cycle of years, and assigns the number of revolutions of each planet in that cycle.

In computing the number of revolutions of each planet, in order to avoid fractions, he rejects such as are less than six signs, as of no consequence; and, for the rest, he takes the next greater entire number. Unless he may deem it necessary, in some instances, to increase or diminish a little the motions; in which case, though the fraction may be under six signs, he may take the next higher number to increase the motion, or if above six signs, he may reject it, to diminish the motion.

From the revolutions thus obtained, the mean places of the planets in the heavens are determined by the following proportion:—

As the number of years in the cycle assumed,
Is to the revolutions of any planet in that cycle;
So is the time expired from the epoch assumed,
To the planets mean longitude.

These are the principles on which the system given in the Sārya Siddhānta, as far as relates to the planets, is founded, and which I shall now proceed to demonstrate.
According to the Sūrya Siddhānta, the planets are assumed to have been in a line of mean conjunction in the first point of Aries in the Hindu sphere, at the beginning of the Cali Yug; I shall therefore carry back the calculation to that time, in order to shew more clearly, the actual differences between the real mean places of the planets at that period, and that which was assumed, and the consequent effect thereof on the mean annual motions thence deduced.

The year 4900 of the Cali Yug, ended on the 12th of April 1799, at forty-five minutes forty-four seconds past nine P. M. on the meridian of Lanka; or fifty-one minutes forty seconds past four, P. M. on the meridian of Paris. The mean places of the planets at that instant of time were, according to the third edition of La Lande's tables, as follow:

<table>
<thead>
<tr>
<th>European sphere</th>
<th>Hindu sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sun</strong></td>
<td>0 20 52 28,5</td>
</tr>
<tr>
<td><strong>Moon</strong></td>
<td>3 22 55 09,3</td>
</tr>
<tr>
<td><strong>Venus</strong></td>
<td>2 24 06 14,0</td>
</tr>
<tr>
<td><strong>Mars</strong></td>
<td>3 04 50 40,0</td>
</tr>
<tr>
<td><strong>Jupiter</strong></td>
<td>1 29 58 02,1</td>
</tr>
<tr>
<td><strong>Saturn</strong></td>
<td>3 24 16 56,1</td>
</tr>
</tbody>
</table>

The length of the Hindu year, according to the Sūrya Siddhānta, is 365 days, 6 hours, 12 minutes, 36 seconds, 33 thirds, 36 fourths, in which time the sun is supposed to make one complete revolu-

---

**NOTE**—There being an error in the number of revolutions of Mercury, as given in the Sūrya Siddhānta, it is here omitted.—See Asiatic Researches, volume VI, section 61, page 566.
oration in his orbit. The mean motions for which, according to La Lande's tables, are as follow:

<table>
<thead>
<tr>
<th>European sphere</th>
<th>Hindu sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun,</td>
<td></td>
</tr>
<tr>
<td>1° 0' 0&quot; 58.671°</td>
<td>1° 0' 0&quot; 00.000°</td>
</tr>
<tr>
<td>Moon,</td>
<td></td>
</tr>
<tr>
<td>13° 4' 12.47° 39.234°</td>
<td>13° 4' 12.46° 40.613°</td>
</tr>
<tr>
<td>Venus,</td>
<td></td>
</tr>
<tr>
<td>1° 7' 15.12° 22.306°</td>
<td>1° 7' 15.11° 23.635°</td>
</tr>
<tr>
<td>Mars,</td>
<td></td>
</tr>
<tr>
<td>0° 6' 11.25° 17.822°</td>
<td>0° 6' 11.24° 19.150°</td>
</tr>
<tr>
<td>Jupiter,</td>
<td></td>
</tr>
<tr>
<td>0° 1' 00.21° 49.153°</td>
<td>0° 1' 00.20° 50.483°</td>
</tr>
<tr>
<td>Saturn,</td>
<td></td>
</tr>
<tr>
<td>0° 0' 12.14° 08.015°</td>
<td>0° 0' 12.13° 09.343°</td>
</tr>
</tbody>
</table>

4900 Hindu years, of the above length, are equal to 1789767 days, 21 hours, 45 minutes, 44 seconds; or 4900 Julian years, 42 days, 21 hours, 45 minutes, 44 seconds; the mean motion for which, from La Lande's tables, are as follow:

<table>
<thead>
<tr>
<th>European sphere</th>
<th>Hindu sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun,</td>
<td></td>
</tr>
<tr>
<td>2° 19' 51.27.5°</td>
<td>0° 00' 00.000°</td>
</tr>
<tr>
<td>Moon,</td>
<td></td>
</tr>
<tr>
<td>5° 21' 48.12.3°</td>
<td>3° 01' 56.44.8°</td>
</tr>
<tr>
<td>Venus,</td>
<td></td>
</tr>
<tr>
<td>3° 20' 21.37.0°</td>
<td>1° 00' 30.09.5°</td>
</tr>
<tr>
<td>Mars,</td>
<td></td>
</tr>
<tr>
<td>5° 15' 55.21.0°</td>
<td>2° 26' 03.53.5°</td>
</tr>
<tr>
<td>Jupiter,</td>
<td></td>
</tr>
<tr>
<td>3° 11' 54.08.1°</td>
<td>0° 22' 02.40.6°</td>
</tr>
<tr>
<td>Saturn,</td>
<td></td>
</tr>
<tr>
<td>6° 14' 14.58.1°</td>
<td>3° 24' 23.30.6°</td>
</tr>
</tbody>
</table>

which motions, being deducted from the mean longitudes at the end of the year 4900 of the C fail Yag, above determined, we shall have their respective mean positions at the beginning of the Cail Yag, the assumed epoch of mean conjunction, as follow:
Whence, it is evident, the planets were not in the position assumed. Now taking the differences between the positions above found in the Hindu sphere, and that which is assumed in the Sūrya Siddhānta, noting those which were past the point assumed, with the sign +, and those which fell short of it, with the sign —, we shall have

<table>
<thead>
<tr>
<th>Planet</th>
<th>European sphere</th>
<th>Hindu sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>10 01 01 01</td>
<td>00 00 00 00</td>
</tr>
<tr>
<td>Moon</td>
<td>10 01 06 57</td>
<td>00 05 56 56</td>
</tr>
<tr>
<td>Venus</td>
<td>11 03 44 37</td>
<td>10 43 36 36</td>
</tr>
<tr>
<td>Mars</td>
<td>9 18 55 19</td>
<td>11 17 54 18</td>
</tr>
<tr>
<td>Jupiter</td>
<td>10 18 03 54</td>
<td>00 02 53 53</td>
</tr>
<tr>
<td>Saturn</td>
<td>9 10 01 58</td>
<td>10 00 00 57</td>
</tr>
</tbody>
</table>

Now, since the planets were not in the position assumed, by the above differences, it is evident, that if we wish to calculate the mean places of the heavenly bodies, at the end of any number of years from this assumed epoch, we must take the above differences into the account, by adding those of the Moon, Venus and Jupiter, and subtracting those of Mars and Saturn:—Thus, if \( n \), be any number of years whatever, then I say,
that the mean places of the planets at the end of $n$ years, in the Hindu sphere, will be as follow:

$$
\begin{array}{lll}
\text{SUN}, & 10000000000 \times n & \\
\text{Moon}, & 134124640,613 \times n + 000556 & \\
\text{Venus}, & 17151123,635 \times n + 324336 & \\
\text{Mars}, & 06112419,150 \times n - 120542 & \\
\text{Jupiter}, & 01002050,483 \times n + 170253 & \\
\text{Saturn}, & 00121309,343 \times n - 205903 & \\
\end{array}
$$

Therefore, if we divide these by $n$, we shall have the mean annual motions requisite to give the same positions at the end of $n$ years, as follow:

**Hindu sphere.**

$$
\begin{array}{lll}
\text{SUN}, & 100000000 & \\
\text{Moon}, & 134124640,613 + \frac{3.5.6}{n} & \\
\text{Venus}, & 17151123,635 + \frac{111.7.8.9}{n} & \\
\text{Mars}, & 06112419,150 - \frac{43.5.4.9}{n} & \\
\text{Jupiter}, & 01002050,483 + \frac{61.7.4.3}{n} & \\
\text{Saturn}, & 00121309,343 - \frac{75.5.4.3}{n} & \\
\end{array}
$$

Hence, it is apparent, that all Hindu books or tables, which assume a mean conjunction of the planets at the beginning of the Cali Yugg, must necessarily give the motions of the Moon, Venus, and Jupiter, greater, and those of Mars and Saturn less, than the Europeans make them.

Let us now put this to the test with respect to the motions in the Siyéa Siddhánta. I have al-
ready shewn, that the *Sūrya Siddhānta* must have been written between seven and eight hundred years ago; we shall therefore call it the end of the year 4100 of the *Cali Yug*, or A. D. 999, which will be near enough for our purpose; then \( n \), in the above formulae, becomes 4100.

In the year A. D. 999, the corrections requisite to be applied to the Moon, Jupiter, and Saturn's mean places, on account of the inequalities in their respective motions arising from mutual attraction*, were

For the Moon, \[ \begin{array}{c} + 8'50'' = + 530',0 \end{array} \]

For Jupiter, \[ \begin{array}{c} + 13'11,7 = + 791,7 \end{array} \]

For Saturn, \[ \begin{array}{c} -31'48' = -1908,0 \end{array} \]

These must be brought now into the formulae as they could not, from being variable, be included in the mean motions. Hence, the mean motions requisite to give the mean places of the planets in A. D. 999, agreeing with *European* tables, are as follow:

<table>
<thead>
<tr>
<th>Hindu sphere.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sun</strong></td>
</tr>
<tr>
<td>r. s.</td>
</tr>
<tr>
<td>1 0 00 00 00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Moon</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>13 4 12 46 40,613 + ( \frac{356''+530'}{4100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Venus</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 7 15 11 23,635 + ( \frac{117816'}{4100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Mars</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 6 11 24 19,150 - ( \frac{17842'}{4100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Jupiter</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 00 20 50,483 + ( \frac{61373''+791',7}{4100} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Saturn</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 12 13 09,343 - ( \frac{7551'1008''}{4100} )</td>
</tr>
</tbody>
</table>

which quantities being reduced, and compared with the motions given in the *Sūrya Siddhānta*, we shall have

---

See *Asiatic Researches*, Vol. VI, p. 568, § 64.
From computation. By the *Sūrya Siddhānta.*

<table>
<thead>
<tr>
<th></th>
<th>r.</th>
<th>s.</th>
<th></th>
<th>r.</th>
<th>s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1</td>
<td>0</td>
<td>00</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>00</td>
<td>00,00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Moon</td>
<td>13</td>
<td>4</td>
<td>12</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>46</td>
<td>40,82</td>
<td>46</td>
<td>40,80</td>
</tr>
<tr>
<td>Venus</td>
<td>1</td>
<td>7</td>
<td>15</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>11</td>
<td>52,36</td>
<td>11</td>
<td>52,80</td>
</tr>
<tr>
<td>Mars</td>
<td>0</td>
<td>6</td>
<td>11</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>24</td>
<td>08,53</td>
<td>24</td>
<td>09,50</td>
</tr>
<tr>
<td>Jupiter</td>
<td>0</td>
<td>1</td>
<td>00</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>21</td>
<td>05,64</td>
<td>21</td>
<td>06,00</td>
</tr>
<tr>
<td>Saturn</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>12</td>
<td>50,48</td>
<td>12</td>
<td>50,40</td>
</tr>
</tbody>
</table>

Here we have a most decisive proof of the principles on which the system given in the *Sūrya Siddhānta* is founded, and consequently of the time at or near which that work was written: for the motions, above deduced from computation, scarcely differ half a second from those given in the *Sūrya Siddhānta.* But these differences, small as they are, do not arise from errors in observation, but from the revolutions of the planets assigned to the cycle of years assumed by the author of the *Sūrya Siddhānta.*

In the *Sūrya Siddhānta,* the least cycle in which the planets are assumed to return to a line of mean conjunction in the beginning of Aries, is 1080000 years. Let the motions above found, therefore, be multiplied by this number, and we shall have

<table>
<thead>
<tr>
<th></th>
<th>s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1080000 0 00 in 1080000 years.</td>
</tr>
<tr>
<td>Moon</td>
<td>14488334 0 05</td>
</tr>
<tr>
<td>Venus</td>
<td>1755593 7 18</td>
</tr>
<tr>
<td>Mars</td>
<td>574207 1 09</td>
</tr>
<tr>
<td>Jupiter</td>
<td>91054 8 12</td>
</tr>
<tr>
<td>Saturn</td>
<td>36642 0 24</td>
</tr>
</tbody>
</table>
Now, taking the nearest entire numbers (except for Mars, which in order to increase its motion a little, take the next greater number), and we shall have

<table>
<thead>
<tr>
<th></th>
<th>From computation.</th>
<th>By the Sūrya Siddhānta.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1080000 Revolut.</td>
<td>1080000 Revolut.</td>
</tr>
<tr>
<td>Moon</td>
<td>14438334</td>
<td>14438334</td>
</tr>
<tr>
<td>Venus</td>
<td>1755594</td>
<td>1755594</td>
</tr>
<tr>
<td>Mars</td>
<td>574208</td>
<td>574208</td>
</tr>
<tr>
<td>Jupiter</td>
<td>91055</td>
<td>91055</td>
</tr>
<tr>
<td>Saturn</td>
<td>36642</td>
<td>36642</td>
</tr>
</tbody>
</table>

The numbers from computation being the same as in the Sūrya Siddhānta, the mean motions and positions of the planets, to be from thence deduced, must necessarily be the same also.

If the numbers above found, be multiplied by 4, we shall have the revolutions of the planets in a Mahā Yug, or 4320000 years: and if the revolutions in a Māha Yug, be multiplied by 1000, we get the revolutions in a Calpa.

The mode of applying the above numbers to practice, must be sufficiently obvious from the manner in which they are determined, as well as from the rule laid down at page 211. I shall, however, add here a few examples.

1st. Let it be required to determine the Moon's mean longitude, at the end of the year 4100 of the Cali Yug.

The revolutions of the Moon in the cycle of 1080000 years \[ \{ = 14438334 \]
Hence the longitude required, 

\[
\text{Revol.} = \frac{1443334 + 1100}{100000} = 54812.10 \text{°} 
\]

By Lalande's tables, 

\[
\text{Hindu sphere, } 2^s. 9^\circ 41' 10'' 
\]

Inequality (see page 216) + 8 52

\[
\text{Difference, the former short by } *0012 
\]

Or thus—

2d. Let it be required to determine the Moon's mean longitude, at the end of the year 4100 of the Cali Yug, reckoning the years from the beginning of the Calpa of Vara'ha.

The years expired of the Calpa of Vara'ha, at the beginning of the Cali Yug, \(= 1955880000 \)

Add \(= 4100 \)

Total years expired A.D. 999, \(= 1955884100 \)

Hence, \(= 26147877686 \text{ rev.} \)

the Moon's mean longitude as before.

Or thus—

3d. Let it be required to determine the Moon's mean longitude, at the end of the year 4100 of the Cali Yug, reckoning from the end of the Calpa, as directed in the Graha Yāmul.

The years in the whole Calpa, \(= 4320000000 \)

The years elapsed, as above, \(= 1955884100 \)

Therefore to expire in A.D. 999, \(= 2364115900 \)

Hence, \(= 31605458313 \text{ revol.} \)

\(= 9^9. 20^\circ 12' 00'' \)

*The difference of 1' 2" in the moon's place, arises from the rejection of the fraction 6° in forming the number of revolutions—the real quantity being 14438334 rev. 0s. 6°, instead of which 14438334 was taken as the nearest entire number—fractions not being admitted in the Hindu artificial systems, and the error produced in consequence \(= \frac{1100}{10000} = 1' 2'' \) in A.D. 999. In A.D. 1040, the error was nothing; since that time it has increased, and now amounts to upwards of eleven minutes.
which, substracted from twelve signs, leave \( \frac{2}{9} 48 00 \) the longitude as before.

My intention in giving these examples, is to shew, that as the system is entirely artificial, it is immaterial whether we make the calculation from the beginning of the Calpa, the end of the Calpa, or any other period at which a mean conjunction of the planets in the first point of Aries, is assumed in the system; for the result must ultimately come out the same, either way.

By attending to the principles on which the motions given in the Sārya Siddhānta are founded, it must appear evident, that it could not give the places of the planets sufficiently correct, for any considerable length of time: for, as \( n \), the number of years from the epoch of assumed mean conjunction (in the formula, page 215), varies, so must the mean annual motions depending thereon. Therefore those motions which would have given the positions of the planets sufficiently correct, when the Sārya Siddhānta was written, would not answer at present. This fact the Hindu astronomers discovered by some means or other, between two and three hundred years ago; they found, that in order to have the places of the planets sufficiently accurate, it was necessary to subtract three revolutions from those of Venus; two from those of Jupiter; and to add three revolutions to those of Saturn, in 1080000 years.

The works in which these corrections are given, are, the Siddhānta Rahasya, dated in 1513, Saca; Graha Tarangini, dated 1530; Siddhānta Munjari, dated 1531; and several others of modern date now in use.
These corrections appear to have been introduced about 245 years ago; therefore let us try how far they will agree with our formula, page 215. Let the time at which they were introduced, be supposed the end of the year 4660 of the Cali Yug, or A.D. 1559. Then substituting 4660 for \( n \) in the formula, we shall have the mean annual motions requisite to give the places of the planets at that time, agreeing with *European* tables as follow:

<table>
<thead>
<tr>
<th>Planet</th>
<th>Modern Hindu tables</th>
<th>Modern European tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1 0 00 00 00 00</td>
<td>1 0 00 00 00 00</td>
</tr>
<tr>
<td>Moon</td>
<td>13 4 12 46 40,613 + 2/53152</td>
<td>13 4 12 46 40,80</td>
</tr>
<tr>
<td>Venus</td>
<td>1 7 15 11 19,335 + 1/1662</td>
<td>1 7 15 11 19,150 - 1/1662</td>
</tr>
<tr>
<td>Mars</td>
<td>0 6 11 24 19,150 - 1/1662</td>
<td>0 6 11 24 19,09,60</td>
</tr>
<tr>
<td>Jupiter</td>
<td>0 1 00 21 03,65 + 1/45058</td>
<td>0 1 00 21 03,60</td>
</tr>
<tr>
<td>Saturn</td>
<td>0 0 12 12 53,13 - 1/45058</td>
<td>0 0 12 12 54,00</td>
</tr>
</tbody>
</table>

The agreement between which is sufficiently obvious. Let the motions above found be now mul-
tiplied by 1080000, the number of years in the assumed cycle, and we shall have

<table>
<thead>
<tr>
<th></th>
<th>Revolutions.</th>
<th>s.</th>
<th>o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1080000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Moon</td>
<td>14438333</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Venus</td>
<td>1755590</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Mars</td>
<td>574208</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Jupiter</td>
<td>91053</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Saturn</td>
<td>36644</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Now taking the nearest entire numbers (except for Saturn, which, in order to increase its motion a little, we take the next greater number), and we shall have

<table>
<thead>
<tr>
<th></th>
<th>From computation.</th>
<th>Modern Hindu tables.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>1080000 revol.</td>
<td>1080000 revol.</td>
</tr>
<tr>
<td>Moon</td>
<td>14438334</td>
<td>14438334</td>
</tr>
<tr>
<td>Venus</td>
<td>1755591</td>
<td>1755591</td>
</tr>
<tr>
<td>Mars</td>
<td>574208</td>
<td>574208</td>
</tr>
<tr>
<td>Jupiter</td>
<td>91053</td>
<td>91053</td>
</tr>
<tr>
<td>Saturn</td>
<td>36645</td>
<td>36645</td>
</tr>
</tbody>
</table>

Having thus, I hope, fully and clearly demonstrated the principles on which the Hindu artificial systems of astronomy are founded, and shewn that, according to these principles, the Śrīrya Siddhānta must have been written between seven and eight hundred years ago, and at no other period whatever; it must now be obvious to every candid mind, that the assertions of the Edinburgh Reviewer are totally unfounded.

The table exhibited in page 209, will shew how much he must have been mistaken in his notions with regard to the basis of calculation: For if there was no such basis, then the errors, or differences in that table, ought at every period to be the same,
neither increasing nor diminishing; the contrary of which most clearly appears; for between seven and eight hundred years ago, the errors were least, and increase gradually, whether we go back into antiquity, or forward from that period; which demonstrates, beyond the power of contradiction, that the work was written at or about that time.

The formation of the numbers, given in the Sūrya Siddhānta, will shew likewise, that no other motions could have been given to correspond to the positions of the planets, with which they must agree. Therefore, I say, it is indispensibly requisite that the Edinburgh Reviewer, if he does not choose to acknowledge his error with the candour due from a gentleman, should distinctly point out to his readers, and the world at large, that precise period of time, so prodigiously anterior to that given by me, at which the Sūrya Siddhānta, in his ideas, gave the positions of the heavenly bodies nearer the truth than between seven and eight hundred years ago. And not only point out the precise time, but also the then actual mean positions of the planets, &c. according to the Sūrya Siddhānta, and the best modern European tables. It is by these means only he can convince his readers of his candour, truth, and abilities.

As I have, in the preceding pages, stated fully all that can be necessary respecting the principles of the Hindu artificial systems of astronomy, the Sūrya Siddhānta, and the antiquity of the system it contains, I shall now take leave of the Reviewer, and proceed to other matters of more importance to those who wish to form a true judgment of the real antiquity of the Hindu history, &c.

Most of the Eastern nations, and the Hindus in particular, appear to have employed, from time
immemorial, artificial systems, not only in astronomy, but also for chronological purposes. Therefore, to form a just idea of the Hindu history and its antiquity, a knowledge of these systems, and of the various changes that have taken place from time to time, is absolutely necessary.

Two of the most ancient Hindu systems now known, and which in early times were applied to the purposes of chronology, are contained in an astronomical work entitled the Graha Munjari. This work is extremely valuable, as it enables us to fix, with precision, the real periods of Hindu history, with their respective durations; and to shew from thence the alterations that have since taken place by the introduction of new systems.

The first system mentioned in this work consisted of 2400000 years, which was called the Calpa.—This period was divided into Manvantaras and Yugs*, as follow:

A Satya Yug consisted of 960 years.
A Trétá, 720
A Dwápar, 480
A Cali, 240

A Mahá Yug, 2400

71 Mahá Yugs, 170400
with a Satya of, 960

A Manvantara, 171360

14 Manvantaras, 2399040
which, with a Satya at beginning, 960

Form the whole Calpa, 2400000

The Calpa is also divided into 1000 Mahá Yugs, of 2400 years each.
### TABLE OF THE HINDU HISTORICAL PERIODS

*Shewing their respective Durations and Times of Commencement, according to two ancient Systems given in an Astronomical Work, entitled The Grahaj Muniyari.*

#### ACCORDING TO THE FIRST SYSTEM—See page 225.

<table>
<thead>
<tr>
<th>B.C.</th>
<th>I. The Purusa Yuga, of Golden Age</th>
<th>B.C.</th>
<th>II. The Treta Yuga, of Silver Age</th>
<th>B.C.</th>
<th>III. The Dwataras Yuga, of Brazen Age</th>
<th>B.C.</th>
<th>IV. The Kali Yuga, of Iron Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000</td>
<td>Brahma,</td>
<td>3200</td>
<td>Rudra, the son of Soma, the son of Atre—See 3rd Manuscript.</td>
<td>1844</td>
<td>Gaia,</td>
<td>1004</td>
<td>and ended before Christ 762</td>
</tr>
<tr>
<td>3600</td>
<td>A flood in this period—Year unknown. See the 4th Manuscript.</td>
<td>3000</td>
<td>Skanda, Vrihatis, Jamadagni, &amp;c.</td>
<td>1450</td>
<td>and ended before Christ 762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3200</td>
<td>Avir,</td>
<td>2500</td>
<td>See the 5th Manuscript.</td>
<td>1200</td>
<td>Cakshu,</td>
<td>900</td>
<td>and ended before Christ 762</td>
</tr>
<tr>
<td>2800</td>
<td>Vayu,</td>
<td>2000</td>
<td>See the 6th Manuscript.</td>
<td>900</td>
<td>Dhanu,</td>
<td>700</td>
<td>and ended after Christ 762</td>
</tr>
<tr>
<td>2400</td>
<td>See the 7th Manuscript.</td>
<td>1500</td>
<td>See the 8th Manuscript.</td>
<td>700</td>
<td>Naga,</td>
<td>500</td>
<td>and ended after Christ 762</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>1000</td>
<td>See the 9th Manuscript.</td>
<td>500</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td></td>
<td>500</td>
<td></td>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

#### REMARKS

The periods of Hindu history, exhibited in the above Table, are strictly laid down according to the data in the Gita Manjari. The four ages belonging to the first system appear to have been adopted in very early times, and to have continued in use among several nations down to the fourth period. All beyond the second period or silver age, appear to be wholly fabulous.

At or about the commencement of the second period, we find several Empires and Kingdoms begun, such as:

- The Hindu Empire under the solar and lunar lines of Princes, B.C. 2904.
- The Chinese Empire under the dynasty of Hs, Pliantais, p. 535, 9307.
- The Kingdom of Egypt about the same time, 2127.
- The Kingdom of Assria, 2221.

Towards the close of the 4th period, the Hindus seem to have adopted the second system, and transferred their history to the corresponding periods; hence, we meet with the names of Brahma, &c. in the 5th Manuscript, of Bishnu, &c. in the 6th; of Jamadagni, &c. in the 7th; and those of Vayu, &c. &c., in the 8th; because these periods correspond with the former in respect to time, though under different names, as may be easily seen from the Table. These distinct facts must carry conviction to the mind of every unbiassed person, of the truth of the above ancient systems; and of the imposition of the system of Brahma Gupta, substituted in their place in modern times. But however strange and inconsistent, the Hindu history now appears to be, in consequence of transferring the above names to the monstrous persons of the system of Brahmagupta, yet, from the force of prejudice, and a partiality for whatever appears strange or marvellous in preference to simple truth, we see it finds advocates even among those whom we would naturally expect to have known better.
The years expired of the above system, at the era of Vicrama'ditya, were 1190627; which being reduced into Manvantaras and Yugs, we shall have

A Satya at the beginning, \( = \) 960
6 Manvantaras complete, \( = \) 1028160
67 Mahá Yugs of the 7th Manvantara, \( = \) 160800

Thence to the era of Vicrama'ditya, 707

Total years expired, \( = \) 1190627

Hence it appears that the Cali Yug, of the 67th Mahá Yug, of the 7th Manvantara of this system, ended 707 years before the era of Vicrama'ditya; or 764 years before Christ—Therefore

The Satya Yug, or golden age, began B. C. 3164
The Trétag Yug, or silver age, \( = \) 2204
The Dwápar Yug, or brazen age, \( = \) 1484
The Cali Yug, or iron age, \( = \) 1004
And ended, \( = \) 764

Making in all 2400 years.

During the first period of 960 years, called the golden age, the Hindus have no real history; the whole being fabulous, except what relates to the flood, which is allegorically represented by the fish incarnation.

With the second period, or silver age, the Hindu empire commences, under the Solar and Lunar dynasties; and from Budha, the son of Sóma, the first of the Lunar line, they reckon about fifty reigns down to the end of the Dwápar, Vol. VIII.
which make, at an average, twenty-four years to a reign.*

Towards the close of the fourth period, this system appears to have been laid aside, as the repeating the same names over again, would, in time, cause a confusion in history.

The next system mentioned in the Graha Munjari, consisted of 387600000 years, which was called the term of Brahma's life. This period is divided and subdivided in the following manner:

A Calpa is called a day of Brahma, which in this system contains, 5000 years
And his night is of the same length, 5000
A day and night therefore, = 10000
30 of such days and nights make a month, = 300000
And 12 such months a year, = 3600000
And 107 such years and eight months make the full period of Brahma's life, = 387600000

The Calpa, or day of Brahma, is divided into Manvantaras and Yugs, in the following manner:

* The Trétá and Dwápar together make 1200 years, which, divided by 50, give 24 years to a reign. It is somewhat remarkable, that the principal Eastern nations date the commencement of their empires from nearly the same time. Thus we find the Chinese empire began under the dynasty of H1A, according to Playfair, B.C. 2207
The kingdom of Egypt, —— 2221
The kingdom of Assyria, —— 2221
The empire of India under the solar and lunar lines, —— 2204
## SYSTEMS OF ASTRONOMY.

<table>
<thead>
<tr>
<th></th>
<th>Years</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Satya contains</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>A Tréta</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>A Dwápar</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>A Cali</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

| A Mahá Yug       | 5       | 0*     |

### 71 Mahá Yugs
With a Satya of
2

### Make a Manvantara of
357

14 such Manvantaras
4998
Which with a Satya at the beginning,  2
Make a Calpa, or day of Brahma',  5000 years

The years expired of this system, at the beginning of the Satya, or golden age of the former system, were,  2125690000
Add thence to the Christian era,  3164
Total years expired at the Christian era,  212563164

After 193799286 years had been expired of Brahma's life, he, for the first time, created the Earth, and ordained that, at the end of every Calpa, or 5000 years, it should be destroyed, and again reproduced.

Therefore, from the years elapsed,  212563164
Take the years at the first creation,  = 193799286
Remain,  18763878
The years from the first creation to the Christian era—which being divided by 5000, the quotient will be the number of times the world has been destroyed and created, and the remainder will shew the years expired since the last creation.

* This Yug of five years is to be met with in many books.

Q 2
Thus $\frac{18763878}{5000} = 3752$ times destroyed and created, and 3878 years from the last creation to the Christian era.—Now since there are 357 years in each Manwantara, we have the date of the commencement of each as follow:

<table>
<thead>
<tr>
<th>Manwantara</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>B.C. 3878</td>
</tr>
<tr>
<td>Second</td>
<td>3521</td>
</tr>
<tr>
<td>Third</td>
<td>3164</td>
</tr>
<tr>
<td>Fourth</td>
<td>2807</td>
</tr>
<tr>
<td>Fifth</td>
<td>2450</td>
</tr>
<tr>
<td>Sixth</td>
<td>2093</td>
</tr>
<tr>
<td>Seventh</td>
<td>1736</td>
</tr>
<tr>
<td>Eighth</td>
<td>1379</td>
</tr>
<tr>
<td>Ninth</td>
<td>1022</td>
</tr>
<tr>
<td>Tenth</td>
<td>665</td>
</tr>
<tr>
<td>Eleventh</td>
<td>308</td>
</tr>
<tr>
<td>Twelfth</td>
<td>A.C. 49</td>
</tr>
<tr>
<td>Thirteenth</td>
<td>406</td>
</tr>
<tr>
<td>Fourteenth</td>
<td>763</td>
</tr>
<tr>
<td></td>
<td>and ended</td>
</tr>
<tr>
<td></td>
<td>1120</td>
</tr>
</tbody>
</table>

Making in all about 5000 years, with the Sandhi of two years.

Having thus exhibited the periods of ancient history, according to both systems, the annexed table will now shew, at one view, the commencement of each period, by which the corresponding times in each system may be more easily seen and understood.

By this table it will appear, that the Satya, or golden age, as we may call it, of the first system, began on the same year that the third Manvantara of the second system did; that is, the year before Christ 3164. And that the ninth Manvantara, of the second system, began the year B.C. 1022, only eighteen years after the commencement of the Cali, or iron age, of the first system.
Hence, from the beginning of the third Manvantara, down to that of the ninth, includes nearly the same time as the Satya, Trétá, and Dvápar of the first system; and consequently, that the events of history recorded in these periods, if transferred to the former, should be found under those particular Manvantaras which corresponded with the actual times in which they happened, unless purposely destroyed or perverted, in modern times, to prevent a discovery of the change that has been made in the systems.

Therefore, without entering minutely into the Hindu history, let us see how far the periods of the two ancient systems agree, with respect to the same events, which will be the most certain mode of proving the truth of these systems.

The Hindus place the flood in the Satya, or golden age:—on referring to the Manvantaras we find, according to the Márcanádeya purána, that the flood took place in the fourth Manvantara; and that the fourth Menú derived his name, Támasa, from the universal darkness which then overspread the earth—therefore the two systems agree in this point.

The next period is the Trétá, or silver age, at or about the commencement of which the Hindu empire began under the Solar and Lunar dynasties. Búdha, the son of Sóma, the son of Átri, was the first of the Lunar line, and from him down to the end of the Dvápar, or brazen age, (being 1200 years) there were about fifty reigns. Now by referring to the table, we see that the beginning of the Trétá of the first system, corresponds to the latter part of the fifth Manvantara of the second; we therefore naturally look into the Puránas under that period, and there find, among
other names of persons who then lived, those of Atri, Sôma, and Budha, which shews the exact agreement between the two systems.

We next come to the sixth Manwantara*, which by the table, began 111 years later than the Trêtâ, or silver age. Among the names we find mentioned in the Purânas in this period, are Bhrîgu and Dacsha, who appear to have been cotemporary, or nearly so.—For Yayati, the fourth prince in descent from Budha in the Lunar dynasty, according to the Purânas, was married to De'va'yanî', the grand-daughter of Bhrîgu, of whom he begat two sons, Yadu and Turvasu; and of Sarmishta', the daughter of Vṛishaparvan, the grandson of Dacsha, he begat three sons more, viz. Druhya, Anu, and Puru; consequently, Bhrîgu and Dacsha must have lived about the same period, and that Budha could have been earlier only by a few years, perhaps one or two generations at most. These circumstances, though they may appear to some at first sight as trivial, involve facts of considerable importance in the Hindu history, while, at the same time, they prove the truth of the ancient systems.

Dacsha appears to have been an astronomer, and to have formed the twenty-seven lunar mansions, and other constellations, of which he is allegorically called the Father, as in the following verse of the Câlicâ Purâna.

चेतायाः प्रथमभागे जाता द्राक्षयं कण्यकं ।
सदौर कण्यकाः समविशालितं सुष्माःशने ॥

* Before Christ 2093.
That is—"In the early part of the Trétá Yug, "the daughters of Dacsha were born; of these "daughters he gave twenty-seven to the Moon."

Dacsha, in some respects, bears a strong re-semblance to Atlas, who, according to heathen mythology, was the father of the Pleiades and Hyades, the Criticá and Rohini of Dacsha. Atlas is supposed by some to have been the son of Asia, the daughter of Oceanus:—The Puránas make Dacsha the grandson of the daughter of Oceanus.

We next proceed to the 7th Manwantara. Among the names given in the Puránas in this period, we find those of Jamadagni, Bis'wa'mitra, and Bharadwa'ja, men who, according to the Hindu history, lived towards the close of the Trétá Yug; for Jamadagni was the father of Parasú-ra'ma, and nephew of Bis'wa'mitra. Hence the two systems agree in this point.

The next period we come to is the Dwápar Yug, or brazen age of the first system. This period is rendered famous in the Hindu history, by the war that took place towards the close of it, between the sons of Dhrítarash'tra and those of Pa'ndu.

Among the names of men we find mentioned in Hindu history, as living in this period, are those of Para'sara, Vy'a's his son, Garga, Ga' lava, Aswattha'man, Causica, Di'ptima'n, Cripa, Rishyas'ringa, &c.

By reference to the table, this period corresponds to the eighth Manwantara of the second system, under which we accordingly look in the Puránas, and find, as might naturally be expected, among
others, the following names, viz. *Vya's*, Ga'lavA, Aswattha'man, Causica, Di'ptima'n, Crípa, and Ríshyas'ringa*.

Having thus fully and clearly proved the truth of the ancient systems, it is unnecessary to proceed farther in the way of comparisons; nor indeed could we, as the fourth period ended shortly after.

We shall, therefore, now proceed to some of the observations that have been left us by Para'sara, Garga, and others of the ancients, which will enable us to judge with more certainty of the actual time in which they lived, as well as of the progress then made in the science of astronomy in India.

It appears, from what is stated in the Párasari Sanhitá, relative to the commencement of the six Hindu seasons, that the solstitial colure had passed through the first point of Dhanisht'há, and the middle of Aslêshá, while the equinoctial colure cut the tenth degree of Bhráni, and 3° 20' of Visác'há.

The same positions of the colures are also given in a little treatise on ancient astronomy, annexed to one of the Védís, in the possesion of Mr. Cole-brooke, which he obligingly lent me, the sixth verse of which runs thus;

---

* In each *Mapwantara*, down to the fourteenth, only a few names are given us in the present *Puránas*, which seem to have been extracted from some larger works, that are not now to be found,
That is—"In the beginning of Sravisht'ha, the "Sun and Moon ascend towards the North, and "in the middle of Sárpa, or the mansion of the "serpent, the Sun goes towards the South; the "former, always in Māgh, the latter in Srāvanea."

About the year A. D. 527, the solstitial colure, according to Brahma' Gupta, cut U. A'shárá in 3° 20', and Punarvasu in the tenth degree, which made a difference in the positions of the colures, of 23° 20', from the time of Para'sara. For, the longitude of the first point of Sravisht'há in the Hindu Sphere is, . . . . . . = 9 s. 23° 20' And 3°—20' of U. A'shárá, . . = 9 00 00 Difference or precession to A.D. 527 = 23 20 Which at 50 seconds per annum gives 1680 years. Add from A. D. 527, to this time, = 1277 Total years since the time of Para'sara 2957 Which make about one hundred and fifty years, before the beginning of the Cali Yug of the first system of the Graha Munjari; or about one hundred and thirty-one years, before the end of the eighth Manvantara of the second system.

It appears also from the little work above-mentioned, and its commentary wherein Garga is repeatedly quoted, that the Sun and Moon were supposed to return to a line of conjunction in the first point of Sravisht'há, at the instant of the winter solstice at the end of every cycle or Yug of five years. In this period the moon was supposed to make sixty-two revolutions to the sun, and sixty-seven to the same fixed star, or the equinox; for,
it seems, they had no knowledge of the precession of the equinoxes at that time.

The number of mean solar days assigned to this cycle of five years was 1830, and the number of lunar days in the same time 1860. Hence

1st, The solar \( \frac{1830}{5} \) days in a year, \( = 366 \) days

2d, The lunar \( \frac{1860}{5} \) days in a year, \( = 372\)

3d, The moon’s mean annual motion \( \frac{67}{5} = 13 - 4 \) 24 - 0 0

4th, The moon’s daily motion \( \frac{67}{1830} = 13 \) 10 \( 49\frac{14}{51} \)

5th, The moon’s periodical revol. \( \frac{1830}{67} = 27 - 7 - 31 - 20 \frac{19}{51} \)

6th, The moon’s synodical revol. \( \frac{1830}{62} = 29 \) 12 23 \( 13 \frac{17}{3} \)

It appears also, that the greatest length of the day was thirty-two Dandas, or twelve hours, forty-eight minutes; consequently, the latitude of the place of observation must have been about \( 13\frac{1}{2} \) North. There is no mention made in this work, nor in that of Parāśara, of the names of

* Cadmus, about fifteen centuries before Christ, introduced the Octateris, or cycle of eight years, into Greece. In this cycle there were ninety-nine lunations, of thirty lunar days each. Therefore,

The lunar days in the cycle were, \( = \) 2970
The lunar days in a year, \( = \frac{2970}{8} = 371\frac{1}{8} \)

The ancient Hindus made it as above, \( = 372 \)

The difference is \( \frac{1}{2} \) of a lunar day, which being taken from 366 the solar days, leave 365\( \frac{1}{2} \) days for the year of Cadmus,—this in eight years makes 2922 solar days—Hence, \( \frac{2022}{99} = 29 \) 12 21 sec.

49\( \frac{1}{3} \) the lunation of Cadmus, which is 1 24 short of the ancient Hindu lunation.
the days of the week, or of the twelve signs; which seem to have been introduced into the Hindu astronomy at a much later period.

From the above short sketch, the reader will be able to judge of the progress made in astronomy in India near 3000 years ago. He will perceive that the Hindus at that time, possessed nothing that could be called astronomy, no more than other nations.

The Hindus made the lunar day $= 29\frac{12}{12} = 23\frac{131/2}{12}$ days. hrs. m. sec.

The Europeans make it now $29\frac{12}{12} = 44\frac{3}{30}$ days. hrs. m. sec.

Difference about $= 20\frac{491/2}{30}$ days. hrs. m. sec.

Which in less than 165 years would produce an error of one lunation.

After this period, we meet with nothing on astronomy till we come down to Brahma' Gupta, being a space of about 1680 years, which seems to be an entire blank in the Hindu astronomy. This astronomer flourished about A. D. 527, and finding that the ancient systems were very imperfect, on account of the shortness of the periods, he framed an entire new system, on a much larger scale, making the Calpa to consist of 4320000000 years. To this cycle or period of years, he assigned the following revolutions of the planets, &c.

<table>
<thead>
<tr>
<th>Planets</th>
<th>Apsides</th>
<th>Nodes. retro.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun,</td>
<td>4320000000</td>
<td>480</td>
</tr>
<tr>
<td>Moon,</td>
<td>5775330000</td>
<td>488105888</td>
</tr>
<tr>
<td>Mercury,</td>
<td>1793609894</td>
<td>332</td>
</tr>
<tr>
<td>Venus,</td>
<td>7022389492</td>
<td>653</td>
</tr>
<tr>
<td>Mars,</td>
<td>2296328322</td>
<td>292</td>
</tr>
<tr>
<td>Jupiter,</td>
<td>364226455</td>
<td>835</td>
</tr>
<tr>
<td>Saturn,</td>
<td>146567298</td>
<td>41</td>
</tr>
</tbody>
</table>

* This makes an error of one day in less than six years, which shews that the Hindus, at that period, could not determine the times of conjunctions and oppositions of the Sun and Moon for six years together correct, much less eclipses; the calculation of which they must have been then, and for many ages after, totally unacquainted with.
The revolution of the equinoxes, in 432000000 years = 199669
Mean solar days, ............ 15779164500000
Lunar days or tithis, ............ 160299900000

He made Sunday* the first day of the Calpa, on which day, at sun rise, the planets, &c. are assumed to have been on a line of mean conjunction in the first point of Aries in the Hindu sphere. The years expired of this system on the 1st of Vaisaca (or Vysakh) this year = 1972948905. Hence, the mean places of the planets, &c. may be computed, from the above data, for any instant required.

This is the third and last system, to which the Hindus have transferred their history, and for which purpose, in imitation of the ancients, they divide it into Manvantaras and Yugs, as follow:

A Satya Yug of, ............ 1728000 years.
A Trétiá of, ............ 1296000 ——
A Dwápar of, ............ 864000 ——
A Cali of, ............ 432000 ——

A Mahá Yug, ............ 4320000 ——

71 Mahá Yugs, ............ 306720000 ——
with a Satya of, ............ 1728000 ——

A Manvantara, ............ 308448000 ——

14 Manvantaras, ............ 4318272000 ——
with a Satya at beginning of, 1728000 ——

The modern Calpa, ............ 4320000000 ——

* This is the first system, so far as we yet know, in which the names of the days of the week and the twelve signs were introduced. These were probably received from the West, and the first point of Aries was fixed to that point in the Hindu sphere, which corresponded with the instant of the vernal equinox, which, in the time of Brahmac Gupta, was the beginning of Aswini. This position has, therefore, a direct reference to the actual time
In order to show how the Hindu history, according to the two former systems, had been transferred to this, let 1972948905, the years now expired be reduced into Manvantaras and Yugs, and we shall have

1. Satya at the beginning, \(= 1728000 \) years.
2. 6 Manvantaras complete, \(= 1850688000 \) —
3. 27 Mahá Yugs of the \(= 116640000 \) —
4. 7th Manvantara, \(= 116640000 \) —
5. Satya of the 28th Mahá Yug, \(= 1728000 \) —
6. Tréta of ditto, \(= 1296000 \) —
7. Dwápar of ditto, \(= 864000 \) —
8. Expired of the Cali of ditto, \(= 4905 \) —

Total years expired, \(= 1972948905 \).

Hence, it is evident that, we are now in the 4906th year of the Cali Yug, of the twenty-eighth Mahá Yug, of the seventh Manvantara of this new system.

Now, if we transfer the names, &c. in the four ages of the first system of the Graha Munjari, to the Satya, Tréta, Dwápar and Cali above-mentioned, and those in the Manvantaras of the second system, to the Manvantara of the same name in this; then we shall have the periods of Hindu history, according to modern notions, founded on the system of Brahma' Gupta.

In the first place, by transferring the names, &c. in the Dwápar Yug of the first system, to the period of the same name in the new system, Para'sara, Vyā's, and others, who lived near three thousand years ago, are thrown back into antiquity about 5000 years; and the same persons who lived in the eighth Manvantara, of the second system, by the transfer, will appear as yet to come; for we are now only in the seventh of the new. Secondly, the twelve signs were first introduced, that is to say, near 1300 years ago; though hitherto but little, if at all, attended to by writers on the Hindu astronomy, &c.
Budha, the son of Soma, the first of the Lunar line, who began his reign about the beginning of the Trétá of the first system, or 2204 years, B. C. will, by the transfer, be placed at the distance of 2163102 years, before the Christian era;—Thirdly, in the Trétá and Dwápar of the first system, there were (taken together) 1200 years, during which about fifty princes in the Lunar line had reigned in succession, but the Trétá and Dwápar of the new system contain 2160000 years, which divided among fifty, give 43200 years to a reign;—Fourthly, Budha, the son of Soma, lived towards the close of the fifth Manvantara of the second system, which being transferred to the new, his name will appear at two distinct periods of time, immensely distant from each other, viz. in the fifth Manvantara, and again in the Trétá Yug, of the twenty-eighth Mahá Yug, of the seventh Manvantara, being an interval, at the least, of 426816000 years;—Fifthly, the mothers of the children of Yayáti (see page 230) who lived in the sixth Manvantara of the second system, by being transferred to the sixth Manvantara in the new, are thrown back several millions of years before their children, and Daksha and Bhrigu, by the same transfer, are thrown back, from their cotemporaries, many millions of years. Lastly, Swayambhuva, the Adam of the Hindus, who, according to the second system, lived 3878 years before Christ, is placed, by the transfer, 1972947101 years before that epoch.—These are a few of the inconsistencies introduced by the adoption of the new system of Brahma' Gupta, the rest may be easily conceived.

To reconcile these different absurdities, it was necessary to new model the whole of the Puránas, and to introduce such fictions and prophecies, as seemed best calculated to answer the end in view; but which after all, only serve to shew, in a more glaring manner, the folly of the attempt.
The enormous length of the periods in the new system, required that the life of man should be proportionally extended, which was accordingly assumed: In order to account for the same Rishis being mentioned in different periods, immensely distant from each other, they are asserted not only to have existed at all times, but to be still living. But as all men were not Rishis, and as there were twenty-seven Mahā Yugs from the beginning of the seventh Manvantara to the commencement of the twenty-eighth Mahā Yug = 116640000 years, during which there is no shadow of history; to account for this, they therefore pretend, that at the end of every Mahā Yug, or 4320000 years, the same names, persons, &c. again occur, as in the preceding period; so that by having the names, &c. for one Mahā Yug, or set of four ages, we have them for all the rest.

Vya's, and others, as I have already noticed, lived in the eighth Manvantara of the second system of the Graha Munjari, but by the transfer of the names in that Manvantara, and in the ninth, tenth, &c. to the periods of the same names in the new system, they would appear as yet to come; therefore, to reconcile this, all that was necessary was to convert it into a prophecy, which was accordingly adopted in the modern Purāṇas; so that those men who in reality are long since past and gone, appear, in these books, as if yet to come; and as many millions of ages must elapse, by the new system, before the periods of their prophesied existence can arrive, there is no great danger of detecting the falsehood of such prophecy.

It may however be easily conceived, that such a change in the history, by the introduction of a new system, though highly flattering to the vanity of the Hindus in general, in exalting them, at
least nominally, in point of antiquity above all other nations, would naturally be opposed by many, as long as any knowledge remained of the ancient systems, therefore, the suppression of these would become necessary. Accordingly we find, by a tradition still current among the learned Hindus, that the Mahârâstras, (Mharatas) destroyed all the works of the ancient astronomers they could meet with; which, in some measure, may account for the deficiency we have observed in astronomical works, anterior to the time of Brahma' Gupta. But if the Mharatas did actually destroy the works of the ancient astronomers, it may be justly inferred that other works of antiquity, the subjects of which might contradict the new order of things, have also met the same fate.

From the foregoing view of the artificial systems which have prevailed at different times, and of the various changes that have been made in the Hindu history, &c. the reader will now be able to judge for himself, and form a just opinion of the antiquity of the books of the Hindus, their arts and their sciences.

In the first place, it must be evident, that as the artificial system of Brahma' Gupta, now called the Calpa of Brahma', and to which the modern Hindus have artfully transferred their history, is not yet 1300 years old, no book whatever, let its name or title be what it will, in which the monstrous periods of that system, or any allusion to them, is found, can possibly be older than the time of its invention *. And secondly, that

* The author of this system, as well as the time in which he lived, is well known to the learned, and subject to no doubt. Those who wish to see the age of the system determined from computation, may consult Vol. VI, Asiatic Researches, page 579-581.
none of the modern Romances, commonly called the Puráñas, at least in the form they now stand, are older than 684 years; the time when the fourteenth Manvantara of the second system of the Graha Munjari ended; but that some of them are the compilations of still later times.

We may, perhaps, be told by some person who has suffered his imagination to get the better of his judgment, that the Hindus firmly believe in the prophecies in the Puráñas, and that we have no right to doubt their authenticity, or what universal opinion sanctions as true.

With respect to the firm belief or universal opinion of the Hindus, we know too well the fallacy of it, and that it is not in the smallest degree to be relied on. We know that it is the universal opinion of the Hindus, that Para’sara, Vyā, Garga, and others, lived near 5000 years ago. But we know, to a certainty, from the positions of the colures in the time of Para’sara, &c. that such opinion is totally false, and that it arose from the transfer of the names of men living in the Dwāpar Yug of the first system of the Graha Munjari, to the period of the same name in the modern system of Brahma’ Gupta; and that a similar transfer of the names in the eighth, ninth, tenth, &c. Manvantaras of the second system, to the periods of the same name in the new, gave rise to the pretended prophetic effusion in the modern Puráñas,&c.

Moreover, we know, that it is the general opinion of the Hindus, that Vara’ha Mihira not only lived about the year A. D. 499, but also at the era of Vicrama’ditya, or fifty-six years before Christ; which opinion we know to be inconsistent with truth, and contrary to the course of nature. Vara’ha Mihira, in his rule for calculating the precession of the equinoxes, given in his work, entitled the Játacárnava, says,—

Vol. VIII. R
That is, "From the year of Saca take 421:—
"having put the remainder down in two places,
"let one of them be divided by ten, and the quo-
tient taken from the other, the residue is the
"precession in minutes."

Hence many of the Hindus have, erroneously, concluded that Vara'Ha Mihira must have lived in the year 421 of Saca, or A. D. 499. But surely there is not the smallest foundation to draw any such inference from the passage, for, he might have lived at the present time and given the same rule. In fact, it might, with equal propriety, be pretended that he lived at the beginning of the Cali Yug, because he assumed the planets to have been in a line of mean conjunction in the first point of Aries at that time. Not satisfied, however, with thus stretching a point in favour of the antiquity of their author, they go something farther, and endeavour from the following verse of the Navaratna, which they generally quote, to refer him to the era of Vicrama'ditya, fifty-six years before Christ, or upwards of 500 years still earlier than the former.

That is, "Dhanvantari, Cshapanaca, Amaratara, Ama-
ras'In'ha, S'an'cu, Be'ta'labhatta, Ghatacar-
Pu'ra, Calida's, the celebrated Vara'ha Mihira and Bararuchi, were the nine gems in the council of Raja Vicrama."

Upon shewing the above verse to an intelligent pandit, he smiled and said, with a degree of candour I did not expect, that the inference, with respect to time, usually drawn from it, was not just; for that there had been several princes of the name of Vicrama, or Vicrama'ditya. That, exclusive of the one from whom the epoch is reckoned, there was another in the time of Salvahan; a third who had succeeded Raja Bhoja; and a fourth lineally descended from the latter, now living at a place, called Bhójpoor, beyond Patna:—that, beside these, there were many others, who had sprung up at different periods in the same family, but that the particular prince in whose time Vara'ha Mihira, and the others above named, flourished, was the immediate successor of Raja Bhoja. For, that they were first in the council of Rajah Bhoja, and afterwards in that of Vicrama'ditya his successor. This simple explanation of the pandit, was a complete solution of the mystery on which the pretended antiquity of the works of Vara'ha, Amaras'inha, Calidas, Bararuchi, &c. were founded, and which led many into an error that they were written before the Christian era, though in reality little more than seven hundred years old.

Raja Bhoja, according to the Ayeen Akbery, began his reign about the year 1153 of Salvahan. This, however, must be incorrect, for it seems, that according to Hindu accounts, and others, he began his reign about 210 years before the death of Raja Pithaura, who fell in battle with the Mahomédans, A. H. 588, or A. D. 1192. And as Raja Bhoja is said to have reigned 100 years, he must consequently have ascended the throne A. D. 982, and died A. D. 1082: which agrees exactly with the time in
which we know Varā'ha Mihira must have flourished, according to the positions of the planets, &c. given by him in his works, as well as from the date of the Bhasvati, composed in A.D. 1099, by one of his pupils. Raja Bhoja, according to the Agni Purāṇa, was succeeded by Raja Vicrama.

Bararuchi, one of the nine above-mentioned, was the author of a popular Work, entitled Sinhāsana dwātrinsati, relating to Raja Bhoja. The names of Ca'lidā's, Bararuchi, &c. are to be met with in the Bhoja Champu, as also in the Bhoja Prabandha, from which last-mentioned work the following passage is taken:

"The Brāhmens seeing him (i.e. Ca'lidā's) said — O Ca'lidā's, Bhoja does not give us, who are learned in all the Vēdus, any thing."

Several other passages might be quoted from the Bhoja Prabandha, to show that Ca'lidā's, Bararuchi, and a great many other learned men whose names are therein mentioned, lived at the court of Bhoja. The Bhoja Prabandha, is said to have been written by Raja Bullā'la Se'na.

We may now plainly perceive, from the whole of the above facts, the little dependence there is to be placed on what is usually called the universal or general opinion of the Hindus; which when thoroughly sifted and examined to the bottom, proves at last to be founded, principally, in vanity, ignorance, and credulity.

A great deal more might be said, respecting the history and astronomy of the Hindus; but having already extended this paper to a much greater length than I originally intended, I shall now take leave of the subject.
VII.

An Essay on the Sacred Isles in the West, with other Essays connected with that Work.

BY CAPTAIN F. WILFORD.

INTRODUCTION.

At the moment of appearing before the tribunal of the Asiatic Society, and of the public, it would be in vain to attempt to conceal my emotion and anxiety. On the merit of the composition alone, I am conscious their judgment must rest; and this conviction agitates me with doubt and apprehension.

I have omitted no endeavour to render this work as free from imperfections as my abilities would allow; but the subject is so novel, and the source of information so remote from the learned in Europe, that I must confess I feel no small degree of uneasiness on that account. Fortunately for me, the Society, to which I have the honour of presenting my work, will stand between me and the public, for it is in the power of every member, whether conversant with the Sanscrit language or not, to ascertain the genuineness of all the authorities cited by me; the books, from which I have drawn my information, being by no means rare nor difficult to be procured.

The grand outlines and principal features of this essay are also well known to pandits and learned men in India. A few passages, anecdotes, and circumstances may be, perhaps, unknown to many of them: but these are perfectly immaterial; and, whether allowed to remain or not, neither my foundation nor superstructure can be affected.
The Sacred Isles in the West, of which Swetadwipa, or the White Island, is the principal, and the most famous, are, in fact, the holy land of the Hindus. There the fundamental and mysterious transactions of the history of their religion, in its rise and progress, took place. The White Island, this holy land in the West, is so intimately connected with their religion and mythology, that they cannot be separated: and, of course, divines in India are necessarily acquainted with it, as distant Muselmans with Arabia.

This I conceive to be a most favourable circumstance; as, in the present case, the learned have little more to do than to ascertain whether the White Island be England, and the Sacred Isles of the Hindus, the British Isles. After having maturely considered the subject, I think they are. My reasons for this opinion are given in the present work, and I submit them with all due deference to the learned, declaring publicly, that I have, to the best of my knowledge, fairly stated the case, and that I have not designedly omitted any passage that might induce a different conclusion. At the same time I desire them to believe, that I do not mean to write dogmatically, even when I seem to make a positive assertion, and that I never entertained an idea that my conviction should preclude the full exercise of their judgment.

Should the learned, after a due investigation of the subject and of the proofs I have adduced in support of my opinion, dissent from it, and assign another situation for the White Island, and the Sacred Isles, I have not the least objection to it: for, admitting my position to be right, I am conscious that Britain cannot receive any additional lustre from it. Indeed I had originally supposed Crete to be meant, and it was not without some
reluctance, that I gave up the first impression, originating from no unspecious reasons, which however yielded to more solid proofs.

The difficulties I have experienced in bringing forward this work, were numerous. Some originated from the nature of the work itself, and of the sources from which I drew my information, whilst others were of a most perplexing and distressing nature in themselves.

My original design was to have published my essay on the Sacred Isles by itself, and this several years ago, when it was ready for the press. But in that detached state, if I may be allowed the expression, unaccompanied with the geography of the country from which I drew my information respecting them, and unconnected with the general system of geography of the Hindus, it would have appeared to great disadvantage. Beside, it was far from being so complete as it now is; for I have since found many valuable and interesting materials, which have enabled me to form a more adequate idea of the subject.

A fortunate, but at the same time a most distressful discovery contributed to delay its publication. Though I never entertained the least doubt concerning the genuineness of my vouchers (having cursorily collated them with the originals a little before I had completed my essay), yet when I reflected how cautious an author ought to be, and how easily mistakes will take place, I resolved once more to make a general collation of my vouchers with the originals, before my essay went out of my hands. This I conceived was a duty which I owed, not only to the public, but to my own character.
In going on with the collation, I soon perceived, that whenever the word Swetam, or Sweta-dwipa, the name of the principal of the Sacred Isles, and also of the whole cluster, was introduced, the writing was somewhat different, and that the paper was of a different colour, as if stained. Surprised at this strange appearance, I held the page to the light, and perceived immediately that there was an erasure, and that some size had been applied. Even the former word was not so much defaced, but that I could sometimes make it out plainly. I was thunderstruck, but felt some consolation, in knowing that still my manuscript was in my own possession. I recollected my essay on Egypt, and instantly referred to the originals which I had quoted in it, my fears were but too soon realized, the same deception, the same erasures appeared to have pervaded them. I shall not trouble the Society with a description of what I felt, and of my distress at this discovery. My first step was to inform my friends of it, either verbally or by letters, that I might secure, at least, the credit of the first disclosure.

When I reflected, that the discovery might have been made by others, either before or after my death, that in one case my situation would have been truly distressful; and that in the other my name would have passed with infamy to posterity, and increased the calendar of imposture, it brought on such paroxysms as threatened the most serious consequences in my then infirm state of health. I formed at first the resolution to give up entirely my researches and pursuits, and to inform Government and the public of my misfortune. But my friends dissuaded me from taking any hasty step; and advised me to ascertain whether the deception had pervaded the whole of the authorities cited by me, or some parts only. I followed their advice,
and having resumed the collation of my vouchers with unexceptionable manuscripts, I found that the impositions were not so extensive as I had apprehended.

The nature of my inquiries and pursuits was originally the source of this misfortune. Had they been confined to some particular object, to be found within the limits of a few books, as astronomy, it could never have taken place; but the case was very different. The geography, history, and mythology of the Hindus are blended together, and dispersed through a vast number of voluminous books, in which prevails a most disgusting confusion and verbosity. Besides, the titles of their books have seldom any affinity with the contents; and I have often found most valuable materials in treatises, the professed subject of which was of the most unpromising nature.

Thus when I began to study the Sanscrit language, I was obliged to wade, with difficulty, through ponderous volumes, generally without finding any thing valuable enough to reward me for my trouble. But in the course of conversation, my pandit, and other learned natives, often mentioned most interesting legends, bearing an astonishing affinity with those of the western mythologists.

I consequently directed my pandit to make extracts from all the Puránías and other books relative to my inquiries, and to arrange them under proper heads. I gave him a proper establishment of assistants and writers, and I requested him to procure another pandit to assist me in my studies; and I obtained, for his further encouragement, a place for him in the college at Benares. At the same time, I amused myself with unfolding to him our ancient mythology, history, and geo-
AN ESSAY ON THE

graphy. This was absolutely necessary, as a clue to guide him through so immense an undertaking, and I had full confidence in him. His manners were blunt and rough, and his arguing with me on several religious points with coolness and steadiness, a thing very uncommon among natives, (who on occasions of this kind, are apt to recede, or seem to coincide in opinion,) raised him in my esteem. I affected to consider him as my Guru, or spiritual teacher; and at certain festivals, in return for his discoveries and communications, handsome presents were made to him and his family.

The extracts which I thus received from him, I continued to translate, by way of exercise, till, in a few years, this collection became very voluminous. At our commencement, I enjoined him to be particularly cautious in his extracts and quotations; and informed him, that if I should, at a future period, determine to publish any thing, the strictest scrutiny would take place in the collation. He seemed to acquiesce fully in this; and we went on, without any suspicion on my part, until Sir William Jones strongly recommended to me to publish some of my discoveries, particularly respecting Egypt. I collected immediately all my vouchers relating to that country, carefully revised my translations, selected the best passages, compared them with all the fragments I could find among our ancient authors, and framed the whole into an essay. I then informed my pandit that, previously to my sending it to Sir W. Jones, a most scrupulous collation of the vouchers, with the original manuscripts from which they were extracted, would take place.

To this, without the least alteration in his countenance, nay, with the greatest cheerfulness, he assented; and as several months intervened, he
had time to prepare himself; so that when the collation took place, I saw no ground to discredit his extracts, and was satisfied.

I have since learned, that, as the money for his establishment passed through his hands, his avaricious disposition led him to embezzle the whole, and to attempt to perform the task alone, which was impracticable. In order to avoid the trouble of consulting books, he conceived the idea of framing legends from what he recollected from the Purânas, and from what he had picked up in conversation with me. As he was exceedingly well read in the Purânas, and other similar books, in consequence of his situation with a Marhatta chief of the first rank in his younger days, it was an easy task for him; and he studied to introduce as much truth as he could, to obviate the danger of immediate detection.

Many of the legends were very correct, except in the name of the country, which he generally altered into that of either Egypt or S'wêtam.

His forgeries were of three kinds; in the first there was only a word or two altered; in the second were such legends as had undergone a more material alteration; and in the third all those which he had written from memory.

With regard to those of the first class, when he found that I was resolved to make a collation of the manuscripts, he began to adulterate and disfigure his own manuscript, mine, and the manuscripts of the college, by erasing the original name of the country, and putting that of Egypt or of S'wêtam in its place.

To prevent my detecting those of the second
class, which were not numerous, but of the greatest importance in their nature; and as books in India are not bound as in Europe, and every leaf is loose, he took out one or two leaves, and substituted others with an adulterous legend. In books of some antiquity it is not uncommon to see a few new leaves inserted in the room of others that were wanting,

To conceal his impositions of the third class, which is the most numerous, he had the patience to write two voluminous sections, supposed to belong one to the Scanda purāṇa, and the other to the Brahmanḍa, in which he connected all the legends together, in the usual style of the Purāṇas. These two sections, the titles of which he borrowed, consist, as he wrote them, of no less than 12,000 Slocas, or lines. The real sections are so very scarce, that they are generally supposed to be lost, and probably are so, unless they are to be found in the library of the Rajah of Javanāgar. Other impostors have had recourse to the Scanda, Brahmanḍa, and Padma-purāṇas, a great part of which is not at present to be found; and for that reason, these are called the Purāṇas of thieves or impostors; though the genuineness of such parts as are in common use has never been questioned. —Some persons attempted, by such means, to deceive the famous Jayasinha, and the late Tīcātraya, prime minister of the Nabob of Oude. They were discovered, lost their places and appointments, and were disgraced.

My chief pandit certainly had no idea, in the first instance, that he should be driven to such extremities. I used (as already remarked) to translate the extracts which he made for me, by way of exercise; and never thought, at that time, of comparing them with the originals; first, because
I had no reason to doubt their authenticity; and secondly, because it would have been soon enough to make the collation when I had determined upon publishing any part of them.

This apparently lulled him into security; but, being afterwards sensible of the danger of his detection, he was induced to attempt the most daring falsification of the originals, in order, if possible, to extricate himself. When discovered, he flew into the most violent paroxysms of rage, calling down the vengeance of heaven, with the most horrid and tremendous imprecations upon himself and his children, if the extracts were not true. He brought ten Bráhmens, not only as compurgators, but also to swear, by what is most sacred in their religion, to the genuineness of these extracts. After giving them a severe reprimand, for this prostitution of their sacerdotal character, I, of course, refused to allow them to proceed.

And here I shall close the recital of what relates personally to a man, whose course of imposition I have deemed incumbent on me to lay before the public. He came to me in distress, but with a fair reputation; he is now in affluence, but with a character infamous for ingratitude, and fraud, and deceit. His voluminous extracts are still of great use to me, because they always contain much truth, and the learned, therefore, have not been misled in their general conclusions from my essay on Egypt; though it would be dangerous for any one to use detached passages, and apply them to any particular purpose. In the course of my present work, I have collected carefully what I could find in India concerning Ethiopia and Egypt.

A few instances of the impositions of my pandit will exemplify his mode of proceeding.
is a legend of the greatest importance, and said to be extracted from the Padma. It contains the history of Noah and his three sons, and is written in a masterly style. But unfortunately there is not a word of it to be found in that Purana. It is, however, mentioned, though in less explicit terms, in many Puranas, and the pandit took particular care in pointing out to me several passages which confirmed, more or less, this interesting legend. Of these I took little notice, as his extract appeared more explicit and satisfactory; and I do not now recollect in what Puranas, or other books, they are contained. It is acknowledged, that the three sons of Swayambhuva are incarnations of the Trimurti; and they are declared, in general, in the Puranas, to have been created by the Deity to marry the three daughters of the first man, with a view to avoid the defilement of human conception, gestation, and birth.

Dacsha and Brahma, in a human shape; Cardama, or Capila, or Cabil, (the name of Cain among Muselmans,) was Siva; and the benevolent Ruchi, was Vishnu: one of Ruchi's titles is Sarma and S'ama: S'iva is called Ha and Ham in the objective case; and Brahma, or Dacsha, is declared to be Praja'pati, nearly synonymous with Jya'pati.

In the Mahā-Bhārata, section of the Adipurva, there is a much more positive passage. Dharma, or the first man, sprang from the right side of Brahma', which was cut open for that purpose; to him were born three sons, S'ama, Cama, and Harsha.

The rest of the legend, about the intoxication of Noah, is from what my pandit picked up in conversation with me.
One of the sons of Noah is called *Ila'-pati*, synonymous with *Jya'pati*, the lord of the earth, the same with *Praja'pati*, or the lord of mankind. Indeed the denomination of *Prajapati* is originally no more than *Japati*, with the *upsarga*, or indeclinable particle *pra*, used intensively. *Jah* is the principle of life in a living being; hence a man is called *Pra-já*, from his superiority above the rest of the animal creation. Besides, it is very common in *India* to prefix the particle *pra* to proper names of holy men, and more particularly so among the *Baudh'hists*. Thus they say, *Pra-S'wana*, the venerable *S'wana*. *Pra-áryya-sira*, the venerable sire of the *Áryyas*, *Pra-Iśwara*, &c. In the same manner, *Praja'pati* signifies the venerable *Ja'pati*, the chief of the animated creation. This will not seem in the least surprising, when we reflect that the *Hindus* never admit of any legend, without disfiguring it so as to make it their own. Besides, we see the enmity between *Brahma* and *S'iva* remaining still in their human shapes; for *Carddames'wara* killed his brother *Dacsna*.

It is acknowledged, both by *Hindus* and the western mythologists, that at every renovation of the world the same events take place, the same heroes re-appear upon the scene; and of course *S'ama*, *Cama*, *Harsha*, or *Pra-ja'pati*, are born again to every *Menu*.

*Ilá*, or *Ilá'*, called also *Idá', and *Irá'* was the son of *Noah*; and *Ilá'-pati* is synonymous with *Jya'pati*, and implicitly so with *Ja'pati*. This *Ilá* is called *Ilys* in the theogony of *Orpheus*, and *Ghilshah* in *Persian* romances, which literally answers to *Ilá'-pati*. He is, perhaps, the same with the eldest *Ilus* of *Homer*. 
The next legend is that of Semiramis, which the pandit has most shamefully disfigured. She is well known in India under the name of Samidevi; and she is the goddess of the element of fire, so inimical to the vegetable kingdom, the St’hawaras, or immovable beings; and of course to their chief, Vishnu, in the character of the Aswatt’ha tree, which is declared to be the first, the chief of trees, and of course St’hawarpati, or Staurobates.

Samí, and the Aswatt’ha tree, have each two countenances; one is that of a tree of the same name, the other is that of a human being. In this, which is their original character, Samí is the same with Urvasi, who married Pururava, the grandson of Noah, exactly in the same degree of descent with the founder of Ninive. The same is called also Aila in the Purānas, and Lailan-shah by Persian romancers, Ninus by the Greeks, and in the Tamuli dialect he is called Nilan. Their amours and their quarrels, and ultimately their reconciliation, are the subject of a beautiful drama. Her charms certainly effected the conquest of Lailan’s heart; they quarrelled, and she disappeared in a most wonderful manner; but Lailan, with powerful spells, forced her back. Semiramis first conquered Staurobates, but was conquered by him at last.

Samí and Pururava were changed into two trees, without losing their human countenances, the Samí and the Aswatt’ha; the St’hawarpati and Samí-devi remain dallying in the tree of the same name; hence she is really Samí-rama, though that denomination be never used.

Her history is to be found in the Gan’es’a, Vishnu, and Bhágavat Purānas, and also in the Mahá Bhárata, but it is incomplete in each
of them: and the whole must be brought together and compared with the account given of her in the above *Nalaca*, or dramatic poem.

It is my intention to resume her history in the course of this work; and, in the mean time, I shall observe, that she was born at Tihotra (or Tri-hotra), to the west of Delhi; acknowledged to be the same place which is now called Tehora or Tehaura, and Tahora in the *Peutingerian* tables, near the river Sutluj: Tihotra is also supposed to be the same with Tri-garta, a place often mentioned in *Hindu* books.

That goddess was the daughter of *Aurvasa*, who presides over the elementary fire, and is most inimical to the *Sthawars*, and their lord and *pati* of course.

The story of the two doves, mentioned in my essay on *Semiramis*, is unknown to the *Pauranics*; but there are some legends about them in the western parts of India, where they apply them to, or, perhaps, framed them, in consequence of the two doves found by *Mohammed* in the *Caaba* at Mecca; which they claim, with some reason, as a place of worship belonging originally to the *Hindus*.

The misfortune which befel *Maha-deva* is well known: but the discription of the sacred *Linga* is represented, in the *Puranas*, in a different light. It was divided into twelve parts, besides many splinters. These twelve *Lingas* preside over the twelve months of the year. I was concerned, for a long time, that I could not discover the least vestiges of the legends concerning *Perseus*, *Andromeda*, and *Pegasus*, nor even the names of the principal characters: but these I have lately found in the *Yantra-rája*, and other books, with a most ample account of the thirty-six *Decani*, so famous

Vol. VIII.
in Egyptian astronomy, and called Drescán in Sanscrit.

Perseus is called there Pretasīra, or the man with the Larea's head, and the same situation is assigned to him in the heavens. He is also called S'aila-muc'ha (or having a stony face or head), alluding to the head of Medusa, which turned the beholders into stone. Pegasus is also mentioned there under the name of Samudra-pacshi, or the bird of the ocean. He is likewise called Samudra-pada, because his hindparts and feet are concealed in the ocean. The lesser horse is called Hayagrīva: but the legends of all these are still wanting, except the last, which will appear in the course of this work. Andromeda is called Vej'ara', and is represented with her head shaven, and her hands bound in fetters. Cassiopea is called Lebana', and Cepheus Nripa or Nri-rupa, and Persian authors say, he is the same with Cai-caous. He is slightly mentioned in other Hindu books as a great king. He was the father of the Cepheuses, and Cephisene was their native country; in Sanscrit Cāpis'āyana. Capes'a is Cepheus, and Cāpis'a is the patronymic appellation of his descendants, called also Sihtucas.

My essays on the chronology of the Hindus and mount Caucasus, are almost entirely free from the forgeries which I have stated, because my chief pandit had little to do with them. I recollect only three instances in which he interfered; and in them the legends were, as usual, disfigured by him. They are legends respecting Prometheus and the Eagle; with some particulars relating to Bāmiyān and the Lipari islands. Garuḍa's den is well known to this day, to pilgrims, and the Hindus of these parts. The place is called Shibr, in Major Rennell's maps,
for Shabar; and it is not far from Bāmīyan. There Garūda used to devour all the Shabarās who passed by; and, in the Purānicas, all savage tribes are thus called. Amongst others were some servants of Maha'-deva whom he devoured; this drew upon him the resentment of that irascible deity, whose servants are called Pramāt'has: hence, probably, the ground-work of the fable of Prometheus and the Eagle. All the rest is an improvement, from what the Pandit gathered out of our conversations on the subject of ancient mythology. His account of Bāmīyan, from the Budd'ha-dharma-charitra must be rejected till its genuineness be ascertained. There is such a book at Benares, but all my endeavours to procure it have been fruitless. In this legend he has certainly adopted admirably the manner, style, and notions of the followers of Budd'ha, and the idiom of the language of their books. I have seen the original legend from which he framed his own, about the islands of Lipari, but it has not the least relation to these islands, and belongs to some place in the mountains to the north of India.

In like manner, many of the legends cited in my essay on Egypt, though they have a striking affinity with those of that country, are not expressly said to belong either to that or to any particular country, being related in general terms. In these cases, my Pandit inserted the name of Egypt, and if the name of any other country was mentioned, he erased it, and put that of Egypt in its place. Yet the similarity between these legends, and many more which are quoted in the course of this work, and the authenticity of which may be depended upon, with those of the Egyptians and other mythologists, is so striking, as to evince their original identity: for so near a coincidence, in my humble opinion, could not have been merely accidental.
It evinces also some remote communication, at least, if not some affinity, at an early period, between the nations among which we find these legends equally current.

In the Hindu books we read of some princes who raised mountains of gold, silver, and precious stones; some three; others only one: but whether this be applicable to Egypt does not appear, rather the contrary. It was, however, a practice formerly, and, if restricted to a single pyramid, it was intended for the mountain of God, the holy mount Meru. If three pyramids were constructed, they were intended to represent the three peaks of Meru. There is a beautiful pyramid at Sarnáth near Benares, built by a king of Gaur, or Bengal. It is conical, and of earth, with a coating of bricks, and is about seventy feet high. In the inscription found there some years ago, it is declared to be intended as a representation of Meru, which is represented of a conical figure by the Hindus, but like a square pyramid by the followers of Budd'ha. The tower, or pyramid of Babel, was of a square form, with seven stages or steps, like Meru.

The recession of the sea from the valley of Egypt is no where mentioned: but the same miracle is recorded as performed by several holy men, particularly on the western shores of India. Indeed, whenever the Hindu writers treat of the accession of lands, which were formerly occupied by the sea, they never fail to attribute it to the prayers of some holy personage.

In the course of my correspondence with the venerable Sir William Jones, the Institutor and first President of the Asiatic Society, and my patron in Oriental literature, I mentioned the discoveries which I thought I had made, and particularly re-
specting Ethiopia and Egypt. He expressed his surprise; but could not be brought to believe an early, or even any communication whatsoever, between the inhabitants of those countries and the Hindus. As I was just entering upon my studies and literary enquiries at that time, he wrote me candidly, that he was afraid I had been misled by enthusiasm, and cautioned me not to trust to the verbal accounts of the Brahmens; but requested that I would, for his satisfaction, send to him the necessary written documents from the Purásás. I complied with his request most cheerfully, and sent him all my vouchers as correct as possible. After perusing them, he wrote to me nearly in the following words, the purport of which I recollect perfectly, but lament that his letter being mislaid, I cannot produce it.

"Having read the numerous passage you adduce in support of your assertions, in their original language, in the extracts you have sent me, both alone and with a pandit, I am fully satisfied that there existed an early communication between the Hindus and the inhabitants of Ethiopia and Egypt."

He then informed me, that his collection of the Purásás being incomplete, he had not been able to compare all the extracts which I had sent to him concerning Ethiopia and Egypt; but that he had found several of the most essential, such as the legends about Náirrita and the Palli, and that he could bear testimony to their general accuracy. Besides, Náirrita, and his being appointed guardian of the south-west quarter of the old continent, being well known to learned pandits, they had pointed out to him several passages in other Puráwas and Sanscrit books, relating to Náirrita, S'ancha-dwípa, &c. so that he was fully convinced
of their genuineness and antiquity; and as for the others of less importance, he did not entertain the least doubt about their being equally genuine. He added, that learned pandits were, besides, well acquainted with the general outlines of most of the other legends I had produced; and concluded by saying, that he intended to make some remarks on my essay on Egypt, in which he would express his conviction in those terms.

In the remarks which Sir William Jones did afterward subjoin to my essay, and which were published with it in the third volume of the transactions of the Asiatic Society, he could not have intended a stronger public testimonial than that which he had communicated to me privately. But as the terms of one passage, relative to the Sanscrit papers which I transmitted to him, as taken from the Puránás, and other books, might be understood to imply a more general collation of my extracts with the original works, than had taken place, or could have been meant, I have thought it incumbent on me to add the preceding explanation of the real circumstances.

I shall ever lament that I was the cause of Sir William Jones being thus misled like myself. I have shewn that I was exposed to imposition; first, from the nature of my literary pursuits; and, in the second place, from the confidence which I reposed in the integrity of my native assistants, and more particularly my chief pandit. This no longer exists, and of course no similar deception can now take place. If a word, or a passage of importance in any manuscript, bears the least mark of adulteration, it must be given up, unless corroborated by collating it with other books, which are totally free from suspicion.

I have prepared two copies of my vouchers, one for the Asiatic Society, and the other for the Col-
lege of Fort William. I have already presented one to Mr. Colebrooke; and I take this opportunity to acknowledge the friendly assistance I have always received from that gentleman, and his ready communication of every sort of information that could be of use to me, through the whole course of my literary pursuits, and for which I return, most gratefully, my most sincere and hearty thanks: and I candidly acknowledge, that without his assistance I should never have been able to bring to a conclusion, in a manner satisfactory to myself, the present work, which, from its nature, and that of the materials, is attended with difficulties of which few people, unacquainted with the subject, can form any idea.

With regard to the British Isles, I soon found that the grand outlines were perfectly correct; even more so than those of my essay on Egypt and Ethiopia, which countries are very little known to the learned, and of which little is recorded in the Puránas, when compared to their holy land. My pandit had filled up the rest with a vast number of legends of all sorts, but most of them of little importance, and affording very little light on the subject.

The White Island, in the West, is the holy land of the Hindus. It is of course a sort of fairy land, which, as might be expected from their well known disposition, they have not failed to store with wonderful mountains, places of worship, and holy streams. It would be highly imprudent to attempt to ascertain their present names and situation; though I have occasionally broken through this rule, and may have been seduced, by a strange similarity of names and other circumstances, within the fascinating attraction of conjectural etymology.
Should the learned reject this, not deeming the presumptive proofs strong enough, I beg their indulgence in the few cases of this description, which certainly cannot mislead them. It is seldom the lot of authors to write without some enthusiasm; a portion of which may perhaps be necessary. I have faithfully collected whatever I could find in the Puráñvas and other Hindu books, relating to this holy land, whether bearing some marks of truth, or obviously fictitious; and I solemnly declare that I have not the desire, either to defend or impugn the notions of the Hindus, as I conceive them, in regard to these Sacred Isles.

It would have been doing injustice to the subject, to have attempted to give an account of these Islands, without the geographical system of the Hindus, who believe them, and consider them as a terrestrial paradise.

I have, therefore, premised an ample, but still incomplete system of geography, according to the followers of Brahma and Buḍḍha.

I have added an essay on the chronology of the Hindus and the emperors of India; with geographical, mythological, and historical sketches of the intermediate countries from India to the British Isles, inclusively. It will appear, in the course of this work, that the language of the followers of Brahma', their geographical knowledge, their history and mythology, have extended through a range or belt about forty degrees broad, across the old continent, in a South-East and North-West direction, from the Eastern shores of the Maláya peninsula to the Western extremity of the British Isles.

Through this immense range, the same original
religious notions re-appear in various places, under various modifications, as might be expected; and there is not a greater difference between the tenets and worship of the Hindus and Greeks, than exists between those of the churches of Rome and Geneva. With regard to the languages, both ancient and modern, through this belt, their radical words, verbs and nouns, with others regularly deduced from them, are in great measure Sanscrit. It cannot be expected that their respective grammars should preserve much affinity. It is the fate of every language, when in a state of decay, to lose gradually its cases, moods, and tenses of the second order, and to employ auxiliary verbs, which the Sanscrit uses sparingly, and by no means through necessity. I have observed that gradual state of decay in the Sanscrit language, through the dialects in use in the Eastern parts of India down to the lowest; in which last, though all the words are Sanscrit more or less corrupted, the grammatical part is poor and deficient, exactly like that of our modern languages in Europe, whilst that of the higher dialects of that country is at least equal to that of the Latin language. From such state of degradation no language can recover itself: all the refinements of civilization and learning will never retrieve the use of a lost case or mood. The improvements consist only in borrowing words from other languages, and in framing new ones occasionally. This is the remark of an eminent modern writer, and experience shows that he is perfectly right. Even the Sanscrit alphabet, when stripped of its double letters, and of those peculiar to that language, is the Pelasgic, and every letter is to be found in that, or the other ancient alphabets which obtained formerly all over Europe, and I am now preparing a short essay on that interesting subject.
The principal object I have in view in this essay is to prove that the Sacred Isles of the Hindus, if not the British Isles, are at least some remote country to the North-west of the old continent; for I cannot conceive that they are altogether Utopian or imaginary. But a secondary one also is to prove that the greatest part of the legends, which formerly obtained all over the Western parts of the world, from India to the British Isles, were originally the same with those found in the mythology of the Hindus. Besides these, they had also in every country local notions and legends, as well as local Deities, and which of course were peculiar to them.

The principal essay on the Sacred Isles in the West will appear, with the permission of the Asiatic Society, in a future volume of their Researches; and it is proposed to publish the series of essays mentioned with that work in the following order.

The Introduction.
Essay I. On the geographical systems of the Hindus.
— II. Geographical and historical sketches on Anu-Gangam, or the Gangetic provinces.
— III. Chronology of the kings of Magadha, emperors of India.
— IV. On Vicrama'ditya and S'al'iva'hana, with their respective aeras.
— V. The rise, progress, and decline of the Christian religion in India.
— VI. The Sacred Isles in the West.
PART THE FIRST.

CHAPTER THE FIRST.

OF THE GEOGRAPHICAL SYSTEMS OF THE HINDUS.

SECTION I.

General Ideas of these Systems.

The Hindus have no name, either for geography or geometry, but we are not to infer thence, that they have entirely neglected these two sciences. They are certainly pretty well acquainted with geometry, but they consider it, and with some reason, as part of the science of numbers; and neither can our denomination of geometry, which signifies surveying, be considered as a very apposite term. In the time of the famous Jayasinha, Raja of Jayapur, the learned at his court gave it the name of Cshetra-dersana, or the inspection and knowledge of figures; and a treatise on geometry, composed by his command, is still called by that name. These elements begin with an inquiry into the properties of lines simply combined together, which combination is called acshëtra, or informal. They then proceed to the consideration of regular figures or cshëtra, as a triangle, a square, cube, &c. whilst an angle is called acshëtra, or informal.

The Hindus give various names to geographical tracts, such as Bhuvana-Cosa, or treasure of terrestrial mansions; Cshëtra-Samasa, or combination of countries; Bhuvana-Sagara, or ocean of
mansions or habitable places. Such a geographical treatise is cited by Signor Bayer, under the corrupted appellation of *Purwana Saccaram*. Another treatise in my possession is called *Trailócyadarpava*, and was given to me by the late Mr. Reuben Burrow, who procured it near Hardwáír. Its name signifies the mirror of the three worlds, meaning heaven, earth, and hell, and answers exactly to the treatise ascribed to Saint Patrick, and called *Dissertatio de Tribus Loís*, or habitaculis. It was written some hundred years ago, and the copy I have is of the year 1718 of *Vícrama'ditya*. In several *Puránás*, there is a section expressly on the subject of geography, and for that reason called *Bháwana-Cós'a*. It is also denominated *Bhú-c'hanída*, or section of the earth. Except the sections contained in the *Puránás*, geographical tracts are in general written in the spoken dialects, and are extremely scarce, as they are discountenanced by the sacerdotal class, as are historical books. This they have often acknowledged to me, saying, they have the *Puránás*; what do they want more? Besides, as they are written in the vulgar dialects, they are the works of persons not sufficiently learned and informed, and very apt, as I am told, to hazard occasionally a few heretical notions. They are not, however, so strict in the *Dekhin*, and the western parts of *India*: there, I am credibly informed, they have treatises expressly on the subject both of history and geography.

There are two geographical tracts in Sanscrit: the first, called *Vícramapratidés'a vyaacast'há*, is attributed to *Vícrama'ditya*, probably the one of that name, who lived, as we shall see hereafter, in the fifth century, and it is said to consist of eighteen, or twenty thousand slócas or lines: the second, called *Munja-pratides'a-vyaacast'há*, is attri-
buted to king *Munja*, the uncle of the famous *Bhója*, who lived in the latter end of the tenth century. It is nearly the same with the former, including some amendments and additions. These two geographical treatises cannot but be curious and interesting; but unfortunately, they are not to be found in this part of *India*. They are however pretty common in the Western parts of it, and particularly so in *Gurjarat*, where they have been seen by several respectable pandits of that country. The *Trai-Locya-darpana*, which I mentioned before, is according to the system of the followers of *Buddha*, and is written in an uncouth dialect of the inland parts of *India*; with a strange mixture of *Sanskrit* words and phrases.

The *Cshetra-Samūsa* is another geographical tract by the *Jainas*, which I lately procured. It is written in *Pracrit*, asserted by some to be the same with the *Báli* or *Mágad'hi* dialect, but probably somewhat different from that used in the Burman empire, *Siam* and *Ceylon*. The *Báli* or *Mágad'hi*, was the language used at the court of the emperors of *India*, kings of *Magad'ha* or *Bahar*, and called also *Bali-putras*, because they were descended from the famous *Bali*, or *Nanda*; and their kingdom is denominated after them *Poli* by the Chinese. This last is accompanied by a copious commentary, with several fanciful delineations of the world, and of mount *Méru*.

With regard to history, the *Hindus* really have nothing but romances, from which some truths occasionally may be extracted, as well as from their geographical tracts. Those in *Sanskrit* are the *Charitrás*, or actions of *Vicrama'ditya*, of king *Bhója*, and others.
The *Vrihat-Cat'hā* is a collection of historical anecdotes, sometimes very interesting, and consists of 22000 *slócās*.

In the spoken dialects, there is the romance of *Prithu-ra'ya*, containing an account of his wars with Sultan Guori; part of it is in my possession. It is exactly in the style of our old romances in *Europe*, with nearly the same proportion of historical truth.

In several of the *Purānias* there is an account of the principal events, which were to take place during the *Cālī-yug* *. These come down as late as the eighth and ninth centuries, except in the *Agni* and the *Bhavishya Purānias*, in which there is an account written, as usual, in a prophetic style, of the principal events, which were to take place, as late as the twelfth century. In the time of *Acbar*, a supplement was added, down to *Huma'yun*, as is obvious from the lists of the kings of *Mālwa* in the second volume of the *Ayin-Acberi*. Since that time another supplement has been added, down to the beginning of the eighteenth century.

It is universally acknowledged, that the court of the kings of *Magad'ha*, now the province of *Bahar*, was once, one of the most brilliant that ever existed, and that learning was promoted there, through its various branches. Their vernacular language was cultivated, and many valuable treatises were written in it, in order to diffuse knowledge among all classes of men. This, I am informed, was carried so far as to incur the resentment of the whole sacerdotal class, who unanimously declared, that

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*The Brahmanda, Bhagavat, Vishnu, and Vayu Puranas. Sections on Futurity.*
Magad'ha could no longer be considered as a proper country for the twice-born to live in, without losing the fruit of their good works, and greatly impairing their energy in the paths of righteousness.

Besides geographical tracts, the Hindus have also maps of the world, both according to the system of the Paurântics, and of the astronomers: the latter are very common. They have also maps of India, and of particular districts, in which latitudes and longitudes are entirely out of question, and they never make use of a scale of equal parts. The sea shores, rivers, and ranges of mountains, are represented in general by straight lines. The best map of this sort I ever saw, was one of the kingdom of Napâl, presented to Mr. Hastings. It was about four feet long, and two and a half broad, of paste board, and the mountains raised about an inch above the surface, with trees painted all round. The roads were represented by a red line, and the rivers with a blue one. The various ranges were very distinct, with the narrow passes through them: in short, it wanted but a scale. The valley of Napâl was accurately delineated: but toward the borders of the map, every thing was crowded, and in confusion.

These works, whether historical or geographical, are most extravagant compositions, in which little regard indeed is paid to truth. King Vicrama-dâitya had four lakhs of boats, carried on carts, for ferrying his numerous armies over lakes and rivers. In their treatises on geography, they seem to view the globe through a prism, as if adorned with the liveliest colours. Mountains are of solid gold, bright like ten thousand suns; and others are of precious gems. Some of silver, borrow the
mild and dewy beams of the moon. There are rivers and seas of liquid amber, clarified butter, milk, curds, and intoxicating liquors. Geographical truth is sacrificed to a symmetrical arrangement of countries, mountains, lakes, and rivers, with which they are highly delighted. There are two geographical systems among the Hindus: the first and most ancient is according to the Puranas, in which the Earth is considered as a convex surface gradually sloping toward the borders, and surrounded by the ocean. The second and modern system is that adopted by astronomers, and certainly the worst, of the two. The Pauranics considering the Earth as a flat surface, or nearly so, their knowledge does not extend much beyond the old continent, or the superior hemisphere: but astronomers, being acquainted with the globular shape of the Earth, and of course with an inferior hemisphere, were under the necessity of borrowing largely from the superior part in order to fill up the inferior one. Thus their astronomical knowledge instead of being of service to geography, has augmented the confusion, distorted and dislocated every part, every country in the old continent. The Pauranics represent, in general, the Earth as a flat surface; though it appears from the context to be of convex figure, with a gentle slope all round toward the ocean, which is supported by a circular range of mountains, called Locálocas by the Hindus; Caf by Musulmans, and by our ancient mythologists Atlas; Dyris, Dyrim, from the Sanscrit tir, and tiram, the margin term or border of the world, or the Iarder (Earth's) Thremi in the Edda Seemudr.

The Jews and the ancients in general, considered the Earth as a flat surface. This idea was certainly a most natural one, till the study of astro-
nomony had undeceived the learned, who, as usual at these early times, did not impart this discovery to the vulgar.

On the higher parts, and in the center of the Earth, the Hindus place a mountain standing like a column 84000 Yojanas high, 32000 broad at the top, and 16000 at the bottom. It is circular, and in the shape of an inverted cone. This idea prevailed once in the West: for, when Cleanthes asserted that the Earth was in the shape of a cone, this, in my opinion, is to be understood only of this mountain, called Meru, in India*. Anaximenes said that this column was plain, and of stone: exactly like the Meru-pargwette (parvata) of the inhabitants of Ceylon, according to Mr. Joinville, in the seventh volume of the Asiatic Researches. This mountain, says he, is entirely of stone, 68000 Yojanas high, and 10000 in circumference, and of the same size from the top to the bottom. The divines of Tibet say, it is square, and like an inverted pyramid. Some of the followers of Budd'ha†, in India, insist, that it is like a drum, with a swell in the middle like drums in India; and formerly, in the West, Leucippus had said the same thing; and the Baudh'hist in India give that shape also to islands. This figure is given as an emblem of the reunion of the original powers of nature. Meru is the sacred and primeval Linga: and the Earth beneath is the mysterious Yoni expanded, and open like the Padma or Lotos. The convexity in the centre is the Os Tince, or navel of Vishnu: and they often represent the physiological mysteries of their religion, by the emblem of the Lotos; where the whole flower signifies both the Earth, and the two principles of its fecunda-

* Plutarch de placit. philosoph.
† Trailocya-derpana.
tion: the germ is both Meru and the Linga: the petals and filaments are the mountains which encircle Meru, and are also the type of the Yoni: the four leaves of the calyx are the four vast regions toward the cardinal points: and the leaves of the plant are the different islands in the ocean round Jambu: and the whole floats upon the waters like a boat. The Hindus do not say, like the Chaldeans, that the Earth has the shape of a boat, which is only the type of it. It is their opinion, I do not know on what authority, that at the time of the flood, the two principles of generation assumed the shape of a boat with its mast, in order to preserve mankind. Enthusiasts among the Hindus see these two principles every where, in the clefts of rocks, commisures of branches, peaks among mountains, &c. The Earth is typified by a boat; the Argha of the Hindus, the Cymbium of the Egyptians, are also emblems of the Earth, and of the mysterious Yoni. The Argha, or Cymbium, signifies a vessel, cup, or dish, in which fruits and flowers are offered to the Deities, and ought to be in the shape of a boat; though we see many that are oval, circular, or square. Iswara is called Argha-nath’ha, (or the lord of the broad-shaped vessel:) and Osiris, according to Plutarch, was commander of the Argo, and was represented by the Egyptians in a boat, carried on the shoulders of a great many men, who, I think, might be called, with propriety, Argonauts. The ship, worshipped by the Suevi, according to Tacitus, was the Argha, or Argo, and the type of the mysterious Yoni. The Argha, with the Linga of stone, is found all over India as an object of worship. It is strewed with flowers, and water is poured on the Linga. The rim represents Yoni, and the fossa navicularis, and instead of the Linga,

II. The Hindus have peculiar names for the four cardinal points, derived from their respective situation, with regard to a man looking toward the rising sun, which is the most proper time to worship him. The East, from that circumstance, is called Para, and Purva, or before: the West, Apara, and Pas'chima, or behind. The South, being then to the right, is called Dacshina, and the North Vâma, or the left.

From dacshina comes obviously the Greek dexion: the Latin dexter, dexterum is from dacsh-tir, or dacshatiram, towards the right. Pas'chima is obviously a derivative form, the root of which, pas'cha, is no longer to be found in Sanscrit, unless in other irregular forms, as pashchát; but it is still in use in the spoken dialects, in which it is pronounced picha, and from pas'cha is derived the Latin post, or behind, and postumus for postimus, answers to paschima, or pas'chum, in the spoken dialects. Para is the English word fore: thus we say a fairy from the Persian Peri. It is also pronounced pra, as in pra-pâda, the fore-foot, or fore part of the foot, including the Tarsus and Metatarsus; and from it is derived the Latin præ and the Greek pro. From this circumstance there arose a peculiar division of the old continent; the midland countries are called Mad'hyama, or in the middle; those toward the East Para, but more generally Purva: Para is used oftener as an adjective noun, as Para-Gan'dicâ, the Eastern Gan'dica. The countries towards the West are denominated Apara, Apar. Its derivatives are aparam, aparena, an adverb; aparica, aparicâ, aparicam, masculine, feminine, and neun.
This division is used in scripture, in which the appellations of Parvaim and Ophir, signify the countries to the East and to the West. These denominations are not deducible from the Hebrew, but only from the Sanscrit language; and Apar and Aparica are the same with Ophir, Aphar, and Africa. In Hebrew, the word Ophir, without points, is written Aupir; and the learned bishop Lowth derives Africa from Aupir or Auphir. That country, we are told, was thus called from a certain Aphros, or Aphraus, who was the son of Saturn and the nymph Pheaura, according to the Paschal chronicle. He was the brother of Picus and Chiron, and is called Aphar by Cedrenus. Another ancient author, as I have somewhere read, calls him Ophris and Aphra; and says he was a companion of Hercules: and Isidorus adds, that the apellation of Aser was supposed to have been Aper originally. The word Aparica is then synonymous with Ibericus, Iberica, &c. The Latin word Apricus seems to have been used to denote a westerly situation, as being more favoured with the congenial warmth of the sun. This ridiculous notion, still prevalent among the country people in many parts of Europe and in India, originated from a supposition, that the Earth was a flat surface. Thus they say, that part of the country is fertile, being under the sun of three; but the other is not so, being under the sun of nine o'clock. The word Aparica is not used by the followers of Brahma to denote the Western parts of the world; but it is constantly so by the Bauddhists. Thus in Ava and in Ceylon, the Western parts of the world are called, by Mr. Jo-

*Aparica is a regular derivative form, but not in use in this part of India: yet it is in the dialect from the Sanscrit current in Ceylon, where it is written Aprico, and Aparego.

† Isidorus de originibus.
invill*, Aprica-Dani, and Aparehgo-Daneh by Captain Mahony. These denominations are Sanscrit, Aparica-Dhanī the Western mansions, or countries. Dhanī is a place of abode in Sanscrit: in the language of Tibet, it is den, and signifies also a country†; and the word den, in English, claims the same original derivation. The Burmahs, say Amaragoja, which is still a further corruption like Aparehgo. The Eastern parts are called, in Ceylon, Purva-weedeseyeh from the Sanscrit Purva-deha, or Purva-videha, or Videhasya in a derivative form, the country of Purva, or toward the East. In Ava they say Proppi-videha, but it should be Proppi-videha; for Mr. Buchanan, in his interesting account of the learning and manners of the Burmahs, informs us, that in that country they generally use the letter I for R; thus in the Bengali dialect they say Purob, and Pob for the East. The North is called, by the Sinhalas, Ootooroocooroo-Dezechinnen, according to Captain Mahony, from the Sanscrit Uttara-curu, still used to signify the Northern parts of the old continent. The same is called Uncheugru by the Burmahs, according to Mr. Buchanan; but in the account of P. Sangermano, lent to me by Captain Romaine, it is Undeugru, which seems to be but a corruption from Uttara-curu. The Southern parts are called Jambu-dwipa in Ceylon, and Zabu-dib by the Burmahs. In the Vayu Purāva, the Eastern part of the old continent is equally called Purva-dwipa as in Ceylon and Ava, and the river Oxus is called Apara-gandicā, or Western Gandicā; whence we may safely conclude, that they said also Apara-dwipa for the West. Apareya and Apareya are regular derivative forms from Apara; and from them is obviously derived Iberia, the ancient name of

* Asiatic Researches, vol. VII.
† Alphab. Tibet, p. 588, &c.
the Western parts of Europe, including Gaul and Spain. Homer uses, in that sense, the appellations of Hypereia and Apera; Abera is found in Apollodorus; for thus we must read instead of Abdera, as we shall see hereafter. It is well known to the learned, that, at a very remote period, Europe and Africa were considered but as one of the two grand divisions of the world; and that the appellation of Africa was even extended to the Western parts of Europe, all along the shores of the Atlantic. Hence the West wind, or Zephyrus, is called the Libyan or African wind; and Homer, if I am not mistaken, makes Zephyrus to blow directly from Lybia, or Africa into Greece.

Instead of para and purva, the word much'a, face, or front, is often used, particularly in the spoken dialects, and some times with the augmentative particle su; and in the dialect of Bengal, sho; thus they say sho much', right in front, due East. Though equally grammatical, yet it is not usual to say, Su-para, Su-purva, Sho-para, or Sho-purva, in that sense. It seems, however, that it was once in use; for in Scripture we have Parvaim and Se-parvaim, or Se-pharvaim, the name of a country, the situation of which is by no means well ascertained; yet it is probable, that it was near the mountains of Se-phar, or Se-era, towards the East, according to Scripture: and it is not unreasonable to suppose, that Parvaim, Se-pharvaim, with the mountains of Se-phar, belong to the same country, which I take to be India, called by the Copts, Sopheir; and by no means to be confounded with Ophir. India is also called, by Hesychius and Josephus, Su-phir, or Su-phoir; and So-phora by Procopius†.

† Procopius in Schol. ad Lib. 3, Regum,
The Sanscrit appellation of Purvam, for the Eastern countries, is written Parvim in Hebrew without points; but with points it becomes Parvaim, which appears in a plural form. The Septuagint read Pharvaim; and, in that case, in the singular number, it should be Parva or Pharva. In the course of etymological enquiries, I have always found it more convenient to read the Hebrew without points, when the affinity is obviously greater. Thus the word in question is written without points P-r-v-i-m, or with the vowel inherent to every consonant, as in Sanscrit, and the common Nāgri, Pa-ra-va-i-ma: the only difficulty in Nāgri and Hebrew, is to find out, in a word, what consonants are to coalesce. The words Se- phar, and Se-pharvaim, without the points, are to be read Se-para and Se-parvim.

The mountains of Se-phar seem to be that range called Be-pyrrus by Ptolemy, and placed by him to the North of India, answering to the first range, or snowy mountains. This range, in Ptolemy, begins at Hardwār, and instead of Be-pyrrus, several authors read Sepyrrus. In Sanscrit, Su-para, and Vi-para or Bi-para, for thus it is generally pronounced, are synonymous, and perfectly grammatical, though perhaps never used; and signify right before, due East. Bi-para signifies also Easternmost; and, in its first acceptance, is the same with before in English, which is now synonymous with fore, or afore: yet there is no doubt but that formerly it was otherwise, and that before signified right afore. It is true, that the particles su, and bi like ge, in the dialects from the Gothic, are often used without enhancing the signification of the word they are prefixed to. Thus fore and before, para, su-para, bi-para, and su-mucha, or sho-mucha, in Bengalee, signify the same thing. The posterity
of Shem, we are told in scripture, dwelt in the country extending from Mesha as thou goest unto Sephar, a mount of the East. This seems to be meant as an explanation of the word Sephar, and at all events implies, that this mountain was a great way to the Eastward. In Europe they called the West Hesperus, and the country toward the West Hesperia. That country is considered by the Purânicas, as the abode of the Gods, or Surâlayam, an appellation well known to the learned, and applied by them, in conformity with the Purânas, to the Westernmost part of Europe, or the British Isles. Another denomination for Surâlayam, and which might be Sanscrit, is Isá-pura, or Is'-pura, though probably never used. This was pronounced by the Gothic tribes As-burh, As-byrig, As-purgium: they said also As-gard, which implies the same thing. There Is'a, or Is'wara Vishnu, resides with all the Gods.

The word Is'a was pronounced Asos, Asioi, by the Greeks, As by the Goths; and for puri, or pura, the Goths said burh, byrig, or burgh; the Greeks pyrgos. The words As-puri, As-burh, Aspurgium, Hesperus, are pronounced by the Persians, As-burj; where burj or burujs, is synonymous with puri, purh, &c. In their romances, we see Cai-caus going to the mountain of Az-burj, or As-burj, at the foot of which the sun sets, to fight the Dīvasīf, or white devil, the Tāra-dāitya of the Purānas, and whose abode was on the seventh stage of the world, answering to the seventh zone of the Baudh'hists, and the sixth of the Purānicas; or, in other words, to the White Island. The Goths, it is true, placed As-burh, or As-gard, in the East; for when they had conquered the Western abode of the Gods, they found none there; and rather than give up this idle notion, they supposed that
As-burh, or As-gard, was in the East. Besides mount Mēru is another Surālayam, As-burh, As-gard, and is in the East.

The Jews and the Arabians, to this day, call the South Yaman, Yamin, and Jamin, which imply the right. The Hindus call the South also Yamya or Jāmya, and Yāmasya; because Yama (Pluto), called also Yaman, is the guardian of that quarter: and when Pliny* says, that the Hindus called the South Dramasa, it should be Diamasa, from Jamasya, as Diamuna for Jamunā, the river Jumna. We have seen that dexion in Greek, and dexter, dexterrum in Latin, are derived from the Sanscrit dacshin'ā, dacsha-tir, and dacsha-tiram; and it is not improbable, but that sinister, sinistrum, sinisterium, or the left in Latin, and aristeros, aristeron in Greek, are equally derived from the Sanscrit Senis-tir, or Senis-tiram, and Arasya-tiram, or Aras-tiram; that is to say, Saturn's quarter, in the same manner that the Hindus say, Yama's quarter, for the South; for Senih, or A'rah, resided in the North: Jupiter gave him that quarter for his residence, and made him guardian of it. Saturn, according to Cicero and Plutarch, was peculiarly worshipped by the nations in the Western parts of Europe, and in the North; though the latter says, that, in process of time, his worship began gradually to decline there. He was born in the left, and perished on the right. The Greeks and Romans considered the South as on the right, and the North on the left. Among them, as well as the Hindus, the right was considered as more honourable, and, of course, in worshipping and performing processions, they turned towards the right, keeping the object of their worship on

* Lib. 6o. c. XIX.
the right; but the Greeks, says Pliny, on these occasions, turn to the left: and, among the Greeks and Romans, in their races in the circus, they drove round the Spina, or ridge in the middle, keeping it all the while on their left. The Hindus seem to have always considered the four cardinal points in the same light; but various systems appeared at different times, in other parts of the world. Empedocles, according to Plutarch, maintained, that the summer solstice happened in the right, or North; and the winter solstice in the left, or South. This system prevailed once in the West, and of course the West was before, and the East behind, or aparam, aperenis, &c. from that time the winter solstice was called by the Latians, Hibernum, which cannot be derived from hyems, winter. This last comes from the Sanscrit hima; and, in a derivative form, haima and haimas, snow; and hyems implies the snowy season: and mount Haimos, or Hæmus, in Thrace, signifies the snowy mountain; and as the West was then before, it was called Su-para or Zephyrus, Se-phar and Sepyrrus, like that famous range of mountains in the East, mentioned by Ptolemy, and in the Bible. King Juva, a famous antiquary, was also of opinion, that the North is on the right; and this is confirmed by Achilles Tatius. The Egyptians, says Plutarch, placed the North on the right, and the South on the left. These alterations must have occasioned feuds among augurs and astrologers; and were, probably either admitted or rejected at different times, according to the power and influence of prevailing factions. This happened no less than four times in Egypt; and, of course, four times the points wherein the sun rises and sets, were considered in different points of view, and received different denominations; and well they might say to Herodotus, that the sun
had four times altered the time of its rising and setting. Twice it rose where it rose before; and twice it did set, where it was seen to rise before. All this happened, they said, without the least alteration in the climate of Egypt. These enigmas, or paradoxes, were much admired formerly, and they were not very willing to explain them.

The same thing happened in Europe; for the sun, shocked at the abominable repast of Atreus, turned back, and set where it used to rise before; that is to say, an alteration took place in the application of the denomination of before and behind, right and left, with regard to the four cardinal points; and Atreus is represented as a famous astronomer, who explained the yearly revolution of the Sun, performed in a contrary direction; in consequence of which the Sun is said, by the Bauudhists, and also by Brahmens, to rise in the West, and to set in the East: and the famous mountain of Astagira, behind which the Sun disappears, is called also the mountain of the rising Sun, or Udaya-giri, and even Mahodaya. In the extracts from manuscripts, in the library of the king of France, there is one from the golden meadows of the famous Masoudi, who lived in the tenth century. The author says, that in the opinion of some philosophers, the renewal of the world would happen, when the circle of the ruling stars shall be accomplished; then what had been North will be South. But, according to the Indians, says he, the Sun remains 3000 years in each of the twelve signs, and performs his revolution in the heavens in 36,000 years. That, when he passes through the meridional signs, the world will be reversed; North will become South, and South will become North: that is to say, as I take it to be, the North will be considered as the right of the world, and the
South as the left. Some Hindus are of opinion, that, at the end of the Calpas, a total renewal of the world will take place, and every thing will be reversed; the gods will become devils, and the devils gods. The giants, they acknowledge, were Pûrva-dévæs, or the first gods. The Egyptians, perhaps, entertained the same notions, and the mythologists in the West certainly did.

III. Another division of the world, is into a mainland and islands, which is also that of scripture, in which the isles of the nations, or Iiehagoin, are often mentioned. This division has also been admitted by Musulmans, who call them Jezair-alomam. Commentators understand by them, not only the islands, but also the peninsulas in the Western parts of the old continent; for in Sanscrit, dwîpa implies only a country, with waters on both sides; so that, like Jazirah in Arabic, they may signify either islands or peninsulas; dwîpa and jazirah are often used to signify countries bordering upon the sea only. By the isles of nations, the islands, peninsulas, and maritime countries in the West, and particularly in Europe, are understood: it is even so with the Pauránics, who are very little acquainted with the Eastern parts of the old continent, even to a surprising degree, and much less then we could reasonably suppose.

The most remarkable feature of this system is mount Mûru in the centre, the Olympus of the Hindus, the place of abode of Brahma', and his Sabhâ congregation, or court. This mountain made also part of the cosmographical system of the Jews; for Isaiah, making use of such notions as were generally received in his time, introduces Lucifer, in Sanscrit Swareha'nu, or light of heaven, boasting that he would exalt his throne
above the stars of God, and would sit on the
mount of the congregation, in the sides of the
North. Mērū has also the name of Sabhd, because
the congregation or assembly of the Gods is held
there, on its northern side. The hill of God is
also frequently alluded to in the psalms, though,
in some instances, it seems to imply mount Moriah.
Musulmans have admitted this mountain, under
the name of Caf; though they confound it, in ge-
neral, with the mountains of Locáloca, which sur-
round the world: but when they say it is the vated,
or pivot of the world, this is to be understood of
mount Mērū, which the Pauránics describe exactly
in the shape of a pivot; and even Mērū, in Sanscrit,
signifies an axis or pivot. According to Anque-
til Duperron, the Parsis call this centrical
mountain Tireh; and the whole world is equally
surrounded by an immense range of mountains.
In Ceylon, this surrounding range is called Chacra-
varutta, according to Captain Mahony*, which,
in Sanscrit, signifies any thing in the shape of a
ring or coit. The Burmans call it Zetkia-vála,
which word is pronounced Sakwell by Mr. Joinville,
and said to signify the world in general. In Zetkia-
vála, vála signifies a ring, or any thing in an
annular shape, from the Sanscrit váláya; and Zetkia-
vála, or Sakwell, may be a corruption from S’acya-
válya, the ring of S’acya or Bud’ha, who is sup-
posed to have made it. The Western mythologiasts
supposed the world, and its seas, to be surrounded
by a land, or continent, of a circular figure, ac-
cording to Plutarch, and Silenus’s narrative, as
related by Elian; and the pilot of the Argonauts,
being near Peuce, or Iceland, was very much afraid
of being driven on its shores †.

* Asiatic Researches, Vol. VII.
There are several divisions of the old continent; the first, and the most ancient, according to the Purāṇas, is into seven dwīpas; the Baudhāṇika in India reckon eight of them, this number being a favourite one among them. The followers of Buddha in Tibet, Ceylon, and Ava, have retained the Brāhmaṇical divisions, and reckon but seven. This division was made by Priyavratta, the eldest son of Swayambhūva, or Adam, in his old age, and previous to his withdrawing into solitude. He had ten sons, and it was his intention to divide the whole Earth between them equally: but three of them renounced the world: their names were Medha', Agnibhu, and Mīna, or Mītra. In the same manner Neptune divided the Atlantis between his ten sons: one of them had Gades, at the extremity of the Atlantis to his share. The Atlantis was probably the old continent, at the extremity of which is Gades. This island or continent is supported by Varāha on one tusk according to the Paurāṇics: but according to mythologist, in the West, Atlas supported the heavens, though, he is said some times to support the world. The Musulmans say that the Earth is supported on the horns of a bull. This Atlantis was overwhelmed with a flood likewise; and it seems that by the Atlantis, we should understand the antediluvian Earth, over which ten princes were born to rule, according to the mythology of the West: but seven of them only sate upon the throne, according to the Paurāṇics. The names of these islands are Jambu proper or India, Čusā, Placesha, Śālmali or 'Salmala, Crouncha or Crounīda 'Saca and Pushcara. These dwīpas, or countries, give their names to so many respective zones round Meru, which is the name the Paurāṇics give also to the Poles. If we disregard entirely the diagrams, or fanciful schemes, of the astronomers, and adhere
to the text of the *Purán'as*, we shall immediately perceive that these seven zones are really our seven climates: for *Jambu*, or *India*, is the first, and *Pushcara* is declared to be at the furthest extremities of the West, and in the same climate with *Uttara Curu*; which last is expressly said to be the country lying South of the Northern ocean. *Pushcara* is the *Thule* of *Ptolemy*, and the modern *Iceland*, under the Arctic circle, at least, the sensible one. It is true that the seven climates, in general, were not supposed to extend much beyond the mouth of the *Borysthenes*; but *Ptolemy*, and *Agathemerus*, by dividing each climate into three parts (like the *Hindus*, who divide the seven zone-like regions of Heaven, Hell, and Earth into three, the beginning, the middle, and the end), thus made twenty-one subordinate climates, extending from the equator to the polar circle. Every climate was denominated from some famous city, country, or island in it; thus we have the zone or climate of *Mer'oe*, that of *Rhodes*, &c. The *dwípas*, or climates of the *Hindus*, gradually increase in breadth, from the equator to the polar circle, from a whimsical notion that they are all equal, as to the superficial contents. The seven zones of the *Hindus* correspond with the following countries: *Jambu* is *India*, *Cus'a* answers to the countries between the *Persian* gulf, the *Caspian* sea, and the Western boundary of *India*. *Placsha* includes the lesser *Asia*, *Armenia*, &c. *'Salmali* is bounded to the West by the *Cronian* seas; that is to say, the *Adriatic* and *Baltic* seas. *Crauncha* includes *Germany*; *Sacam*, the *British* isles; and *Pushcara* is *Iceland*.

The *Paurán'ics*, however, consider these seven zones in a very different light, and the text of the *Purán'as* is equally applicable to their scheme. By *Mérû* they understand, in general, the *North* pole,
but the context of the *Puránias* is against this supposition. In these sacred books, Méréu is considered solely as a point to the North of India, from which four large rivers issue, and flow toward the four cardinal points of the world; and we frequently read of countries and places said to be to the North of Méréu, others are declared to be West, East, South, and North-west from it. This surely can have no reference whatever to the North pole, where the denominations of North, East, and West vanish.

This Méréu will appear in the sequel of this work, to be to the North of India, on the elevated plains of Tartary, and in the latitude of forty-five degrees. This point is considered in the *Puránias*, as the center of the world as known to the Hindus: there is its zenith or Méréu, which is as applicable to a line passing through the centre, zenith, and nadir of a place, as to that passing through the poles. In whatever light we consider Méréu, it is always the centre of the world, as delineated by the *Pauránics*. Cosmas, surnamed Indopleustes, from his travels into India, in the sixth century, says, that in his time the Brâhmens asserted that, if a line was drawn from China to Greece, it would pass through the centre of the world, or through this Méréu. The *Pauránics* and astronomers in India, had not then attempted to disfigure their cosmographical system: and did not, at that period, consider Méréu as the North pole. Round this point they draw seven zones, and the context of the *Puránias* is as favourable to this supposition, as to the former, because these zones equally pass through the above islands. These zones have introduced much confusion, and entirely disfigured their geographical system. They are by no means countenanced in the body of the *Puránias*; being
only introduced in a section of some of them called Bhu-c'han'\da, or section of the Earth, which seems to be interpolated, and of a more recent date.

The Hindus, and the followers of Budd'ha, differ considerably about the shape, and situation of the zones. The Paurán\ics say, that they are so many concentric circles enclosing Jambu, and situated between it and the land which bounds the Universe, and the first climate is that of Mérie, included in the dwîpa of Jambu: among the Greeks and Romans, the first climate was that of Meroë. Astronomers having discovered that the Earth is of a globular form, have placed them within the Southern hemisphere, which they fill up entirely. The Baudh'hist\s of Tibet represent these zones as so many concentric squares between Jambu or India, and Mount Mérie. The followers of Budd'ha in Ceylon consider them as so many circles, but place them also between Jambu and Mérie, considered as the North pole. The Jainas in India have, in great measure adopted the Hindu system: but reckon eight dwîpas. Dwîpa-āt'ha-mai hāi Jāgā sāra, the whole world consists of eight dwîpas, says the author of the Trailocya-darpana. Though the followers of Budd'ha seem to reckon seven dwîpas, like the Hindus, they really reckon eight; for Mérie is not included among the seven; they say the seven ranges of mountains, or zones round Mérie: but the Paurán\ics consider Mérie and Jambu as one of their seven dwîpas. Seven is a favourite and fortunate number among the Hindus: eight among the Baudh'hist\s; and nine formerly in the West, and in the North of Asia. Between these zones, there are seven seas, or rivers only, according to some of the followers of Budd'ha, and some Hindus also. There are even some, who consider these oceans, or rivers, either as one, or only as so many

Vol. VIII.
branches springing from one head, and winding seven times round Méru, according to the Paurânicis, or, eight times, according to the Baudhâ'ists: but according to Servius, the Styx went nine times round the Earth. They reckoned, accordingly, nine seas and nine davîpas, or worlds. These nine worlds are noticed in the Edda-Sa'mudr, and the nine oceans are mentioned by Plutarch, who informs us that a certain Timarchus visited the oracle of Trophonius, where, in a vision, he saw the islands of the departed in the eighth part, or division of the ocean. These islands, according to the Hindus, and the followers of Jîna, are constantly placed in the last sea but one: thus they are in the sixth, according to the Hindus: in the seventh, according to the Jainas: but the Western mythologists placed them in the eighth, because they reckoned nine seas. Nine was held a mystical and sacred number in the Northern parts of the old continent, from China to the extremities of the West. The Cimbri observed the ninth day, month, and year, sacrificing ninety-nine men, as many horses, &c. The number seven was held to be sacred by the Hebrews, and also by Musulmans to this day, who reckon seven climates, seven seas, seven heavens, and as many hells. According to Rabbis and Musulman authors, the body of Adam was made of seven handfuls of mould taken from the seven stages of the Earth: and, indeed, the seven zones, or ranges of mountains, are arranged by the Hindus like so many steps, rising gradually one above another, in such manner that Méru looks like an immense pillar or obelisk with a case, either circular or square, and consisting of seven steps, but, according to others, of eight, or even nine. The length, or height, of this obelisk is to its breadth, as 84 to 16. The Hindus generally represent mount Méru of a conical figure, and kings
were formerly fond of raising mounds of earth in that shape, which they venerated like the divine Mēru, and the Gods were called down by spells to come and dally upon them. They are called Mēru-śringas, or the peaks of Mēru. There are four of them either in, or near Benares: the more modern, and, of course, the most perfect, is at a place called Sār-nāth. It was raised by the son of an Emperor of Gaur, in Bengal, with his brother, in the year of Vicramaḥīṭṭa, 1083, answering to the year of Christ, 1027, as mentioned in an inscription lately found there. This emperor had, it seems, annexed Benares to his dominions, for he is reckoned as one of the kings of Benares, under the name of Budd’ha-sena. This conical hill is about sixty feet high, with a small but handsome octagonal temple on the summit. It is said, in the inscription, that this artificial hill was intended as a representation of the worldly Mēru, the hill of God, and the tower of Babel, with its seven steps, or zones, was probably raised with a similar view, and for the same purpose.

I observed before, that the Hindus place Jambu within these seven inclosures, while the heterodox Baudd’hists insist that it is without, and that these seven ranges of mountains, or dāvipas, pass between it and Mēru. As these zones, ranges, and inclosures are impossible, and, of course, never existed, they are to be rejected: but the countries, and islands, after which they were denominated, and through which they are supposed to pass, probably existed with their surrounding seas. The Nubian geographer is the only author, I believe, who has connected the seven climates with as many seas, or rather bays, and gulfs, as he calls them.

IV. The first, or dāvipa of Jambu, commonly called India, was formerly an island, as it appears
from the inspection of the country. The British provinces along the Ganges from Hari-dwär, down to the mouth of that river, was formerly an arm of the sea: and, in the same manner, toward the West, another arm of the sea extended from the mouth of the Indus to Hari-dwär, and there met the other from the East. A delineation of the Northern shores of India could not be attended with much difficulty, as they are, in general, sufficiently obvious. The sea coast may be traced from the Neelgur mountains to Rájamáhl, where it turns suddenly to the West. There the shore is bold, and rises abruptly, forming a promontory, consisting chiefly of large rounded stones, irregularly heaped together, but these irregular heaps may be only the ruins of more regular strata in the mountain. These stones are, in general, of an oval, yet irregular shape, about two feet long, sometimes three. Their superior and inferior surfaces are somewhat flattened, and, in some instances, I thought I perceived, that one was concave and the other convex. I found, also, there some Volcanic nuclei above one foot and a half in diameter: in one that was broken the interior coats were very obvious: the outward surface was remarkable for numerous cracks and fissures, some very deep, and all forming together a variety of irregular figures. This I found at the foot of the hill, near the Sácri-gully pass; unfortunately, I am not sufficiently acquainted with Natural History to enter upon such a subject; and I shall conclude with observing, that I conceive the cascade of Muti-jírná, near this place, to be the remains of the crater of a Vulcano. This I mentioned with a view to engage the attention of persons better qualified than I am, for such enquiries.

* In consequence of this, Mr. Samuel Davis, some time ago, requested a German gentleman, well skilled in Natural His-
From Rájímáhí, the shore trends towards the West, forming several head-lands; the principal of which are Mongheir, and Chunar. From thence it goes all along the banks of the Jumna to Agra, and to Delhi, where it ends, forming two small rocky eminences; and then turns suddenly to the South West; and forming an irregular semi-circle, it trends towards the Indus, which it joins near Baccar, at the distance of about four coss from that place, and one from Lohri, or Rohri, where, suddenly turning to the South, it goes towards Ranipoor, sixteen coss from Rohri, and four from Gunmol on the Indus. This account is from Captain Falvey, who visited that country about the year 1787. From Delhi to Baccar, in a direct line, there are no mountains, for the hills remain to the South of this line, forming an immense curve. Thus, from the mouth of the Indus to that of the Ganges, round Delhi, it is an immense flat and level country. The beach of the shores to the North, at the foot of the snowy mountains, and to the South, round the island of India, in ancient times, is covered with pebbles, some of the most beautiful I ever saw. But the greatest part of them are not real pebbles; they are only fragments of stones, marble, and agate, rounded and polished by mutual attrition, produced by the agitation of the waves. It seems as if the waters, which once filled up the Gangetic provinces, had been suddenly turned into earth: for the shores, the rocks, and islands, rise abruptly from the level; and are everywhere well defined, and strongly marked; except where the
tory, and who was going upon the Ganges, for the benefit of his health, to stay at Rájímáhí, and ascertain, whether these were the remains of a Vulcano or not. That gentleman, whose name I do not recollect now, having maturely examined every particular appearance about Mutí-jirná and Rájímáhí, wrote a short essay, in which he proves these appearances to be Vulcanic, and the cascade to be the undubitable remains of the crater of a Vulcano.
surface of the adjacent level has been disturbed by the incroachments of rivers, and torrents from the hills in the rains, or by the industry of man. This I noticed particularly about Birbhoom, and to the South-east of Chunar. What we call the hills in this country, and which appear such, from the immense plains below, are, in reality, the table-land of old India. In the Gangetic provinces no native earth is to be found, and the soil consists of various strata of different sorts of earths, in the greatest confusion, the lightest being often found below the heaviest. The deepest excavation, that ever came to my knowledge, was made, some years ago, near Benares, at a place called Comowl^, within a furlong, I believe, of the Ganges, by some gentlemen who were erecting some indigo works. They pierced through an amazing thick stratum of stiff earth, without obtaining water. They found then several beds of mould and sand, remarkably thin; then at the depth of about ninety-five feet, they arrived at an old bed of the Ganges, which consisted of a deep stratum of river sand, with bones of men and quadrupeds. They were supposed to be petrefactions; from their extraordinary weight, though they preserved their original texture. The human bones were entire, but those of quadrupeds were broken, and bore evident marks of their having been cut with a sharp instrument. This bed was exactly thirty feet below the present bed of the Ganges. Below this stratum of sand they found another of clay; and below it, some mould: then, at the depth of about one hundred and five feet, they found a bed of fine white sand, such as is found on the sea shore. Under this they found a bed of the same clay and earth as there was above: and they were relieved from their labours, by a copious stream of fresh water. The sight of the sea sand gave me some hope of finding some marine productions, but I was disappointed: which shews
that this bed of sand was merely adventitious, and had been brought down by the river from the shores to the lower parts of its bed; and that the old bottom of the sea was considerably below. The same appearances, with human bones, have been found lately at different places, in digging wells near the Ganges, and generally at the same depth nearly.

To ascertain the quantity of the declivity, both of the country and of the bed of the Ganges, would be useful and entertaining: but I have nothing but conjectures to offer on this subject. When we consider the numerous windings of this river, we may safely conclude, that the declivity cannot be considerable. It is greater from Hurdatwar to Allahabad, and through the country of Oude, than any where else. From Allahabad to Sácri-gully, it appears to be trifling; but from the head of the Delta, where the banks are generally about thirty feet above the surface of the waters of the river, when at their lowest period, the declivity is uniform down to the sea (where the land is nearly on a level with it), for a space of two hundred and thirty miles: I have often observed, between Allahabad and Rájamáhl, that there was no sensible declivity in the surface of the waters of the river, when at their lowest period, for ten miles, in some places fifteen, and even twenty in others. For since there was no sensible current in the river, when the winds were silent, there could be no declivity. Besides, the river Cosa, which fell into the Ganges formerly opposite Rájamáhl, has altered its course, and joins this river twenty-five miles higher up, which is the distance between Nabob-gunge and its present mouth. If the declivity was very considerable, this could not have happened. In the Western parts of the Gangetic provinces there are two de-
clivities, one from the North and the other from the West, in consequence of which the rivers flow in a compound direction toward the South-east. But as you advance toward the East, the declivity from the West toward the East decreases gradually, and of course the rivers incline more and more toward the South, till the declivity from the West, disappearing entirely, they run directly South into the Ganges. The rivers in Bahar, to the South of the Ganges, run also directly North into the Ganges.

This inland-sea being narrower at the bottom, near Hardwâr, was of course sooner filled up; and the table land of old India, about Delhi, is very little above the level of the country. In the time of Bhagirat'ha, the Gangetic provinces are represented as uninhabitable, except in the upper parts of the country, where Satyavratta, or Noah, is said to have generally resided. Bhagirat'ha went to Hardwâr, and obtained the Ganges, led her to the ocean, tracing, with the wheels of his chariot, two furrows, which were to be the limits of her incroachments. The distance between them is said by some to be four coss, and according to others four Yojanas; and the Ganges has never been known, it is said, to transgress on either side. This legend is of great antiquity, as it is mentioned by Philostratus in his life of Apollonius. The Ganges, says he, once nearly overflowed all India (the Gangetic provinces); but his son directed its course towards the sea, and thus rendered it highly beneficial to the country. Thus we read in the history of China, that the Hoangho formerly caused great devastations all over the country: but the emperor Yu went in search of its source, from whence he directed its course to the sea. Hercules, at the command of Osiris, brought the Nile from Ethiopia; this Christians
and Musulmans formerly attributed to Enoch, or Idris. Bhagiratha thus brought the Ganges to a place on the shores of the ocean, called Gangasagara, where it was made to discharge its waters through seven channels; but, according to others, through one hundred. The first number is mentioned by Mela, and the other by Apuleius.

Eois regnator aquis-in flumina centum,
Discurrir, centum valles illi, oraque centum,
Oceanique fretis centeno jungitur amni.

"This king of the Eastern wave runs into a hundred streams; with a hundred mouths, through a hundred channels, like so many vallies; and joins the ocean through a hundredfold stream."

The Ganges, advancing toward the ocean, was frightened, and fled back through one hundred channels, according to the Pauranics; and through this exercise she goes twice every day.

This happened at a place called Purinva-Sagara, or old Sagara; for the new Sagara is in the island of that name near the sea, and the old one is near Fulta, close to a place called Mund'a-gach'ha, or Moragatcha, in Major RenneL's Atlas. There is an insignificant stream very often dry, which is the true Ganges, which divides its waters into seven small rivulets, some of which are delineated in the Bengal Atlas: from this circumstance, the Ganges is called S'at-muchi-Gangá in the spoken dialects, or with seven mouths. When she is called S'atu-muchi, or with one hundred mouths, this implies her numerous channels, through the Sunderbunds. The old Sagara, probably the Oceanis of Diodorus the Sicilian, is now about fifty miles from the Southern extremity of Sagar island; and
this distance shews the encroachment of the land upon the sea, since the days of Bhagiratha, who lived above two thousand years before Christ, according to the genealogical scale prefixed to my essay on the chronology of the Hindus. The new Sāgara was originally on the sea shore, but it is now five or six miles from it, toward the East, and many more toward the North. It is to be wished, that the era of its foundation could be ascertained, as it would enable us to form some idea of the gradual progress of the encroachments of the Delta upon the sea.

There can be no doubt, but that the factitious soil of the Gangetic provinces, and of the Panjāb, has been brought down by the alluvions of rivers from the countries to the North of India. The quantity of earth thus brought down must have been very considerable at a very early period; but it is very trifling at present, for these alluvions have left nothing but the bare rocks, with such parcels of ground as were out of their reach, from their being supported and protected by stony ramparts. The country between the ranges to the North of India is a table-land, and forms, as it were, so many steps, as mentioned in the Trai lokya-derpana, and by the Paurāṇics. This circumstance was ascertained by Mr. Samuel Davis, who went as far as the first range. This was also confirmed to me by natives, with respect to other parts of the country, as far as Cashmir. On these table-lands are also various peaks and mountains; and the beds of the rivers look like so many ravines of an enormous size.

V. By the dwipa of Jambu, the Paurāṇics understand, in general, the old continent, but the followers of Budhā, in Tibet, Ava, and Ceylon,
understand India; and many passages from the Purâñas, prove that it was originally understood of India only.

The dwâpa of Jambu, or India, is called also Câtyâ-dwâpa, or the island of the virgin or damsel, daughter of king Bharata, the fifth from Swâyambhuva, or Adam. Her name was Ila, or the Earth: this was also the name of the daughter of Satyavrata, or Prithu; for though the Earth was his wife, she became also his daughter. The sea surrounding Jambu, is called the Lavanasamudra, or salt sea. It would have been highly imprudent for the Paurânicos to have placed there seas, either of milk or honey.

The second dwâpa, is that of Cus'a, thus called either from a sage of that name, or from the grass Cus'a, or Poa, supposed to grow there plentifullly. It includes all the countries from the Indus to the Persian gulf, and the Caspian sea, which probably the Paurânicos made the limits of that country, or dwâpa, and afterwards supposed to form a watery belt round the zone of Cus'a, under the name of sea of Surâ or Irâ, or sea of intoxicating liquors. The origin of this denomination may possibly have some affinity with Iran, and the Sur or Assur of scripture. It is probable that Sur and Assur were once considered as synonymous; if not, then Sur, or Syria, certainly extended once from the shores of the Mediterranean sea to the gulf of Persia, and even included the greatest part, if not the whole, of Arabia. The dwâpa of Cus'a is the land of Cush of scripture, at least, part of it. Cus'ha should be pronounced nearly like Cusha, but not quite so forcibly, like the two ss in the English word cession. The third dwâpa is Placsha, or the country abounding with fig-trees. It is called
Palangshu by the mythologists of Bootan, and included the lesser Asia, Armenia, &c. The name still remains in Placia, a town in Mysia, the inhabitants of which, with those of Scylace, had a peculiar language, which was the same with that spoken by the Pelasgi of Crestone, or Crotone, above the Tyrrhenians, in Italy; and by the Pelasgi, who lived on the shores of the Hellespont, according to Herodotus. Thus the denomination of Placsha, or Palangshu, seems to be the same with Placia, and Pelasgia; and the Pelasgi came originally from the lesser Asia. It is bounded by the sea of Iceshu, or juice of the sugar-cane, and which seems to be the Euxine sea: but this will be the subject of a separate article, when it will appear, that the Pauranics have confounded the Ask, or Ash-tree, with the Iceshu or sugar-cane, as this tree produces also a sweet juice, famous in the Edda, and called, when boiled, asky, by the old Scythians (according to Herodotus, who has, however, strangely misrepresented the tree from which this sweet juice was procured,) and which was afterwards boiled into a hard substance, like that of the sugar-cane, which is called gur in India. Hence the Iceshu sea, is called also in the Puranics, the sea of Guda in Sanscrit, and pronounced gur in the spoken dialects.

The fourth dwīpa is Sālmali, Sālmala, or Sālmalica, or the country of the willow *, and of the lord of the willow Sālmalasvāra, Sālmalicesa, the same with Zamolxis, called also, more properly, Salmolxis and Zamolxis. It extended from the Euxine to the shores of the Baltic and Adriatic seas.

* The word Sālmla is generally understood to signify Bombay; but it signifies also such trees as produce cotton unfit for spinning; and I shall shew, when I come to treat of Sālmalādwīpa, that it is to be understood there of the willow.
It is surrounded by the sea called Sarpi, Prita, or clarified butter.

The fifth dwipa is called Crauncha, and Craunda, which included Germany, France, and the Northern parts of Italy. Crauncha is the same with Cronus, confounded with Saturn by Western mythologists; and the Baltic and Adriatic seas were, probably, called Cronan, from the dwipa of Craunca. It is surrounded by the Dadhi-Sagara, or sea of curds.

The sixth dwipa is called Saca, and Sacum, and includes the British isles. It is surrounded by the sea of milk, or the white sea; Cshirabdhi and Dugdhabdhi, Cshira-Sagara, or Cshira-Samudra, Cshira-Salila, Cshiranidhi, Cshiranava. It is called also Amritabdhi, or sea of Amrita, synonymous with Amalaci, from which they made Amalchium in the West. It is called, also, Somasailabdhi, or the sea of the mountain of the moon.

The seventh dwipa is Pushcara or Ice-land, surrounded by the Svaduda, Swadudaca, Swadujala, Payodhi, Toyabdhi, or the sea of fresh water: for it was, also, the opinion of the ancients, that the furthermost ocean was of fresh water: Scythicus Oceanus dulcis est, says Pliny.

The Western ocean is, in general, called Mohoddabdi and Maharnava, or the great sea; and in the Revachandaa, the Cshira-Samudra is said to come down as low as the parallel of Himavân, or the snowy mountains, or about thirty degrees of latitude North. Calanus seems to allude to these wonderful seas, when he said to Alexander's messenger, that formerly there were springs of water, others of milk, honey, wine, and oil; but
that in the present wicked age and degenerated times, they had disappeared. This is also the opinion of many divines in India, who believe, that in Culti-yuga these seas have disappeared, or are turned salt, and bitter, and also, that the white island, is become black, on account of the sins of mankind. One iscritus, to whomCALENUS was speaking, was probably unwilling to give credit to these seas of milk, wine, and honey, but could have no great objection to springs only of the same. One of the seven seas is called Cshaudra-Ságara, or sea of honey, I believe, in the Sidd‘hanta-Siromeni. There is another division of the world into seven dwípas, more complete than the preceding, but its origin is not mentioned. Their names are, Jambu, in the center; to the West, reckoning from North to South, are the dwípas of Varáha Cus‘a and Sanc‘ha; to the East, reckoning from South to North, Yamala, or Malaya, Yama, and Anga. The dwípas of Cus‘a and Yama, are acknowledged to be East and West with respect to India. Jambu here appears again in a different light. It includes India, the elevated plains of Tartary, and mount Méru, and extends towards the West to the Caspian sea and the Persian gulf. The followers of Jina, in India, represent Jambu nearly in the same light, except that they make it larger, and seem to extend it as far as the shores of the Euxine and Mediterranea1 seas. Varáha dwípa being situated in the North West quarter of the old Continent, is Europe, as will appear more fully in the course of this work. The dwípa of Cus‘a, according to this new division, includes the lesser Asia, Armenia, Syria, and Arabia. There seems also to be a third dwípa of Cus‘a near the equator, which includes Ethiopia, &c. The Pauránic account plausibly for these three different situations assigned to Cus‘a, by supposing it owing to the
successive emigrations of the original inhabitants of that country; and the first and second Cusa they consider but as one and the same.

The third dwipa is that of S'an'cha, or Africa, of which they know but little, and nothing beyond Ethiopia, or rather Abyssinia and Egypt, with the Eastern shores. It retains, in great measure, its Sanscrit name; an extensive part of that coast being called Lengh, and Lengh-bhar, to this day. But Ptolemy extends it as far as cape Gardafui, to the South of which he places another cape, called Lingis, or Singis extrema. The denomination of S'an'cha is obvious also in the names of Singis, Lenghistan, and perhaps Lengitana, Langiro, Lanhaga, Lenighi, and even perhaps Senegal, from the Sanscrit Sanc'hala, in a derivative form; and the Troglodytes are called to this day Shangalas.

S'an'cha-dwipa signifies the island of shells, and the natives, according to Strabo, used to wear large collars of them; but, according to the Paurânicês, the inhabitants used to live in shells: probably in caverns, hollowed like shells, or compared to shells. The famous demon S'an'chasura, lived in a shell. When Crîshna killed him, he took the shell in which he lived, and which is now become one of Vishnu's insignia. This strange idea was not unknown to the Greeks, who represent young Nerites, who is one of the Cupids, as living in shells, on the shores of the Red sea. Sânc'ha-dwipa is then synonymous with Troglodytica of the ancients. The Troglodytes, or inhabitants of Caves, are called in scripture Sukim, because they dwelt in Suca, or dens; but it is probable, that the word Suca, which means a den only in a secondary sense, and signifies also an arbour, a booth, or a tent, was originally taken in the
sense of a cave, from S'anc'ha, and afterwards used to imply any fabric to dwell in. Thus the word den is obviously derived from the Sanscrit d’hâni, or den, in the language of Tibet, in which it signifies any place, house, or even country to live in. The Sukim, or Sukkium, were a powerful nation in the time of Rehoboam, for they accompanied Shishac in his expedition against Jerusalem; and we find their descendants, in the third century of the Hejira, crossing Arabia, and invading Irak-Arabi, or the country about Babylon, under their king Saheb-al-Zeng, or the lord of Zeng, who appears as a successor of the famous Sanc'hâ-muc’ha-nâ’ga, a giant in the shape of a snake, with a mouth like a shell, and whose abode was in a shell; and who had, as usual, two countenances, that of a man, and another of a snake. He was killed by Crîshna; but his descendants and subjects, in similar shapes, still remain there. He is called also Pa’ncha-janya. The breath of the Sanc'hâ-nâ’ga is believed, by the Hindus, to be a fiery poisonous wind, which burns and destroys animals and vegetables, to the distance of a hundred Vojanas round the place of his residence: and by this hypothesis they account for the dreadful effects of the Sâmum, or hot envenomed wind, which blows from the mountains of Hubab, through the whole extent of the desert. The sage Agastyâ, who is supposed to live in the South West, or Abyssinia, put an end to this evil, and even reduced the serpent so much as to carry him about in an earthen vessel. This legend is current in the Western parts of India, but, how far it is countenanced in the Purâñas, I cannot say. The Hindus, in the Western parts of India, are remarkably well acquainted with the superstitious monuments, rites, and legends of the Musulmans in Arabia and Egypt, such as the serpent Heredi, the black stone in the Caaba,
the two pigeons destroyed by Mohammed, and the impression of a foot on a stone there. These, plausibly enough, they claim as their own property, and have traditionary legends, purporting to be grounded on the Paurāṇīs, though, perhaps, not expressly found there. They say, there was formerly a great intercourse between them and Egypt, Abyssinia, and Arabia, where there are Hindus and Brāhmens, even to this day, as well as all over Persia, and even in Georgia. Fakcers occasionally go there; and certain it is, that the famous Urd'ha-Ba'hu, who travelled to Moscow, and died lately at Benares, attempted to go to Egypt, but he went no further than El-Catif and Baharein, on the Western shores of the Persian gulf, being deterred from going further. I have made mention of him in my essay on Sami-Ramis, called Sami'-De'vi' by the Hindus. Ptolemy saw many Hindus at Alexandria, and they used to visit the temple of Maha'-Bha'ga'-devi', at Bambyke, or Mubog, in Syria, according to Lucian, as cited by the authors of the ancient universal history.

The mountains in which S'anc'ha'sura lived, are called to this day Hubab in Arabic, or the mountains of the serpent; and the people of these mountains have, according to the Abyssinian traveller, legendary traditions of a snake, who formerly reigned over them, and conquered the kingdom of Siré. They are famous, with their serpentine tribes, in Oriental tales; and in the Arabian Nights, we read of the miraculous escape of Sinbad from the devouring mouth of that dreadful race, who lived in caves among the mountains. Near that country he was exposed to many dangers from the birds called Rocks, or Simorgs, the Garidas of the Paurāṇīs, whom Persian roman-
ers represent as living in Madagascar, according to Marco Polo. The serpent 'Sancha-Naga is now called Heredi in Egypt. The Muslims insist, that it is a Shaikh of that name, transformed into a snake; the Christians that it is Asmodeus, mentioned in the book of Tobit, the Ashmugh-div of the Persians. There, in the dwipa of S'an'cha, is the capital city of Naisrit, or Palli, called Črīshnānganā, being situated on the river Črīshna, or Črīshnānganā, that is, with a black body in a human shape; for rivers have two countenances. Nairrit had a famous elephant called Čumuday, with the title of Nairrityādigaja, or the elephant of the South West quarter, or Nairrit. Wonderful stories are related of him; and there is no doubt but some of them are mentioned in the Purāṇas, or some other books; but I could not find them. This famous elephant is, however, mentioned in Lexicons, and lived in S'an'cha-dwipa, with his tribe of giants in the shape of elephants, or rather with two countenances. The names of several rivers in that country are pure Sanscrit, and obviously allude to the ancient inhabitants, in the shape of elephants, living and sporting on their banks. Thus the Aistamenos is from Hastimān, or Hasti-mati, full of elephants. The Mareb was called Astosulas, from Hasti-sabhā, because their chief held his court there. Astaboras, or Astaboras, was also the name of another river there, from Hasti-vara, or Hasti-bāra, the country along its banks being full of elephants, whose abode it was.

There the unfortunate Sinbad, according to the author of the Arabian Nights, was once more in the most imminent danger amongst this Elephantine tribe, on his return from Seren-dip, or rather Serandah, or Madagascar, called also Ranch, and in the Purāṇas, Harīta.
In my essay on Egypt, I mentioned the unfortunate affray between the son of Cussin, and some of these elephants, in consequence of which he became a Caunapas, or like a dead corpse. I cannot ascertain whether the whole legend be genuine or not: certain it is, that in Lexicons the Carenapas are mentioned as belonging to the train and retinue of Nairrit, or Palli, and of course they lived either in Ethiopia or in Egypt.

The dwipa of S'anch'a is supposed, by the Pauränicś, to join the island of Sumatra, or of the Moon. This mistaken notion has been adopted by Ptolemy, and after him by Oriental writers. In the beginning of the Brahmāṇīda-parāṇī, Lanca, or the peninsula of Malaya, and Sumatra join the island of S'anch'a, or Zengh. Samāsthitam, adhering to, is a participial form, answering to con-stitum in Latin, and sun-istamai in Greek. This is understood of the island of Mandara, or Sumatra; for it is positively declared, that Mahā Lanca, or Malacā, and Sumatra, are separated by a strait called Lancā-dwāra, or the gates of Lanca. Ptolemy, however, supposed it was the peninsula of Malacā that was thus joined to Africa; and, for this purpose, makes the shores take a most circuitous turn. El Edrissi asserts equally, that the isle of Malai joins, toward the West, to the country of Zengh. The inland, or Mediterranean sea, is called Yāmōdadhi'ē, or the sea of Yama; and by Ptolemy Hippados, perhaps from the Sanscrit Upābd'hi, which would imply a subordinate or inferior sea. This expression would be perfectly grammatical, but I do not recollect that it is ever used. Hippados may also be derived simply from Abūd'hi, pronounced Apūd'hi, or the sea. The tract of islands called Raneh by Arabian writers, and including Madagascar and the surrounding islands, is obviously
the dwipa of Harin'ā, mentioned in the Bhāgavata, along with S'ancha, in the South-West quarter of the old continent. This island being also called in Arabic, the isle of the Moon, has occasioned some confusion. Doctor Vincent has thrown much light on this subject, in his learned and elaborate treatise on the Periplus of the Erythrean sea; by which it appears, that the notions of the Arabs, relating to these seas, are more conformable to the Purāńas than Ptolemy's description. The three dwīpas to the Eastward, are Yamala, or Malaya, now the peninsula of Mālacā, and the adjacent islands; as for the dwīpa of Yama, its situation is rather obscure; the third is Anga-dwīpa, in the North-East, by which they understand China. There is very little about it in the Purāńas; and, with regard to the dwīpas of Yama and Malaya, they will be the subject of a particular paragraph.

VI. There is another division of the old continent, extracted chiefly from the Bhāgavata, the Brahmanīḍā, and Brahmā-Puranas, which represent the world under the emblem of a Nymphaea, or Lotos, floating on the ocean. There the whole plant signifies both the Earth and the two principles of its fecundation. The stalk originates from the navel of Vishnu, sleeping at the bottom of the ocean; and the flower is described as the cradle of Brahma', or mankind. The germ is both Mēru and the Linga: the petals and filaments are the mountains which encircle Mēru, and are also the type of the Yoni; the four leaves of the calyx are the four vast dwīpas, or countries, toward the four cardinal points. Eight external leaves, placed two by two, in the intervals, are eight subordinate dwīpas or countries.
The four great countries, or Maha-dwīpas, are Uttara-curu to the North, Bhadrasva to the East, Jambu to the South, and Cetumala to the West. In the intermediate spaces, in the North-West, are Swarna-prasīṭha, or Ireland, and Chāvdra-sucā-Avantana, or Britain. In the North-East are Ramanaca and Mandara; these are unknown, and have been placed there probably for the sake of symmetry. In the South-East, Lanā, the peninsula of Mālaca, Sinhāla, or Ceylon: in the South-West there is Harinā, the Ranēh of Arabian authors, now Madagascar; and Pāncha-janīya, or Sanc'ha; as may be seen in the accompanying delineation of the worldly Lotos.

The usual division of the known world is into nine chan'das, or portions, exactly of the same size, as to superficial contents, but of very different figures and dimensions. In the center of the old continent, on the highest and most elevated spot, is the division called Ilāvratā, or the circle of Ila: to the East is Bhadrāsva, and to the West Cetumāla, or simply Cetu. Toward the South are three ranges of mountains, and as many to the North; between them are four divisions, two between the three ranges in the South, and as many between those in the North. The names of the ranges, to the South of Ilāvratā, are Himāchala, Himādrā, or the snowy mountain: to the North of this range is the second, called Hema-cūṭ'a, from its golden peaks; the country, or division, between them, is called Cīmpu-rusha, or Cinnara-chan'ḍa. The third range is called Nishad'ha; and the country between this and Hema-cūṭ'a, is called Harivarsham, or Harivardha.

To the North of Ilāvratā are the Nīla, or blue mountains: to the North of this range is another.
called 'Sveta, or the white mountains: the country between these two is called Ramyaca: the third and last range is called 'Sringa-van: and the country between the two last, is Hiranyamaya, or Hiran'maya. These six ranges extend from sea to sea, and are of different length, according to the latitudes they are in. The length of the two innermost ranges, and of course of the longest, is equal to the breadth of Jambu-dvipa, or 100,000 Yojanas; the length of the two middle ranges, 'Sveta and Hema-ci'ta, is 90,000 Yojanas: the two outermost, 'Sringa-van and Himáchala, are 80,000 Yojanas in length. These mountains are 2000 Yojanas broad, and as many high, or about 10,000 miles: we are informed, in the Càlicà-purán'a, that it was so formerly; but that since, the mountains have gradually subsided, and that the highest is not above one Yojana in height, or less than five miles.

According to the Trai-locya-darpan'a, these ranges do not extend from sea to sea, and occupy little more than the fourth part of the breadth of the old continent, which is, in that treatise, said to be equal to 60,000 Yojanas. The length of the two outermost ranges is declared to be 4202 Yojanas; the two middle ones 8416, and the two innermost 16,832. This is the more reasonable, as these three ranges, very plain and obvious in the North of India, are soon confused together, and disappear at some distance from it; and as 150,000 Yojanas, in the Trai-locya-darpan'a, are considered as equal to 180 degrees of longitude, the first range will extend East and West, about two and twenty degrees of longitude, which is the utmost breadth of India. The difference between the two other ranges, and the first, is disproportionate and inadmissible; and the proportion given in the Purán'as
of their respective lengths, is more natural, being in the ratios of ten, nine, and eight. In this manner the three ranges are, in a great measure, confined to the original Jambu, or India.

The country, to the South of the Southernmost range, is called Bhārata, and originally was confined to India; but it is also enlarged, along with Jambu, and is now made to extend from the shores of the Atlantic to those of the Eastern ocean.

In the same manner, the country beyond the Northernmost range, as far as the Frozen ocean, is called Čuru, or Airāvata, being the native country of the famous elephant of Indra, called Airāvata, and of his numerous tribe and descendants, whose eunucæ, or spoils, are to be found in vast quantities in the Northern parts of the old continent. These nine divisions are said to be perfectly equal in superficial contents, though of different shapes: and the only difficulty in delineating a general map of the world, is to divide the whole surface into nine equal parts, one of which, in the centre, is to be a perfect square, and out of the eight others, every two divisions are to have exactly the same figure and dimensions. The accompanying map of Jambu, which is very common, is supposed to be drawn on these principles; but whether it be very exact in that respect, I shall not determine, as I am by no means willing to go through the necessary calculations, which, after all, would prove of no use. In consequence of this arrangement, the first range, or the snowy mountains, lies under the parallel of fifty-two degrees of latitude; the second under that of 65° 48'; and Nishadha in 76°. Méru is here supposed to be the North pole. The three other ranges beyond Méru are exactly in the same latitudes,
reckoning from the opposite side of the equator, which circumscribes the Northern hemisphere. But Mēru is not the North pole; it is true that it is the Nava, Nobeh, or under the ninetieth degree, not from the equator, but from the horizon; or, in other words, it is the zenith and centre of the known world, or old continent, not including the sea; and this centre, according to the Paurāṇics, in the time of Cosmas Indoplfustes, in the middle of the sixth century, was said to be exactly between China and Greece. We read constantly in the Purāṇas of countries, mountains, and rivers, some to the North, others to the East, or to the West of Mēru; the country of North Curu, beyond Mēru, is repeatedly declared to be to the South of the Northern ocean. All these expressions shew very plainly, that by Mēru, the Paurāṇics did not originally understand the North pole, which they call Sidd'hapur, which place, the astronomers say, cannot be under the North pole, because it is in the track of the sun; for when the sun is there, it is midnight at Luncá and in India; it must be then under the equator. This is very true; but we are to argue, in the present case, according to the received notions of the Paurāṇics, who formerly considered the Earth as a flat surface, with an immense convexity in the centre, behind which the sun disappeared gradually, descending so as to graze the surface of the sea at Sidd'hapurā. In the Brahmānīda Purāṇa section of the Bhuvana-Cos'a, it is declared, that one-half of the surface (vedi) of the earth is on the South of Mēru, and the other half on the North. All this is very plain, if we understand it of the old continent; one half of which is South of the elevated plains of little Bokhāra, and the other half to the North of it. Then, twelve or fifteen lines lower, the author of the same Purāṇa adds, and
these two countries, South and North of *Méru*, are in the shape of a bow; this is to be understood of their outermost limits or shores.

Another irrefragable proof, that by *Méru* we are to understand the elevated plains of little *Bokhāra*, are the four great rivers issuing from it, and flowing toward the four cardinal points of the world; three of which are well known to the *Hindus*. These rivers are the *Ganges*; the *Sītā*, flowing toward the East, and now called the *Hara-Moren*; the *Bhadrā* to the North, and probably the *Jenisea* in *Siberia*; the fourth is the *Apara-Ganīḍicā*, or Western *Garīḍicā*, called more generally *Chacshu*. It flows toward the West, and its present name, among the natives, toward its source, is *Coesha*, and from the former is derived its *Greek* appellation of *Oxus*.

Thus the distance of *Méru* from the equator is reduced from ninety degrees to forty-five; the distance from the equator at *Lancā*, to *Sidd'ha-pura*, or the North pole, is reduced from one hundred and eighty to ninety degrees; and every distance from North to South, in the *Hindu* maps, must be reduced in the same proportion.

Thus the snowy mountains, to the North of *India*, and placed in the map in the latitude of fifty-two degrees, are brought down lower into twenty-six degrees, the half of fifty-two: and they really begin that latitude near *Assam*; but they are made, most erroneously, to run in a direction East and West. *Strabo* descants a great deal upon the direction of the mountains to the North of *India*; from *Hipparchus* and *Eratostenes*; and concludes

*Strabo*, lib. II, page 118 and 122.
by saying, that the obliquity of the direction of these ranges was to be retained in the maps, exactly as it was in the old ones. The whole reductions are thus exhibited in the following table:—

<table>
<thead>
<tr>
<th>Range</th>
<th>Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Pole</td>
<td>90°</td>
</tr>
<tr>
<td>66° parallel of 66°</td>
<td></td>
</tr>
<tr>
<td>128°</td>
<td>64°</td>
</tr>
<tr>
<td>114° 2'</td>
<td>57° 1</td>
</tr>
<tr>
<td>104°</td>
<td>52°</td>
</tr>
<tr>
<td>90°</td>
<td>45°</td>
</tr>
<tr>
<td>76°</td>
<td>38°</td>
</tr>
<tr>
<td>65° 8'</td>
<td>32° 3'</td>
</tr>
<tr>
<td>52°</td>
<td>26°</td>
</tr>
<tr>
<td>Snowy mountains</td>
<td></td>
</tr>
</tbody>
</table>

Instead of the numbers beyond Mēru, their complement to ninety is to be used.

But as Mēru, or the centrical point between the sources of the four great rivers, is not in the latitude of forty-five degrees, a further correction must take place. No precision can be expected here; but this centrical point cannot be carried further North than thirty-nine or forty degrees; and the three Northern ranges will fall in the following latitudes.

Mēru in 40°; the Nila range in 47°, Sweta in 52°, and Śringā-van in 59°.

The summit of Mēru is represented as a circular plain, of a vast extent, surrounded by an edge of hills. The whole is called Ilavratta, or the circle of Ilá, and considered as a celestial Earth, or Śwaragabhūmi; and it is thus called to this day, by the people of Tibet, the Chinese, and the Tartars; and, like the Hindus, they have it in the greatest veneration, worshipping its encircling mountains whenever they descry them. According to De Guignes, the Chinese call them Tien-c'han, and
the Tartars Kiloman, or the celestial mountains. In Tibet they call them Tangra, or Tangla, according to F. Cassiano and Pura'ñ-gir; the latter accompanied the late Lama to China, and gave me an accurate journal of his march from Tissoo-Lumbo to Siling, or Sining. Tingri, in the language of the Tartars and Moguls, signifies the heavens; and even Tibet is called Tibet-Tingri, or the heavenly country of Tibet. The name of Tien-c'han is given by the Chinese to the mountains to the North of Hima: to the Southern part of the circle they give the name of Siove-c'han, or snowy mountains. This range, says De Guignes, runs along the northern limits of India, toward China, encompassing a large space, enclosed, as it were, within a circle of mountains*. The Southern extremity of this circle is close, according to the present Hindu maps, to the last, or Northern range, called Nishad'ha; and this is actually the case with the mountains of Tangrah, near Lassa, which is in the interval between the second and third range. According to F. Cassiano, the mountains of Tangrah are seen from the summit of Cambálá, several days journey to the Westward of Lassa. The famous Purañ-gir left them on the left, in his way from Tissoo-Lumbo to China, at the distance of about twelve coss, and did not fail to worship them. At the distance of seventy-seven coss from the last place, he reckoned Lassa to be about twenty coss to the right; twenty-three coss beyond that, he was near the mountains of Ninjink Tangrá, a portion of that immense circular ridge. In his progress toward the famous temple of Uljak, or Uzuk, called Souk in the maps, he saw them several times. Close to Ninjink-Tangra he entered the mountains of Lurkinh, called Larkin in the maps.

VII. This sacred mountain, or heaven-like country, made part, it seems, of the sacred cosmography of the ancients. The Jews had some notions of it, and called it the mountain of God: they afterwards, with great propriety, gave that name to mount Moriah. The Greeks had their mount Olympus, inaccessible but to the Gods; and I'da-vratta, or Ilá-vratta, signifies the circle of Ila, the Earth, which is called also I'da. Olympus is derived from the Sanscrit Ilápu, or Ilápus, the holy city of Ila, or Ida: thus it appears, that Olympus and Ida were originally the same. In remembrance of this holy circular space, the Greeks and Romans when wishing to build a town, marked out a circle, which the first called Olympus, and the others Mundus, from the Sanscrit Man'đa, a circle; they said also urbs orbis, which is a translation of manda, in the language of the Gods, into that of mortals. According to Du Përron, the Parsis are acquainted with such a mountain in the centre of the world; and so are the Musulmans to this day. It was not unknown to our ancestors, the Scythians; for they are introduced by Justin, saying, that their native country was situated on an elevated spot higher than the rest of the world, and from which rivers flowed in all directions. The Jews and Greeks soon forgot the original Mēru, and gave that name to some favourite mountain in their own country; the first to mount Sion, or Moriah. The Greeks had their Olympus, and mount Ida, near which was the city of Ilium, Aileyam in Sanscrit, from Ila, whose inhabitants were Meropes, from Merupa; being of divine origin, or descended from the rulers of Mēru.

This mountain was even known in Europe to a late period; for it is mentioned in the Nubian geographer, under the name of Moregar, from Meru-
giri, or Meru-gir, the mountain of Meru. It is described by him as of an immense height, circular, and enclosing several countries within.

This sacred mountain is called, by divines in Tibet, Rigbiel: hence Sosthenes, as cited by Plutarch*, instead of saying that Dionysius, or Bacchus, was born on mount Mérû, or Meros, says, that he was born on mount Argillus, which he places, it is true, either in Egypt or Ethiopia.

In the same author we find another ridiculous story about this mountain, under the name of the bed of Boreas, which he says was one of the highest peaks of mount Caucasus, and from which Jupiter hurled Saturn down into Tartarus. Mount Mérû is called, in the Deccan, the mountain, peak, Cúta of Boreca, or the pole Boureka, by Mr. Bailly, and other French authors. In the Tamuli language, and others in that country, the North is called Vádaca, Vádaburram, or Vádapurram, generally pronounced Váraca, &c. the North wind Váranâda, from the root Vada. In Sanscrit, Udac is the North, or Uttara. Vada signifies originally high, great, &c. and the North is called, in Sanscrit, Uttara, from its being supposed to be the highest point on the surface of the earth. The Greeks thus translated Cúta, the peak of Burraca, Badaga, Badaca, by the bed of Boreas; because Koité, in Greek, signifies a bed. This mode of translation seems to have been much in use among them; for they translated Deo-bán, the forest of the Gods, by Theon-painai, Deorum-pæae. The Atshâmi, a powerful tribe in the hills near the Ganges, by Astomi, or people without mouths.

* Plutarch de flum.
The Bittigi mountains of Ptolemy, in the Decan, are in the country of the Badegas, according to European travellers of the seventeenth century; and their language is called Badega. The inhabitants of that country are called, in the Tamuli dialect, Váducin; and by others Vaduca and Vadugas, but generally pronounced Várugás and Varugas; though in writing they retain the letter D, which has a peculiar sound between D and R, as in Sanscrit. Nonnus, in his Dionysiaca*, takes particular notice of mount Mêru, and of its circular surface on its summit. "Bacchus," says he, "or Crisîna, divided his forces into four armies; one he sent to the foot of the Northern mountain, with a circular summit, and surrounded with deep vallies shaded with trees; and from this peak, in Caucasiæ, issue many rivers, deriving their waters from Jupiter." This was Jupiter Pluvialis, the Indra of the Hindus, who holds his court on the summit of Mêru, which is called the Savarga, or heaven of Indra. To this mountain Euhemerus gives the name of Olympus, and very properly. It is emphatically called, as we have seen, the circle of Ilá, or Ídá, or Ilávratâ; it might be called also Ilápû, or Ílápûs, the city of the Earth, or Ilá-pus, from Ilá or Ilas, which sounds exactly like Ilas in Greek. Ilá was the son of Vaîvasvata-Manu, or Noah, and who, in his old age, resigned the empire of the Earth to him; and thus he became Ilá-pati, or Jijá-pati, the Lord sovereign of the earth, and Ilus the eldest, in Homer, lived near mount Olympus and Ída, in the city of Ilium, inhabited by Me-ropes.

Ilá', Ídá, and Irá, in Sanscrit, signify the earth;
and these three names are to be found in the Greek language: *Ilys*, or *Ilos*, signifies mud; *Era* is the earth; and *Ida* is the name of the goddess Earth, *Idéa mater*, both in Greek and the ancient Gothic. 

Athenagoras, as cited by Rudbeck*, informs us, that, according to Orpheus, water was first, and from it was created *Ilys*, or Earth, *in an unformed state*; *Ila*, or *Ila's*, was the son of Manu, or Noah, called also Mitra Varuna in the Puránas, or the friendly Varuna, or Neptune. According to Hesychius, Ilaon, a hero, was the son of Poseidon, the God of the sea. *Jyá*, in Sanscrit, is the Earth; and in Greek, *Aia*, *Gé*, or *Gaiá*, which last signifies earth, and also dust. Thus, in Sanscrit, *Ilá* is the earth, and *Aileyam* is dust and earth also. *Aileyam-pus* is synonymous with *Ilá-pus*, and is the famous city of *Indra*, and of the Gods; a *heavenly city*, which is really a terrestrial heaven. The followers of Alexander mistook a small mountain, between Cabul and the Indus, for the original *Méru*. This is called *Méru-śringa*, or the peak of *Meru*, in the Puránas, and is considered as a splinter of that holy mountain. There are many other hills thus called in *India*, besides artificial ones; and the Gods are supposed to come and sport there occasionally. 

The Greeks had likewise several holy mountains, called *Olympus* and *Ida*. Euhemerus calls it *Triphylan Olympus*, because *Jupiter Triphylius*, or Siva, with his *trident* (*trisul*), resides there, and fixed it on its summit. The *Trisul* is called Triphala, in the North-West parts of India, from the Sanscrit *Tri-phala*, which is rendered in Lexicons by *Tri-cantaca*, or having three points. The word *phala* was used in the West in that sense, and the obelisks in the circus were called *Phalæ*. But as

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* Volume II, page 466.
Tri-philios, in Greek, signifies three tribes or families, Euhemerus thought proper to translate it thus; besides, he found three nations and cities in the legends of India, which he might conceive countenanced his translation. The abode of Urânus was called Caclus, or Coiltus, by the Latians; and he is the same with Siva, called the God of Cailás, because he resides on Cailás, one of the three peaks on the summit of Meru.

Mount Meru is said to be of four different colours, toward the four cardinal points; but the Paurāṇīcīs are by no means unanimous about them; and the seas, through the reflection of the solar beams from each side, are of the same colours. The East, like the Brāhmaṇas, is of a white colour; the South, like the Vaiśyas, is yellow; Apara, the West, like the Śūdras, is of a brown or dark colour; and the North is red, like the Chātāriyas. But in the Haimavatānanda, Meru is said to be supported, or propped, by four enormous buttresses; that toward the East, is of pure gold; toward the South, of iron; to the West, of silver; and the buttress to the North, of copper. Thus toward the East it is yellow, to the South red, white to the West, and of a dark brown to the North. There are several other opinions, which I shall pass over with observing, that the Indian ocean is called Arunoda, or Arunodādhi, or the Red sea, being reddened by the reflection of the solar beams from that side of Meru which is of that colour; and Pliny nearly says the same thing*. I shall pass over the extravagant accounts of this famous mountain, represented by some as a cone, by others as an inverted one. In Ceylon, they say it is in the shape of an immense

* Pliny, Lib. 6. c. 23.
round column: in Tibet this column is said to be square; some of the followers of Jīna compare it to a drum, that is to say, they give it the shape of a barrel. This idea, however extravagant and absurd, prevailed once in the West, as we have seen before.

VIII. The rivers flowing from Ménu are four in number: there are four also in scripture; and we read, in the Edda, of four primæval rivers of milk flowing from the teats of the cow Audhumbla. In all these accounts, these rivers are only branches of an original one, called Swargangā, or Mandācīni, in the Purāṇas: in the Edda all rivers derive their origin from that called Ilver gelmer; but in scripture it has no name.

It rises from under the feet of Viṣṇu, at the polar star, and, passing through the circle of the moon, it falls upon the summit of Méru, where it divides into four streams, flowing toward the four cardinal points. According to Genesis, this river went forth, watering the garden of Eden, and of course winding through it; from thence it was parted, and became into four heads. The Paurāṇics use the same expression, but in a literal sense; and suppose that these four branches pass actually through four rocks, carved into the shape of four heads of various animals. The Ganges, running towards the South, passes through a cow's head; hence India is called the country of the Cow, its inhabitants are descended, according to some, from a cow, whence they are styled Gau-vansas, they were originally Go-pālas, or simply Pullis, or shepherds. To the West is a horse's head, from which flows the chacshu or caurus: and the inhabitants of the countries bordering on it, are of course Aśvās, or Tūrāngamas, horses or rather horsemen.
AN ESSAY ON THE

According to Scripture the house of Togarmah, or Thorgama, as he is called by Cedrenus and Syncellus, traded in the fairs of Tyre, with horses. Toward the East is the head of an elephant, from which flows the river Sitá: and to the North is a lion’s head, from which flows the Bhadrasamá; hence this country, the same with Siberia, is called the kingdom of the lions: and there was actually a powerful Tartarian tribe called the tribe of the lion.

The Bauddhists have no rivers on Mérú; but place the origin of them in the South-West quarter. The reason of this is, that they place the seven dwipas, or ranges of mountains, with their seas between Mérú, and India, or Jambu-dwipa. These seven seas, or rather the river of milk, winding seven times round Mérú, is the original river, which re-appears in the South-West, and there parting, becomes into four heads of animals, the same as in the Puránas. But the rivers are very different, being the Ganges, the Sind’hu or Indus, the Pahku or Brahmaputra, which springs from the head of an elephant; and for this reason upper Tibet is called the kingdom of the elephant, though there are no elephants there at present. The other river, toward the North, issues from a lion’s head, and is called Sitá: it is the Oxus.

These four rivers spring from the roots of the tree Jambu, of a most extravagant size. The Bauddhists seem to know but of one tree of knowledge, and granting all our wishes. The Pauránics have many, which they call Calpavṛṣka. There is but one in the Mosuical account, and the Musulmans acknowledge but one, which they call Tuba: and our ancestors boasted of the famous Ash-tree Ygdrásil. This river of milk, winding round Mérú, is not peculiar to the followers of Buddhist; I re-
member seeing in one of the Puránías, that the heavenly Ganges winds seven times round Méru: that is between that mountain, and the dwípa of Jambu. The Styx, according to mythologists in the West, went nine times round the world; for nine was a favourite number among them: and the ancient Goths reckoned nine worlds, or dwípas. The elevated plains of Méru are perhaps the highest spot, or at least the highest flat in the old continent. Its height toward India, and China, is prodigious: it is not so considerable toward the North, and is still less toward the North-west, where the ascent between the Lithinos-pyrgos or stone-tower, and the station of the merchants trading to China, is by no means very difficult. The Lithinos-pyrgos still exists under the name of Chalsatooon, or the forty columns; and is famous all over these countries. The station of the merchants is still their place of rendezvous to this day, and is called Tuct-Soleiman, or the throne of Solomon. The Lithinos-pyrgos is at the extremity of a small branch jutting out of a range of mountains to the left of the road, or to the North, and projects toward the South, and ends abruptly in the middle of a plain. Its extremity, consisting of a solid rock, has been cut into a regular shape, with two rows, each of twenty columns. The front part is in a very ruinous condition, and the upper row of columns remains suspended from the top: the columns below answering to them, with their entablature, having been destroyed. It is a most wonderful work, and ascribed by the natives to supernatural agents as usual.

At the distance of a day's march toward the East, is Hoshin, or Oshn, called also Oosh, or Owesh: there begins a chain of mountains, from which springs a rivulet called Aschen by Strahlenberg:
Here I have placed the three ranges of mountains, according to the documents of Hindu astronomers: but not according to their usual delineations: for, according to these, the three ranges should be represented by three concentric half circles, parallel to the meridians of the projection. It is acknowledged, that these ranges are in the direction of as many parallels of latitude. In that case the outermost ranges must be the longest: and this is the opinion of the Jainas, as I observed before, in the sixth paragraph of the first chapter.

No. IV, exhibits the old Continent, projected upon an imaginary circle passing through the North pole, and just grazing the equator in the South. Instead of a circle, it should be an oval, with the longest diameter East and West. But as the tracing of an oval would be attended with some difficulty, the indolent Pauránics have adopted the circle in its room; and seldom use the other. As such a delineation would be useless, I have, of course, omitted it.

The chasm in the North-West, through the mountains surrounding the world, was made by Críshna, when he went to see his prototype Vishnu, or the great spirit, the Paramátmá of the world, whose abode is among waters, in the land of darkness. Several heroes have passed since through this chasm, which will be the subject of a particular paragraph hereafter.

No. V, explains the true system of the known world, according to the Puránas, and the Jainas, reconciled with that of the astronomers of India.

Here the Méru of the Pauránics is brought back to its proper place, whilst the Méru of the astro-
nomers remains under the North pole. The zones between Jambu or India, and the Mēru of the astronomers, are obviously our seven climates; and the points where the astronomical zones intersect the zones of the Paurāṇīcs round their respective centres equally called Mēru, shew the true situation of the dwīpas or countries, from which these zones, according to the system either of the astronomers or of the Paurāṇīcs, are equally denominated, whether they are reckoned relatively to the North pole, or to a centrical point in the elevated plains of Tartary.

No. VI, is a delineation of the country of Bhārata, in the fullest acceptation of that denomination. Its nine divisions with Curu, or Siberia, and the Northern parts of Europe, making in all ten districts, were all destroyed by a violent storm, and inundation, except one. Thus the ten divisions of the Atlantis were all destroyed by a flood, except one, called Gades, which probably included Spain.

Some also are of opinion, that, out of the seven dwīpas, six were likewise overwhelmed by a flood. This circumstance is also noticed in the third volume of the Ṣyin-Acberi. But I believe that this notion originated with the Purāṇīcas, who, unable to point out these wonderful countries, described in so extravagant a manner in their sacred books, found that the best way was to swear, that they had disappeared.
miles, which agrees tolerably well with the above account.

Between the ranges to the North and South of Mēru, the Paurāṇīcs place two other ranges of mountains; one on each side of Mēru, and in a North and South direction. The Western range, called Gandhāramādana, does really exist, and answers to the Comædi mountains of Ptolemy, called also Cunuda in the Purāṇas. But the Eastern range, called Mālyavān, and answering to the former, exists but in the imagination of the Paurāṇīcs; symmetry certainly required it, and this was enough for them.

IX. In the Vayu Purāṇa, we are told, that the water or Ogha of the ocean, coming down from heaven like a stream of Amṛita upon Mēru, encircles it, through seven channels, for the space of 84,000 Yojanas, and then divides into four streams, which, falling from the immense height of Mēru, rest themselves in four lakes, from which they spring over the mountains through the air, just brushing the summits. This wild account was not unknown in the West; for this passage is translated, almost verbally, by Pliny and Q. Curtius, in speaking of the Ganges. Cum magno fragore ipsius statim fontis Ganges erumpit, et magnorum montium juga recto alveo stringit, et ubi primum mollis planities contingat, in quodam lacu hospitatur. The words in Italics are from Pliny*, the others from Curtius†.

These four lakes are called Arunodā in the East; Mānasa in the South; in the West Sitodā: the fourth, in the North is called Mahā-Bhadrā.

* Pliny VI. c. 18°. † Curtius VIII. c. 9°.
From Mana-Sarovara, or, according to the vulgar pronunciation, Mansaraur, the lake of Mana or Manasa, issues the Ganges. According to Pur'an-gir, who accompanied the late Lama to China, and had seen that lake in his way from Lassa to Lādac, it is called in Tibet, Chu-Māpanh, or the lake of Māpanh. In the Lama's map it is called Mapama: but Pur'an-gir, a well informed man, assured me that its true name was Māpanh. It was probably written at first Mapam by Portuguese Jesuits, in whose language the letter M, at the end of a word, has a nasal sound, as it had in Latin, and is to be sounded like the letter N at the end of a word in French.

This lake is constantly called Mansaraur by pilgrims; but there appears, according to the Paurūṇics, to be another, a great way to the North; this they call Bindu-Sarovara, or the lake formed by the Bindu, or drops of water falling from the hair of Mahā′-deva, when he received the holy stream, from on high, on his head. There is certainly some confusion in the Pūrūras about Mana-Sarovara; and we must then acknowledge two lakes of that name: one on the summit of Mēru, and the other to the South of it: for the sacred books cannot be reconciled otherwise. In that case Bindu-sarovara, mentioned but seldom, is the same with the Southern Mana-sarovara. The great Mana-sarovara, which proceeded from the heart of Brahma′, is on Mēru, and the four great rivers issue from it: but from this Mansaraur, South of Mēru, the Ganges is the only river issuing. It is of course the same with Bindu-saraur, or the lake Māpanh of those of Tibet.

According to Pur'an-gir, this lake is situated on an elevated plain covered with long grass, to the
North of which is a conical hill called *Khyem-lung*, and dedicated to *Maha'-deva*; and which is inserted in the map of the *Lamas*, but without name, and with two roads ending there. It is one of the Southern peaks of mount *Cantaisch*, which rises above the rest to an amazing height. A small stream, rising behind the subordinate peak of *Khyem-lung*, is considered by pilgrims as the source of the *Ganges*. There ended the survey of the *Lama* mathematicians; and the countries to the South, and South-West, were added afterwards, from the report of natives. During the rains the lake is said to overflow, and several streams rush down from the hills, but they soon dry up, even the sacred stream itself not excepted.

According to *Pura'n-gir*, and other pilgrims from *India*, this extensive plain is surrounded on all sides by peaks, or conical hills, but very irregular: toward the North they rise gradually, and a little beyond the sugar-loaf hill of *Khyem-lung* begins the base of *Cantaisch*. Toward the East the range of peaks is very low, forming only a serrated crest. To the South this crest is much higher than toward the other cardinal points: but, to the North, the mountains beyond the crest are very high. The Southern crest is very near the banks of the lake. The lake itself forms an irregular oval, approaching to a circle, but the two inlets or smaller lakes to the North are said not to exist. For *Puran'-gir*'s route was to the North of the lake, and close to its shore, and he did not see them. Pilgrims are five days in going round the lake, and the place of worship, or *Gombah*, is to the South. It consists of a few huts, with irregular steps down the banks of the lake. The *Ganges* issues from it, and during the dry season its stream is hardly five or six inches deep. It does not go through the
lake called *Lanken* in the maps; it flows to the South East of it, at the distance of two or three coss. This lake is called in *India* the pool of *Ravana*: and because he is the Lord of *Lancā*; his pool is called the lake of *Lancā*, or *Lanken*, in the maps.

The lake of *Man-saraur* is mentioned by *Pliny*, as I observed before, and it is probably the same that is mentioned by *Ctesias*, who says it was eight hundred *stadia* in circumference. *M. Polo* describes it as to the West of *Tibet*, but does not mention its name. It is noticed by *P. Monserrat*, who accompanied the Emperor *Acbar* in his expedition to *Cubul*, in the year 1581. He calls it *Man-saraur*, and, from the report of pilgrims, places it in thirty-two degrees of latitude *North*; and about three hundred and fifty miles to the North-East of *Serhind*. The first *European* who saw it, was *P. Andrada*, in the year 1624: and in the years 1715, and 1716, it was visited by the missionaries *P. Desiderius*, and *Emanuel Freyer*.

The *Burmahs* call this lake *Anoudat*, and place four heads of animals to the four cardinal points, from which spring the four great rivers; and thus, in the opinion of the divines of *Tibet* and *Ava*, this lake is the real *Man-saraur*. From this description one might be induced to suppose this lake to be the crater of a *Volcano*, but much larger than any now existing. *Ctesias* says that a liquid matter like oil was swimming on its surface, and was carefully collected by the inhabitants, and *M. Polo* adds, that pearls were found there. The pilgrims I have consulted knew nothing either of this precious oil or of the pearls. They showed me, however, small pebbles, some like pease, others as big as a pigeon's egg, which they told me were found on the shores.
of that lake, and that pilgrims used to take a few of them as relics, to give to their friends: and I was presented accordingly with some. They are in general as transparent as the purest chrystal, and I should suspect them to be pieces of chrystal, broken and rounded by mutual attrition, occasioned by the motion of waters.

To the West of this lake springs the Sita-Cánt'há, probably the Sitocatis of Arrian. It is called also the Mech'há-Gangá, or impure Ganges: and is supposed, by some, to be the same with the ‘Satlaj’ or Sitlódá in the Panjáb: this erroneous idea seems to originate from its being called by pilgrims Sitlódá: but its true name is Sitlódá, nearly synonymous with Sita-cánt'há. The famous Jaya-sinha, Rajah of Jaypoor, sent people as far as the Cow’s-mouth, and they found that the Sitlódá, after flowing for a considerable space toward the South, came within two miles of the Cow’s-mouth, and fell into the Ganges about sixteen coss lower.

To the East, or para, is the Aruvóda lake, literally the water or lake of Arúña or Dawn: and it is called to this day Orin-nor, or the lake of Orin, and from it flows the yellow river, the Sitá of the Puránas, called also Para-Gándica, or Eastern Gan'dica.

Aparen'a, or to the West, is the Sitlódá lake from which issues the Apara-Gándicá or Western Gan'dica, called also Chaeshu in the Puránas, Oxus by the Greeks, and Cocshu by the natives. This lake at the source of the Oxus, is noticed in some maps: by the natives it is called Cul or the lake; and by Persian authors Div-sarán; according to Sir W. Jones, in his life of Nádir-Sháh; Deva-
**Sacred Isles in the West, &c.**

sara, in Sanscrit, signifies the lake of the Gods, or the divine lake. According to them it is near the mountains of Andemas from the Sanscrit And'ha-Tamas, or And'h-Tamas: both words imply darkness; but being joined together, imply it in a superlative degree; and it is the name of one of the divisions of hell. On their summit is the Belur, or dark country of the maps. The Anthema mountains are called Sacrānthema by Bernard Goez. An intelligent and well informed native of Biducshan, and royal messenger of that country for forty years, under Ahmed and Zeman-Shah, informed me that Ser-Anthema is the true name; that ser or sereh signifies in his country, end, limit, or border, and appears to be the name of a place near the Anthema mountains, as Ser-Hind, or on the borders of Hind. This lake is said to be three days journey in circumference. The Ovus does not spring immediately from it, but at the distance of fifteen miles to the West it emerges from the ground. The Cocsha is the sacred stream which sanctifies the waters of the Ovus; but by no means the main stream, which is more to the North. It is so with regard to the Ganges, the sacred stream of which is called Alakananda, and is but a small river, the source of which is twelve coss to the North-East of Badaricasrana, and, I believe, about 130 miles from Hardwar. From the lake to the hills to the Eastward is an extensive plain, called Sarāgh-Chopawen, or the plains of Chopawen. There are four places there mentioned by Goez, Ciarciunar, or Chār-Chunār the four cedars, like the four cedars, or pines, perhaps, near Cashmir, called Chār-Chunār also: these four trees no longer exist*. Sarcil was explained to me, by Camber-Ali, the king's messenger, by Sereh-

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* Mr. Forster renders the word Chunār by plane trees in his account of Cashmir, and he is perhaps right.
cul, or Ser-cul close, or on the borders of the lake: and Serpanil by Ser-pamer. These mountains are called in the Puránas Cumudů, the Comädi of Ptolemy, and Anjana or Críshna the black mountains. Cambrer-Áli gave me a dreadful account of them from report, for he never saw them, but at a distance.

The fourth lake in the North is called Mahá-Bhadré, which is probably the lake Saisans, from which flows the river Irtiz. As the epithet Mahá implies a great lake, I am sometimes inclined to suppose it to be the same with the lake Baikal; but it is too much out of the way: though I must confess, that its distance can be no objection with the Puránics. Besides, the Baikal lake is called to this day śveto-móre, or the holy and sacred sea, and the country about it, and all along the Ergone, or Argon, is considered as holy by the Hindus, who occasionally visit this sacred spot. Bell, in his travels, mentions his seeing a Hindu there from Madras. Strahlenberg saw another at Tabolsk, who, it seems, had settled there. I have seen two who had visited that country, one was called Arees-wara, whom I mentioned in my essay on mount Caucasus. The four sacred rivers springing from the Mán-sarœvara, according to the divines of Tibet, are the Bramá-putra, the Ganges, the Indus, and the Sítá. The Ganges is the only one that really issues from that lake, or if the three others do, it must be through subterranean channels; and such communications, whether real or imaginary, are very common in the Puránas. The Sítá may be the Sutodá, Sitlódá, supposed to communicate with the 'Satlaj or 'Satacjara, thus called from its hundred branches or bellies, through which it is supposed to fall into the sea.
The *Indus* was supposed formerly to have its source not far from *Mán-sarovara*, which P. Monserrat places in thirty-two degrees of latitude North; and the source of the *Indus* in latitude $32^\circ 15'$, the difference of longitude between the source and the lake $1^\circ 45'$.

The difference of longitude between *Delhi*, and *Mansarovara* is according to Monserrat $5^\circ 2'$. This places *Mánsarovara* in $82^\circ 2'$ of longitude, and both its longitude and latitude are remarkably correct: but what is more surprising, the good father was ignorant that the Ganges issued from it. Abul Fazil places the source of the *Indus* nearly in the same latitude with *Cashmir*, but eighteen degrees to the Eastward. The *Indus* has its source four or five days journey to the North-West of Yérechand, according to Czernichef: it runs thence in a direction South-South-East toward Ládac, and within two days journey of it: nay, merchants, who trade from India to Cashghar, say it can be done in one day. The *Indus* then turns immediately toward the West, taking an immense sweep round *Cashmir*; and the place near Ládac, where it turns suddenly to the Westward, has been mistaken for its source.

X. The followers of *Jina* in the *Trai-loeya-da-pana* represent the old continent, as consisting of two concentric *dvipas*, of the same superficial extent. They call the whole world *Arâî*, or *Nâdai-dvipas*, literally the two and half Islands. The two first *dvipas* are *Zambu* in the centre, and *Dhâtuci*: and they are divided by an intermediate sea. The whole is surrounded by the ocean, in which are many islands, called, in general, *Antaca* or *Anta-mai-dvipas*, or the islands at the *anta* (end,
or extremity) of the world. The first of them is the White Island, and the last Swayambhūva-dvīpa, called Pushcara in the Purāṇas.

Beyond this is the half of Pushcara, the Śvarṇa-bhumī of the Purāṇas, which surrounds the world, as well as the mountain of Mīnasottara, called Locāloca by the Paurāṇics. Beyond this circular range is the other half of Pushcara: but as it is out of the world, it is not included in their system of geography.

In the division of the old Continent into nine parts by the Paurāṇics, Bhārata is erroneously introduced: it should be Nābahi. For Agni'dhra, the son of Priyavrata, the eldest son of Adima, had nine sons; called Naba'hi, Ila'vratta, Cimpurusha, Hari'varsha, Cetuma'la, Bhadra's'va, Raman'aca, Hiran'maya, and Curu. Thus we read in Sanchoniathon that Phos, Phur, or Phlox, answering to Agni'dhra, begat sons of vast bulk, whose names were given to the countries they inhabited.

Priyavrata had ten sons, as we have seen before; among whom was Agni'dhra. Three withdrew into forests; and the seven remaining were appointed to rule over the seven great divisions of the world, called the seven dvīpas. The great grandson of Agni'dhra, called Bharata, gave his name to the country South of Himālaya, which, under that denomination, was originally confined to India; but it is now made to extend from sea to sea, along the range of the Snowy mountains. This we are told in general in the Purānas: but it is by no means the case, as it will appear from the particulars, that Bhārata, forms a semi-circle round
Méru, beginning in the West in fifty-two degrees of latitude, or nearly so: being, as it is declared in the Puránás, in the shape of a Cow.

To King Bharata, Maha'deva gave eight sons and one daughter, called Ila', or Cumári, emphatically the Maiden. A new division of the Earth took place according to some; but the general opinion is, that it was only a partial one. Be this as it may, it appears that, out of the ten divisions of the old continent, Bhárata, included nine; Curu, in the North, being excepted and left out.

According to the Prabhása-chán'da, the names of these nine chán'ídas or sections are, reckoning from the East toward the West, Indra-dvípa or Gand'harva-chán'da, Cáseru, Tamrapurnáh, Gäbhastimán, Cumáricó, (India), Nagá-chán'da, Saumya, Varuna-chán'da, and Gand'harva-chán'da again. In the Revá-chán'da, their names are thus exhibited; Gand'hara, Cáseru, Tamraparni, Gabhastimán, Cumáricó or India, Nága, Saumya, Varuna, Chan'dra-dvípa.

In the same section we find another variation; Gand’hara, Cáseru, Tamrapattra (erroneously for Tamra-puríñah), Shilastica, Cumáricó (India), Bhága-dvípa (probably for Nága), Saumya, Varuna and Chan'dra-dvípa. The first and the last divisions are, in general, called Ghand’harva-chán’ída, being supposed to be the abode of the Gods, with their usual retinue of heavenly musicians. Through the seven remaining divisions, seven rivers are said to flow. They have a common source in the lake from which issues the Ganges. To the East are, the Nalini, flowing through Cáseru; the Pávani, through Tamrapurnáh; Hládini, through Gabhas-
timán. To the West, the Sitá or Jaxartes flows through the country of Varuńa; the Chacshu; through Saumya; and the Sind'hu, through Nága-ch'án'da. Between these, in the middle, is the Ganges, which flows through Cumáricá-ch'án'da or India.

In the Váyu Purána, the origin of these seven rivers is thus described; North of Cailása is the Gaurá mountain, at the foot of which is the Bindusárevāra, or lake with golden sand. There went Bhagíraṭha to fetch the Ganges, called Tripathága because it goes through three paths, or channels.

There he obtained the Ganges from Mahá-deva, which dividing into seven streams or paths, is called, from that circumstance, Saptádhá. The Sitá goes through countries inhabited by the Sírind'hras, the Cuntalas with long hair, the Chinas, for this is considered as the native country of the Chinese; the Barbaras, Yacanas, Bṛuhhas, Tusháras living among snow, Čulindás, Ancas, Locavāras. The Sitá goes towards the West, and falls into the sea of salt water.

The Chacshu flows through the countries of the Chinamanus, or Chinamen, Tanganas, Sarca-Cálicas, Sand'hras, Tusháras; Tumpacas, read Lumpacas, Pahvas, Daradas, 'Sacas or Saxens.

The Sind'hu goes through Daradas, Cásmiras, Gandh'hras or Gandari, Yacanas or Greeks of Bactria, Hridás, Rhotas, the Rhédos of the Bassaries of Dionysius*, 'Sivapauras (living in the town of 'Sivapura, or Sheepoor), Indrahóas Vadántis, Visar-įyas, Saind'hāvas, (living on the banks of the

* STEPHAN of Byzantium ad vocem.
SACRED ISLES IN THE WEST, &c. 337

Sindhu, Randhracaras, Brahmatas, Bhirarohacas, Sunamuchhas, Urdhmanus. The Ganges flows through the Gandharvas, Cinnaras, Yacschas, Râcshasas, Vidyadharas, Uragas (or large snakes; these are tribes of demons, good and bad, in the hills), Câlupagrânacac, Pâradas, Seiganâs, Svâsas Cirátas, Pulindas, Curacas in Curu about Tanehsar, Sam-Bhâratas, Panchalâs, Câsi or Benares, Mûtasas, Magadhas (or South Bhar), Brahmettaras, Angas, Bangas, Calingas, Tamratsiptas (or Tamlook), Sam-Bhârata or Samsârata, as pronounced in the spoken dialects, signifies a native of India: and I am told, that it is used, though very seldom, in that sense. The Hladini or Brahmaputra goes through the Nishudas, Râcshasas, Upa-Bangas, (or near Bengal), the Dhivasras (or boatmen), Rishicas, Nitalmachhas, Ceralas, Oshracarntas, Ciratâs, Câlodarvas, Vircarntas, Cumaras, Svarnabhûshitas (living near Svarna-gam, or Sonargaum, near Dacca.)

The Pâvanî flows through countries inhabited by the Apatâs, or whose country is without paths, then through the large lake of Indradhyumna, through the Chârpatâs, living near difficult passes, the Indrasambupatâs, the Madhyanodhanas, the Namascuras, the Cusa-prâvaranâs, then falls into that sea, in which is Indra-devipâ, and which joins the sea of salt. The Nalini goes through the Tomaras, remarkable for their quivers, as implied by their name, through the Hansa-margas, or those living near the paths of the Anseres, or water fowls, that is to say, among marshes; through the Sa-hun-hacas, or who seem to repeat incessantly the words hong hang, like the Chinese, then, after forcing its way through many hills, it goes through the Carnaprávaranâs, or wearing ear-rings, then through the Aśva-muchhas, horse-
faced, Sicatas, parrot-faced, Parvatamanus or hill-men, and Vidyâd'haras, and falls into the Mahodad'hi, or great sea.

The Pâvanî is probably the river of Pá or Bhá, and called Pa-chu or water of Pá before it enters China, where it is called Kin-sha-kyang, and Yangtse-kyang. The lake of Indrad'hyumna is probably that, which covered once the province of Yu-quang, and was drained up in great measure by one of the Emperors of China; some extensive lakes in the lower grounds still remain. The epithet of Namascárás is well adopted to the Chinese, from their polite and ceremonious behaviour, with bowing, &c.

The dwîpa of Indra, a very large island, appears to be Japan: for it is described as the island of the rising sun, which is the meaning of the words Japan or Gepuen. The Nalinî, called Sind'hu, or Burra-Attock by pilgrims from India, is the Hoang-ho or Cara-Moran. It is called the great Attock, or forbidden river, because strangers are seldom permitted to go beyond it. This forbidden river is noticed by Pliny*, though he does not mention its name. It was equally forbidden to those, who came from the West, on the part of the Romans (negotiatores nostri), or to those who came from India. For there were two roads frequented by merchants, according to Ptolemy, from the metropolis of China; one leading to Bactra, and the Western countries, and the other to Palibothra and India.

The learned in Napal, consider the Brahmâputra to be the Hûdînî of their sacred books. There

* Pliny 46*, C. 22
came to Benares, about nine years ago, a most respectable native from that country, called Bhagiratha: being very old, he wished to die on the banks of the Ganges, at the holy place of Casi. He had been to China, and favoured me with a short account of his journey. There, he says, that the Burrampooter is the same with the Hladini, and that the Hara-more is the Nalini. This river, says he, is also called, by Hindu pilgrims, the Burrah-attaca, or great Attock, or forbidden river. He had promised to favour me with further particulars; but soon after, the venerable old man breathed his last on the banks of the Ganges.

The dvāpa of Chandra in the West will appear, in the course of this work, from the Purāṇas, to include the British isles: but as it is considered here as one of the nine grand divisions of the Empire of Bhārata, the Paurāṇics must have comprehended under that appellation a more extensive region altogether, than the British isles, and including the Western parts of Europe, under the name of Liguria, or Lloegyr, which I shall shew hereafter to be synonymous with the country of Chandra, or Lunus, emphatically called Urupa, or the Lord of the Zodiac. The king of the dvāpa of Chandra being considered as a vassal, was occasionally summoned to appear before his Lord Paramount, with all the Kings of the world in India, at least, according to the Revā-chārīda, a section of the Scanda-purāṇa.
SECTION II.

List of Mountains, Rivers, and Countries, from the Purānas, and other Books.

I. IN the Brahmāṇḍa-Purāṇa* we have the following list of the mountains, rivers, and countries in the Empire of Bha'ratā.

To the East it is bounded by the tribes of Cīrātās, or shepherds, living in the hills to the North and North-East of Bengal; to the West, by the Yavanas, or Greeks of Bactriana. The four great tribes live in the middle, and there are seven principal ranges of mountains, or cula parvatās: Maḥendra, toward Madras, Malaya, on the coast of Malabar, Sahya, toward Poonah, Suctimāṇ, Ricsha, Vinādhyā (the Bind hills), and Pariyātra.

The inferior mountains are Mandava, Vaihāra, Dardura, Cōlāhala, Susurasā, Maināca, Vēdhyuta, Sriparvata, Cutuca, Cēṭasāila, Tungapraśīha, Črīshnāgiri, Godhānā, Hari-parvata, Pushpāgiri, Jayanta, Raivātaca, near the Revā, or Narmadā river. In these mountainous countries live the Āryya Mlek'has, or foreigners; and all these mountains are in the Deccan.

The principal rivers are Gungā, Sin'dhu, Sarasvati, Satadru or Satlaj, Chan'ārabhaga or Chināb, Yamuna or Jumna, Sarayū or Sarjew, Airavati or Rāvy, Vitasta or Bidasta, Vipōṣa or Bēya, Devica, Cūhu, Gomati, D'hutpāpa, Bāhuddā, Drīshadvatī, Caus'ici or Cosa, Vṛitiyā, Nirvirā, Gānidacī, Icsū,

* Section of the Earth.
Lohita: all these flow from Himavát, or the snowy mountains.

Vedasmriti, Vedavati, Vratraghni, Sind’hu, Varánsá, Chandaná, Sadynbrá, Mahi near Cumbay, Párá, Charmanvati Vidiśá, Veéravati, or Betwá river, Sípá near Ujjain, Avanti: all these rivers flow from the mountains of Páriyátra. Soná, Narmadá, Sumahádrumá, Mandácini, Dasarntá from Chitracú’tá, Tamasá, Pippalá Sron’ti, Cara- toyá, Curvátyá, Piśááchicá Chitotpalá, Vipáshá, Jambulá, Válucáhiní, Sinerajá, Suctimáti, Matvá, Tridivá, Cramá: These are born from the Rísha mountains.

The Tápi Taptí, Payoshnti, Nirvindhyá, Madrás, Nishad’ha, Ven’ává, Vaitaraní near Cuttac, Sini- báhu, Cumudváti, Nípá, Mahá-gaurí, Durgá, An- tahálidá; all these spring from the Vind’hyá mountains. Godávarí, Bhimarat’hi, Crishná, Venú, Van- julá, Tungabhadrá, Suprayogá, Caverí: all these come from the Sahya mountains. Critamátá, Tam- raparni, Carmajá, Punyalávatí, from the Malaya mountains. Trisámadá, Rítuculyá, Dracshalá, Tri- divá, Lángúlíní, Vans’ad’hará: These proceed from the mountains of Mahendra.

Ríshicá, Sucumári, Mandagá, Mandaváhiní, Cré- pá, Palás’ini, from the mountains of Suctimán; all these rivers flow immediately into the ocean. This is not true, for the Sarasvoti, Yamundá, Go- mati, &c. fall into the Ganges.

Then follow a list of countries: the names are in the plural, and of course signify the inhabitants of these countries. Curu near Tahnesur, Panchála, ‘Sálva or Sálawá, Jangala, Súrasena, the Súrasení of Arrian, Bhadracára, Bod’ha, Pat’héswará,
Vatsa, Cisṛishta, Culya, Cuntala, Cāsīcsala or Benares, Tilinga, Magad'ha, Vrica: these are in Mad'hyades'a or middle of India.

In the North of the Sahya mountains rises the Godāveīi: on the banks of the Crīshnā, are extensive and famous districts: there is the mountain Govadd'hana, made by Indra; through Ra'ma's pleasure it is Śvēnga, or heaven. There Bharadwajā built a town, with gardens and pools. Vāhlica Balk, Vātad'hana, Abhīra or Pallis, in Candeish; Cālatojyaca, Aparīta, Sūdra, Pahvavāra, Charma-chanīdaca, probably the Charmā of Pliny, Camboja, Cuj or Coj, Roh-Coj or Arachosia, Darada Dardeī Darvurd, Barbara or Varvara Priyalaucica, Pīna, Tushāra, or snowy country. Bāhyatodara; there live the descendants of Aтри and Bharadwajā; Prast'hala, Cas'eruca, Lampācas-t'hānaca, those who live near the sthān of lampaca or Lamech, now Lamgan; Pīdica, Juhūda, Apaga, Alimadra, there live Cirātas, or shepherds; Tomara, Hansamārga, Čāsmīra, Tāngana, Chūlica, Bāluca in the Vayu Purāva, Āhuca, Purnā-darva.

To the East are the And'hrawāca, Sujaraca, Antarāgiri within the hills, Bāhirigiri without the hills, Plavangava, Angeya Malada, or Mālda, Mālavarti, Brahmottara, Pravijaya, Bhārgavāngeya, Ari'haca, Pragjyotisha, now Gohati, in Assam, Mun'da, Videha the country of the famous Janaca: Tamraliptica or Tamlook, Māla, the Mallī and mount Mallus of Pliny, toward the Ganges, now Mal-bhoom in Midnapoor, Magad'ha, or South Bahar, Govind'ha. Toward the South is Pānd'ya, the country of Pandion, Ceralā, Ceralā-des'a, Chūlya or Chola Coromandelā, Culya Setuca, Mushiica. Cumāna, Mahā-Rasht'ras Mahā-rattas, Māhishica, Conlinga, Abhīra, or Pallis, Vaishica, Āta-
SACRED ISLES IN THE WEST, &C. 343

vya, living in the middle of thick forests, Vara, Pulinda, Vind'hya-mur维奇, Vaidarbhā or Burra-Nagpoor, Danidaca, Paunica, Maunica, As'maca, Bhoga-vard'hana, Nairn'ica, Cuntala, And'hra, now Telingana, Udbhida, Nalaça, Alica.

The next are in front of the Vind'hya mountains: Suryácára, Colavána, Durga, Cáítaca, Puleya, Surala, Rupasa, Tápasa, (these are probably the Tabassi of Ptolemy; for, in the Dekan, they pronounce that word Tabasa,) Surasita, Carancára, Násicaya, Antara-Narmadá within the Narmadá, Bhánu-Cach'ha, Máheya, Sás'vata.

The following are behind the mountains of Vind'hya: Málava, Carusha, Mecala along the Narmadá, called also Mecalá, Utcala, or Orissa, Uttamárána, Des'áraná, (the country of Dosarene, in the Periplus and Ptolemy,) Bhoja, Cishcind'haca, Tosala, (the Tosale of Ptolemy, and Jesual of European travellers,) Cos'ala, Traipura or Tipperah, Vaidica, Tumura, Tupura, Shatasura near Naishad'ha-desá, Anaya, (in the Váyu Purán'á, Anuya,) Tuûdicéra, Vitihotra, D'hananjaya.

There are also other countries called Nigarhara for Nagarhara, called Nakierhur in the Ayin Acheri, near Cábul, Hansamírga, the Hunsá, probably the white Humí of Cosmas Indopleustes, in the sixth century, and who inhabited the upper part of the Panjáb. Their chiefs were called Collas, and it is related, that once their army besieging a city, drank up all the water round it; as water is very scarce in that country, it is very possible. Dar'va, Sahanhaca, Trigarta, Málava, Cirátá Támasa.

II. In the Vará-sanhita, an astronomical treatise, there is a more complete list. In Mad'hyam, Z 4
middle or inland country, are the following tribes: Bhadra, Arimeda, Maṇḍavya, Salāva, Nīpa, Ud-jihāna, Mēru, Vatsa, Ghosha, Yāmuna, Sārasvata, Matsa or Matsuṣya, all these are Madhyamica or in the midland Mat'huraca, Apa-Jyotisha, D'harmāranya, Sarasena, Gauragriiva with white necks, Uddehica, Paṇḍya, Gūḍāśvatt'ha, Pāṇchāla, Saceta, or Oude and Benares, Canca, Čuru, Čālacotī, Čucura, Pāriyātra (said to be at the source of the Chambul), in other Purāṇas it is called Pāripātra; Naga, Audumbara, Cāpisht'ala, Gajāhvaya. Towards the East, are the Anjana, Vṛiṣhabha, D'hwaja, Padma, Mālyavatgiri, Vyāghra-mucaḥ or Tyger-faced, Suhma, Cārvat'a, Čāndrapura, Suryacarana, Č'hasa, Magad'ha, Sivirgiri, the mountains of the Siviras. (These no longer exist as a nation; their name, in the spoken dialects, is Suiv. They are said to have been very powerful once in the Gangegetic provinces, as well as the Bhar tribe, who no longer form a body.) The Siviras, or Sibiras, are the Sabiri of Nonnus. Mit'hila or North Bahar, Samatat'la, Un'dra, Asvarādāna or horse-faced, Dunturaca, Prācyotisha, the Lauhitya river, Čšhiroda-Samudra, the sea or lake of milk, Purushāda or Canibals, Udaya-giri, Bhadra, Gāuḍaca those of Gaúda or Gaur, (the Corygazus of PtOLEMY,) Paw'andra, Utcala, Časi, Mecala, Ambasht'a, (the Ambastae of ARRIAN,) Eca'padu or single-footed, Tamraliptica or Tamlook, Čos'ala-Cos'alaca, called Toś'ala-Cos'alaca in the preceding list, Vard'dhamāna, or Burdwan.

In the South-East is Čoś'ala, Calinga, Banga, Apa-Banga, Jał'ara, Anga, 'Svalica, Vidarbha, Vatsa, And'hra, Vaidica, Uriddhva-cānt'a, with high necks, Vṛiṣha, Nālicera or Nāricelu, Sumatra, according to the Vrihatcāt'ha, Charma-dvipa, Vind'hyāntaravāsina, (living in the interior parts of the Vind'hyān mountains,) Tripura or Tipperah, 'Smas-'
rud’hara, Hema-c’ita, Vyálagr’ica, (with necks like snakes,) Mahágr’ica, (long necks,) Cisheind’ha, Cántocast’halí, Nishádha-rásh’t’ra, Puríca, Da’sára-n’a, Nagnaparr’n’a, ’Sabara, a wild race.

In the South is Lánč’a, or the peninsula of Málaca, Cállójína, Sauricaránlá, Talícata, Girinagára, Malaya the Malabáár coast, Daradura, Mahendra, Málindra, Mérú-Cach’ha, Careót’a, Tanca, Vana-
vási, ’Sivica, Chan’ícára, Cauncán’a, ’Abhíra, ’Aca-
ra, Vén’a, Ávántaca, Dásapura, Gónárdda, Cera-
laca, Cárn’át’a, Mahát’ávi, Chíutra-Cít’a, Násic’ya,
Collagíri, Chola, Crauncha-dáv’é’h, (the islands of
the water fowls of Lacca-diases,) Jal’á’d’hara, Cáve-
ryá, Rishyamúc’ha, Vaidúryá, ’Sanc’ha, or islands
of shells, (they are more generally called Bar’át’a
and Barola; hence cowries are called Barát’as, be-
cause they come from that country). Múctátrí
Váríchará, D’harmapattana-dáv’é’pa, an island oppo-
site to D’harmapattan. (D’harmapattan was for-
merly a place of some note between Calicút and
Cananor.) Gántarásh’t’ra, Críshína-Vellúra, Pi’síca,
Súryád’ri, Cusumúñága, Tumbavána, Cármánley’ca,
Yúmyodad’hi the sea of Yama, or Southern sea, Tá-
pás’ráma-Rishíca, Canchípúra, Cunjívoram, Chinap-
tattana or Madras, Décórshíc’ca, Sín’hála or Ceylon,
Ríshabha, Bala-deca-pattana, or Maha Bálípúra,
now Mavelívoram, Dán’dacanúna, Tíningúla, San-
bhádra, Cach’ha, Cunjárardár, Tamraparr’ní.

In the South-West is Páhwa, Cambeja, Ara-
chosía, Sínd’hu, Sávéra, Vádamúc’ha, Ámba, Am-
basht’a, Campílla, Narimúc’ha, ’Anáríta, Phéntagíri,
Yavana-márgana, (those who live toward the passes
leading into the country of the Yávanas, or Greeks of
Bactríana, or the frontiers of the Yávanas,) Cór’a-
právárn’a, Sabaráca, ’Súdra, Barbára, Ciríta Chan-
da, Crávyác’h’ya, ’Abhíra, Chanchúc’a, Hémagíri,
An Essay on the Sind'hu-Calaca, Raivátaca, Surásht'ra, Bádara, Dravida. These are in the great sea, or near the great sea, Man'ımán, Meghván, Vanogha, Cshurarp'ana, Astagirí, Ápará'ntica, at the end of the West, Sánatica, perhaps Sintica, Hauhaya the Persians, Prasastá'dri, Uccána, Panchanada, or Parinjáb, Rámátá, Párita, Tárueshica, Irínga, Vais'ya, Canaca, 'Saca, Nirmayádamlech'has. These are impure tribes living on the borders. In the North-West, Man'íravya, Tushára, Tála, Hala, Madra, As'maco, Culu, Taláha, (Strirajah) or Amazones, Nrisinhavána, Ch'asta, Ven'umati, Phalagulucu, Agurúka, Maruha, Turuca, Charmaranga, Écavilo-chana, (one-eyed,) Sulíca, Dirghagríva, or with long necks.

To the North is Cailásá, Himaván, Vasumángiri, D'hanushmán, Cramuncha Mérú, Uttara-Curu with the epithet of Cshudramíná, or North Curu under the lesser Fish, or the lesser Bear,

Caicaya Cabul, Vasáti, or Yánuma, Bhogaprassta or Hardxear, Arjunáyana, Agní'd'hra, Adars'a, Ap-tarád'épi, the Doád between the Ganges and the Jumna, Trígartha, Tahora, Twágáma or As'ra-нуča, Cšád'hara, Chipitnásica, Dásérica, Vá-tad'hána, 'Sarád'hána, Tacsha-síla in the Vřihat-cathá, (these are called Tacshila, the Taxila of the Greeks, and the ruins of which are to be seen between the Vetaštá and Indú,) Pushcalácvata, Cái-nátaca, Cant'ád'hána, Ambára, Mdracá, Málava, Paulaca, Cach'ha, Dan'ída, Pingalaca, Mánvahala, (now Manhál in the mountains to the North of the Penjáb,) Hún'a, (the Hurnoi of Cosmas,) Cohála, Sátaca, Man'íravya, Bhútapura, Gand'hara, Yasovati, Hemátála, Ráganya, Cachara, Gavya, Yaud'héya, Sameya, 'Syámaca, Cšenam'hurtta.
To the North-East (it should be to the North-West,) is Meruca, (the mount Meros of the Greeks,) Nasht’a-rájya, Páshupala, Cira, Cásmirá, Abhíśára (which includes part of Cásmirá to the North-West: this was the kingdom of Abisares; by Abhíśára they oftener understand Cásmirá,) Darada, Tanga’á, Culáta, Sauritya, Vana-rashtra. Brahna-pura, Dárcada, Amarasáná, Rájya-Círátá, Chiña, Caulinda, Pála’vá, Lola, Jatá’d’hara, Cunaha, Ch’asa, Ghosha, Canchica, Eca-charna, Súvarna-bhú, Vasud’hana, Divishtha, Pávacara, Chivara, Nivasana, Trinetra, (or with three eyes,) Munjádrí, Soma, Gand’harea. Then Pánchála, Mágadhica, Cúlinga, ‘Avartha, ‘Anartta or Dwára’ca, Sind’hu, Sauvira, Hárhaua, Madrésa.

To the South of the Jambuná, Prayaga, or Allahabad, Narmadá, Ardd’ha’-Son’á the Sone, (which is considered as the half of the Narmadá,) Undra, Vanga, Suhma, Calinga, Váhlica, or Bulk, ‘Saca, Yavana, Magad’há, ‘Sabara Prágjyotishá in Assam, China, Camboja Arachosía, Mecalu, Cirá’tá, Vicatá, Bahránta-Sailá, (within and without the hills,) Pulinda, Drávira, (all these are South of the Yamuna,) Chambá, Udunbara, Causámbl, Vedi, Vánd’hyá’t’ává, (the forests of the Vánd’hyán hills,) Calinga, Pun’dra, Golángúla, Sríparcata, Varid’hamán, or Burdácán, Jeshumati, Tascara, (a tribe of robbers,) Páratá, Cantara, Gopávija, Tushad’hán’ya, Catuca, Taru-Canaca, (or golden tree,) Dahanavisha, Samarás’ura, Bheshaja, Bhishaca, Chatušpadá, (with four feet,) Crishicara, Nripahínsra, Pápapapi,- (these are tribes of robbers,) Vyúláránya, (the woods of snakes,) Yashoyüta, Tíshn’a. (the Sun rules there,) Girisul’la, Durga-coshala, Marina’ch’á, Samudra-Romaca, (the sea of Rome,) Tu-shára Vanavási, Tuncanía, Hala, Strírájya, and the islands in the Mahárí’aca, or great sea, Mad-
hura-rasa, Cusumaphala, some read Madhura, Rasaca, Sumaphala, (this last is the name of the country at the source of the Ganges, according to the divines of Tibet, and the lake Su-Mapauh seems to be called by them the sea of Matroba) Salila-marit the jewel of the sea, Lavan'a the sea of salt, 'San'cha, Mauetica, Abja, Mandacini, Uttara pandya, or North Pandu, on the banks of the Hystaspes. Between the river Sindhu and Mot'hura on the Yamuná, is Bhárata, and the Sauviras, (Subr in the spoken dialects) Sughna, Divya, (a river, the Vipásá or Beyah,) Satadru, Satlaj, the country of Rámuta, Sálava, Traigartta, now Táhorah, Pau-rava or country of Puru, (Porus,) Ambashta Bad, near Tanchsar, D'hunya, Yand'heya or country of Yuddha, Ayod between the river Véstá and Sindhu, the country of Sarasvata, Arjunáyana, Matsya, Ardha-gráma, Hastyás'apura, Mangalya, Paush-tica, Sácia Carun'ya. The following tribes drink of the waters of the Airavati; Ravy, Vitastá, and Chandrabhágá, the Prast'halas, Málaeva, Caicaya, Das'arn'á, Úshínara. The country of Caicaya is acknowledged to be Cabul, and Málaeva is Mákra, and of course they cannot drink of the waters of the above mentioned rivers: such blunders and inaccuracies are very frequent in the Puráññás: in the present list Čuśmíra is placed to the North-East of India: and I could point out many more.

III. The Tacsha-silas mentioned in this list, are called Tacshilas in the Vṛihat-cat'ha, and their country is said there to be on the banks of the Vitasá, or Hystaspes. They still exist as a numerous tribe, under the name of 'Syalas or 'Seyalas, and are divided into several branches; the Syalas proper, those of 'Syál-cote, of Jehung-Syál, whose principal town is called Yehungsidlan, by Major Rennel, the Cac-Syalas, &c.
The immense ruins of Tacshaila, as it is spelt also, cover a vast extent of ground, upon which a town and several considerable villages have been built; but these ruins are now mere rubbish. The Syálas are exceedingly proud of their antiquity, talk of ancient heroes, yet they remember nothing of Alexander, and his conquests. They are a fine race of men, tall, bold, and generous, like their neighbours the Chátars, the Chateri of Diodorus, the Sicilian; the greatest part of the latter are still Hindus, and I have seen several of them at Benares: and their tribe is well known in Penjáb. The Syálas, and Chátárs are certainly a distinct race in that part of the country. The Syálas, or Tacshasails, or Silas are also called simply Tacshas as well as Syálas. The Syálas say, that the ancient name of their city was Uda-nágrí, and Hud that of their country, from one Hud-Vallala, or the shepherd, called Yulluleah by Persian authors, and Lilaios, by the Greeks*. The country of Hud is called Hodu, in the book of Esther, and seems to have included what is called Sind by Persian writers, at least the Northern parts of it. It is called Yud'dheya in the Puránas, and Ayud or Ayoud by European travellers of the sixteenth century.

Serai Ravaut, called Rubbaut by Major Rennell, is built upon the site of Tacshila, near Serai-Puckah.

* Plutarch de flumin. voce Indus.
CHAPTER THE THIRD.

GEOGRAPHICAL EXTRACTS FROM THE PURAN'AS.

I. FOR the satisfaction of the reader, I shall give a few specimens of the geographical style of the Hindus, in the very words of the Pauránícs. The first specimen is from the Brahmán'ía-púrán'a.

Now I shall describe the length, and breadth of the earth; and give a true account of the seas and islands. Between the seven islands are thousands of smaller ones. I shall now describe the seven islands, with the Moon, the Sun, and the planets, with their dimensions, to the satisfaction of mankind. I shall describe the nine divisions of the island of Jambu, which exists from old, their length and circumference in Yojana. The breadth of Jambu-dwípa is 100,000 of Yojanas: it is very large, beautiful, and circular. It includes nine divisions, with mansions full of living beings; it is surrounded by the sea of salt; the breadth of which is equal to that of Jambu-dwípa. Six ranges of mountains, with their divisions or countries, extend toward the East; which on both sides, East and West, join the Ocean.

Himapraya is Himáván, or full of snow: Hemacítaca, full of gold, is Hemáván: Nishad'ha resplendent with gold, like the rising Sun: Mérú of gold of four colours is the greatest of mountains; its body appears high in all its dimensions, of many colours all round, united by the skill of Praja'pati Brahma'. Eastward it is white, like the offspring of Brahma', born from the navel of Vishnu; South it is yellow, and appears like a
Vaiśya. On the side of Varuṇa, West, it is like the dry leaves of a tree; and like a Śūdra, looks Meru of many names. North it is red, and looks like a Cshetra: these are conspicuous from their colours.

Like the Vāidūrya, or Lapis Lazuli gem, is the Nila mountain: Śvetasringa, abounding with gold, and Śringavān, like the feathers of the peacock. These are the chief hills, like so many kings; inhabited by Siddhas and Gandharvas. The spaces between them are 9000 Yojanas. In the middle is Ilāvrama, round Meru, a space of 9000 Yojanas, and this mount Meru, like fire without smoke, stands in the middle. The surface of the Earth stands one half on the South of Meru, and the other half on the North. Between these seven divisions are hills; their breadth is 2,000 Yojanas each, and 2,000 Yojanas their height.

I have mentioned the breadth of Jambu-dvipa, now the two middle ranges Nila and Nishad'ha, are 10,000 Yojanas less, (in the Bhāgavata 1000 only). Śveta and Hemacāta, likewise 10,000 less than the two former in length, and so are Himavān and Śringavān. In these seven countries are seen the footsteps of living creatures, with hills here and there, as if scattered at random. The Country below Himavat is Bhārata by name: beyond is Haimacāta with Cimpurusha: beyond is Naishad'ha with golden peaks, and the Country of Harivarsham: and beyond Harivarsham is Meru and Ilāvrama; beyond Ilāvrama are the Nīla mountains, and the Country of Ramyaca; beyond Ramyaca is Hiraṇmaya; beyond this is Śringa, and the Country of Cūru. Know that the countries South and North of Meru, are shaped like a
bow. These are four districts remarkable for their length, between them is Ilácrata. The division of the surface behind Nishad'ha is called the Southern division: the division beyond Nilha is called the Northern one. South of Nilha, and North of Nishad'ha length-wise, and towards the East is Málâyaván, a thousand Yojanas: high, like Nilha and Nishad'ha. Its length is 34,000 Yojanas, West of it is the mountain of Gand'hamádana. Its length and breadth like Málâyaván's. In the middle of a sort of circle, is Mëru high, and of four colours; of four sides is this golden mountain, the greatest of all.

These four sides are remarkable, as they are the four paths of the five affections of the mind, from which, as they answer to the five elements, are produced all living beings.

The great God, the great, omnipotent, omniscient one, the greatest in the world, the great Lord, who goes through all the worlds, incapable of decay, and without body, is born a moulded body, of flesh and bones, made, whilst himself was not made. His wisdom and power pervades all hearts; from his heart sprung this Padma Lotos like world in times of old. It was then in this, that appeared, when born, the God of Gods with four faces, the Lord of the Lords of mankind, who rules over all, the Lord of the world: when this flower was produced by Višnú, then from his navel sprang the worldly Lotos, abounding with trees, and plants: then the dimensions of this worldly Lotos became obvious to the sight.

Round it are four great islands or countries: in the middle like the germ is Mëru thus called; a great mountain of various colours all round,
toward the East para it is white, I say: yellow toward the South: apara Westward it is black; and to the North red like the dawning morn bâlárca. Its height is 84,000 Yojanas: 16,000 below the surface of the Earth. In the middle it is hollow like the germ of the Lotos. Its breadth is above 32,000 Yojanas: its circumference twice that, added to it. Round it are four larger countries, and many smaller ones. Bhadrásva, Bhá-rata, Cetumála to the West, and to the North the Curavas, Curu, in the singular number; in which are men abounding in righteousness. The circumference of the germ carnica is 90,000 Yojanas, the internal circumference is 84,000: the staminâ, filaments, or chives ceśarajála extend length-wise to the number of 100,000; and their circumference is 300,000 Yojanas. The four petals are 80,000 long, and as many broad. I am now going to describe this great and wonderful germ carnica, drupe, or pericarp.

It consists of 100,000 angles: Bhrígu says 3000; Sa'verni 8000; Varshapánì 1000: Bha-guri says it is square; Ga'lava that it is hollow; Gra'mya that it is like an egg, with the broad end below. Urd'hvein, like three twisted locks of hair, whilst others will have it to be spherical. Every Rishi represents this Lord of mountains, as it appeared to him from his station. Brahma', Indra, and all the Gods, declare, that this largest of all mountains, is a form, consisting of jewels of numberless colours; the abode of various tribes; like gold, like the dawning morn, resplendent, with a 1000 petals, like 1000 water pots, with 1000 leaves.

Within it is adorned with the self moving cars of the Gods, all beautiful: in its petals are the abodes of the Gods, like heaven: in its thousand
petals they dwell with their consorts. There reside above Brahma', God of Gods, with four faces, the greatest of those, who know the Vedas, the greatest of the great Gods, also of the inferior ones. There is the court of Brahma', consisting of the whole Earth, of all those who grant the object of our wishes: thousands of great Gods are in this beautiful court; there the Brahmarishis dwell; it is called by all the world Manovati. There in the East is Indra for ever to be praised, the God setting upon a vimána, resplendent like a thousand suns. There the Gods and tribes of Rishis are always sitting in the presence of the four faced God: these the God makes happy with his resplendence: there the Gods are singing praises to him. There is the Lord of wealth, beautiful with a thousand eyes, the destroyer of towns: the Indralocas enjoy all the wealth of the three worlds. In the second interval, between the East and the South, is the great vimána of Agni or fire, with a great resplendence, variegated with a hundred sorts of metals, resplendent; and from whom sprang the Vedas: there is his court; he does good to all, and his name is Jívanti, in the mouth of whom the sacred elements of the homa are put. There fire Anala, the greatest of Gods, is seen in his proper form; he who gives delight to all the Gods.

On the third side, in this very same manner, know there is the great court of Vaivasvata-Yama, called by mankind Su-Sanyama'. Thus in the next or fourth, is the court Sabhá of the Lord of the corner, or country, of Nairita: his court is called Crishnánganá; his name is Viru-pacsha', with a disagreeable countenance. On the West, know that there is the court of Varun'a, called Subhavati’: Now toward the North, in the North-West, is the court of Vayu', called
Gand'haviti. In the seventh corner is the Sabhá of the Lord of the Zodiac, called Mahopaya', his seat, most beautiful, is of Vaidurya, or lapis lazuli. In the eighth corner is the seat of Is'á'na, or Siva; its colour is of fervid gold, and it is called Yaso-vati. These are the great and beautiful vimánas in the eight corners of the eight most benevolent Gods, called Indra-muckyas. There dwells on the summit the God of Gods, with four faces. There is the beautiful court of Brahma', served by tribes of Rishis: it is called Manovatí, by mankind. There the Rishis, the Gods, and Gand'harcas, the Apsarásas, the great snakes are the attendants, most fortunate, and constantly lifting up their hands.

Such is this Carneica, or germ, above the surface of the earth. Its circumference at the surface of the Earth is 48,000 Yojanas. This Mérü, above the surface of the Earth, is declared to be a hill full of inhabitants. On all sides, in every country, are maryádá, or dividing mountains. In these countries are mountains with seven channels, one from each hill, with beautiful peaks, like gold, yellow, with many streams: without, there are three channels, and as many within Jat'ara, and Deva-cátá, are two hills to the East. Their length is from North to South equal to that of Nila and Nishad'ha: Cailása and Himaván are South and North of each other: their length is East and West, jutting into the sea. Of this Mérü very high, and of gold, the supports, or buttress like mountains, I shall now describe; like so many feet on four sides: 10,000 Yojanas is their breadth; and they are adorned on all sides with great vimánás. East is Mandara, South Gand'harmádána; Vipula West, Supårśva, North. Their thousand peaks are so many seats adorned with black and red coral. There are four.
large trees, each with as many roots sa-mula, and branches with thousand smaller ones, all beautiful, and with flowers: these trees are the largest in the dvipas. On the summit of the Mandara mountain is a beautiful Cadamba tree: its fruit is like a great waterpot, with flowers, with open Calices. Its fragrance is felt one thousand Yojanas, and above, all round: consider it then as a large flag: from its excellence, the country it is in, is called Bhadrás'va. Here is seen Rishices'a, Bhagavā'na, and he, with numerous Lidd'has, rules there; here Harahari the great, the white, did obtain the tree Rudracadamba; he who does good to every body. No great man, famous and learned among the bipedes, ever saw this whole island called Bhadrás'va. The Jambu tree, most beautiful, is on the South of the mountain of Mēru; the fruits of which are Amritcalpáni, like those of the Calpavīśesha, and fall on the summit of the mountain. From this mountain issues the Jambu river, flowing with honey: in it is found the gold called Jambunada, with which the Gods are adorned. This flag-like tree is in the Southern part of the dvipa, and is called Jambu by mankind: from it Jambu-dvīpa derives its name.

On the Vipula mountain, toward the West, is the Placsha tree: from this flag-like tree, or Cētu, the country is called Cētu-Māla; the Gods, and Gandharvas worship it. On Supars'va, in the North, on its summit is a large tree, the Nyagrod'ha: its large branches, and their circumference extend many Yojanas all round. Thus I have described the flag-like tree of the North, Curus. There are the seven Curavas, or Curus: for Curava is a plural form, truly fortunate, and who obtained happiness, unalterable, most exquisite in this world, for a long time: and after them this island or
country was called the seven Curavas, or Curu, simply in the singular number.

This will suffice to give an idea of the geographical turn of the Hindus, and I shall leave off, in future, the descriptions of mountains, dales, and lakes, as if viewed through a prism, omitting the enchanting buzz of the six-footed Bhramara, a beetle, or rather a large black bee, fucus, or drone, the names of fragrant flowers, and precious stones, with which the Hindus are as much delighted, as children are with the bare names of sweetmeats, and flowers jumbled together.

II. In the description of Bhadrás'va, or China, as we have observed before, the Pauránics take peculiar notice, that this extensive country had never been visited by great men, that is to say, by men of learning and respectability. The author then gives an account of the four sacred streams in these words:

Hear now what divine streams issue from the lakes, abundant with ogha living waters. The water of the Ocean, coming from heaven upon Mèru, is like amrita; and from it arises a river, which, through seven channels, encircles Mèru for a space of eighty-four Yojanas, and then divides into four streams springing over the four sacred hills, toward the four cardinal points. One stream goes over Mandara in the East, and encircles the beautiful grove of Chaitra-rat'ha, and falls into the Arun'odá, or Aruna lake, and goes thence to the mountains of Sitanta, Su mànata, Su mànjasa, Màdhyavanta, to Vaicancea, Mani', Rish-abha, from hill to hill; then falls to the ground, and waters the country of Bhadrás'va, a Su-mahä-dwipa, or beautiful and extensive island, or coun-
try; and then it joins the Eastern Ocean near the Purca-dwipa, or Eastern island, called, in other Puránas, the island of Indra, and of the rising sun, as implied also in its present Chinese name of Gepuren, or Japan.

The Southern branch goes to Gand'hamadana, from hill to hill, from stone to stone; it encircles the forest of Gand'hamadana, or Deva-nandana, where it is called Alacanandá. It goes to the Northern lake, called Mánasa, thence to the King of mountains with three summits, thence to the mountains of Calinga, Ruchaca, Nishad'ha, Jam-rábha, or copper mountains, 'Śvetodara, Sumula, another King of hills, Vusud'hara, Hemacút'a, Deva-vringa, Pisháchaca, a great mountain, Panchá-cút'a, or with five peaks; then to Cailasa, thence to Himavat, or snowy range; and then, this Mahábhágá, or most propitious river, having watered many countries, falls into the Southern Ocean. Maha'deva received it on his own head, from which, spreading all over his body, its waters are become most efficacious. It falls then upon Himá-chala, from which it gangs its way upon earth: hence it is called Gangá.

To the West, apara is a large river encircling the forests of Vaibhrájá: it is Mahá-bhágá, most propitious: it falls into the lake Sitodá, called by Persian authors Diva-Sáran: thence it goes to the Su-Bacscha mountains, and to the Purníoda lake, or the Caspian Sea, to the mountains called 'Sic'hi, Canca Vádúrya, Capila Gand'ha-mádana, Pinjara, Cumuda Mad'humánta, Anjana, Muchta Crishna. 'Śceta filled with large snakes, to the mountain with 1000 peaks, to the Párijáta mountain, through Cetumála, a large country, then falls into the Western Ocean. It is the Chacshu or Oxus.
North from Mëru there falls a branch called Bhadrá, and Bhadrá-somá upon Supars'éva of gold, which it encircles; and goes to the lake called Sitodacá, in the forest of Bhadra-soma, thence to the mountains of 'Sancha-cú'tá, \( Vrisha \) Vatsa, Nilá, Capinjalá, Indranílá, Mahá-nilá, Hemasringa, Svetasringa, Sunaga, to the mountain with an hundred peaks. Pushcara, Dwija-rája, Varába boar, Mayura peacock, to the single peak Játudhi; then after corrodng a thousand inferior hills, it goes to the mountain with three peaks, to Vishudd'ha; then goes into the Northern Ocean. This mountain of Vatsa is said by astronomers to be in the same meridian with Láncá, and as such is mentioned by several French authors, as Bailli, Gentil, &c.

Close to the Gand'hamádana, along the banks of the \( Apara-Gandícad \), or Western Gandícad, is the country of Cetu-mála, 34,000 Yojanas in length, and 32,000 broad. The Cetu-málas are mighty in deeds, strong and powerful; the women bright like the Lotos flower; and whoever sees them, falls in love with them. There is the great tree \( Panusa \), the \( Ygdrasil \) of the \( Edda \), from which flow the sixth juices. There resides Is'wara, or Is'A, the son of Brahma'. The proper name of this country is Cetu, which has an obvious affinity with the Cetúm of Scripture, a plural form, and in the singular number Ceti, and with the Cetú of prophane authors.

On the East, in Bha\( drá\)séva or Chína, is the Purc\( a\)-Gan'dicá, or Eastern Gan'dicá; and the length of its course is the same with that of the \( Apara \), or Western one. In the \( Varáha-puráná \), it is said that the course of the Purc\( a\)-Gan'dicá is 1000 Yo\( janas \), but that of the \( Apara \) or Western, is only...
400, which is more conformable to truth, as the Oxus does not fall into the Atlantic Ocean.

The author then gives an account of the countries round Mēru, as far as the seas surrounding the old continent. He treats first of the Drônîs, vallies, or countries situated between ranges of mountains. The Brāhma, Vāyu, and Brâhmānta-purāṇas, are the most copious on this subject. The mountainous tracts to the North of India, are so little known to us, and to the Hindus themselves, that I can by no means throw any light upon so extravagant and obscure descriptions of them, as are to be found in these Purāṇas. I shall of course pass them over, after having taken notice of two curious passages, one relates to the famous mountain of Caîlîsa or Caïlas, the heaven of 'Siva, and often used by his followers for heaven in general, as Coîlus, Coîlum, and Coîta, by the Latians. There resides 'Siva, called also Arhan, or Uranus: for 'Siva, like Uranus, presides over Astronomy.

It is said to be one hundred yojanas in length, and fifty broad; and a most extravagant description of it is given in the Purāṇas. I have conversed with many pilgrims, who had seen this famous mountain, and they uniformly declared to me, that it is only eight or nine miles to the South of the lake of Râcana, the Lanken of the maps. It is about three coss long, or seven miles, and shaped like a mandap, by which they understand a building, like a barn. Vaîcanta, the heaven of Vishnu, is toward Assam; and that of Brahma, towards Tartary, a considerable way to the North. In the Vāyu-purāṇa we read, that in the Southern vallies with regard to Mēru, is the immense forest of Udumbara, in which is the place of abode of
Carddameswaras, the eldest son of Adam. This place they suppose to be in the vast Mediterranean island, in the Paltze lake in Tibet, a very proper place for him, and also to the Eastward of Eden.

But let us pass to the mountains, vallies, and champain countries to the West of Meru. It is said, in the Brahmapuran, that in Bhadrusva, or China, Vishnu resides with the countenance and head of a Horse. In Bharata, he has the countenance of a Tortoise: in Cetu-mala, or Europe, he resides in the shape of a Varaha, or Boar, and he is described as the chief of a numerous offspring, or followers in that shape. He is then in Cetu-mala Varahapa, or the chief of the Varahas, or Boars; a word to be pronounced according to the idiom of the spoken dialects, Varapata. In Curu he has the countenance of a Matsya, or fish: and, of course, he is there Siramatsya, or with the head or countenance of a fish. He is probably the Chrado of the Goths, who was represented standing upon a fish in the waters. For the extensive country of Curu is declared to be South of the Northern Ocean, and North of Meru, in the Puranas, and particularly in the beginning of the Brahmapuran. It begins immediately at the foot of the Northernmost range of Hills, a little beyond fifty-two degrees of latitude North, and extends from sea to sea.

III. In the Vayupuran, the countries to the West of Meru are thus described; and the author begins with the vallies, and champain countries.

There are many vallies and flat grounds to the West of Meru, divided by numerous ranges of hills. About the mountains of Subacsha, the Beaus of Ptolemy, and Sicchisaila is a level coun-
try about a hundred yojanas in extent; and there
the ground emits flames. It is a most dismal
place, horrid to the sight, inaccessible to mortals:
the sight of it, makes the very hair stand. It is
the abode of the superior deities. There is Vīhi-
vasu, or Vasu simply, who presides over the fire,
burning without fuel; he who is the great deity,
and there fire seems to have life. When perform-
ing holy rites with offerings to the Gods, men al-
ways give fire his share. There that very fire,
which one day will spread over, and en compass
the whole universe, is constantly burning. With-
in the mountains is the abode of the illustrious and
powerful Gods; with the place of the Mātul-linga,
ten yojanas broad, and there is the hermitage of
Vṛihaspāti.

Like these two mountains are Cumuda and An-
jana: between these is an extensive valley with a
lake. The Cumuda range answers to the Comedii
mountains of Prolemy: and the Anjana, or black
range, to the Anthēna of Persian writers, as I ob-
served before, and there is the Ayatana, or abode
of Vishnu.

The st'hūn of Vasu is obviously a volcano in
the Al-burz mountains, and a volcano is really
Vāsūvādayatana, or the abode of Vasu in a derivative
form: and here we have the etymology of Vesuvius,
Vesuvius, and Aitna or Ätina, which words have
been improperly divided. Between the great moun-
tains Cūrśna and Pān'dura, the black and white
mountains, is a level country. In it is a Padmini
land, or marshy ground abounding with Lotos.
There resides the God with a thousand bodies.
Mankind call it Ananta-saḍa, or Anantee-sedes, the
seat of Hari, with the title of Ananta. In the
middle of the Cumuda mountains with a thousand
peaks, there is a forest fifty yojanas long, and thirty
broad. There is the famous pool of the Apsárasas; many holy men live there, and drink of its pure waters.

Between 'Sancu-cúta', or the peak like a wooden-pin, and the Frishabha mountains, is the stháli, or country of Parushaca, many yojanas in length. There live the Cinnarás, Urgas, serpents, and holy men.

The tract between the mountains of Copinjala and Nága-s'aila, is two hundred yojanas in length, and one hundred broad, truly delightful, adorned with many groves. It abounds with fruits, and flowers of various sorts. The Cinnarás, and Urgas, with tribes of pious and good men live there. There are beautiful groves of Drácsá or vine trees, Nága trees, or Nága-ránga, the orange-tree, and plum, or rather stone-fruit trees. It abounds with lakes and pools filled to the brim, with sweet and refreshing waters. What part of it lies between the Pushpacu and Mahá-Megha mountains, about one hundred yojanas long, and sixty broad, is as flat as the palm of the hand, as known to every body, with very little water, which is whitish. The soil is hard, and tenacious, without trees, and even without grass. There are few living creatures: and the few inhabitants are without fixed habitations: this desert is so dreary as to make the traveller's hair stand up. The whole country is called Cánana, or Cánan. There are several large lakes, likewise great trees, and larger groves, called Cántá. The smaller lakes, pools, groves, orchards, producing delightful juices, are numberless. The vallies, depths, lakes, and groves are, some ten, others twelve, seven, eight, twenty, or thirty yojanas in circumference. There are caves, in the mountains, most dreary and dark, inaccessible to the rays of the sun, cold, and difficult of access.
In that country are Siddhas, or prophets, with the gift of miracles; learned and famous Brähmens, bright like fire; hundreds of thousands of them are in that country.

It is truly surprising to find so plain, and sensible a description of a country in the Puránas: for the translation is faithful, and I have not left out, as before, any passage on any account whatsoever. It appears to be Syria in its largest dimensions, and which the author calls Canan; because the Cananeans, and amongst them the Phœnicians, were possessed of the greatest and best part of it, and were, moreover, famous all over the East.

The dimensions in yojanas in general, must be considerably reduced: but there are particular instances when they must be retained, and such cases are by no means numerous. I have noticed that the description of this country was a plain narrative, which, if not true, bore at least every mark of probability.

The mountains of Capinjala, a sort of bird, and Nága, or of the Serpents, are unknown: the region between them was 200 yojanas, or about 900 miles long, and 100 broad, or about 450 miles. These are the dimensions of Syria from Babylon to the Mediterranean sea. It consisted of two parts, a dreary desert, and the other a most charming and fruitful country, with six or seven lakes, called seas, the largest of which is the Asphaltite sea, thirty yojanas in circumference, according to Josephus's account.

The Pauránics, in their description of countries, never mention, at least as far as I can recollect,
the vine, and plum, or olive tree, nor the Nāgarāṇa, or orange tree, unless we are to understand the latter of trees, bearing golden apples. The larger lakes, the numberless pools, the caves in the mountains, the abundance of vineyards and orchards filled with orange and olive trees, is perfectly correct, as well as the description of the desert, with its scanty waters of a whitish colour, and a few inhabitants, without any fixed habitations, is literally true. The numerous and learned Levites, who were really Brāhmins, the Siddhas or prophets working miracles, are certainly wonderful circumstances.

The Cinnaras may be the inhabitants of the country of Cinnereth, round the lake of the same name with the town of Cinnereth. The tribe of Uragas, or serpents, were probably the Hivites, whose name implies the same thing. Vadari signifies a plum tree, but, in general, a stone-fruit tree; and is, of course, applicable to the olive tree, for which, I believe, there is no name in Sanscrit. It is not understood here of the date tree, for which there is a name in that language.

This curious passage proves the existence of an early intercourse between the Hindus with the inhabitants of the more Western countries, and particularly the Israelites. I shall show, in the course of this work, that such an intercourse existed formerly: and Lucian takes a particular notice of the Hindus visiting holy places in Syria, such as the st'hán of Mahá-bhága-devi, called Bombye, and now Manbeg. This, in my humble opinion, explains an obscure passage of the prophet Isaiah, who lived in the eighth century before Christ*:

* Isaiah, chap. ii. v. 6.—See also Bishop Lowth on Isaiah.
"Verily thou hast forsaken thy people, the house of Jacob; because they are filled with diviners from the East, from more than or beyond the East; who are soothsayers like those of the Philistines; and they delight in the society of children of strangers." This passage I conceive to allude to Hindus, from the very forcible expression of from the East, from beyond the East, or from the remotest parts of the East. The prophet did not mean the Chaldeans, who were well known to him, as he repeatedly takes notice of them.

IV. The next mountains are those of Sitánta, many yojanas in extent, abounding with all sorts of metals and gems. It is skirted by a most delightful country, well watered, enlivened with the harmonious noise of the black bee and frogs. There are towns, with gates; and the refreshing moisture of this country, proceeds from Uruapa, or the Lord of the Zodiac; and re-uniting together, forms a stream, called the Vahú of the Moon, or Chandra-vahá. There live the Siddhas and Yacshas, in caves, with intricate but delightful mazes. There, among immense caves, is the Crídłówana, or place of dalliance of Mahendra, where knowledge and the completion of our wishes is fully obtained. There is the great forest of the Pávábáta tree, of the kings of the Gods, known through the three worlds: and the whole world sings his praise from the Védas: such is the place of dalliance of him with 1000 eyes, or Índra.

One side is Suvarna of gold, as implied by its name, full of hills of the purest gems and corals. In this charming grove of Sacra, or Índra, the Gods, the Dánaras, the snakes, Yacshas, Rácsahas, Guhya, or Cuveras, Gandharvas, Vidyádharas live happy, as well as numerous tribes of Apsará-sas, fond of sport.
To the East of this lord of mountains is Cumula, a peak, with eight towns of the proud Dänavas. In the mountains of Vajrach, with many peaks, live Ráçshasas, frightful, assuming whatever countenance they please, strong, and performing wonderful achievements: these Ráçshasas are called Nilacas.

In Mahá-Nila, or the great blue range, are fifteen towns belonging to the Hayánana, or Asva-muc'ha, or horse-faced tribe, probably the Par-thians, and the descendants of Torgama, who bred horses, and carried them to the principal fairs in the East. In Sanscrit, Turangana, perhaps the same with Thorgama, for thus Thogarma is also written, signifies a horse, and implicitly a horseman: and the Hindus derive from it the appellation of Turcoman. They are originally Cinnaras, courageous like the leader of the armies of the Gods; Ca'rtice'ya, with large hands, and strong like the Indrudicas. There are fifteen chiefs of the Cinnaras, elated with pride. Therein towns, under ground, like Bùmîyan, live people like snakes; no man can look them in the face, and meet their eyes: their looks are like fire, like the poison of serpents. These live upon the golden stamina of certain flowers. In the hills there are above a thousand abodes of Daityas: the houses are elegant, like high-embattled forts.

In Venu-manta, or Venuman, are three forts belonging to the Vidyád'haras, thirty yojanas long, and twenty-five broad. These belong to the Uhcas, the Romashas, or Romacas, and the Mahá-netras. These rank among the greatest of the Vidyád'haras, and whose mighty deeds equal those of Indra. The country of Venu-manta is one hundred and forty miles long, and about sixty broad.
in it there are three strong fortified places, held at the same time by the three most powerful nations then existing. The Romashas, or Romacas, are the Romans, called Romaicoi in Greek, and often mentioned in the Purāṇas and other books of the Hindus, but only in general terms. The Ulucas are the 'Sacas, called also Bolga, Voles, and Wolke; these were probably the Parthians. The Mahānetra, or with large eyes, are probably the Armenians: and it was in the first century, that these three powerful nations were thus brought in contact, on the borders of Syria, Armenia, and Persia, in a country bordering upon the lake Van, thus called from a town of the same name, which in the Armenian language signifies a fortified place. Har-Minni, or Har-Minnith, signifies the mountains of Minnith, or Armenia, and Vani-minnith, or Vanni-minni, the strong holds of Ar-minni, Armona, Armana, or Armenia: for thus its name is variously written.

In the Brahmānda it is declared, that in the country of Cus'a, including Iran, Syria, and Arabia, is the Cumudvati, or Euphrates, with the Cumuda mountains; from which Cus'a is also denominated the dvari, or country of Cumuda. There live the 'Sacas, a powerful nation: the Pārasicas remarkable for their beauty, and the Syāmacas seemingly thus called from their black complexion. These were subdued by Rāghu: and in the book of his wars, a few remarkable circumstances relating to that extensive country, occur occasionally. Otherwise the Pārasicas, or natives of Pārāsa, or Persia, are seldom noticed by the Paurāṇics. In Cumuda is the Cumudvati river, and the sthān of Mahā-bha'ga-devī, the sister of Mahā'-deva. Of this famous place, I took particular notice in my Essay on Semiramis, under the name of Mabog and Manbeg.
On Vaicana resides the offspring of Garud’a, the destroyer of serpents: it abounds with metals and precious stones. A strong and turbulent wind swiftly passes over this mountain, in a human form, called Sugrīva. The offspring of Punna-gari, or Garud’a, in the shape of birds, fly about this mountain: they are strong, fly quickly, and mighty are their achievements. On Caraja always resides the mighty lord of living beings, who manifests himself there to human sight, the great God riding upon a Bull, hence called Vrishabhānca-sancara, the chief of Yogis. The inhabitants, like Maha’-deva, always carry poison about them: they are Pramathas, or servants of Maha’-deva, and difficult of access. Maha’-deva resides there among them.

On Vasu-d’hūra in Vasumati, a mountain and country full of fire, as implied by their names, are the st’hāns, or places of the eight forms of Maha’-deva, the merciful God. They are full of resplendence, and proper places of worship. There are seven st’hāns of Sidd’has: and the st’hān of Brahma’ with four faces, the mighty lord of created beings, on a high peak: all living creatures bow to it. The eleven Rudras reside there, on the Gaja-s’aila, or elephant mountain.

Su-Megha is full of metals, a king of mountains it is, like the clouds Megha, with many caves in its bosom, and arbours in its skirts. It is the Ayatanan, or place of abode of the twelve Suns, and of the eight forms of Rudra. There also the st’hāns of Vishnu, and the As’winau or Dioscuri, with many belonging to the Sidd’has and Gods. There the Yacshas, Gand’harras, and Cimiaras, probably priests and minstrels, are constantly performing the puja. In the bosom of this mountain, Vol. VIII. B b
are famous and large cities of the *Gand'harvas*, resplendent like *Amara-puri*, with large forts well embattled, in which reside the *Sidd'has*, and *Gand'harvas* deeply skilled in war, with their king *Capinjala*, God and king of kings. From him these are called the *Capinjala* mountains, of which I took notice before.

On *Anala*, a fire mountain also, reside tribes of *Rácshasas*, or evil spirits with a human body, on this mountain with five peaks, with the *Dánavas*, proud, enemies of the Gods, great, strong, and of mighty deeds. These *Dánavas* are perhaps the *Greeks*, the offspring of *Danaüs*.

On *'Sata-s'ringciy*, or with one hundred peaks, reside the *Yacshas*, a benevolent tribe. On *Tamrabha*, or the copper mountain, is a town inhabited by the *Cádraveyas*, or children of *Cádry*, the wife of *Ca's'yapa*, and by *Yacshacas*, a serpentine tribe of artists.

In the great and beautiful *Visácach'a* are many caves in its skirts: it is the famous place of abode of the God, who always dwells in caves, *Cárticey'a*, or *Mars*. On *Svetodara*, or with a white belly, is a large town, and settlement of the beneficent *Suna'bha*, the son of *Garud'a*.

On the large mountain of *Paisáchaca*, is a settlement of the *Cuveras*, (called also *Cuberas* and *Guhyas*, and the same with the *Cabirian* tribes,) with a commodious palace, resorted to by the *Yacshas* and *Gand'harvas*. On *Hari-cú't'a* resides the God *Hari*, to whom all the world bows: the famous navel of this most resplendent mountain is remarkable for its splendour.
On Cumunda reside the Cinnaras: on Anjana the great Snakes: on Crīshna are the towns of the Gandharvas with large houses.

On Pândura, on a beautiful peak, is the town of Vidyādharā, well fortified, and a large palace with battlements.

On the mountain with a thousand peaks, reside the Daityas and Dānavas in a thousand towns. They are all shining with gold, and their voice is most melodious.

On Sucūta reside the chiefs of the Pannāgas, or great Snakes: and on Pushpaca many tribes of Munis. On Supaçha, or Subaçha, are the four mansions of Vaivāswata, or Noah, of the Moon, of Vayu, and Na'ga'd'hīpa', or King of Serpents. The Gandharvas, Cinnaras, Yaçhas, Nāgas and Vidyādharas, and their chiefs, are constantly worshipping their Ishta, or favourite deity.

The place of Vaivāswata, or Maïtlam, is near Cabul, in the country of Lampacam, as it is called in the Purānas, and Lampam, by the natives. Of this place, I took particular notice in my Essay on mount Caucasus.

V. In this Purāṇa, the author, whilst describing the mountains to the South, and South-West of Méru, mentions a circumstance truly curious and interesting. Here, says he, in the forest of Sauc'ha was born Shada'nana, or Ca'rtice'ya, Mars with six faces. Here he wished, or formed the resolution of going to the mountains of Craun'cha, Germany, part of Poland, &c. to rest, and recreate himself after his fatigues in the wars of the Gods with the giants. There, in the skirts of
the mountains of Crauncha, he flung his sword, the very same which Attila, in the fifth century, asserted he had found under a clod of earth. It was placed in his tomb, where it is probably to be found.

In the Devi-Purāṇa, it is declared, that Devi in her character of Jaya-devi', or goddess of victory, is worshipped in the dwīpa of Crauncha, under the emblem of a sword.

The rest of the more Western countries is neglected by the compiler, as they are described in other paragraphs, under the names of dwīpas or countries of Placsha, Salmali, Crauncha Sācam, and Pushcara. He takes particular notice of a singular region in Salmali, called the peak-land of the Gods.

Hear now: in Deva-cūt'a, or peak-land of the Gods, which is a mountain dividing, parting countries, or, in other words, a long and extensive range, is this place where Garuḍa, the son of Vīnatā', was born; which is also his D'hāma-domus home, on a broad peak of this great range, with a beautiful palace. This country is one hundred yojanas in circumference, or about four hundred and ninety miles. There resides the numerous offspring of Garuḍa, in the shape of large birds, and of men also swiftly flying, strong, ruling all over the country, and full of pride. This is the first mansion of the lord of birds, generous and merciful, swift like the stormy wind, and who resides in the dwīpa of S'almali. It is toward the South on one of the peaks of this mountain, conspicuous, full of wealth, beautiful, seven in number, bright like the morning and evening skies, with forts of silver, well embattled, adorned with chaplets of houses made by the Gods, forty yojanas
long, two hundred miles, and thirty broad, one hundred and fifty miles. These are called the seven towns of the Gand'harvas, full of men and women. This is a peculiar tribe of the Gand'harvas, called Agneyas, fire-men, or rather artificers by fire, very strong, and of mighty deeds. They are the servants of the Cuveras, or Guhyas, whose principal employment is to explore the bowels of the earth in search of wealth. The rest of this curious description will be hereafter the subject of a particular section.

Before we pass to the second part, it will be requisite to give some explanation of the accompanying Plates:

No. I, represents the worldly Lotos, floating upon the waters of the Ocean, which is surrounded, and its waters prevented from falling into the vacuum by the Swarnā-bhūmi, or land of gold, and the mountains of Locálocas.

No. II, represents the globe of the Earth, according to the Hindu astronomers. It is projected upon the plane of the equator, and the Southern hemisphere expanded in such a manner, that the South pole, instead of a point, becomes the largest circle of this projection. They also represent the two hemispheres, separately upon the plane of the equator.

No. III, represents the same, projected upon the plane of a meridian. These two projections are against the tenor of the context of the Puránias: a Southern hemisphere being then absolutely unknown.
Here I have placed the three ranges of mountains, according to the documents of *Hindu* astronomers: but not according to their usual delineations: for, according to these, the three ranges should be represented by three concentric half circles, parallel to the meridians of the projection. It is acknowledged, that these ranges are in the direction of as many parallels of latitude. In that case the outermost ranges must be the longest: and this is the opinion of the *Jainas*, as I observed before, in the sixth paragraph of the first chapter.

No. IV, exhibits the old Continent, projected upon an imaginary circle passing through the North pole, and just grazing the equator in the South. Instead of a circle, it should be an oval, with the longest diameter East and West. But as the tracing of an oval would be attended with some difficulty, the indolent *Pauránics* have adopted the circle in its room; and seldom use the other. As such a delineation would be useless, I have, of course, omitted it.

The chasm in the North-West, through the mountains surrounding the world, was made by *Crishna*, when he went to see his prototype *Vishnu*, or the great spirit, the *Paramátmá* of the world, whose abode is among waters, in the land of darkness. Several heroes have passed since through this chasm, which will be the subject of a particular paragraph hereafter.

No. V, explains the true system of the known world, according to the *Puránias*, and the *Jainas*, reconciled with that of the astronomers of *India*.

Here the *Méru* of the *Pauránics* is brought back to its proper place, whilst the *Méru* of the astro-
nomers remains under the North pole. The zones between Jambu or India, and the Meru of the astronomers, are obviously our seven climates; and the points where the astronomical zones intersect the zones of the Pauranies round their respective centres equally called Meru, shew the true situation of the dwipas or countries, from which these zones, according to the system either of the astronomers or of the Pauranies, are equally denominated, whether they are reckoned relatively to the North pole, or to a centrical point in the elevated plains of Tartary.

No. VI, is a delineation of the country of Bharata, in the fullest acceptation of that denomination. Its nine divisions with Curu, or Siberia, and the Northern parts of Europe, making in all ten districts, were all destroyed by a violent storm, and inundation, except one. Thus the ten divisions of the Atlantis were all destroyed by a flood, except one, called Gades, which probably included Spain.

Some also are of opinion, that, out of the seven dwipas, six were likewise overwhelmed by a flood. This circumstance is also noticed in the third volume of the Ayin-Acheri. But I believe that this notion originated with the Puranicas, who, unable to point out these wonderful countries, described in so extravagant a manner in their sacred books, found that the best way was to swear, that they had disappeared.
The Worldly LOTOS.

No. 2

The SEVEN Dwipas

North Pole

J A M B U

South Pole

Cuīa
Piachā
Sālmali
Crauncha
Sācam
Punhecara
VIII.

On the Vēdas, or Sacred Writings of the Hindus.

BY H. T. COLEBROOKE, ESQ.

IN the early progress of researches into Indian literature, it was doubted, whether the Vēdas were extant; or, if portions of them were still preserved, whether any person, however learned in other respects, might be capable of understanding their obsolete dialect. It was believed too, that, if a Brāhmaṇa really possessed the Indian scriptures, his religious prejudices would nevertheless prevent his imparting the holy knowledge to any, but a regenerate Hindu. These notions, supported by popular tales, were cherished long after the Vēdas had been communicated to Dāra Shucoh; and parts of them translated into the Persian language, by him, or for his use*. The doubts were not finally abandoned, until Colonel Polier obtained from Jeyepūr a transcript of what purported to be a complete copy of the Vēdas, and which he deposited in the British Museum. About the same time, Sir Robert Chambers collected, at Benares, numerous fragments of the Indian scripture: General Martine, at a later period, obtained copies of some parts of it; and Sir William Jones was successful in procuring valuable portions of the Vēdas, and in translating several cu-

* Extracts have also been translated into the Hindi language: but it does not appear, upon what occasion this version into the vulgar dialect was made.
rious passages from one of them*. I have been still more fortunate in collecting at Benares, the text and commentary of a large portion of these celebrated books; and, without waiting to examine them more completely, than has been yet practicable, I shall here attempt to give a brief explanation of what they chiefly contain.

It is well known, that the original Vêda is believed, by Hindus, to have been revealed by Brahma; and to have been preserved by tradition, until it was arranged in its present order by a sage, who thence obtained the surname of Vya'sa, or Ve'davya'sa; that is, compiler of the Vêdas. He distributed the Indian scripture into four parts, which are severally entitled Rich, Yajush, Sâman, and 'At'harvan'a; and each of which bears the common denomination of Vêda.

Mr. Wilkins and Sir William Jones were led, by the consideration of several remarkable passages, to suspect, that the fourth is more modern than the other three. It is certain, that Menu, like others among the Indian lawgivers, always speaks of three only, and has barely alluded to the 'At'harvan'a†, without however terming it a Vêda. Passages of the Indian scripture itself seem to support the inference: for the fourth Vêda is not mentioned in the passage, cited by me in a former essay‡, from the white Yajush||; nor in the following text,

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† Menu, chap 11, v. 33.
‡ Essay Second, on Religious Ceremonies. See Asiatic Researches, Vol. VII. page 251.
|| From the 31st chapter; which, together with the preceding chapter (30th), relates to the Purushamêd'ha, a type of the allegorical immolation of Nara'yan'a, or of Brahma in that character.
quoted from the Indian scripture by the commentator of the Rich.

"The Rigveda originated from fire; the Yajurveda from air; and the Samaveda, from the sun."

Arguments in support of this opinion might be drawn even from popular dictionaries; for Amersinha notices only three Vedas, and mentions the Atharva without giving it the same denomination. It is, however, probable, that some portion at least of the Atharva is as ancient as the compilation of the three others; and its name, like theirs, is anterior to Vyasa's arrangement of them: but the same must be admitted in regard to the Itihasa and Puranas, which constitute a fifth Veda, as the Atharva does a fourth.

It would indeed be vain to quote in proof of this point, the Puranas themselves, which always enumerate four Vedas; and state the Itihasa and Puranas as a fifth: since the antiquity of some, among the Puranas now extant, is more than questionable; and the authenticity of any one, in particular, does not appear to be as yet sufficiently established. It would be as useless to cite the Manvadica and Tapanyja Upanishads, in which the Atharva-veda is enumerated among the scriptures, and in one of which the number of four Vedas is expressly affirmed: for both these Upanishads ap-

* Menu alludes to this fabulous origin of the Vedas, (chap. 1, v. 23). His commentator, Medhatithi, explains it by remarking, that the Rigveda opens with a hymn to fire; and the Yajurveda, with one, in which air is mentioned. But Cullu Cabhata has recourse to the renovations of the universe. 'In one Calpa, the Vedas proceeded from fire, air, and the sun; in another, from Brahma,' at his allegorical immolation.
pertain to the 'At'harvan'a itself. The mention of the sage At'harvan in various places, throughout the Vedas*, proves nothing: and even a text of the Yajurveda†, where he is named in contrast with the Rich, Yajush, and Sáman, and their supplement or Bráhman'a, is not decisive. But a very unexceptionable passage may be adduced, which the commentator of the Rich has quoted, for a different purpose, from the Ch'handogya Upanishad, a portion of the Sáman. In it, Na'reda, having solicited instruction from Sanatcum'a, and being interrogated by him, as to the extent of his previous knowledge, says, 'I have learnt the Rigveda, the Yajurveda, the Sámanveda, the 'At'harvan'a, [which is] the fourth, the Itihása and Purán'a, [which are] a fifth, and [grammar, or] the Véda of Vedas, the obsequies of the manes, the art of computation, the knowledge of omens, the revolutions of periods, the intention of speech [or art of reasoning], the maxims of ethicists, the divine science [or construction of scripture], the sciences appendant on holy writ [or accentuation, prosody, and religious rites], the adjuration of spirits, the art of the soldier, the science of astronomy, the charming of serpents, the science of demigods [or music and mechanical arts]: all this have I studied; yet do I only know the text, and have no knowledge of the soul‡.'

* Vide Védas passim.
† In the Tréntiriva Upanishad.
‡ Ch'handogya Upanishad, ch. 7, § 1. I insert the whole passage, because it contains an ample enumeration of the sciences. The names, by which grammar and the rest are indicated in the original text, are obscure; but the annotations of Sancara explain them.

This, like any other portion of a Véda where it is itself named, (for a few other instances occur;) must of course be more modern than another part, to which the name had been previously
From this, compared with other passages of less authority, and with the received notions of the Hindus themselves, it appears, that the Rich, Yajush, and Saiman, are the three principal portions of the Vedas; that the Ait'harvana is commonly admitted as a fourth; and that divers mythological poems, entitled Itihása and Purâñas, are reckoned a supplement to the scripture, and, as such, constitute a fifth Vedas.

The true reason, why the three first Vedas are often mentioned without any notice of the fourth, must be sought, not in their different origin and antiquity; but in the difference of their use and purport. Prayers, employed at solemn rites, called Yajnyas, have been placed in the three principal Vedas: those, which are in prose, are named Yajush; such, as are in metre, are denominated Rich; and some, which are intended to be chanted, are called Saiman: and these names, as distinguishing different portions of the Vedas, are anterior to assigned. It will hereafter be shown, that the Vedas are a compilation of prayers, called mantras; with a collection of precepts and maxims, entitled Brâhmana; from which last portion, the Upânishad is extracted. The prayers are properly the Vedas, and apparently preceded the Brâhmana.

* When the study of the Indian scriptures was more general than at present, especially among the Brâhmans of Canyakubja, learned priests derived titles from the number of Vedas, with which they were conversant. Since every priest was bound to study one Veda, no title was derived from the fulfilment of that duty; but a person, who had studied two Vedas, was surnamed Dwivedi; one, who was conversant with three, Trivédi; and one, versed in four, Chaturvédi: as the mythological poems were only figuratively called a Veda, no distinction appears to have been derived from a knowledge of them, in addition to the four scriptures. The titles, abovementioned, have become the surnames of families among the Brâhmans of Canôj, and are corrupted by vulgar pronunciation into Dôbê, Tiwârê, and Chanbé.
their separation in Vyas'a's compilation. But the \textit{At'harvan'a}, not being used at the religious ceremonies above-mentioned, and containing prayers employed at lustrations, at rites conciliating the deities, and as imprecations on enemies, is essentially different from the other \textit{Vedas}; as is remarked by the author of an elementary treatise on the classification of the \textit{Indian} sciences*.

But different schools of priests have admitted some variations in works which appear under the same title. This circumstance is accounted for by the commentators on the \textit{Vedas}, who relate the following story taken from \textit{Purânas}, and other authorities. Vyas'a, having compiled and arranged the scriptures, theogonies, and mythological poems, taught the several \textit{Vedas} to as many disciples: viz. the Rich to Paila; the Yajush to Vais'ampa'yana, and the Sáman to Jaimini; as also the \textit{At'harvan'a} to Sumantu, and the \textit{Itihasa} and \textit{Purânas} to Su'ta. These disciples instructed their respective pupils, who, becoming teachers in their turn, communicated the knowledge to their own disciples; until, at length, in the progress of successive instruction, so great variations crept into the text, or into the manner of reading and reciting it, and into the no less sacred precepts for its use and application, that eleven hundred different schools of scriptural knowledge arose.

The several \textit{Sanhitás}, or collections of prayers in each \textit{Veda}, as received in these numerous schools, or variations, more or less considerable, admitted by them either in the arrangement of the whole text (including prayers and precepts), or in regard to particular portions of it, constituted the \textit{Súchas}

* \textit{Mad'husu'dana Saraswati}, in the \textit{Prast'hanabhéda}. 
or branches of each Veda. Tradition, preserved in the Puránas, reckons sixteen Sanhitás of the Rigvédá; eighty-six of the Yajush; or, including those which branched from a second revelation of this Veda, a hundred and one; and not less than a thousand of the Sámavédá; besides nine of the 'At’hárva’á. But treatises on the study of the Veda reduce the Sáchás of the Rich, to five; and those of the Yajush, including both revelations of it, to eighty-six*.

The progress, by which (to use the language of the Puránas) the tree of science put forth its numerous branches, is thus related. Páila taught the Rigvédá, or Bálvarich, to two disciples, Bahcalal and Indrapramati. The first, also called Bahcalal, was the editor of a Sanhitá, or collection of prayers; and a ‘Sácha, bearing his name, still subsists: it is said to have first branched into four schools; afterwards into three others. Indrapramati communicated his knowledge to his own son Man’dúce’ya, by whom a Sanhitá was compiled: and from whom one of the Sáchás has derived its name. Védamitra, surnamed S’ácal’ya, studied under the same teacher, and gave a complete collection of prayers: it is still extant; but is said to have given origin to five varied editions of the same text. The two other and principal Sáchás of the Rich are those of As’wá-la’yanâ and Sa’n’chýa’yanâ, or, perhaps, Caushitaci: but the Vishnuuparáta omits them, and intimates, that Sa’capur’nt, a pupil of Indrapramati, gave the third varied edition from this teacher, and was also the author of the Niructa: if

* The authorities on which this is stated, are chiefly the Vishnu puráná, part 3, chap. 4, and the Vijeyavílása on the study of scripture; also, the Charanáryáha, on the Sáchás of the Védas.
so, he is the same with Yásca. His school seems to have been subdivided by the formation of three others derived from his disciples.

The Yajush, or Ad’hwaryu, consists of two different Vedas, which have separately branched out into various Suc’hás. To explain the names, by which both are distinguished, it is necessary to notice a legend, which is gravely related in the Puránás, and in the commentaries on the Védà.

The Yajush, in its original form, was at first taught by Vais’ampa’yana, to twenty-seven pupils. At this time, having instructed Ya’jnyawalcya, he appointed him to teach the Védà to other disciples. Being afterwards offended by the refusal of Ya’jnyawalcya to take on himself a share of the sin incurred by Vais’ampa’yana, who had unintentionally killed his own sister’s son, the resentful preceptor bade Ya’jnyawalcya relinquish the science, which he had learnt*. He instantly disgorged it in a tangible form. The rest of Vais’ampa’yana’s disciples, receiving his commands to pick up the disgorged Védà, assumed the form of partridges, and swallowed these texts which were soiled, and, for this reason, termed “black;” they are also denominated Taittiriya, from tittiri, the name for a partridge.

Ya’jnyawalcya, overwhelmed with sorrow, had recourse to the sun; and, through the favour of that luminary, obtained a new revelation of the Yajush; which is called “white,” or pure, in contradistinction to the other, and is likewise named Vájasaneyi, from a patronymick, as it should

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* The Vishnu purán’a, part 3, chap. 5. A different motive of resentment is assigned by others.
I have cited this absurd legend, because it is referred to by the commentators on the white Yajush. But I have yet found no allusion to it in the Veda itself, nor in the explanatory table of contents. On the contrary, the index of the black Yajush gives a different and more rational account. Vaisampayana, according to this authority, taught the Yajurveda to Ya'sca, who instructed Tittiri: from him Uc'ha received it, and communicated it to A'atreya: who framed the 'Sach'ha, which is named after him; and for which that Index is arranged.

The white Yajush was taught by Yajnyawalcya to fifteen pupils, who founded as many schools. The most remarkable of which are the 'Sach'has of Canwa and Madhyandina; and, next to them, those of the Jabalas, Baudháyanas, and Tápaníyas. The other branches of the Yajush seem to have

* Vrihad Aranyaca ad calcem. The passage is cited by the commentator on the Rigveda. In the index likewise, Yajnyawalcya is stated to have received the revelation from the sun.
† Cänd'anaucrama, verse 25. This index indicatorius is formed for the 'Atréyá S'áchá. Its author is Cun'dina, if the text (verse 27) be rightly interpreted.
‡ This agrees with the etymology of the word Taittriya; for, according to grammarians (see Páñini 4. iii. 102), the derivative here implies 'recited by Tittiri, though composed by a different person.' A similar explanation is given by commentators on the Upanishads.
been arranged in several classes. Thus the Characas, or students of a Sáč'ha, so denominated from the teacher of it, Characa, are stated as including ten subdivisions; among which are the Cat’has, or disciples of Cat’ha, a pupil of Vais’ampa’yana; as also the Śvetás-wataras, Aupamanyavas, and Maitráyaníyas: the last mentioned comprehend seven others. In like manner, the Taittir’yas are, in the first instance, subdivided into two, the Auc’hyáyas and Chándic’yas; and these last are again subdivided into five, the A’pasta’mbíyas, &c. Among them, A’pastamba’s Sáč’ha is still subsisting; and so is A’trey’ya’s, among those which branched from Uc’ha; but the rest, or most of them, are become rare, if not altogether obsolete.

Súmantú, son of Jaimini, studied the Sáma-védà, or Ch’ándógya, under his father: and his own son, Sucárman, studied under the same teacher, but founded a different school; which was the origin of two others, derived from his pupils, Hira’nyana’bha and Paushyinji, and thence branching into a thousand more. For Lóca’cshi, Cúthumi, and other disciples of Paushyinji, gave their names to separate schools, which were increased by their pupils. The Sáč’ha, entitled Caut’humí, still subsists. Hira’nyana’bha, the other pupil of Sucárman, had fifteen disciples, authors of Sanhitás, collectively called the northern Sámagas; and fifteen others, entitled the southern Sámagas: and Criti, one of his pupils, had twenty-four disciples, by whom, and by their followers, the other schools were founded. Most of them are now lost; and, according to a legend, were destroyed by the thunderbolt of Indra. The principal Sáč’ha now subsisting, is that of the Ráňáyaníyas, including seven subdivisions; one
of which is entitled Caushumi, as above-mentioned, and comprehends six distinct schools. That of the Talavacáras, likewise, is extant, at least, in part; as will be shown in speaking of the Upanishads.

The At'harva-vêda was taught by Sumantu, to his pupil Caband'ha, who divided it between DeVadars'â and Pathyâ. The first of these has given name to the S'âchá, entitled Devadarsî; as Pippala'dâ, the last of his four disciples, has, to the S'âchá of the Paippaládás. Another branch of the At'harvana derives its appellation from Saunaca, the third of Pathyâ's pupils. The rest are of less note.

Such is the brief history of the Vêda, deducible from the authorities before cited. But those numerous S'âchás did not differ so widely from each other, as might be inferred from the mention of an equal number of Sanhitás, or distinct collections of texts. In general, the various schools of the same Vêda seem to have used the same assemblage of prayers; they differed more in their copies of the precepts or Brâhma'ñas; and some received, into their canon of scripture, portions which do not appear to have been acknowledged by others. Yet the chief difference seems always to have been the use of particular rituals taught in aphorisms (Sútras) adopted by each school; and these do not constitute a portion of the Vêda; but, like grammar and astronomy, are placed among its appendages.

It may be here proper to remark, that each Vêda consists of two parts, denominated the Mantras and the Brâhma'ñas; or prayers and precepts. The complete collection of the hymns, prayers, and invocations, belonging to one Vêda, is entitled
its *Sanhitā*. Every other portion of Indian scripture is included under the general head of divinity (*Brāhmaṇa*). This comprises precepts, which inculcate religious duties; maxims, which explain those precepts; and arguments, which relate to theology*. But, in the present arrangement of the *Vedas*, the portion, which contains passages called *Brāhmaṇas*, includes many which are strictly prayers or *Mantras*. The theology of the Indian scripture, comprehending the argumentative portion entitled *Vedānta*, is contained in tracts denominated *Upanishads*; some of which are portions of the *Brāhmaṇa*, properly so called; others are found only in a detached form; and one is a part of a *Sanhitā* itself.

**On the Rīgveda.**

The *Sanhitā* of the first *Veda*† contains *mantras*, or prayers, which, for the most part, are encomiastic; as the name of the *Rīgveda* implies ‡. This collection is divided into eight parts

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* The explanation, here given, is taken from the *Prasthāna bhēda.*
† I have several copies of it, with the corresponding index for the *Śācylya*, *Śāchā*; and also an excellent commentary by *Sayan'acha'rya*. In another collection of *mantras*, belonging to the *Āśvalayani Śāchā* of this *Veda*, I find the first few sections of each lecture agree with the other copies; but the rest of the sections are omitted. I question whether it be intended as a complete copy for that *Śāchā*.
‡ Derived from the verb *rich*, to laud; and properly signifying any prayer or hymn, in which a deity is praised. As those are mostly in verse, the term becomes also applicable to such passages of any *Veda*, as are reducible to measure according to the rules of prosody. The first *Veda*, in *Vya'sa's* compilation, 1
(C'handa); each of which is subdivided into as many lectures (ad'hyāya). Another mode of division also runs through the volume; distinguishing ten books (māṇḍala), which are subdivided into more than a hundred chapters (anuvāca), and comprise a thousand hymns or invocations (sūcta). A further subdivision of more than two thousand sections (barga) is common to both methods; and the whole contains above ten thousand verses, or rather stanzas, of various measures.

On examining this voluminous compilation, a systematical arrangement is readily perceived. Successive chapters, and even entire books, comprise hymns of a single author: invocations, too, addressed to the same deities, hymns relating to like subjects, and prayers intended for similar occasions, are frequently classed together. This requires explanation.

In a regular perusal of the Vēdu, which is enjoined to all priests, and which is much practised by Mahrattas and Telingas, the student or reader is required to notice, especially, the author, subject, metre, and purpose of each mantra, or invocation. To understand the meaning of the passage is thought less important. The institutors of the Hindu system have indeed recommended the study of the sense; but they have inculcated with equal strenuousness, and more success, attention to the name of the Rishi or person, by whom the text was first uttered, the deity to whom it is addressed, or the subject to which it relates, and also its rhythm or metre, and its purpose, or the

comprehending most of these texts, is called the Riguēdu; or, as expressed in the Commentary on the Index, "because it abounds with such texts (Rich)."

Cc 3
religious ceremony at which it should be used. The practice of modern priests is conformable with these maxims. Like the Koran among the Mohammedans, the Veda is put into the hands of children in the first period of their education; and continues afterwards to be read by rote, for the sake of the words without comprehension of the sense.

Accordingly the Veda is recited in various superstitious modes: word by word, either simply disjoining them, or else repeating the words alternately, backwards and forwards, once or oftener. Copies of the Rigveda and Yajush (for the Samaveda is chanted only) are prepared for these and other modes of recital, and are called Pada, Crama, Jat’á, Ghana, &c. But the various ways of inverting the text are restricted, as it should appear, to the principal Vedas; that is, to the original editions of the Rigveda and Yajush: while the subsequent editions, in which the text, or the arrangement of it, is varied, being therefore deemed subordinate ‘Sáchhás, should be repeated only in a simple manner.

It seems here necessary to justify my interpretation of what is called the "Rishi of a mantra." The last term has been thought to signify an incantation rather than a prayer: and, so far as supernatural efficacy is ascribed to the mere recital of the words of a mantra, that interpretation is sufficiently accurate; and, as such, it is undoubtedly applicable to the unmeaning incantations of the Mantra-s‘astrA, or Tantras and Agamas. But the origin of the term is certainly different. Its derivation from a verb, which signifies ‘to speak privately,’ is readily explained by the injunction for meditating the text of the Veda, or reciting it
inaudibly: and the import of any mantra in the Indian scriptures, is generally found to be a prayer, containing either a petition to a deity, or else thanksgiving, praise, and adoration.

The Rishi or saint of a mantra is defined, both in the index of the Rgveda, and by commentators, “he, by whom it is spoken:” as the Devata, or deity, is, “that, which is therein mentioned.” In the index to the Vajasaneyi Yajurveda, the Rishi is interpreted “the seer or rememberer” of the text; and the Devata is said to be “contained in the prayer; or [named] at the commencement of it; or [indicated as] the deity, who shares the oblation, or the praise.” Conformably with these definitions, the deity, that is lauded or supplicated in the prayer, is its Devata: but in a few passages, which contain neither petition nor adoration, the subject is considered as the deity, that is spoken of. For example, the praise of generosity is the Devata of many entire hymns addressed to princes, from whom gifts were received by the authors.

The Rishi, or speaker, is of course rarely mentioned in the mantra itself: but, in some instances, he does name himself. A few passages too, among the matras of the Veda, are in the form of dialogue; and, in such cases, the discoursers were alternately considered as Rishi and Devata. In general, the person, to whom the passage was revealed, or, according to another gloss, by whom its use and application was first discovered *

* Translating literally, “the Rishi is he, by whom the text was seen.” Panini (4. ii. 7) employs the same term in explaining the import of derivatives used as denominations of passages in scripture; and his commentators concur with those of the
is called the Rishi of that mantra. He is evidently then the author of the prayer; notwithstanding the assertions of the Hindus, with whom it is an article of their creed, that the Vedas were composed by no human author. It must be understood, therefore, that, in affirming the primeval existence of their scriptures, they deny these works to be the original composition of the editor (Vya'sa), but believe them to have been gradually revealed to inspired writers.

The names of the respective authors of each passage are preserved in the Anumeraman'i, or explanatory table of contents, which has been handed down with the Veda itself, and of which the authority is unquestioned*. According to this index, Vis'wa'mitra is author of all the hymns contained in the third book of the Rigveda; as Bharadwa'ja is, with rare exceptions, the composer of those collected in the sixth book; Vasish'tha, in the seventh; Grîtsamada, in the second; Va'made'va in the fourth; and Bud'ha† and other descendants of Atri, in the fifth. But, in the remaining books of this Veda, the authors

Veda, in the explanation here given. By Rishi is generally meant the supposed inspired writer; sometimes, however, the imagined inspirer, is called the Rishi, or saint of the text; and, at other times, as above noticed, the dialogist or speaker of the sentence.

* It appears from a passage in the Vijeya vîlāsa, as also from the Vēdadīpa, or abridged commentary on the Vajasaneji, as well as from the index itself, that Ca'tya'yana is the acknowledged author of the index to the white Yajush. That of the Rigveda is ascribed by the commentator, to the same Ca'Tyaya'na, pupil of Saunaca. The several indexes of the Veda contribute to the preservation of the genuine text; especially, where the metre, or the number of syllables, is stated; as is generally the case.

† First of the name, and progenitor of the race of Kings called children of the moon.
are more various: among these, besides Agastya, Cas'ya'pa, son of Mara'chi, Angiras, Jama-dagni, son of Bhrigú, Para's'ara, father of Vy-a's'a, Gótama and his son No'd'has, Vrihaspati, Na'reda, and other celebrated Indian saints, the most conspicuous are Can'wa, and his numerous descendants, Me'd'hatit'hi, &c.; Mad'huch'han-das, and others among the posterity of Viswa-mit'ra; S'unas'ép'ha, son of Ajigarta; Cutsa, Hiran'ya's'tu'ya, Savya, and other descendants of Angiras; besides many other saints, among the posterity of personages above-mentioned.

It is worthy of remark, that several persons of royal birth (for instance, five sons of the king Vri'hangir; and Trayyarun'a and Trasadas'yu, who were themselves kings); are mentioned among the authors of the hymns, which constitute this Véda: and the text itself, in some places, actually points, and in others obviously alludes, to monarchs, whose names are familiar in the Indian heroic history. As this fact may contribute to fix the age, in which the Véda was composed, I shall here notice such passages of this tendency, as have yet fallen under my observation.

The sixth hymn of the eighteenth chapter of the first book, is spoken by an ascetic named Cac-shi'vat, in praise of the munificence of Swanaya, who had conferred immense gifts on him. The subject is continued in the seventh hymn, and concludes with a very strange dialogue between the king Bha'vayavy'a and his wife Rómasa', daughter of Vrihaspati. It should be remarked, concerning Cacshívat, that his mother Us'ic was bondmaid of king Anga's queen.

The eighth book opens with an invocation,
which alludes to a singular legend. 'Asanga, son of Playóga, and his successor on the throne, was metamorphosed into a woman; but retrieved his sex through the prayers of Med'hyatit'un, whom he therefore rewarded most liberally. In this hymn he is introduced praising his own munificence; and, towards the close of it, his wife 'Sas'wati', daughter of Angiras, exults in his restoration to manhood.

The next hymns applaud the liberality of the kings Vibhíndu, Pacast'haman (son of Curay'a'na), Cuñunga, Cas'u (son of Che'di), and Tírindira (son of Para's'u), who had severally bestowed splendid gifts on the respective authors of these thanksgivings. In the third chapter of the same book, the seventh hymn commends the generosity of Trasada'syu, the grandson of Ma'nd'ha'atri. The fourth chapter opens with an invocation containing praises of the liberality of Chitra; and the fourth hymn of the same chapter celebrates Varu, son of Susha'man.

In the first chapter of the tenth book, there is a hymn to water, spoken by a king, named Sind'hu-dwi'pa, the son of Ambarisha. The seventh chapter contains several passages, from the fifteenth to the eighteenth súcta, which allude to a remarkable legend. Asa'mati, son or descendant of Icsh-wa'cu, had deserted his former priests, and employed others: the forsaken Bráhma'ñas recited incantations for his destruction; his new priests, however, not only counteracted their evil designs, but retaliated on them, and caused the death of one of those Bráhma'ñas: the rest recited these prayers, for their own preservation, and for the revival of their companion.
The eighth chapter opens with a hymn, which alludes to a story respecting Na'bha'nedish'ta, son of Menu, who was excluded from participation with his brethren in the paternal inheritance. The legend itself is told in the Aitaréya Bráhmana*, or second portion of the Rógvéda.

Among other hymns by royal authors, in the subsequent chapters of the tenth book of the Sanhitá, I remark one by Ma'nd'há'tri, son of Yu-vana's'wa, and another by S'ivi, son of Us'ýnara, a third by Vasúmanas, son of Róhidas'wa, and a fourth by Pratárdána, son of Divóda'sa, king of Cús'.

The deities invoked appear, on a cursory inspection of the Védá, to be as various as the authors of the prayers addressed to them: but, according to the most ancient annotations on the Indian scripture, those numerous names of persons and things are all resolvable into different titles of three deities, and ultimately of one god. The Nighanti, or glossary of the Védas, concludes with three lists of names of deities: the first comprising such as are deemed synonymous with fire; the second, with air; and the third with the sun†. In the last part of the Niructa, which entirely relates to deities, it is twice asserted, that there are but three gods; 'Tisra éva dévatáh ‡.' The further

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* In the second lecture and fourteenth section of the fifth book.
† Nighanti, or first part of the Niructa, C. 5.
‡ In the second and third sections of the twelfth chapter, or lecture, of the glossary and illustrations of the Védá. The Niructa consists of three parts: the first, a glossary as above-mentioned, comprises five short chapters or lectures. The second, entitled Naígama, or the first half of the Niructa, properly so called, consists of six long chapters; and the third entitled Dáivata, or second half of the proper Niructa, contains eight more.
inference, that these intend but one deity, is supported by many passages in the Veda; and is very clearly and concisely stated in the beginning of the index to the Rgveda, on the authority of the Niructa, and of the Veda itself.

"Yasya vacyam, sa rishir; yá ténóchyaté, sá devatá; yad aehiara-parimánám, tach ch'handó. Art'hépsava rishayó dévatás ch'handóbhir abhyad' hávan.

"Tisra éva devatáh; cshält-antaricsha-dyu-st'há-ná, agnír váyuh súrya ity: évam vyáhrútayah próctá vyastáh; samastánám praýápatir. O'cára sarvadévatyah, páramésht'hyó va, bráhmó, daivó va, ád'hyátmicás. Tat tat st'háná anyás tad vibhútayah; carma prít'hacwád d'hi príthag abhid'háná stutayó bhavan
ty: écaiva vá mahán átmá dévatá; sa súrya ity áchacshaté; sa hi sarva-bhút átmá. Tad uctam rishin'á: "súryá átmá jagatás tást'húshaś ch'éti." Tad vibhútayó' nyá dévatás. Tad apy étad rishin" óctam: "Indram Mitram Varúnam Agnim áhur iti."

"The Rishi [of any particular passage] is he, whose speech it is; and that, which is thereby addressed, is the deity [of the text]: and the number of syllables constitutes the metre [of the prayer]. Sages (Rishis), solicitous of [attaining] particular objects, have approached the Gods with [prayers composed in] metre.

"The deities are only three; whose places are, the earth, the intermediate region, and heaven: [namely] fire, air, and the sun. They are pro-

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The chapter, here cited, is marked as the twelfth including the glossary, or seventh exclusive of it.
nounced to be [the deities] of the mysterious names* severally; and (Praja'pati) the lord of creatures is [the deity] of them collectively. The syllable Oṃ intends every deity: it belongs to (Paramēṣṭhī) him, who dwells in the supreme abode; it appertains to (Brahme) the vast one; to (Dēva) God; to (Ad'hyātma) the superintending soul. Other deities, belonging to those several regions, are portions of the [three] Gods; for they are variously named and described, on account of their different operations: but [in fact] there is only one deity, the great soul (Mahān ātmā). He is called the sun; for he is the soul of all beings; [and] that is declared by the sage, "the sun is the soul of (jagat) what moves, and of (tast’hush) that which is fixed." Other deities are portions of him: and that is expressly declared by the sage: "The wise call fire, Indra, Mitra, "and Varun’a;" &c.†

This passage of the Anucramani’i is partly abridged from the Niructa (c. 12), and partly taken from the Brāhmaṇa of the Vēda. It shows (what is also deducible from texts of the Indian scriptures, translated in the present and former essays), that the ancient Hindu religion, as founded on the Indian scriptures, recognises but one God; yet not sufficiently discriminating the creature from the creator.

* Bhur, bhuvaḥ, and swar; called the Vyākritis. See Menu, c. 2, v. 76. In the original text, the nominative case is here used for the genitive; as is remarked by the Commentator, on this passage. Such irregularities are frequent in the Vēdas themselves.
† Niructa, c. 12, § 4, ad finem. The remainder of the passage, that is here briefly cited by the author of the Index, identifies fire with the great and only soul.
The subjects and uses of the prayers contained in the Vēda, differ more than the deities which are invoked, or the titles by which they are addressed. Every line is replete with allusions to mythology*, and to the Indian notions of the divine nature and of celestial spirits. For the innumerable ceremonies to be performed by a householder, and, still more, for those endless rites enjoined to hermits and asceticks, a choice of prayers is offered in every stage of the celebration. It may be here sufficient to observe, that Indra, or the firmament, fire, the sun, the moon, water, air, the spirits, the atmosphere and the earth, are the objects most frequently addressed: and the various and repeated sacrifices with fire, and the drinking of the milky juice of the moon-plant or acid asclepias†, furnish abundant occasion for numerous prayers adapted to the many stages of those religious rites. I shall, therefore, select for remark such prayers as seem most singular; rather than such as might appear the fairest specimens of this Vēda.

In the fifteenth chapter of the first book, there are two hymns ascribed to Cutsa, and also to Tritya, son of water. Three asceticks, brothers it should

* Not a mythology which avowedly exalts deified heroes (as in the Purānīs); but one, which personifies the elements and planets; and which peoples heaven, and the world below, with various orders of beings.

I observe, however, in many places, the ground-work of legends, which are familiar in mythological poems; such, for example, as the demon Vritra, slain by Indra, who is thence surnamed Vritrahan; but I do not remark anything that corresponds with the favourite legends of those sects, which worship either the Linga, or Sacti, or else Rāma or Crishnā. I except some detached portions, the genuineness of which appears doubtful; as will be shown towards the close of this essay.

† Soma-latā, Asclepias acida, or Cynanchum viminale.
The twenty-third chapter of the same book commences with a dialogue between Agastya, Indra, and the Maruts; and the remainder of that, with the whole of the twenty-fourth chapter, comprises twenty-six hymns addressed by Agastya to those divinities, and to the Aswins, fire, the sun, and some other deities. The last of these hymns was uttered by Agastya, under the apprehension of poison; and is directed by rituals to be used as an incantation against the effects of venom. Other incantations, applicable to the same purpose, occur in various parts of the Veda; for example, a prayer by Vasishtha for preservation from poison (book 7, ch. 3, § 18).

The third book, distributed into five chapters, contains invocations by Viswamitra, son of Gathin, and grandson of Cusica. The last hymn or Sûlsa, in this book, consists of six prayers, one of which includes the celebrated Gâyatri: this remarkable text is repeated more than once in other Vedas; but, since Viswamitra is acknowledged to be the Rishi, to whom it was
first revealed, it appears, that its proper and original place is in this hymn. I therefore subjoin a translation of the prayer, which contains it, as also the preceding one, (both of which are addressed to the sun;) for the sake of exhibiting the Indian priest's confession of faith with its context; after having, in former essays, given more than one version of it apart from the rest of the text. The other prayers, contained in the same Sûcta, being addressed to other deities, are here omitted.

'This new and excellent praise of thee, O splendid, playful, sun (Pûshâya)! is offered by us to thee. Be gratified by this my speech: approach this craving mind, as a fond man seeks a woman. May that sun (Pûshan), who contemplates, and looks into, all worlds, be our protector.'

'Let us meditate on the adorable light of the divine ruler (Savitrî): may it guide our intellects. Desirous of food, we solicit the gift of the splendid sun (Savitrî), who should be studiously worshipped. Venerable men, guided by the understanding, salute the divine sun (Savitrî) with oblations and praise.'

The two last hymns, in the third chapter of the 7th book, are remarkable; as being addressed to the guardian spirit of a dwelling house, and used as prayers, to be recited with oblations, on building a house. The legend, belonging to the second of these hymns, is singular: Vasish'Tha,

* Sayân'ach'arya, the commentator whose gloss is here followed, considers this passage to admit of two interpretations: 'the light, or Brahma constituting the splendour, of the supreme ruler, or creator of the universe;' or 'the light, or orb, of the splendid sun.'
coming at night to the house of Varuna, (with the intention of sleeping there, say some; but, as others affirm, with the design of stealing grain to appease his hunger, after a fast of three days,) was assailed by the house dog. He uttered this prayer, or incantation, to lay asleep the dog who was barking at, and attempting to bite, him. A literal version of the first of those hymns is here subjoined.

"Guardian of this abode! be acquainted with us; be to us a wholesome dwelling; afford us what we ask of thee; and grant happiness to our bipeds and quadrupeds. Guardian of this house! increase both us and our wealth. Moon! while thou art friendly, may we, with our kine and our horses, be exempted from decrepitude; guard us as a father protects his offspring. Guardian of this dwelling! may we be united with a happy, delightful, and melodious abode afforded by thee: guard our wealth now under thy protection, or yet in expectancy; and do thou defend us."

The fourth hymn, in the fourth chapter, concludes with a prayer to Rudra, which, being used with oblations after a fast of three days, is supposed to ensure a happy life of a hundred years. In the sixth book, three hymns occur, which, being recited with worship to the sun, are believed to occasion a fall of rain after the lapse of five days: the two first are aptly addressed to a cloud; and the third is so, to frogs, because these had croaked while Vasishtha recited the preceding prayers, which circumstance he accepted as a good omen.

The sixth chapter of the tenth book closes with two hymns, the prayer of which is the destruct-
tion of enemies, and which are used at sacrifices for that purpose.

The seventh chapter opens with a hymn, in which Sūrya', surnamed Savitri, the wife of the moon*, is made the speaker; as Dāshīna', daughter of Praja'pati, and Juhu, daughter of Brah...
I range with the Rudras, with the Vasus, with the Adityas, and with the Visvadévás. I uphold both the sun and the ocean [Mitra and Varúna], the firmament [Indra] and fire, and both the As'wíns. I support the moon [So'ma], destroyer [of foes]; and [the sun entitled] Twashtri, Pu'šhan, or Bhaga. I grant wealth to the honest votary who performs sacrifices, offers oblations, and satisfies [the deities]. Me, who am the queen, the conferrer of wealth, the possessor of knowledge, and first of such as merit worship, the gods render, universally, present everywhere, and pervader of all beings. He, who eats food through me, as he, who sees, who breathes, or who hears, through me, yet knows me not, is lost; hear then the faith, which I pronounce. Even I declare this self, who is worshipped by gods and men: I make strong, whom I choose; I make him Brahmá, holy, and wise. For Rudra I bend the bow, to slay the demon, foe of Brahma; for the people I make war [on their foes]; and I pervade heaven and earth. I bore the father, on the head of this [universal mind]; and my origin is in the midst of the ocean*: and, therefore, do I pervade all beings, and touch this heaven with my form. Originating all beings, I pass like the breeze; I am above this heaven, beyond this earth; and what is the great one, that am I.'

* Heaven, or the sky, is the father; as expressly declared in another place: and the sky is produced from mind, according to one more passage of the Vedas. Its birth is therefore placed on the head of the supreme mind. The commentator suggests three interpretations of the sequel of the stanza: 'my parent, the holy Ambhrin'a, is in the midst of the ocean;' or, 'my origin, the sentient deity, is in waters, which constitute the bodies of the gods;' or, 'the sentient god, who is in the midst of the waters, which pervade intellect, is my origin.'
The tenth chapter closes with a hymn to night; and the eleventh begins with two hymns relative to the creation of the world. Another, on this subject was translated in a former essay*: it is the last hymn, but one, in the Rigveda; and the author of it is Ag'hamarshana (a son of Mad'huch'handas), from whom it takes the name by which it is generally cited. The other hymns, of which a version is here subjoined, are not ascribed to any ascertained author. Praja'pati, surnamed Paramēshi, and his son Yajnya, are stated as the original speakers. But, of these names, one is a title of the primeval spirit; and the other seems to allude to the allegorical immolation of Brahmā.

I. 'Then was there no entity, nor nonentity; no world, nor sky, nor ought above it: nothing, any where, in the happiness of any one, involving or involved; nor water, deep and dangerous. Death was not; nor then was immortality; nor distinction of day or night. But that breath without afflation, single with (Swad'hā) her who is sustained within him. Other than him, nothing existed, [which] since [has been]. Darkness there was; [for] this universe was enveloped with darkness, and was undistinguishable [like fluids mixed in] waters: but that mass, which was covered by the husk, was [at length] produced by the power

† The pronoun (tad), thus emphatically used, is understood to intend the supreme being according to the doctrines of the Vêdânta. When manifested by creation, he is the entity (sat); while forms, being mere illusion, are nonentity (asat). The whole of this hymn is expounded according to the received doctrines of the Indian theology, or Vêdânta. Darkness and desire (Tamas and Cûma) bear a distant resemblance to the Chaos and Eros of Hesiod. Theog. v. 116.
of contemplation. First desire was formed in his mind; and that became the original productive seed; which the wise, recognising it by the intellect in their hearts, distinguish, in nonentity, as the bond of entity.’

‘Did the luminous ray of these [creative acts] expand in the middle? or above? or below? That productive seed, at once, became providence [or sentient souls], and matter [or the elements]: she, who is sustained within himself*, was inferior; and he, who heeds, was superior.’

‘Who knows exactly, and who shall in this world declare, whence and why this creation took place? The gods are subsequent to the production of this world: then who can know whence it proceeded? or whence this varied world arose? or whether it uphold [itself], or not? He, who, in the highest heaven, is the ruler of this universe, does indeed know; but not another can possess that knowledge.’

II. ‘That victim, who was wove with threads on every side, and stretched by the labors of a hundred and one gods, the fathers, who wove and framed and placed the warp and woof, do worship. The [first] male spreads and encompasses this [web]; and displays it in this world and in heaven: these rays [of the creator] assembled at the altar, and prepared the holy strains, and the threads of the warp.’

‘What was the size of that divine victim, whom all the gods sacrificed? What was his form? what

* So Swad'ha is expounded: and the commentator makes it equivalent to Mâyâ, or the world of ideas.
the motive? the fence? the metre? the oblation? and the prayer? First was produced the Gāyatrī joined with fire; next the sun (Savitṛi) attended, by Ushnīh; then the splendid moon with Amūshṭubh, and with prayers; while Vrīhatī accompanied the elocution of Vṛūhapsatī (or the planet Jupiter). Vīrātī was supported by the sun and by water (Mitraitāvarūn'ā); but the [middle] portion of the day and Trīshtubh were here the attendants of Indra; Jāgati followed all the gods: and by that [universal] sacrifice, sages and men were formed.'

'When that ancient sacrifice was completed, sages, and men, and our progenitors, were by him formed. Viewing with an observant mind this oblation, which primeval saints offered, I venerate them. The seven inspired sages, with prayers and with thanksgivings, follow the path of these primeval saints, and wisely practise [the performance of sacrifices], as charioteers use reins [to guide their steeds].'

Some parts of these hymns bear an evident resemblance to one, which has been before cited from the white Yajush*, and to which I shall again advert in speaking of that Vēda. The commentator on the Rigveda quotes it to supply some omissions in this text. It appears also, on the faith of his citations, that passages, analogous to these, occur in the Taittirīyāca, or black Yajush, and also in the Brāhmana of the Vēda.

The hundred and one gods, who are the agents in the framing of the universe typified by a sacri-

fice, are, according to this commentator, the years of Brahma's life, or his afflations personified in the form of Angiras, &c. The seven sages, who instituted sacrifices in imitation of the primeval type, are Marychi, and others. Gayat'i, Ushnih, &c. are names of metres, or of the various lengths of stanzas and measured verses, in the Vedas.

The preceding quotations may be sufficient to show the style of this part of the Veda; which comprehends the prayers and invocations.

Another part belonging, as it appears, to the same Veda, is entitled Aitaréya Brãhmans. It is divided into eight books (panjicâ), each containing five chapters or lectures (ad'hyâya), and subdivided into an unequal number of sections (chandâ), amounting in the whole to two hundred and eighty-five. Being partly in prose, the number of distinct passages contained in those multiplied sections need not be indicated.

For want either of a complete commentary *, or of an explanatory index †, I cannot undertake from a cursory perusal, to describe the whole contents of this part of the Veda. I observe, however, many curious passages in it, especially towards the close. The seventh book had treated of sacrifices performed by kings: the subject is continued in the first four chapters of the eighth book; and three of these relate to a ceremony for the consecration of kings, by pouring on their

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* I possess three entire copies of the text, but a part only of the commentary by Sa'yan'achârya.
† The index before-mentioned does not extend to this part of the Veda.
heads, while seated on a throne prepared for the purpose, water mixed with honey, clarified butter, and spirituous liquor, as well as two sorts of grass and the sprouts of corn. This ceremony, called Abhiséca, is celebrated on the accession of a king; and subsequently, on divers occasions, as part of the rites belonging to certain solemn sacrifices performed for the attainment of particular objects.

The mode of its celebration is the subject of the second chapter of the eighth book; or thirty-seventh chapter, reckoned (as is done by the commentator) from the beginning of the Aitáréya. It contains an instance, which is not singular in the Védas, though it be rather uncommon in their didactick portion, of a disquisition on a difference of opinion among inspired authors. 'Some,' it says, 'direct the consecration to be completed with the appropriate prayer, but without the sacred words (Vyáhritis), which they here deem superfluous: others, and particularly Satyaca'ma, son of Ja'ba'la, enjoin the complete recitation of those words, for reasons explained at full length; and Uddá'laca, son of Aru'na, has therefore so ordained the performance of the ceremony.'

The subject of this chapter is concluded by the following remarkable passage. 'Well knowing all the [efficacy of consecration], Janamejáya, son of Parícshit, declared; “Priests, conversant with this ceremony, assist me, who am likewise apprized [of its benefits], to celebrate the solemn rite. Therefore, do I conquer [in single combat]; therefore, do I defeat arrayed forces with an arrayed army: neither the arrows of the gods, nor those of men, reach me: I shall live the full period of life; I shall remain master of the whole earth.” Truly neither the arrows of the gods,
nor those of men, do reach him, whom well instructed priests assist in celebrating the solemn rite: he lives the full period of life; he remains master of the whole earth.'

The thirty-eighth chapter (or third of the eighth book) describes a supposed consecration of Indra, when elected by the gods to be their king. It consists of similar, but more solemn, rites; including, among other peculiarities, a fanciful construction of his throne with texts of the Véda; besides a repetition of the ceremony of consecration in various regions, to ensure universal dominion. This last part of the description merits to be quoted, on account of the geographical hints which it contains.

'After [his inauguration by Praja'pati], the divine Vasús consecrated him in the eastern region, with the same prayers in verse and in prose, and with the same holy words, [as before-mentioned,] in thirty-one days, to ensure his just domination. Therefore, [even now,] the several kings of the Práchyas, in the East, are consecrated, after the practice of the gods, to equitable rule (Sámrájya); and [people] call those consecrated princes, Samráj*.

'Next the divine Rudras consecrated him in the southern region, with the same prayers in verse and in prose, and with the same holy words, in thirty-one days, to ensure increase of happiness. Therefore, the several kings of the Satwats, in the

* In the nominative case, Samrical, Samrād, or Samrāl; substituting in this place a liquid letter, which is peculiar to the Véda, and to the southern dialects of India; and which approaches, in sound, to the common t.
south, are consecrated, after the practice of the gods, to the increase of enjoyment (Bhójya); and [people] name those consecrated princes, Bhója.

'Then the divine Adityas consecrated him in the western region, with, &c., to ensure sole dominion. Therefore, the several kings of the Níchyas and Apáchyas, in the West, are consecrated, &c. to sole dominion; and [people] denominate them Swaráj*.

'Afterwards all the gods (Visvē dēva) consecrated him in the northern region, with, &c., to ensure separate domination. Therefore, the several [deities, who govern the] countries of Uttara curu and Uttara madra, beyond Himavat, in the North, are consecrated, &c. to distinct rule (Vairájya), and [people] term them Viráj †.

'Next the divine Sád'hyas and A'ptyas consecrated him, in this middle, central, and present region, with, &c., for local dominion. Therefore, the several kings of Curu and Panchála, as well as Vás'a and Uśinara, in the middle, central, and present region, are consecrated, &c. to sovereignty (Rájya); and [people] entitle them Rájá..

'Lastly, the Maruts, and the gods named Angiras, consecrated him, in the upper region, with, &c., to promote his attainment of the supreme abode, and to ensure his mighty domination, superior rule, independent power, and long reign: and, therefore, he became a supreme deity (Paraméshi'hi) and ruler over creatures.

* In the nominative case, Svarát', Svarád, or Svarál.
† In the nominative, Virát', Virád, or Virál.
"Thus consecrated by that great inauguration, Indra subdued all conquerable [earths], and won all worlds: he obtained, over all the gods, supremacy, transcendent rank and pre-eminence. Conquering, in this world [below], equitable domination, happiness, sole dominion, separate authority, attainment of the supreme abode, sovereignty, mighty power, and superior rule; becoming a self-existent being and independent ruler, exempt from [early] dissolution; and reaching all [his] wishes in that celestial world; he became immortal: he became immortal."

The thirty-ninth chapter is relative to a peculiarly solemn rite, performed in imitation of the fabulous inauguration of Indra. It is imagined that this celebration becomes a cause of obtaining great power and universal monarchy; and the three last sections of the chapter recite instances of its successful practice. Though replete with enormous and absurd exaggerations, they are here translated at full length, as not unimportant, since many kings are mentioned, whose names are familiar in the heroick history of India.

§ VII. 'By this great inauguration similar to Indra's, Tura, son of Cavasha, consecrated Janamejaya, son of Paricshit; and, therefore, did Janamejaya, son of Paricshit, subdue the earth completely, all around, and traverse it every way, and perform a sacrifice with a horse as an offering.

* In the didactick portion of the Veda, the last term, in every chapter, is repeated to indicate its conclusion. This repetition was not preserved in a former quotation, from the necessity of varying considerably the order of the words.
Concerning that solemn sacrifice, this verse is universally chanted. "In Asandlvat, Janame-Jaya bound [as an offering] to the gods, a horse fed with grain, marked with a white star on his forehead, and bearing a green wreath round his neck."

By this, &c. Chyavana, son of Bhrigu, consecrated Sarvata sprung from the race of Menu: and, therefore, did he subdue, &c. He became likewise a householder in the service of the gods.

By this, &c. Somas'ushman, grandson of Vajaratna, consecrated 'Satani'ca, son of Satra'jit: and, therefore, did he subdue, &c.

By this, &c. Parvata and Nareda consecrated Ambasht'hya: and, therefore, &c.

By this, &c. Parvata and Nareda consecrated Yud'ha'ns'raushti, grandson of Ugrase'na; and, therefore, &c.

By this, &c. Casyapa consecrated Viswacarm'an, son of Bhuvana; and, therefore, did he subdue, &c.

The earth, as sages relate, thus addressed him: "No mortal has a right to give me away; yet thou, O Viswacarm'an, son of Bhuvana, dost wish to do so. I will sink in the midst of the waters; and vain has been thy promise to Casyapa."

* So great was the efficacy of consecration, observes the commentator in this place, that the submersion of the earth was thereby prevented, notwithstanding this declaration.
By this, &c. Vasisht'ha consecrated Sudas, son of Pijavana; and, therefore, &c.

By this, &c. Samvarta, son of Angiras, consecrated Marutta, son of Avicshit; and, therefore, &c.

On that subject this verse is everywhere chanted, "The divine Maruts dwelt in the house of Marutta, as his guards; and all the gods were companions of the son of Avicshit, whose every wish was fulfilled."

§ VIII. 'By this great inauguration similar to Indra's, Udamaya, son of Atri, consecrated Anga; and, therefore, did Anga subdue the earth completely all around, and traverse it every way, and perform a sacrifice with a horse as an offering.

'He, perfect in his person, thus addressed [the priest, who was busy on some sacrifice], "Invite me to this solemn rite, and I will give thee [to complete it], holy man! ten thousand elephants and ten thousand female slaves."

'On that subject these verses are everywhere chanted, "Of the cows, for which the sons of Priyamed'ha assisted Udamaya in the solemn rite, this son of Atri gave them, [every day] at noon, two thousand each, out of a thousand millions.

"The son of Viro'chana [Anga] unbound and gave, while his priest performed the solemn sacrifice, eighty thousand white horses fit for use.

* All this, observes the commentator, was owing to his solemn inauguration.
The son of Atri bestowed in gifts ten thousand women adorned with necklaces, all daughters of opulent persons, and brought from various countries.

While distributing ten thousand elephants in Avachatruca, the holy son of Atri grew tired and dispatched messengers to finish the distribution.

"A hundred [I give] to you;" "A hundred to you," still the holy man grew tired; and was at last forced to draw breath, while bestowing them by thousands *.

§ IX. 'By this great inauguration, similar to Indra's, Dīrg'hatamas, son of Mamata', consecrated Bharata, the son of Duhshanta †; and, therefore, did Bharata, son of Duhshanta, subdue the earth completely all around, and traverse it every way, and perform repeated sacrifices with horses as offerings.

On that subject too, these verses are everywhere chanted. "Bharata distributed in Māsh'n'ara," a hundred and seven thousand millions of black elephants with white tusks, and decked with gold.

* It was through the solemn inauguration of Anga, that his priest was able to give such great alms. This remark is by the Commentator.
† So the name should be written, as appears from this passage of the Veda; and not, as in copies of some of the Purānās, Dushmanta, or Dushyantha.
‡ The several manuscripts differ on this name of a country; and, having no other information respecting it, I am not confident that I have selected the best reading. This observation is applicable also to some other uncommon names.
"A sacred fire was lighted for Bharata, son of Duhshanta, in Sāchigunā, at which a thousand Brāhmanas shared a thousand millions of cows apiece.

"Bharata, son of Duhshanta, bound seventy-eight horses [for solemn rites] near the Yamunā; and fifty-five, in Vṛitrag'ha, on the Gangā.

"Having thus bound a hundred and thirty-three horses fit for sacred rites, the son of Duhshanta became pre-eminently wise, and surpassed the prudence of [every rival] king.

"This great achievement of Bharata, neither former nor later persons [have equalled]; the five classes of men have not attained his feats, any more than a mortal [can reach] heaven with his hands*.

'The holy saint, Vrihaduct'ha, taught this great inauguration to Durmuc'ha, king of Pānchāla; and, therefore, Durmuc'ha, the Pānchāla, being a king, subdued by means of that knowledge the whole earth around, and traversed it every way†.

'The son of Satyahavya, sprung from the race of Vasisht'ha, communicated this great inauguration to Atyara'ti, son of Janantapa; and, therefore, Atyara'ti, son of Janantapa,

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* All this, says the commentator, shows the efficacy of inauguration.
† It is here remarked, in the commentary, that a Brāhman'a, being incompetent to receive consecration, is however capable of knowing its form: the efficacy of which knowledge is shown in this place,
being no king, [nevertheless] subdued by means of that knowledge the whole earth around, and traversed it every way.

'SA'TYAHAVYA, of the race of VASISHTH'A, addressed him, saying, "Thou hast conquered the whole earth around; [now] aggrandize me." ATRYAR'ATI, son of JANANTAPA, replied; "When I conquer Uttaracuru, then thou shalt be king of the earth, holy man! and I will be merely thy general." SA'TYAHAVYA rejoined; "That is the land of the gods; no mortal can subdue it: thou hast been ungrateful towards me; and, therefore, I resume from thee this [power]." Hence the king SUSHMIN' A, son of S'IVI, destroyer of foes, slew ATRYAR'ATI, who was [thus] divested of vigour and deprived of strength.

'Therefore let not a soldier be ungrateful towards the priest, who is acquainted [with the form], and practises [the celebration, of this ceremony]; lest he lose his kingdom, and forfeit his life; lest he forfeit his life.'

To elucidate this last story, it is necessary to observe, that, before the commencement of the ceremony of inauguration, the priest swears the soldier by a most solemn oath, not to injure him. A similar oath, as is observed in this place by the commentator, had been administered previously to the communication of that knowledge, to which ATRYAR'ATI owed his success. The priest considered his answer as illusory and insulting, because Uttaracuru, being north of MÉRU, is the land of the gods, and cannot be conquered by men: as this ungrateful answer was a breach of his oath, the priest withdrew his power from him; and, in consequence, he was slain by the foe.
The fortieth and last chapter of the Aitarkya Brahmana, relates to the benefit of entertaining a Puróhita, or appointed priest; the selection of a proper person for that station; and the mode of his appointment by the king; together with the functions to be discharged by him. The last section describes rites to be performed, under the direction of such a priest, for the destruction of the king's enemies. As it appears curious, the whole description is here translated; abridging, however, as in other instances, the frequent repetitions with which it abounds.

'Next then [is described] destruction around air (Brahme)*. Foes, enemies, and rivals, perish around him, who is conversant with these rites. That, which [moves] in the atmosphere, is air (Brahme), around which perish five deities, lightning, rain, the moon, the sun, and fire.

'Lightning having flashed, disappears behind rain†: it vanishes, and none know [whither it is gone]. When a man dies, he vanishes; and none know [whither his soul is gone]. Therefore, whenever lightning perishes, pronounce this [prayer]; "May my enemy perish: may he disappear, and none know [where he is]." Soon, indeed, none will know [whither he is gone].

'Rain having fallen, [evaporates and] disappears within the moon, &c. When rain ceases, pronounce this [prayer], &c.

'The moon, at the conjunction, disappears

* So this observance is denominated, viz. Brahman'ah pari-marah.
† Behind a cloud.
 Volume VIII.

within the sun, &c. When the moon is dark, pronounce, &c.

' The sun, when setting, disappears in fire, &c. When the sun sets, pronounce, &c.

' Fire, ascending, disappears in air, &c. When fire is extinguished, pronounce, &c.

' These same deities are again produced from this very origin. Fire is born of air; for, urged with force by the breath, it increases. Viewing it, pronounce [this prayer]. “May fire be revived; but not my foe be reproduced: may he depart averted.” Therefore, does the enemy go far away.

' The sun is born of fire†. Viewing it, say, “May the sun rise; but not my foe be reproduced, &c.”

' The moon is born of the sun‡. Viewing it, say, “May the moon be renewed, &c.”

' Rain is produced from the moon§. Viewing it, say, “May rain be produced, &c.”

* The Taittiriya Yajurveda contains a passage, which may serve to explain this notion; ‘The sun, at eve, penetrates fire; and, therefore, fire is seen afar at night: for both are luminous.’

† At night, as the commentator now observes, the sun disappears in fire: but re-appears thence next day. Accordingly, fire is destitute of splendour by day, and the sun shines brighter.

‡ The moon, as is remarked in the commentary, disappears within the sun at the conjunction; but is reproduced from the sun, on the first day of the bright fortnight.

§ Here the commentator remarks, Rain enters the lunar orb, which consists of water; and, at a subsequent time, it is reproduced from the moon.
Lightning comes of rain. Viewing it, say, "May lightning appear, &c."

Such is destruction around air. Maitre'ya, son of Cusha'ru, communicated these rites to Sutwan, son of Ciris'a, descended from Bha'rga. Five kings perished around him; and Sutwan attained greatness.

The observance [enjoined] to him [who undertakes these rites, is, as follows]: let him not sit down earlier than the foe; but stand, while he thinks him standing. Let him not lie down earlier than the foe; but sit, while he thinks him sitting. Let him not sleep earlier than the foe; but wake, while he thinks him waking. Though his enemy had a head of stone, soon does he slay him: he does slay him.'

Before I quit this portion of the Vêda, I think it right to add, that the close of the seventh book contains the mention of several monarchs, to whom the observance, there described, was taught by divers sages. For a reason before-mentioned, I shall subjoin the names. They are Vis'wantara, son of Sushadman; Sahade'va, son of Sarja, and his son Sômaca; Babhiru, son of De'va- vrîd'ha, Bhîma of Vidarbeta, Nagna'jit of Gand'ha'ra, Sanas'ruta of Arinda'ma, Ritu-vid of Janaca; besides Janamêjaya and Su'da's, who have been also noticed in another place.

The Aitare'ya A'ranyaca is another portion of the Rîgveda. It comprises eighteen chapters or lectures unequally distributed in five books (A'ra- n'yaca). The second, which is the longest, for it...
contains seven lectures, constitutes with the third an Upanishad of this Veda, entitled the Bahuvrīch Brāhmaṇa Upanishad; or, more commonly, the Aitareya, as having been recited by a sage named AITAREYA*. The four last lectures of that second A'ranyaca, are particularly consonant to the theological doctrines of the Vēdānta; and are accordingly selected by the theologians of the Vēdāntī school, as the proper Aitareya Upanishad†. The

* It is so affirmed by ANANDATIR'THA in his notes: and he, and the commentator, whom he annotates, state the original speaker of this Upanishad to be MAHIDA'SA, an incarnation of NA'RĀ'YAN'A, proceeding from VIS'AL'A, son of ABJA. He adds, that, on the sudden appearance of this deity at a solemn celebration, the whole assembly of gods and priests fainted: but, at the intercession of BRAHMA, they were revived; and, after making their obeisance, they were instructed in holy science: this Avatar was called MAHIDA'SA, because those venerable personages (Mahīn) declared themselves his slaves (dāsa).

In the concluding title of one transcript of this A'tan'ya, I find it ascribed to A'SWALĀ'YANA: probably, by an error of the transcriber. On the other hand, SAUNACA appears to be author of some texts of the A'ranyā; for a passage, from the second lecture of the fifth (Ar. 5, lect. 2, § 11), is cited as SAUNACA'S, by the commentator on the prayers of the Rigveda (lect. 1, § 15).

† I have two copies of SANCARA'S commentary, and one of annotations on his gloss by NA'RĀ'YAN'ENDRA; likewise a copy of SAYANA'S commentary on the same theological tract, and also on the third A'ranyaca; besides annotations by ANANDATIR'THA on a different gloss, for the entire Upanishad. The concluding prayer, or seventh lecture of the second A'ranyaca, was omitted by SANCARA, as sufficiently perspicuous: but is expounded by SAYANA, whose exposition is the same, which is added by SANCARA'S commentator: and which transcribers sometimes subjoin to SANCARA'S gloss.

As an instance of singular and needless frauds, I must mention, that the work of ANANDATIR'THA was sold to me, under a different title, as a commentary on the Taitàtirīya sanhītā of the Yajurveda. The running titles, at the end of each chapter, had been altered accordingly. On examination, I found it to be a different, but valuable work; as above described.
following is literally translated from this portion of the second *A'raṇyaca*.

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The *Aitare'ya A'raṇ'ya*. B. 2.

§ IV. 'Originally this [universe] was indeed soul only; nothing else whatsoever existed, active [or inactive]. He thought, “I will create worlds;” thus he created these [various] worlds; water, light, mortal [beings] and the waters. That “water,” is the [region] above the heaven, which heaven upholds; the atmosphere comprises light; the earth is mortal; and the regions below are “the waters *.”

'He thought, “these are indeed worlds; I will create guardians of worlds.” Thus he drew from the waters, and framed, an embodied being †. He viewed him; and of that being, so contemplated, the mouth opened as an egg: from the mouth, speech issued; from speech, fire proceeded. The nostrils spread; from the nostrils, breath passed; from breath, air was propagated. The eyes opened: from the eyes, a glance sprung; from that glance, the sun was produced. The ears dilated: from the ears came hearkening; and from that, the regions of space. The skin expanded; from the skin, hair rose; from that, grew

* Ambhas water; and *A'pas* the waters. The commentators assign reasons for these synonymous terms being employed, severally, to denote the regions above the sky, and those below the earth.

† *Purusha*: a human form.

E e 3
herbs and trees. The breast opened; from the breast, mind issued: and, from mind, the moon. The navel burst: from the navel, came deglutition*; from that, death. The generative organ burst: thence flowed productive seed; whence waters drew their origin.

'These deities, being thus framed, fell into this vast ocean; and to him they came with thirst and hunger: and him they thus addressed; "Grant us a [smaller] size, wherein abiding we may eat food." He offered to them [the form of] a cow: they said, "that is not sufficient for us." He exhibited to them [the form of] a horse: they said, "neither is that sufficient for us." He showed them the human form: they exclaimed: "well done! ah! wonderful!" Therefore man alone is [pronounced to be] "well formed."

"He bade them occupy their respective places. Fire becoming speech, entered the mouth. Air, becoming breath, proceeded to the nostrils. The sun, becoming sight, penetrated the eyes. Space became hearing and occupied the ears. Herbs and trees became hair and filled the skin. The moon, becoming mind, entered the breast. Death, becoming deglutition, penetrated the navel; and water became productive seed and occupied the generative organ.

'Hunger and thirst addressed him, saying "Assign us [our places]." He replied: "You I distribute among these deities; and I make you parti-

* Apāna. From the analogy between the acts of inhaling and of swallowing, the latter is considered as a sort of breath or inspiration: hence the air, drawn in by deglutition, is reckoned one of five breaths, or airs inhaled into the body.
'He reflected, "These are worlds, and regents of worlds: for them I will frame food." He viewed the waters: from waters, so contemplated, form issued; and food is form, which was so produced.

'Being thus framed, it turned away, and sought to flee. The [primeval] man endeavoured to seize it by speech; but could not attain it by his voice: had he by voice taken it, [hunger] would be satisfied by naming food. He attempted to catch it by his breath; but could not inhale it by breathing: had he by inhaling taken it, [hunger] would be satisfied by smelling food. He sought to snatch it by a glance; but could not surprise it by a look: had he seized it by the sight, [hunger] would be satisfied by seeing food. He attempted to catch it by hearing: but could not hold it by listening: had he caught it by hearkening, [hunger] would be satisfied by hearing food. He endeavoured to seize it by his skin; but could not restrain it by his touch: had he seized it by contact, [hunger] would be satisfied by touching food. He wished to reach it by the mind: but could not attain it by thinking: had he caught it by thought, [hunger] would be satisfied by meditating on food. He wanted to seize it by the generative organ, but could not so hold it: had he thus seized it, [hunger] would be satisfied by emission. Lastly, he endeavoured to catch it by deglutition; and thus he did swallow it: that air, which is so drawn in, seizes food; and that very air is the bond of life.
He [the universal soul] reflected "How can this [body] exist without me?" He considered by which extremity he should penetrate. He thought, "If [without me] speech discourse, breath inhale, and sight view; if hearing hear, skin feel, and mind meditate; if deglutition swallow, and the organ of generation perform its functions; then who am I?"

Parting the suture [siman], he penetrated by this route. That opening is called the suture (virditi), and is the road to beatitude (nandana)

Of that soul, the places of recreation are three; and the modes of sleep, as many: this (pointing to the right eye) is a place of recreation; this (pointing to the throat) is [also] a situation of enjoyment; this (pointing to the heart) is [likewise] a region of delight.

Thus born [as the animating spirit], he discriminated the elements, [remarking] "what else [but him] can I here affirm [to exist];" and he contemplated this [thinking] person †, the vast expanse ‡, [exclaiming] it have I seen. Therefore is he named it-seeing (idam-dra): it-seeing is indeed his name; and him, being it-seeing, they call, by a remote appellation, Indra; for

* The Hindus believe, that the soul, or conscious life, enters the body through the sagittal suture; lodges in the brain; and may contemplate, through the same opening, the divine perfections. Mind, or the reasoning faculty, is reckoned to be an organ of the body, situated in the heart.
† Purusha.
‡ Brahme, or the great one.
the gods generally delight in the concealment [of their name]. The gods delight in privacy.

§ V. 'This [living principle] is first, in man, a fetus, or productive seed, which is the essence drawn from all the members [of the body]: thus the man nourishes himself within himself. But, when he emits it into woman, he procreates that [fetus]: and such is its first birth.

'It becomes identified with the woman; and being such, as is her own body, it does not destroy her. She cherishes his ownself; thus received within her; and, as nurturing him, she ought to be cherished [by him]. The woman nourishes that fetus; but he previously cherished the child, and further does so after its birth. Since he supports the child before and after birth, he cherishes himself: and that, for the perpetual succession of persons; for thus are these persons perpetuated. Such is his second birth.

'This [second] self becomes his representative for holy acts [of religion]: and that other [self], having fulfilled its obligations, and completed its period of life, deceases. Departing hence, he is born again [in some other shape]: and such is his third birth.

'This was declared by the holy sage. "Within the womb, I have recognised all the successive births of these deities. A hundred bodies, like

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* Here, as at the conclusion of every division of an Unfinished, or of any chapter in the didactic portion of the Vedas, the last phrase is repeated.
† For the man is identified with the child procreated by him.
ON THE VEDAS.

iron chains, hold me down: yet, like a falcon, I swiftly rise." Thus spoke VA'MADE'VA, reposing in the womb: and possessing this [intuitive] knowledge, he rose, after bursting that corporeal confinement; and, ascending to the blissful region of heaven*, he attained every wish and became immortal. He became immortal.'

§ VI. 'What is this soul? that we may worship him. Which is the soul? Is it that by which [a man sees]? by which he hears? by which he smells odours? by which he utters speech? by which he discriminates a pleasant or unpleasant taste? Is it the heart [or understanding]? or the mind [or will]? Is it sensation? or power? or discrimination? or comprehension? or perception? or retention? or attention? or application? or haste [or pain]? or memory? or assent? or determination? or animal action †? or wish? or desire?

'All those are only various names of apprehension. But this [soul, consisting in the faculty of apprehension,] is BRAHMA'; he is INDRA; he is (PRAJA'PATI) the lord of creatures: these gods are he; and so are the five primary elements, earth, air, the ethereal fluid, water and light*: these, and the same joined with minute objects and other seeds [of existence], and [again] other [beings] pro-

* Swarga: or place of celestial bliss.
† Asu: the unconscious volition, which occasions an act necessary to the support of life, as breathing, &c.
‡ BRAHMA" (in the masculine gender) here denotes, according to commentators, the intelligent spirit, whose birth was in the mundane egg; from which is named HIRANYACARHHA. INDRA is the chief of the gods, or subordinate deities; meaning the elements and planets. PRAJA'PATI is the first embodied spirit, called VIRA'J, and described in the preceding part of this extract. The gods are fire, and the rest as there stated.
duced from eggs, or borne in wombs, or originating in hot moisture*, or springing from plants; whether horses, or kine, or men, or elephants, whatever lives, and walks or flies, or whatever is immovable [as herbs and trees]: all that is the eye of intelligence. On intellect [every thing] is founded: the world is the eye of intellect; and intellect is its foundation. Intelligence is (Brahme) the great one.

' By this [intuitively] intelligent soul, that sage ascended from the present world to the blissful region of heaven; and, obtaining all his wishes, became immortal. He became immortal.

§ VII. ' May my speech be founded on understanding: and my mind be attentive to my utterance. Be thou manifested to me, O self manifested [intellect]! For my sake [O speech and mind!] approach this Védas. May what I have heard, be unforgotten: day and night may I behold this, which I have studied. Let me think the reality: let me speak the truth. May it preserve me; may it preserve the teacher: me may it preserve: the teacher may it preserve; the teacher may it preserve; may it preserve the teacher †.'

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On the Caushítaci.'

Another Upanishad of this Védas, appertaining to a particular Sáchá of it, is named from that,

* Vermin and insects are supposed to be generated from hot moisture.
† This, like other prayers, is denominated a mantra; though it be the conclusion of an Upanishad.
and from the Brāhmaṇa, of which it is an extract, Caushitaci Brāhmaṇa Upanishad. From an abridgment of it (for I have not seen the work at large), it appears to contain two dialogues; one, in which Indra instructs Pratardana in theology; and another, in which Ajātasatru, king of Cāsi, communicates divine knowledge to a priest named Baḷa’ci. A similar conversation between these two persons is found likewise in the Vṛihadāranyā of the Yajurveda; as will be subsequently noticed. Respecting the other contents of the Brāhmaṇa, from which these dialogues are taken, I have not yet obtained any satisfactory information.

The abridgment above-mentioned occurs in a metrical paraphrase of twelve principal Upanishads, in twenty chapters, by Vidyāranyā, the preceptor of Maḍhava āchārya. He expressly states Caushitaci as the name of a Śācha of the Rigveda.

The original of the Caushitaci was among the portions of the Veda, which Sir Robert Chambers collected at Benares; according to a list, which he sent to me, some time before his departure from India. A fragment of an Upanishad, procured at the same place by Sir William Jones, and given by him to Mr. Blaquiere, is marked in his hand writing, “The beginning of the Caushitaci.” In it, the dialogists are Chitra, surnamed Gaṅga’yani, and Śvetacetu, with his father Uddalaca, son of Aruna.

I shall resume the consideration of this portion of the Rigveda, whenever I have the good fortune to obtain the complete text and commentary, either of the Brāhmaṇa, or of the Upanishad, which bears this title.
On the White Yajurvéda.

The Vájasánéyi, or white Yajush, is the shortest of the Védas; so far as respects the first and principal part, which comprehends the Mantras. The Sanhitá, or collection of prayers and invocations belonging to this Véda, is comprised in forty lectures (Ad’hyáya), unequally subdivided into numerous short sections (candícá); each of which, in general, constitutes a prayer or Mantra. It is also divided, like the Rígvéda, into Anuvédcas, or chapters. The number of Anuvédcas, as they are stated at the close of the index to this Véda, appears to be two hundred and eighty-six: the number of sections, or verses, nearly two thousand (or exactly 1987). But this includes many repetitions of the same text in divers places. The lectures are very unequal, containing from thirteen to a hundred and seventeen sections (candícá*).

Though called the Yajurvéda, it consists of passages, some of which are denominated Rich, while only the rest are strictly Yajush. The first are, like the prayers of the Rígvéda, in metre: the others are either in measured prose, containing from one to a hundred and six syllables; or such of them as exceed that length, are considered to be prose reducible to no measure.

The Yajurvéda relates chiefly to oblations and

* I have several copies of Mah’dhyándína’s white Yajush, one of which is accompanied by a commentary, entitled Védadhépa; the author of which, Mah’dhára, consulted the commentaries of Uvata and Mah’dháva, as he himself informs us in his preface.
sacrifices, as the name itself implies*. The first chapter, and the greatest part of the second, contain prayers adapted for sacrifices at the full and change of the moon: but the six last sections regard oblations to the manes. The subject of the third chapter is the consecration of a perpetual fire, and the sacrifice of victims: the five next relate chiefly to a ceremony called Agnishtoma, which includes that of drinking the juice of the acid asclepias. The two following relate to the Vajapeya and Rajasya; the last of which ceremonies involves the consecration of a king. Eight chapters, from the eleventh to the eighteenth; regard the sanctifying of sacrificial fire; and the ceremony, named Sautramidani, which was the subject of the last section of the tenth chapter, occupies three other chapters from the nineteenth to the twenty-first. The prayers to be used at an Aswamedha, or ceremony emblematic of the immolation of a horse and other animals, by a king ambitious of universal empire, are placed in four chapters, from the twenty-second to the twenty-fifth. The two next are miscellaneous chapters; the Sautramani and Aswamedha are completed in two others; and the Purushamedha, or ceremony performed as the type of the allegorical immolation of Narayana, fills the thirtieth and thirty-first chapters. The three next belong to the Svarcamedha, or prayers and oblations for universal success. A chapter follows on the Pitrimedha, or obsequies in commemoration of a deceased ancestor: and the last five chapters contain such passages of this Veda as are ascribed to Dadhyach.

* Yajush is derived from the verb Yaj, to worship or adore. Another etymology is sometimes assigned: but this is most consistent with the subject; viz. (Yajnya) sacrifices, and (homa) oblations to fire.
son or descendant of Atharvan: four of them consist of prayers applicable to various religious rites, as sacraments, lustrations, penance, &c.; and the last is restricted to theology.

Excepting these five chapters, most of the passages contained in the preceding part of this collection of prayers, are attributed to divine personages: many are ascribed to the first manifested being, named Prajapati, Parameshtiti, or Narayan'a Purusha; some are attributed to Swayambhu' Brahme, or the self existent himself; the reputed authors of the rest are Vrihaspati, Indra, Varun'a, and the Aswins: except a few scattered passages, which are ascribed to Vasishtha, Viswamitra, Vama'de'va, Madhu'chhandas, Medh'atii'thi, and other human authors; and some texts, for which no Rishi is specified in the index, and which are therefore assigned either to the sun (Vivasvat or A'ditya), as the deity supposed to have revealed this Veda; or to Yajnyawalcya, as the person who received the revelation: in the same manner, as the unappropriated passages of the Rigveda are assigned to Prajapati, or Brahma.

Several prayers and hymns of the Yajur-Veda have been already translated in former essays*; and may serve as a sufficient example of the style of its composition. I shall here insert only two passages, both remarkable. The first is the beginning of the prayers of the Sarvaméd'ha. It constitutes the thirty-second lecture, comprising two chapters (anuvéd'ca) and sixteen verses.

*Fire is that [original cause]; the sun is that;

*Asiatic Researches, Vol. V. and VII.
so is air; so is the moon: such too is that pure Brahme, and those waters, and that lord of creatures. Moments [and other measures of time] proceeded from the effulgent person, whom none can apprehend [as an object of perception], above, around, or in the midst. Of him, whose glory is so great, there is no image: he it is, who is celebrated in various holy strains*. Even he is, the god, who pervades all regions: he is the first born: it is he, who is in the womb; he, who is born; and he, who will be produced: he severally, and universally, remains with [all] persons.

' He, prior to whom, nothing was born; and who became all beings; himself the lord of creatures, with a [body composed of] sixteen members, being delighted by creation, produced the three luminaries [the sun, the moon, and fire].

'To what God should we offer oblations, but to him, who made the fluid sky and solid earth, who fixed the solar orb (swar), and celestial abode (náca), and who framed drops [of rain] in the atmosphere? To what god should we offer oblations, but to him, whom heaven and earth mentally contemplate, while they are strengthened and embellished by offerings, and illuminated by the sun risen above them.

'The wise man views that mysterious [being]; in whom the universe perpetually exists, resting on that sole support. In him, this [world] is absorbed; from him, it issues: in creatures, he is twined and wove, with various forms of existence. Let the wise man, who is conversant with the

* The text refers to particular passages.
import of revelation*, promptly celebrate that immortal being, the mysteriously existing and various abode: he, who knows its three states [its creation, continuance and destruction], which are involved in mystery, is father of the father. That [Brahme], in whom the gods attain immortality, while they abide in the third [or celestial] region, is our venerable parent, and the providence which governs all worlds.

' Knowing the elements, discovering the worlds, and recognising all regions and quarters [to be him], and worshipping [speech or revelation, who is] the first-born, the votary pervades the animating spirit of solemn sacrifice by means of [his own] soul. Recognizing heaven, earth, and sky [to be him], knowing the worlds, discovering space and (swar) the solar orb [to be the same], he views that being: he becomes that being; and is identified with him, on completing the broad web of the solemn sacrifice.

" For opulence and wisdom, I solicit this wonderful lord of the altar, the friend of Indra, most desirable [fire]: may this oblation be effectual. Fire! make me, this day, wise by means of that wisdom, which the gods and the fathers worship: be this oblation efficacious. May Varu'na grant me wisdom; may fire and Praja'pati confer on me sapience; may Indra and air vouchsafe me

* For the word Gand'harba is here interpreted, as intending one, who investigates holy writ. In another place (Asiatic Researches, Vol. VII. p. 297), the same term signified the sun; and should have been so translated, instead of "heavenly quirister, or celestial chorister;" which is not the meaning in that place, though it be the most common acceptation of the word.
knowledge; may providence give me understanding: be this oblation happily offered! May the priest and the soldier both share my prosperity; may the gods grant me supreme happiness: to thee, who art that [felicity], be this oblation effectually presented.'

The next passage, which I shall cite, is a prayer to fire*.

'Thou art (samvatsara) the [first] year [of the cycle]; thou art (parivatsara) the [second] year; thou art (idavatsara) the [third] year; thou art (idvat-vatsara) the [fourth] year; thou art (vatsara) the [fifth] year: may mornings appertain to thee; may days and nights, and fortnights, and months, and seasons, belong to thee; may (samvatsara) the year be a portion of thee: to go, or to come, contracting or expanding [thyself], thou art winged thought. Together with that deity, remain thou firm like Angiras.'

I have quoted this almost unmeaning passage, because it notices the divisions of time, which belong to the calendar of the Védas; and which are explained in treatises on that subject annexed to the sacred volume, under the title of Jyôtish. To this I shall again advert, in a subsequent part of this essay. I shall here only observe, with the view of accounting for the seeming absurdity of the text now cited, that fire, as in another place†, sacrifice, is identified with the year and with the cycle, by reason of the near connexion between

* Ch. 27, § 45th, and last.
† In the Satapathâ Brâhman'a, b. 11, ch. 1. The reason here assigned, is expressly stated by the commentator.
consecrated fire, and the regulation of time relative to religious rites; at which one is used, and which the other governs.

The fortieth and last chapter of this Veda is an Upanishad, as before intimated: which is usually called I'sa-vāsyam, from the two initial words; and sometimes Iṣā 'dhyāya, from the first word; but the proper title is 'Upanishad of the Vījasa-nēya sanhitā.' The author, as before-mentioned, is Dadhyach, son or descendant of Atharvan. A translation of it has been published in the posthumous works of Sir William Jones.

The second part of this Veda, appertaining to the Mādhyandina Sāč'hā, is entitled the S'atapat'ha Brāhmaṇa; and is much more copious than the collection of prayers. It consists of fourteen books (cānda) unequally distributed in two parts (bhāga): the first of which contains ten books; and the second, only four. The number of lectures (ad'hyāya), contained in each book, varies; and so does that of the Brāhmaṇas, or separate precepts, in each lecture. Another mode of division, by chapters (Prapāt'aka), also prevails throughout the volume: and the distinction of Brāhmaṇas, which are again subdivided into short sections (cāndicā), is subordinate to both modes of division.

* Besides Mahī'dhara's gloss on this chapter, in his Veda-dīpa, I have the separate commentary of S'ancara, and one by Ba'lacrishn' 'Añanda, which contains a clear and copious exposition of this Upanishad. He professes to expound it, as it is received by both the Čān'va and Mādhyandina schools. Sir William Jones, in his version of it, used S'ancara's gloss; as appears from a copy of that gloss, which he had carefully studied, and in which his hand-writing appears in more than one place.
The fourteen books, which constitute this part of the Vēda, comprise a hundred lectures corresponding to sixty-eight chapters. The whole number of distinct articles, entitled Brāhmaṇa, is four hundred and forty: the sections (caṇḍica) are also counted, and are stated at 7624*. The same order is observed in this collection of precepts concerning religious rites, which had been followed in the arrangement of the prayers belonging to them. The first and second books treat of ceremonies on the full and change of the moon; the consecration of the sacrificial fire, &c. The third and fourth relate to the mode of preparing the juice of the acid Asclepias, and other ceremonies connected with it, as the Jyotisha, &c. The fifth is confined to the Vājapeya and Rājasūya. The four next teach the consecration of sacrificial fire: and the tenth, entitled Agni rahasya, shows the benefits of these ceremonies. The three first books of the second part are stated, by the commentator †, as relating to the Sautrāmanī and Asvamēḍ'ha; and the fourth, which is the last, belongs to theology. In the original, the thirteenth book is, specially denominated Asvamēḍ'hya; and the fourteenth is entitled Vṛihad āraṇyaca.

The Asvamēḍ'ha and Purushamēḍ'ha, celebrated

* My copies of the text and of the commentary are both imperfect; but the deficiencies of one occur in places, where the other is complete; and I have been thus enabled to inspect curiously the whole of this portion of the Vēda.

Among fragments of this Brāhmaṇa, comprising entire books, I have one which agrees, in the substance and purport, with the second book of the Madhyandina Satapatha, though differing much in the readings of almost every passage. It probably belongs to a different Sāchā.

† At the beginning of his gloss on the eleventh book.
in the manner directed by this Vēda, are not really sacrifices of horses and men. In the first mentioned ceremony, six hundred and nine animals of various prescribed kinds, domestic and wild, including birds, fish, and reptiles, are made fast; the tame ones, to twenty-one posts; and the wild, in the intervals between the pillars: and, after certain prayers have been recited, the victims are let loose without injury. In the other, a hundred and eighty-five men of various specified tribes, characters, and professions, are bound to eleven posts: and, after the hymn, concerning the allegorical immolation of Ṛṣiṣṭhitā*; has been recited, these human victims are liberated unhurt: and oblations of butter are made on the sacrificial fire. This mode of performing the Asvāmed'ha and Purushamēd'ha, as emblematic ceremonies, not as real sacrifices, is taught in this Vēda: and the interpretation is fully confirmed by the rituals†, and by commentators on the Sanhitā and Brāhmaṇa; one of whom assigns as the reason, ‘because the flesh of victims, which have been actually sacrificed at a Yajnya, must be eaten by the persons who offer the sacrifice: but a man cannot be allowed, much less required, to eat human flesh ‡. It may be hence inferred, or conjectured at least,

* Asiatic Researches, Vol. VII, p. 251. The version of the hymn, as there given, should be amended by substituting, at the 15th verse, ‘binding’ for ‘immolating.’ A similarity of terms led to that error, which the context did not correct; for the 9th verse is rightly translated. However, to follow the commentaries strictly, even the term, which there occurs, and which properly signifies ‘immolated,’ may be translated, ‘consecrated.’ † I particularly advert to a separate ritual of the Purushamēd'ha by Ya'jnyade'vā. ‡ Cited from memory: I read the passage several years ago; but I cannot now recover it.
that human sacrifices were not authorized by the *Veda* itself; but were either then abrogated, and an emblematical ceremony substituted in their place; or they must have been introduced in later times, on the authority of certain *Puránas*, or *Tantras*, fabricated by persons, who, in this as in other matters, established many unjustifiable practices on the foundation of emblems and allegories, which they misunderstood.

The horse, which is the subject of the religious ceremony called *As'waméd'ha*, is also, avowedly, an emblem of *Viráj*, or the primeval and universal manifested being. In the last section of the *Taittiriya Yajurveda*, the various parts of the horse's body are described, as divisions of time, and portions of the universe: 'morning is his head; the sun, his eye; air, his breath; the moon, his ear; &c.' A similar passage in the 14th book of the *Satapatha bráhmaṇa* describes the same allegorical horse for the meditation of such, as cannot perform an *As'waméd'ha*; and the assemblage of living animals, constituting an imaginary victim, at a real *As'waméd'ha*, equally represent the universal being, according to the doctrines of the Indian scripture. It is not, however, certain, whether this ceremony did not also give occasion to the institution of another, apparently not authorized by the *Védas*, in which a horse was actually sacrificed.

The *Vrihad áranyaca*, which constitutes the fourteenth book of the *Satapatha bráhmaṇa*, is the conclusion of the *Vájasanéyi*, or white *Yajush*. It consists of seven chapters or eight lectures; and the five last lectures, in one arrangement, corresponding with the six last lectures in the other, form a theological treatise entitled the *Vrihad Upanishad*,

ON THE VÉDAS,
or Vájasaneyá bráhman'ā upanishad, but more commonly cited as the Vrihad áraṇyaca.* The greatest part of it is in dialogue; and Ya'jnyawálcya is the principal speaker. As an Upanishad, it properly belongs to the Cánwa S'áč'há: at least, it is so cited by Vidyáránc'ya, in his paraphrase of Upanishads before-mentioned. There does not, however, appear to be any material variation in it, as received by the Mád'hyandina school: unless in the divisions of chapters and sections; and in the lists of successive teachers, by whom it was handed down †.

To convey some notion of the scope and style of this Upanishad, I shall, here, briefly indicate some of the most remarkable passages; and chiefly those which have been paraphrased by Vidyáránc'ya. A few others have been already cited; and the following appears likewise to deserve notice.

Towards the beginning of the Vrihad áraṇyaca, a passage, concerning the origin of fire hallowed for an As'wamé'd'ha, opens thus: 'Nothing existed in this world, before [the production of mind]: this universe was encircled by death eager to devour; for death is the devourer. He framed mind, being desirous of himself becoming endued with a soul.'

* Besides three copies of the text, and two transcripts of S'ancára's commentary, I have, also in duplicate, another very excellent commentary by Nitya'ñand' Asérama, which is entitled Mitácshará; and a metrical paraphrase of S'ancára's gloss, by Sure's'war'ácha'ryá, as well as annotations in prose by Ananda Giri.
† This is the Upanishad, to which Sir William Jones refers, in his preface to the translation of the Institutes of Menu: p. viii.
Here the commentators explain death to be the intellectual being who sprung from the golden mundane egg: and the passage before cited from the Rigveda*, where the primeval existence of death is denied, may be easily reconciled with this, upon the Indian ideas of the periodical destruction and renovation of the world, and finally of all beings but the supreme one.

The first selection by Vidya'ran'ya, from this Upanishad, is the fourth article (brāhmaṇa,) of the third lecture of the Vrihad āraṇyaca. It is descriptive of Vīra'j, and begins thus:

' This [variety of forms] was, before [the production of body], soul, bearing a human shape. Next, looking around, that [primeval being] saw nothing but himself; and he, first, said "I am I." Therefore, his name was "I:" and, thence, even now, when called, [a man] first answers "it is I," and then declares any other name which appertains to him.

' Since he, being anterior to all this [which seeks supremacy], did consume by fire all sinful [obstacles to his own supremacy], therefore does the man, who knows this [truth], overcome him, who seeks to be before him.

' He felt dread; and, therefore, man fears, when alone. But he reflected, "Since nothing exists besides myself, why should I fear?" Thus his terror departed from him; for what should he dread, since fear must be of another?

* Page 404.
He felt not delight; and, therefore, man delights not, when alone. He wished [the existence of] another; and instantly he became such, as is man and woman in mutual embrace. He caused this, his own self, to fall in twain; and thus became a husband and a wife. Therefore, was this [body, so separated], as it were an imperfect moiety of himself: for so Yajñyāwalcyā has pronounced it. This blank, therefore, is completed by woman. He approached her; and, thence, were human beings produced.

She reflected, doubtfully; "how can he, having produced me from himself, [incestuously] approach me? I will now assume a disguise." She became a cow; and the other became a bull, and approached her; and the issue were kine. She was changed into a mare, and he into a stallion; one was turned into a female ass, and the other into a male one: thus did he again approach her; and the one-hoofed kind was the offspring. She became a female goat, and he a male one; she was an ewe, and he a ram: thus he approached her; and goats and sheep were the progeny. In this manner, did he create every existing pair whatsoever, even to the ants [and minutest insect].

The sequel of this passage is also curious; but is too long to be here inserted. The notion of Vīra'j dividing his own substance into male and female, occurs in more than one Purāṇa. So does that of an incestuous marriage and intercourse of the first Menu with his daughter S'atarupa': and the commentators on the Upanishad understand that legend to be alluded to in this place. But the institutes, ascribed to Menu, make Vīra'j to be the issue of such a separation of persons,
and Menu himself to be his offspring*. There is, indeed, as the reader may observe from the passages cited in the present essay, much disagreement and consequent confusion, in the gradation of persons interposed by Hindu theology between the supreme being and the created world.

The author of the paraphrase before-mentioned, has next selected three dialogues from the fourth lecture or chapter of the Vṛihadāraṇyaca. In the first, which begins the chapter and occupies three articles (Brāhmaṇas), a conceited and loquacious priest, named Ba'la'ci (from his mother Bala'ca'), and Ga'rgya (from his ancestor Garga), visits Ajatasa'atru, king of Cásī, and offers to communicate to him the knowledge of God. The king bestows on him a liberal recompense for the offer; and the priest unfolds his doctrine, saying he worships, or recognises, as God, the being who is manifest in the sun; him, who is apparent in lightning, in the ethereal elements, in air, in fire, in water, in a mirror, in the regions of space, in shade, and in the soul itself. The king who was, as it appears, a well instructed theologian, refutes these several notions, successively; and, finding the priest remain silent, asks "is that all you have to say?" Ga'rgya replies, "that is all." Then, says the king, "that is not sufficient for the knowledge of God." Hearing this, Ga'rgya proposes to become his pupil. The king replies, "It would reverse established order, were a priest to attend a soldier in expectation of religious instruction; but I will suggest the knowledge to you." He

* See Sir W. Jones's translation of Menu. Ch. 1, v. 32 and 33.
takes him by the hand; and, rising, conducts him to a place, where a man was sleeping. He calls the sleeper by various appellations suitable to the priest's doctrine; but without succeeding in awakening him: he then rouses the sleeper by stirring him; and, afterwards, addressing the priest, asks, "While that man was thus asleep, where was his soul, which consists in intellect? and whence came that soul when he was awakened?" Ga'rgya could not solve the question: and the king then proceeds to explain the nature of soul and mind, according to the received notions of the Védánta. As it is not the purpose of this essay to consider those doctrines, I shall not here insert the remainder of the dialogue.

The next, occupying a single article, is a conversation between Ya'jnyawalcya, and his wife, Maitre'yī. He announces to her his intention of retiring from the civil world; requests her consent, and proposes to divide his effects between her, and his second wife, Ca'tya'yani'. She asks, "Should I become immortal, if this whole earth, full of riches, were mine?" "No," replies Ya'jnyawalcya, "riches serve for the means of living; but immortality is not attained through wealth." Maitre'yī declares she has no use, then, for that, by which she may not become immortal; and solicits from her husband the communication of the knowledge, which he possesses, on the means, by which beatitude may be attained. Ya'jnyawalcya, answers, "Dear wert thou to me; and a pleasing [sentiment] dost thou make known: come, sit down; I will expound [that doctrine]; do thou endeavour to comprehend it." A discourse follows, in which Ya'jnyawalcya elucidates the notion, that abstraction procures immortality; because affections are relative to the
soul, which should therefore be contemplated and considered in all objects, since every thing is soul; for all general and particular notions are ultimately resolvable into one, whence all proceed, and in which all merge; and that is identified with the supreme soul, through the knowledge of which beatitude may be attained.

I shall select, as a specimen of the reasoning in this dialogue, a passage, which is material on a different account; as it contains an enumeration of the Védas, and of the various sorts of passages, which they comprise; and tends to confirm some observations hazarded at the beginning of this essay.

'As smoke, and various substances, separately issue from fire lighted with moist wood; so, from this great being, were respired the Rígvéda, the Yajurvéda, the Sámacvéda, and the Athravan and Angiras; the Itihásā and Purána; the sciences and Upanishads; the verses and aphorisms; the expositions and illustrations: all these were breathed forth by him.'

The commentators remark, that four sorts of prayers (Mantra), and eight kinds of préceips (Bráhmāna) are here stated. The fourth description of prayers comprehends such, as were revealed to, or discovered by, Athravan and Angiras: meaning the Athravana véda. The Itihása designates such passages in the second part of the Védas entitled Bráhmāna, as narrate a story: for instance, that of the nymph Urvasī and the king Pururavas. The Puránā intends those, which relate to the creation and similar topics. "Sciences" are meant of religious worship. "Verses" are memorial lines. "Aphorisms" are short sentences in a concise style. "Expositions" interpret
such sentences; and "illustrations" elucidate the meaning of the prayers.

It may not be superfluous to observe in this place, that the Itihsas and Puranas, here meant, are not the mythological poems bearing the same title; but certain passages of the Indian scriptures, which are interspersed among others, throughout that part of the Vedas, called Brhmana, and instances of which occur in more than one quotation in the present essay.

The dialogue between Wajnyawalcya and Maitreyi, above-mentioned, is repeated towards the close of the sixth lecture, with a short and immaterial addition to its introduction. In this place, it is succeeded by a discourse on the unity of the soul: said, towards the conclusion, to have been addressed to the two A'swins, by Dadhyach, a descendant of Atharvan.

The fourth lecture ends with a list of the teachers, by whom that and the three preceding lectures, were handed down, in succession, to Pautima'shya. It begins with him, and ascends, through forty steps, to Aysya; or, with two more intervening persons, to the A'swins; and from them, to Dadhyach, Atharvan, and Mrityu, or death; and, through other gradations of spirits, to Viraj; and finally to Brahme. The same list occurs again at the end of the sixth lecture: and similar lists are found in the corresponding places of this Upanishad, as arranged for the Madhyandina Sachha. The succession is there traced upwards, from the reciter of it, who speaks of himself in the first person, and from his immediate teacher Sauryana'yya, to the same ori-
ON THE VEDAS,

ginal revelation, through nearly the same number of gradations. The difference is almost entirely confined to the first ten or twelve names.

The fifth and sixth lectures of this Upanishad have been paraphrased, like the fourth, by the author before-mentioned. They consist of dialogues, in which YAJNYAWALCYA is the chief discoursor.

'Janaca, a king paramount, or emperor of the race of Vidéhas, was celebrating at great expense, a solemn sacrifice, at which the Bráhmanas of Cúru and Panchála were assembled; and the king, being desirous of ascertaining which of those priests was the most learned and eloquent theologian, ordered a thousand cows to be made fast in his stables, and their horns to be gilt with a prescribed quantity of gold. He then addressed the priests, "whoever, among you, O venerable Bráhmanas, is most skilled in theology, may take the cows." The rest presumed not to touch the cattle; but YAJNYAWALCYA bade his pupil SA'MAS'RAVAS drive them to his home. He did so; and the priests were indignant, that he should thus arrogate to himself superiority. AS'WALA, who was the king's officiating priest, asked him, "art

* I do not find VYA'SA mentioned in either list: nor can the surname Púrásarya, which occurs more than once, be applied to him; for it is not his patronymick, but a name deduced from the feminine patronymick Púrásarí. It seems therefore questionable, whether any inference, respecting the age of the Védas, can be drawn from these lists, in the manner proposed by the late Sir W. JONES, in his preface to the translation of MENU (p. viii.). The anachronisms, which I observe in them, deter me from a similar attempt to deduce the age of this Veda from these and other lists, which will be noticed further on.
This introduction is followed by a long dialogue, or rather by a succession of dialogues, in which six other rival priests (besides a learned female, named Ga'rgi', the daughter of Vachacru;) take part as antagonists of Ya'jnyawalcyA; proposing questions to him, which he answers; and, by refuting their objections, silences them successively. Each dialogue fills a single article (Brahmana); but the controversy is maintained by Ga'rgi' in two separate discussions; and the contest between Ya'jnyawalcyA and Vidag'dha, surnamed Sa'calya, in the ninth or last article of the fifth lecture, concludes in a singular manner.

Ya'jnyawalcyA proposes to his adversary an abstruse question, and declares, "if thou dost not explain this unto me, thy head shall drop off." 'Sa'calya (proceeds the text) could not explain it; and his head did fall off; and robbers stole his bones, mistaking them for some other thing.'

Ya'jnyawalcyA then asks the rest of his antagonists, whether they have any question to propose, or are desirous, that he should propose any. They remain silent, and he addresses them as follows:

"Man is indeed like to a lofty tree: his hairs are the leaves; and his skin, the cuticle. From his skin flows blood, like juice from bark; it issues from his wounded person, as juice from a stricken tree. His flesh is the inner bark; and the membrane, near the bones, is the white sub-
stance of the wood*. The bones within are the wood itself: and marrow and pith are alike. If then a felled tree spring anew from the root; from what root does mortal man grow again, when hewn down by death? Do not say, from prolific seed; for that is produced from the living person. Thus, a tree, indeed, also springs from seed; and likewise sprouts afresh [from the root] after [seemingly] dying: but, if the tree be torn up by the root, it doth not grow again. From what root, then, does mortal man rise afresh, when hewn down by death? [Do you answer] He was born [once for all]? No; he is born [again]: and [I ask you] what is it, that produces him anew?"

The priests, thus interrogated, observes the commentator, and being unacquainted with the first cause, yielded the victory to Yajñyavalcya. Accordingly, the text adds a brief indication of the first cause as intended by that question. 'Brahme, who is intellect with [the unvaried perception of] felicity, is the best path [to happiness] for the generous votary, who knows him, and remains fixed [in attention].''

The sixth lecture comprises two dialogues between Yajñyavalcya, and the king Janaca; in which the saint communicates religious instruction to the monarch, after inquiring from him the doctrines which had been previously taught to the king by divers priests.

These are followed by a repetition of the dialogue between Yajñyavalcya and his wife Maitreyi; with scarcely a variation of a single

* Snāva and Cināṭ'a answering to the Periosteum and Alburnum.
word, except the introduction as above-mentioned. The sixth lecture concludes with repeating the list of teachers, by whom, successively, this part of the Veda was taught.

Concerning the remainder of the Vrthad hiran-ya ca, I shall only observe, that it is terminated by a list of teachers, in which the tradition of it is traced back from the son of Pautima'shi', through forty steps, to Ya'jnyawalcy. And, from him, through twelve more, to the sun. In copies belonging to the Madhyandina Sáchá, the list is varied, interposing more gradations, with considerable difference in the names, from the reciter who speaks in the first person, and his teacher, the son of Bha'radwa'ji, up to Ya'jnyawalcy; beyond whom both lists agree.

The copy, belonging to the Clincea Sáchá, subjoins a further list stated by the commentators, to be common to all the Sáchás of the Vájin, or Vájasanyi Yajurveda, and to be intended for the tracing of that Veda up to its original revelation. It begins from the son of Sa'nji'vi, who was fifth, descending from Ya'jnyawalcy, in the lists above-mentioned; and it ascends by ten steps, without any mention of that saint, to Tura, surnamed Ca'vashe'ya, who had the revelation from Praja'pati; and he, from Brahma.

Before I proceed to the other Yajurveda, I think it necessary to remark, that the Indian saint last mentioned (Tura, son of Cavasha) has been named in a former quotation from the Aitaréya, as the priest who consecrated Janame'jaya, son of ParicsHit. It might, at the first glance, be hence concluded that he was contemporary with the celebrated king, who is stated in Hindu his-

Vol. VIII. G g
tory to have reigned at the beginning of the Cali
age. But, besides the constant uncertainty re-
specting Indian saints, who appear and re-appear
in heroic history at periods most remote, there is
in this, as in many other instances of the names of
princes, a source of confusion and possible error,
from the recurrence of the same name, with the
addition even of the same patronymic, for princes
remote from each other. Thus, according to Pu-
rānas, Parīcshīt, third son of Curū, had a son
named Janamejāya; and he may be the person
here meant, rather than one of the same name,
who was the great grandson of Arjuna.

On the Black Yajurvēda.

THE Tāttirīya, or black Yajush, is more co-
pious (I mean, in regard to mantras,) than the
white Yajush, but less so than the Rīgvēda. Its
Sanhitā, or collection of prayers, is arranged in
seven books (asht'aca, or cāṇḍa), containing from
five to eight lectures, or chapters (ad'hyāya, prāṣ-
na, or prapāt'aca). Each chapter, or lecture, is
subdivided into sections (anuvāca), which are
equally distributed in the third and sixth books;
but unequally in the rest. The whole number ex-
ceeds six hundred and fifty.

Another mode of division, by cāṇḍas, is stated
in the index. In this arrangement, each book
(cāṇḍa) relates to a separate subject; and the
chapters (prāṣna), comprehended in it, are enu-
merated and described. Besides this, in the San-
hitā itself, the texts contained in every section
are numbered; and so are the syllables in each text.

The first section (amtvāca), in this collection of prayers, corresponds with the first section (candīcā) in the white Yajush*: but all the rest differ; and so does the arrangement of the subjects. Many of the topics are indeed alike in both Vēdas; but differently placed, and differently treated. Thus the ceremony called Rājasūya occupies one cân'da, corresponding with the eighth pras'na of the first book (Asht'aca); and is preceded by two cân'adas, relative to the Vājapēya, and to the mode of its celebration, which occupy fourteen sections in the preceding pras'na. Consecrated fire is the subject of four cân'adas, which fill the fourth and fifth books. Sacrifice (ad'hvāra) is noticed in the second and third lectures of the first book, and in several lectures of the sixth. The subject is continued in the seventh and last book; which treats largely on the Jyotistōma, including the forms of preparing and drinking the juice of acid Aṣclepias. The Aṣwamēd'ha, Nrimēd'ha, and Pitrimēd'ha, are severally treated of in their places; that is, in the collection of prayers †, and in the second part of this Vēda. Other topics, introduced in different places, are numerous; but it would be tedious to specify them at large.

Among the Rishis of the texts, I observe no human authors: nine entire cân'adas, according to the

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* Translated in a former essay, with the first verse in each of the three other Vēdas. Asiatic Researches, Vol. V, p. 364.
† The prayers of the Aṣwamēd'ha occur in the concluding sections, between the 12th section of the 4th chapter, and the end of the fifth chapter of the 7th and last book.
second arrangement indicated by the index, appear to be ascribed to Praja'pati, or the lord of creatures; as many to So'rna, or the moon; seven to Agni, or fire; and sixteen to all the gods. Possibly some passages may be allotted by the commentators to their real authors, though not pointed out by the index for the A'tréyī S'ác'há.

Several prayers from this Véda have been translated in former essay's*. Other very remarkable passages have occurred on examining this collection of Mantras†. The following, from the seventh and last book ‡, is chosen as a specimen of the Taittiriya Yajurvéda. Like several before-cited, it alludes to the Indian notions of the creation; and, at the risk of sameness, I select passages relative to that topic, on account of its importance in explaining the creed of the ancient Hindu religion. The present extract was recommended for selection by its allusion to a mythological notion, which apparently gave origin to the story of the Varáha-avatára; and from which an astronomical period, entitled Calpa, has perhaps been taken.§

'Waters [alone] there were; this world originally was water. In it the lord of creation moved, having become air: he saw this [earth]; and upheld it, assuming the form of a boar (varáha); and then moulded that [earth], becoming Vis'wa-carmán, the artificer of the universe. It became

* Asiatic Researches, Vol. V, and VII.
† I have several complete copies of the text; but only a part of the commentary by Sa'yana.
‡ Book VII, Chapter 1, Section 5.
§ One of the Calpas, or renovations of the universe, is denominated Varáha.
celebrated (aprat'hata), and conspicuous (prīthivī); and therefore is that name (Prīthivī) assigned to the earth.

The lord of creation meditated profoundly on the earth; and created the gods, the Vasus, Rudras, and 'Adityas. Those gods addressed the lord of creation, saying; "How can we form creatures?" He replied, "As I created you by profound contemplation (tapas); so do you seek in devotion (tapash), the means of multiplying creatures." He gave them consecrated fire, saying, "With this sacrificial fire, perform devotions." With it they did perform austerities; and, in one year, framed a single cow. He gave her to the Vasus, to the Rudras, and to the 'Adityas, [successively]: bidding them 'guard her.' The Vasus, the Rudras, and the 'Adityas, [severally] guarded her; and she calved, for the Vasus, three hundred and thirty-three [calves]; and [as many] for the Rudras; and [the same number] for the 'Adityas: thus was she the thousandth.

They addressed the lord of creation, requesting him to direct them in performing a solemn act of religion with a thousand [kine for a gratuity]. He caused the Vasus to sacrifice with the Agnishtoma; and they conquered this world, and gave it [to the priests]: he caused the Rudras to sacrifice with the Ucthyâ; and they obtained the middle region, and gave it away [for a sacrificial fee]: he caused the 'Adityas to sacrifice with the Atirâtra; and they acquired that [other] world, and gave it [to the priests for a gratuity].'

This extract may suffice. Its close, and the remainder of the section, bear allusion to certain religious ceremonies, at which a thousand cows must be given to the officiating priests.
To the second part of this Veda* belongs an Aranyya, divided, like the Sanhitā, into lectures (praśna), and again subdivided into chapters (anuvāda), containing texts, or sections, which are numbered, and in which the syllables have been counted. Here also a division by caṇḍas, according to the different subjects, prevails. The six first lectures, and their corresponding caṇḍas, relate to religious observances. The two next constitute three Upanishads; or, as they are usually cited, two: one of which is commonly entitled the Taittirīyaca Upanishad; the other is called the Nārāyaṇa, or, to distinguish it from another belonging exclusively to the At'haravēda, the great (Māha, or Vṛiha,) nārāyaṇa. They are all admitted in collections of theological treatises appendant on the At'harvaṇa; but the last-mentioned is there subdivided into two Upanishads.

For a further specimen of this Vajurveda, I shall only quote the opening of the third and last chapter of the Vāruni, or second Taittirīyaca Upanishad, with the introductory chapter of the first†.

Bṛṛigu, the offspring of Varuṇ'a, approached his father, saying, "Venerable [father]! make known to me Brahma." Varuṇ'a propounded these: namely, food [or body], truth [or life], sight, hearing, mind [or thought], and speech:

* The Taittirīya, like other Védas, has its Brāhmaṇa: and frequent quotations from it occur in the commentary on the prayers, and in other places. But I have not yet seen a complete copy of this portion of the Indian sacred books.
† I use several copies of the entire Aranyya, with Sancara's commentary on the Taittirīya Upanishad, and annotations on his gloss by Anandajnya'na: besides separate copies of that, and of the Mahānārāyaṇa; and a commentary on the Vāruni Upanishad, entitled Laghu dipiṣā.
and thus proceeded, “That, whence all beings are produced; that, by which they live when born; that, towards which they tend; and that, into which they pass; do thou seek, [for] that is Brahme.”

He meditated [in] devout contemplation; and, having thought profoundly, he recognised food [or body] to be Brahme: for all beings are indeed produced from food; when born, they live by food; towards food they tend; they pass into food. This he comprehended; [but yet unsatisfied] he again approached his father Varuna, saying, “Venerable [father]! make known to me Brahme.” Varuna replied, “Seek the knowledge of Brahme by devout meditation: Brahme is profound contemplation.”

Having deeply meditated, he discovered breath [or life] to be Brahme; for all these beings are indeed produced from breath; when born, they live by breath; towards breath they tend; they pass into breath. This he understood: [but] again he approached his father Varuna, saying, “Venerable [father]! make known to me Brahme.” Varuna replied, “Seek him by profound meditation: Brahme is that.”

He meditated in deep contemplation, and discovered intellect to be Brahme: for all these beings are indeed produced from intellect; when born, they live by intellect; towards intellect they tend; and they pass into intellect. This he understood: [but] again he came to his father Varuna, saying, “Venerable [father]! make known to me Brahme.” Varuna replied, “Inquire by devout contemplation: profound meditation is Brahme.”
'He thought deeply; and, having thus meditated [with] devout contemplation, he knew Ananda [or felicity] to be Brahme: for all these beings are indeed produced from pleasure; when born, they live by joy; they tend towards happiness; they pass into felicity.

'Such is the science which was attained by Bhṛigu, taught by Varun'ā, and founded on the supreme ethereal spirit. He who knows this, rests on the same support; is endowed with [abundant] food; and becomes [a blazing fire], which consumes food: great he is by progeny, by cattle, and by holy perfections; and great by propitious celebrity.'

The above is the beginning of the last chapter of the Varun'ī Upanishad. I omit the remainder of it. The first Taittiriyaca Upanishad opens with the following prayer. 'May Mitra [who presides over the day], Varun'ā [who governs the night], Aryaman [or the regent of the sun and of sight], Indra [who gives strength], Vṛihas-pati [who rules the speech and understanding], and Vishn'ū, whose step is vast, grant us ease. [1] bow to Brahme. Salutation unto thee, O air! Even thou art Brahme, present [to our apprehension]. Thee I will call, "present Brahme:" thee I will name, "the right one:" thee I will pronounce, "the true one." May that [Brahme, the universal being entitled air], preserve me; may that preserve the teacher: propitious be it*.

* I have inserted here, as in other places, between crotchets, such illustrations from the commentary, as appear requisite to render the text intelligible.
On other Upanishads of the Yajurveda.

Among the Sáčchás of the Yajurveda, one entitled Maitráyaní', furnishes an Upanishad, which bears the same denomination. An abridged paraphrase of it, in verse*, shows it to be a dialogue in which a sage, named Sá'ca'yána, communicates to the king Vrihadrátha, theological knowledge derived from another sage, called Maitra.

A different Sáčhá of this Véda, entitled the Cat'ha, or Cát'haca, furnishes an Upanishad bearing that name; and which is one of those most frequently cited by writers on the Védánta. It is an extract from a Bráhmana; and also occurs in collections of Upanishads appertaining to the Áta'harcvána.

S'vétas'váta, who has given his name to one more Sáčhá of the Yajurveda, from which an Upanishad is extracted†, is introduced in it, as teaching theology. This Upanishad, comprised in six chapters or lectures (ad'hyáya), is found in collections of theological tracts appertaining to the Áta'harcavéda; but, strictly, it appears to belong exclusively to the Yajush.

* By Vidyára'anya. I have not seen the original.
† In the abridgment of it by Vidyáranya, this is the description given of the S'vétás'váta Upanishad.
On the Sa'mave'da.

A peculiar degree of holiness seems to be attached, according to Indian notions, to the Sáma-véda; if reliance may be placed on the inference suggested by the etymology of its name, which indicates, according to the derivation* usually assigned to it, the efficacy of this part of the Vedas in removing sin. The prayers, belonging to it, are, as before observed, composed in metre, and intended to be chanted, and their supposed efficacy is apparently ascribed to this mode of uttering them.

Not having yet obtained a complete copy of this Véda, or of any commentary on it, I can only describe it, imperfectly, from such fragments as I have been able to collect.

A principal, if not the first, part of the Sáma-véda is that entitled A'rchica. It comprises prayers, among which I observe many, that constantly recur in rituals of Sámavédíya, or Ch'hándóga priests, and some of which have been translated in former essays †. They are here arranged, as appears from two copies of the A'rchica ‡, in six chapters (pra-pá'taca) subdivided into half chapters, and into sections (das'ati); ten in each chapter, and usually

* From the root Sho, convertible into só and sá, and signifying ' to destroy.' The derivative is expounded as denoting something 'which destroys sin.'
† Asiatic Researches, Vol. V. and VII.
‡ One of them dated nearly two centuries ago, in 1672 Samvat. This copy exhibits the further title of Ch'hándasi Sanhitá.
containing the exact number of ten verses each. The same collection of prayers, in the same order, but prepared for chanting, is distributed in seventeen chapters, under the title of the Grúmagkya gána. That, at least, is its title in the only copy which I have seen. But rituals, directing the same prayers to be chanted, employ the designation of Archica gána, among other terms applicable to various modes of rhythmical recitation.

Another portion of the Súmacéda, arranged for chanting, bears the title of A'ránya gána. Three copies of it *, which seem to agree exactly, exhibit the same distribution into three chapters, which are subdivided into half chapters and decades or sections, like the Archica above-mentioned †. But I have not yet found a plain copy of it, divested of the additions made for guidance in chanting it.

The additions here alluded to, consist in prolonging the sounds of vowels, and resolving diphthongs into two or more syllables, inserting likewise, in many places, other additional syllables, besides placing numerical marks for the management of the voice. Some of the prayers, being subject to variation in the mode of chanting them, are repeated, once or oftener, for the purpose of showing these differences; and, to most, are prefixed the appropriate names of the several passages.

* The most ancient of those in my possession, is dated nearly three centuries ago, in 1587 Samvat.
† This Aranya comprises nearly three hundred verses (Súman), or exactly 290. The Archica contains twice as many, or nearly 600.
Under the title of *A'rshaya Brahmanīa*, I have found what seems to be an index of these two portions of the *Sāmaveda*. For the names of the passages, or sometimes the initial words, are there enumerated in the same order, in which they occur in the *Grāma gēya*, or *A'rchica*, followed by the *A'ranīya gāna*. This index does not, like the explanatory tables of the other *Vēdas*, specify the metre of each prayer, the deity addressed in it, and the occasion on which it should be used; but only the *Rishi*, or author: and, from the variety of names stated in some instances, a conclusion may be drawn, that the same texts are ascribable to more than one author.

It has been already hinted, that the modes of chanting the same prayers are various, and bear different appellations. Thus, the rituals frequently direct certain texts of this *Vēda* to be first recited simply, in a low voice, according to the usual mode of inaudible utterance of the *Vēdas*; and then to be similarly chanted, in a particular manner, under the designation of *A'rchica gāna*; showing, however, divers variations and exceptions from that mode, under the distinct appellation of *Aṅ-ructa' gāna*. So, likewise, or nearly the same passages, which are contained in the *A'rchica* and *Grāmagēya*, are arranged in a different order, with further variations as to the mode of chanting them, in another collection named the *Uha gāna*.

From the comparison and examination of these parts of the *Sāmaveda*, in which, so far as the collation of them has been carried, the texts appear

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*The ritual, which is the chief authority for this remark, is one by Sā'yan' A'char'ya, entitled Yajnyatantra Sud'hānīd'hi.*
to be the same, only arranged in a different order, and marked for a different mode of recitation, I am led to think, that other collections, under similar names*, may not differ more widely from the Ārčhica and Araṇiya above-mentioned: and that these may possibly constitute the whole of that part of the Sāmaṉveda, which corresponds to the Sanhitās of other Vedas.

Under the denomination of Brāhmaṇa, which is appropriated to the second part or supplement of the Vēda, various works have been received by different schools of the Sāmaṉveda. Four appear to be extant; three of which have been seen by me, either complete or in part. One is denominated Shādvinsa; probably from its containing twenty-six chapters. Another is called Adbhūta, or, at greater length, Adbhūta Brāhmaṇa. The only portion, which I have yet seen, of either, has the appearance of a fragment, and breaks off at the close of the fifth chapter: both names are there introduced, owing, as it should seem, to some error; and I shall not attempt to determine which of them it really belongs to. A third Brāhmaṇa of this Vēda is termed Panchavinsa; so named, probably, from the number of twenty-five chapters comprised in it: and I conjecture this to be the same with one in my possession not designated by any particular title, but containing that precise number of chapters.

* Sir Robert Chambers's copy of the Sāmaṉveda comprised four portions, entitled Gāna, the distinct names of which, according to the list received from him, are Viṅgana Arṇā, Veṅgana, Ugāna, and Uhya gana. The first of these, I suspect to be the Aṛanya, written in that list, Aṛṇā: the last seems to be the same with that which is in my copy denominated Uha gana.
The best known among the Brāhmaṇas of the Sāmaveda, is that entitled Tāṇḍya. It was expounded by Sa'yan'ā'cha'ārya; but a fragment of the text with his commentary, including the whole of the second book (panjicā), from the sixth to the tenth lecture, is all that I have been yet able to procure. This fragment relates to the religious ceremony named Agnishtōma. I do not find in it, nor in other portions of the Sāmaveda before described, any passage, which can be conveniently translated as a specimen of the style of this Vēda.

Leaving, then, the Mantras and Brāhmaṇas of the Sāmaveda, I proceed to notice its principal Upanishad, which is one of the longest and most abstruse compositions bearing that title.

The Ch'handogya Upanishad contains eight chapters (prapūtacās), apparently extracted from some portion of the Brāhmaṇa, in which they are numbered from three to ten *. The first and second, not being included in the Upanishad, probably relate to religious ceremonies. The chapters are unequally subdivided into paragraphs or sections; amounting, in all, to more than a hundred and fifty.

A great part of the Ch'handogya † is in a didactic form: including, however, like most of the other Upanishads, several dialogues. The beginning of one, between Sanatcuma'ra and Na'reda,

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* I have several copies of the text, with the gloss of S'ancara, and annotations on it by Anandajnya'ñagiri; besides the notes of Vyā'sa'ti'ṛt'ha on a commentary by Ananda-ti'ṛt'ha.

† Its author, indicated by Vyā'sa'ti'ṛt'ha, is Hayagrī'va.
which occupies the whole of the seventh chapter*, has been already quoted. The preceding chapter consists of two dialogues between Svētācētu, grandson of Arunā, and his own father, Uddalaca, the son of Arunā. These had been prepared in the fifth chapter, where Pravaḥana, son of Jīva, convicts Svētācētu of ignorance in theology: and where that conversation is followed by several other dialogues, intermixed with successive references for instruction. The fourth chapter opens with a story respecting Ja'nas'rutī, grandson of Putra; and, in this and the fifth chapter, dialogues, between human beings, are interspersed with others in which the interlocutors are either divine or imaginary persons. The eighth or last chapter contains a disquisition on the soul, in a conference between Prajāpāti and Indra.

I shall here quote, from this Upanishad, a single dialogue belonging to the fifth chapter.

"Pra'chi'nas'ā'la, son of Upamanyu, Satyayajnya, issue of Pulusha, Indradyumna, offspring of Bhallavi, Jana descendant of S'arcarācshya, and Vudila sprung from Aswatara'swa, being all persons deeply conversant with holy writ, and possessed of great dwellings, meeting together, engaged in this disquisition, "What is our soul? and who is Brahme?"

"These venerable persons reflected, "Uddalaca, the son of Arunā, is well acquainted with the universal soul: let us immediately go to him."

* That is the seventh of the extract which constitutes this Upanishad; but the ninth, according to the mode of numbering the chapters, in the book, whence it is taken.
They went: but he reflected, "these great and very learned persons will ask me; and I shall not [be able] to communicate the whole [which they inquire]: I will at once indicate to them another [instructor]." He thus addressed them, "As'wa-PATI, the son of CE'CAYA, is well acquainted with the universal soul; let us now go to him."

"They all went; and, on their arrival, [the king] caused due honours to be shown to them respectively; and, next morning, civilly dismissed them; [but, observing that they staid, and did not accept his presents,] he thus spoke: "In my dominions, there is no robber; nor miser; no drunkard; nor any one neglectful of a consecrated hearth; none ignorant; and no adulterer, nor adulteress. Whence [can you have been aggrieved]?

[As they did not state a complaint, he thus proceeded;] "I must be asked, O venerable men! [for what you desire]." [Finding, that they made no request, he went on;] "As much as I shall bestow on each officiating priest, so much will I also give to you. Stay then, most reverend men." They answered: "It is indeed requisite to inform a person of the purpose of a visit. Thou well knowest the universal soul; communicate that knowledge unto us." He replied; "To-morrow I will declare it to you." Perceiving his drift, they, next day, attended him, bearing [like pupils] logs of firewood. Without bowing to them, he thus spoke:—

"Whom dost thou worship as the soul, O son of UPAMANYU?" "Heaven," answered he, "O venerable king!" "Splendid is that [portion of the] universal self, which thou dost worship as the soul: therefore, in thy family, is seen [the juice of the acid asclepias] drawn, expressed, and pre-
pared, [for religious rites]; thou dost consume food [as a blazing fire]; and dost view a [son or other] beloved object. Whoever worships this for the universal soul, similarly enjoys food, contemplates a beloved object, and finds religious occupations in his family. But this is [only] the head of the soul. Thy head had been lost," added the king, "hadst thou not come to me."

'He now turned to Satyayajnya, the son of Pulusha, saying; "Whom dost thou worship as the soul, O descendant of Prachinayoga?"

"The sun," answered he, "O venerable king!"

"Varied is that [portion of the] universal self, which thou dost worship as the soul; and, therefore, in thy family, many various forms are seen; a car yoked with mares, and treasure, together with female slaves, surround thee; thou dost consume food, and contemplate a pleasing object. Whoever worships this, for the universal soul, has the same enjoyments, and finds religious occupations in his family. But this is only the eye of soul. Thou hadst been blind," said the king, "hadst thou not come to me."

'He next addressed Indradyumna, the son of Bhallavi: "Whom dost thou worship as the soul, O descendant of Vyaghrapad."

"Air," replied he, "O venerable king!"

"Diffused is that portion of the universal self, which thou dost worship as the soul; numerous offerings reach thee; many tracts of cars follow thee: thou dost consume food: thou viewest a favourite object. Whoever worships this, for the universal soul, enjoys food and contemplates a beloved object: and has religious occupations in his family. But this is only the breath of soul. Thy breath had expired," said the king, "hadst thou not come to me."

Vol. VIII. H h
He then interrogated Jana, the son of Sarcara'cshya: "Whom dost thou worship as the soul, O son of Sarcara'cshya?" "The ethereal element," said he, "O venerable king!" "Abundant is that universal self, whom thou dost worship as the soul; and, therefore, thou likewise dost abound with progeny and wealth. Thou dost consume food; thou viewest a favourite object. Whoever worships this, for the universal soul, consumes food, and sees a beloved object; and has religious occupations in his family. But this is only the trunk of soul. Thy trunk had corrupted," said the king, "hadst thou not come to me."

He afterwards inquired of Vudila, the son of As'watara'swa: "Whom dost thou worship as the soul, O descendant of Vya'ghrapad?" "Water," said he, "O venerable king!" "Rich is that universal self, whom thou dost worship as the soul; and, therefore, art thou opulent and thriving. Thou dost consume food; thou viewest a favourite object. Whoever worships this, for the universal soul, partakes of similar enjoyments, contemplates as dear an object, and has religious occupations in his family. But this is only the abdomen of the soul. Thy bladder had burst," said the king, "hadst thou not come to me."

Lastly, he interrogated Udda'laca, the son of Aruna. "Whom dost thou worship as the soul, O descendant of Gotama?" "The earth," said he, "O venerable king!" "Constant is that universal self, whom thou dost worship as the soul: and, therefore, thou remainest steady, with offspring and with cattle. Thou dost consume food; thou viewest a favourite object. Whoever worships this, for the universal soul, shares like enjoyments, and views as beloved an object, and
has religious occupations in his family. But this forms only the feet of the soul. Thy feet had been lame," said the king, "hadst thou not come to me."

' He thus addressed them [collectively]: "You consider this universal soul, as it were an individual being; and you partake of distinct enjoyment. But he, who worships, as the universal soul, that which is known by its manifested portions, and is inferred from consciousness, enjoys nourishment in all worlds, in all beings, in all souls: his head is splendid, like that of this universal soul; his eye is similarly varied; his breath is equally diffused; his trunk is no less abundant; his abdomen is alike full; and his feet are the earth; his breast is the altar; his hair is the sacred grass; his heart, the household fire; his mind, the consecrated flame; and his mouth, the oblation.

"The food, which first reaches him, should be solemnly offered: and the first oblation, which he makes, he should present with these words: "Be this oblation to breath efficacious." Thus breath is satisfied; and, in that the eye is satiate; and, in the eye, the sun is content; and, in the sun, the sky is gratified; and, in the sky, heaven and the sun, and whatever is dependant, become replete: and after that, he himself [who eats] is fully gratified with offspring and cattle; with vigour proceeding from food, and splendour arising from holy observances *.

* Several similar paragraphs, respecting four other oblations, so presented to other inspirations of air, are here omitted for the sake of brevity. The taking of a mouthful, by an orthodox Hindu

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"But whoever makes an oblation to fire, being unacquainted with the universal soul, acts in the same manner, as one who throws live coals into ashes: while he, who presents an oblation, possessing that knowledge, has made an offering in all worlds, in all beings, in all souls. As the tip of dry grass, which is cast into the fire, readily kindles; so are all the faults of that man consumed. He, who knows this, has only presented an oblation to the universal soul, even though he knowingly give the residue to a Chândála. For, on this point, a text is [preserved]: "As, in this world, hungry infants press round their mother; so do all beings await the holy oblation: they await the holy oblation."

Another Upanishad of the Sámaśvéda belongs to the Sáč'há of the Talavacáras. It is called, the "Céněshita," or, "Céna" Upanishad, from the word, or words, with which it opens: and, as appears from Sańcara's commentary*, this treatise is the ninth chapter (ad'hyáya) of the work, from which it is extracted. It is comprised in four sections (ch'and'á). The form is that of a dialogue between instructors and their pupils. The subject is, as in other Upanishads, a disquisition on abstruse and mystical theology. I shall not make any extract from it, but proceed to describe the fourth and last Védá.

* I have Sańcara's gloss, with the illustrations of his annotator, and the ample commentary of Crisña'Nanda: besides a separate gloss, with annotations, on the similar Upanishad belonging to the At'harvvéda.
On the At'harva-veda.

The Sanhita, or collection of prayers and invocations, belonging to the At'harvan'a, is comprised in twenty books (canda), subdivided into sections (anuvaca), hymns (sûcta), and verses (rich). Another mode of division by chapters (prapâtaca) is also indicated. The number of verses is stated at 6015; the sections exceed a hundred; and the hymns amount to more than seven hundred and sixty. The number of chapters is forty nearly.

A passage from this Veda was quoted by Sir W. Jones in his essay on the literature of the Hindus*; and a version of it was given, as a specimen of the language and style of the At'harvan'a. That passage comprises the whole of the forty-third hymn of the nineteenth book †. In the beginning of the same book, I find a hymn (numbered as the sixth) which is almost word for word the same with that, which has been before cited from the thirty-first chapter of the white Yajush.‡. Some of the verses are indeed trans-

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† Sir W. Jones cites it, as from the first book; I suspect, that, in Colonel Polier's copy, the nineteenth book might stand first in the volume. It does so, in General Martin's transcript, though the colophon be correct. I have another, and very complete, copy of this Veda. General Martin's, which I also possess, is defective: containing only the ten first and the two last books. An ancient fragment, also in my possession, does not extend beyond the sixth.
‡ Asiatic Researches, Vol. VII. p. 251.
posed, and here and there a word differs: for example, it opens by describing the primeval man (purusha) with a thousand arms, instead of a thousand heads. The purport is, nevertheless, the same; and it is needless, therefore, to insert a version of it in this place.

The next hymn, in the same book, includes an important passage. It names the twenty-eight asterisms in their order, beginning with Critticá: and seems to refer the solstice to the end of Asléshá, or beginning of Maghá. I call it an important passage; first, because it shows, that the introduction of the twenty-eighth asterism is as ancient as the At'hareva-védá; and, secondly, because it authorises a presumption, that the whole of that Védá, like this particular hymn, may have been composed when the solstice was reckoned in the middle, or at the end, of Asléshá*, and the origin of the Zodiac was placed at the beginning of Critticá. On the obvious conclusion, respecting the age of the Védá, I shall enlarge in another place.

An incantation, which appears to be the same that is mentioned by Sir W. Jones†, occurs in the fourth section of the nineteenth book. It is indeed a tremendous incantation; especially the three Suctas, or hymns, which are numbered 28, 29, and 30. A single line will be a sufficient specimen of these imprecations, in which, too, there is much sameness.

* The middle of Asléshá, if the divisions be twenty-seven, and its end, when they are twenty-eight equal portions, give the same place for the colure.

'Destroy, O sacred grass*, my foes; exterminate my enemies; annihilate all those, who hate me, O precious gem!'

The *Atharva-veda*, as is well known, contains many forms of imprecation for the destruction of enemies. But it must not be inferred, that such is the chief subject of that *Veda*; since it also contains a great number of prayers for safety and for the averting of calamities: and, like the other *Vedas*, numerous hymns to the gods, with prayers to be used at solemn rites and religious exercises, excepting such as are named *Yajnya*.

The *Gopat'ha Bráhmana* appears to belong to the second part of this *Veda*. Not having seen a commentary, nor an index, of this work, I can only speak of it from a copy in my possession: this contains five chapters (*prapítaca*), with the date of the transcript † and name of the transcriber, at the end of the fifth, as is usual in the colophon at the close of a volume.

The first chapter of this *Gopat'ha Bráhmana* traces the origin of the universe from *Brahme*; and it appears from the fourth section of this chapter, that *Atharvan* is considered as a *Prajápati* appointed by *Brahme* to create and protect subordinate beings.

In the fifth chapter, several remarkable passages, identifying the primeval person (*purusha*) with the year (*samvatsara*), convey marked allusions to the calendar. In one place (the fifth section), besides stating the year to contain twelve or thirteen

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* Darbha, *Poa Cynosuroides.*
† It is dated at *Mat'horá*, in the year (*Samvat*) 1732.
lunar months, the subdivision of that period is pursued to 360 days; and, thence, to 10,800 mu-
hurtas, or hours.

I proceed to notice the most remarkable part of the At’havva-vėda, consisting of the theological treatises, entitled Upanishads, which are appendant on it. They are computed at fifty-two: but this number is completed by reckoning, as distinct Upanishads, different parts of a single tract. Four such treatises, comprising eight Upanishads, together with six of those before described as appertaining to other Vėdas, are perpetually cited in dissertations on the Vėdānta*. Others are either more sparingly, or not at all, quoted.

It may be here proper to explain what is meant by Upanishad. In dictionaries, this term is made equivalent to Rehesya, which signifies mystery. This last term is, in fact, frequently employed by Menu, and other ancient authors, where the commentators understand Upanishads to be meant. But neither the etymology, nor the acceptation, of the word, which is now to be explained, has any direct connexion with the idea of secrecy, concealment, or mystery. Its proper meaning, according to SANCARA, Sa’YAN’A, and all the commentators, is divine science, or the knowledge of God: and, according to the same authorities, it is equally applicable to theology itself, and to a book in which this science is taught. Its deriva-

* The Cēna and Ch’hândōgya from the Sāmavēda; the Vri-
had āran’yaca and Is’ivas’ya from the white Yajush, and the Taittiriyaaca from the black Yajush; the Aitariya from the Rig-
vēda; and the Caṭ’ha, Pras’na, Mun’duca, and Mun’dūca from the At’havva’a, To these should be added, the Nriśuha tēpa-

tion is from the verb *sad* (*shad-ibr*), to destroy, to move, or to weary, preceded by the prepositions *upa* near, and *ni* continually, or *nis* certainly. The sense, properly deducible from this etymology, according to the different explanations given by commentators, invariably points to the knowledge of the divine perfections, and to the consequent attainment of beatitude through exemption from passions.*

The whole of the Indian theology is professedly founded on the *Upanishads* †. Those, which have been before described, have been shown to be extracts from the *Veda*. The rest are also considered as appertaining to the Indian scripture: it does not, however, clearly appear, whether they are detached essays, or have been extracted from a *Brâhmaṇa* of the *At'harva-veda*. I have not found any of them in the *Sanhitā* of the *At'harva-vaṇa*, nor in the *Gōpat'ha Brâhmaṇa*.

In the best copies of the fifty-two *Upanishads* ‡, the first fifteen are stated to have been taken from the *Sānaciyas*, whose *Śāch'ha* seems to be the principal one of the *At'harva-veda*. The remaining

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* Sancara, and Ananda's Rama on the Vrihad āraṇyaca; as also the commentaries on other *Upanishads*: especially Sancara on the *Cat'haea*. Other authors concur in assigning the same acceptation and etymology, to the word: they vary, only, in the mode of reconciling the derivation with the sense.
† It is expressly so affirmed in the *Vedánta sūtra* v. 3.
‡ I possess an excellent copy, which corresponds with one transcribed for Mr. Blaquiere, from a similar collection of *Upanishads* belonging to the late Sir W. Jones. In two other copies, which I also obtained at Benares, the arrangement differs, and several *Upanishads* are inserted, the genuineness of which is questionable; while others are admitted, which belong exclusively to the *Yajurveda*. 
thirty-seven appertain to various S'ac'has, mostly to that of the Paippulâdis: but some of them, as will be shown, are borrowed from other Vêdas.

The Mun'daca, divided into six sections unequally distributed in two parts, is the first Upa-nishad of the A't'hârva'nâ; and is also one of the most important, for the doctrines which it contains. It has been fully illustrated by Sancara, whose gloss is assisted by the annotations of Ananda'nya'na. The opening of this Upânishad, comprising the whole of the first section, is here subjoined.

'Brahma' was first of the gods, framer of the universe, guardian of the world. He taught the knowledge of God, which is the foundation of all science, to his eldest son A't'hârva. That holy science, which Brah'ma revealed to A't'hârva*, was communicated by him to Angir, who transmitted it to Satyavahâ, the descendant of Bharadwa'ja: and this son of Bharadwa'ja imparted the traditional science to Angiras.

'Saunaca, or the son of Sunaca, a mighty householder, addressing Angiras with due respect, asked "What is it, O venerable sage, through which, when known, this universe is understood?"

'To him the holy personage thus replied: "Two sorts of science must be distinguished; as they, who know God, declare: the supreme science,

*Sancara remarks, that At'hârva, or A't'hârvan, may have been the first creature, in one of the many modes of creation, which have been practised by Brahma'.
and another. This other is the *Rigveda*, the *Yajurveda*, the *Samaveda*, the *Atharva-veda*; the rules of accentuation, the rites of religion, grammar, the glossary and explanation of obscure terms, prosody, and astronomy: also the *Itihasa* and *Purana*; and logic, with the rules of interpretation, and the system of moral duties.

"But the supreme science is that, by which this unperishable [nature] is apprehended; invisible [or imperceptible, as is that nature]: not to be seized; nor to be deduced; devoid of colour; destitute of eyes and ears; without hands or feet, yet ever variously pervading all: minute, unalterable; and contemplated by the wise for the source of beings.

"As the spider spins and gathers back [its thread]; as plants sprout on the earth; as hairs grow on a living person: so is this universe, here, produced from the unperishable nature. By contemplation, the vast one germinates; from him, food [or body] is produced; and thence, successively, breath, mind, real [elements], worlds, and immortality arising from [good] deeds. The omniscient is profound contemplation, consisting in the knowledge of him, who knows all: and, from that, the [manifested] vast one, as well as names, forms, and food, proceed: and this is truth."

The *Prasāna*, which is the second *Upanishad*, and equally important with the first, consists, like it, of six sections; and has been similarly interpreted by *Śaṅcara* and *Balacrīshā*†. In this

* Meaning the prayers contained in the four *Védas*, disjoined from theology.
† I have several copies of the text, besides commentaries on both *Upanishads*.
dialogue, Suceś'a, the son of Bharadwa'ja, Satyac'ama, descended from Śivi, Saurya'yani, a remote descendant of the Sun, but belonging to the family of Garga, Caus'alya, surnamed Aśwala'yana, or son of As'wala, Vaidarbhī of the race of Bhrigu, together with Cāband'hi, surnamed Cā'nya, or descendant of Catya, are introduced as seeking the knowledge of theology, and applying to Pippala'da for instruction. They successively interrogate him concerning the origin of creatures, the nature of the gods, the union of life with body, and the connexion of thoughts with the soul.

The nine succeeding Upanishads (from the 3d to the 11th) are of inferior importance, and have been left unexplained by the writers on the Vedānta, because they do not directly relate to the Sārīraca, or theological doctrine respecting the soul *. They are enumerated in the margin †.

The Maniducya follows, and consists of four parts, each constituting a distinct Upanishad. This abstruse treatise, comprising the most material doctrines of the Vedānta, has been elucidated by the labours of Gaud'apa'da, and S'ancara. Gaud'apa'da's commentary is assisted by the notes of Anandagiri.

Among the miscellaneous Upanishads, the first thirteen (from the 16th to the 28th) have been left

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* This reason is assigned by the annotator on S'ancara's gloss, at the beginning of his notes on the Munidaca Upanishad.
† 3d Brahme-vidyā. 4th Čshuriča. 5th Chālica. 6th and 7th Atharva-s'iras. 8th Garbha. 9th Mahā. 10th Brahma. 11th Prānāgniḥbtra.
uncommented by the principal expounders of the Vedánta, for a reason before-mentioned. The names of these Upanishads will be found in the subjoined note.*

The following six (from the 29th to the 34th,) constitute the Nrisinha Tāpaniya; five of them compose the Pūrva Tāpaniya, or first part of the Upanishad so called; and the last, and most important, is entitled Uttara Tāpaniya. It has been expounded by Gaudāpaḍa, as the first part (if not the whole Upanishad) has been by Sancara†. The object of this treatise appears to be the identifying of Nṛśinva with all the gods: but, so far as I comprehend its meaning (for I have not sufficiently examined it to pronounce confidently on this point,) the fabulous incarnation of Viśnu, in the shape of a vast lion, does not seem to be at all intended; and the name of Nṛśinva is applied to the divinity, with a superlative import, but with no apparent allusion to that fable.

The two next Upanishads constitute the first and second parts of the Cāthaca, or Vallī, or Cātha-vallī (for the name varies in different copies). It belongs properly to the Yajurveda, as before mentioned; but it is usually cited from the Āthar-

* 16th Nīla-rudra. 17th Nāḍa-vindu. 18th Brahma-vindu. 19th Amrita-vindu. 20th Dhyāna-vindu. 21st Tējō-vindu. 22d Yōga-sīchā. 23d Yōga-tatwa. 24th Samyūsa. 25th Aruniya or Aruni-yōga. 26th Cant’hasruti. 27th Pin’da. 28th Ātmā.

† I have several copies of the text, and of Gaudāpaḍa’s commentary; with a single transcript of Sancara’s gloss on the five first of the treatises entitled Tāpaniya.
\[\text{van'a; and has been commented, as appertaining to this Veda, by S'ancara, and by Ba'lacrishn'a*.}\

It comprises six sections, severally entitled Valli; but constituting two chapters (ad'hyāya), denominated Pūrva-valli and Uttara-valli. The dialogue is supported by Mrityu, or death, and the prince Nachicetas, whom his father, Va'jasraňasa, consigned to Yama, being provoked by the boy's importunately asking him, (through zeal, however, for the success of a sacrifice performed to ensure universal conquest,) "to whom wilt thou give me?" Yama receives Nachicetas with honour, and instructs him in theology, by which beatitude and exemption from worldly sufferings may be attained, through a knowledge of the true nature of the soul, and its identity with the supreme being. The doctrine is similar to that of other principal Upanishads.

The Ceneshita, or Céna Upanishad, is the thirty-seventh of the At'havana, and agrees, almost word for word, with a treatise bearing the same title, and belonging to a S'áchá of the Sánavéda. S'ancara has, however, written separate commentaries on both, for the sake of exhibiting their different interpretations†. Both commentaries have, as usual, been annotated.

* The commentary of S'ancara is, as usual, concise and perspicuous: and that of Ba'lacrishn'a, copious but clear. Besides their commentaries, and several copies of the text, together with a paraphrase by Vidya'raňya, I have found this Upanishad forming a chapter in a Brahmána, which is marked as belonging to the Sánavéda, and which I conjecture to be the Pancha vinsa Brahmána of that Veda.

† Here, as in other instances, I speak from copies in my possession.
A short Upanishad, entitled Nārāyana, is followed by two others (39th and 40th), which form the first and second parts of the Vrihan Nārāyan'a. This corresponds, as before mentioned, with an Upanishad, bearing the same title, and terminating the A'raṇ'ya of the Taittirīya Yajurvēda.

On the three subsequent Upanishads I shall offer no remarks; they have not been commented among such as relate to the Vēdānta; and I have not ascertained whence they are extracted*.

Under the name of Anandavallī and Bhrīgu-vallī, two Upanishads follow (44th and 45th), which have been already noticed as extracts from the A'raṇ'ya of the black Yajush, distinguished by the titles of Taittirīya and Vārūni.

The remaining seven Upanishads† are unexplained by commentators on the Vēdānta. They are, indeed, sufficiently easy, not to require a laboured interpretation; but there is room to regret the want of an ancient commentary, which might assist in determining whether these Upanishads be genuine. The reason of this remark will be subsequently explained.

Entertaining no doubts concerning the genuineness of the other works, which have been here described, I think it, nevertheless, proper to state some of the reasons on which my belief of their

* Their titles are, 41st Sarvāpanishatsūra. 42d Hansa. And 43d Parama hansa.
† 46th Garuda. 47th Cālāgni-rudra. 48th and 49th Rāma-tāpanīya, first and second parts. 50th Caivalya. 51st Jābula. 52d Aśrama.
authenticity is founded. It appears necessary to do so, since a late author has abruptly pronounced the Védas to be forgeries.

It has been already mentioned, that the practice of reading the principal Védas in superstitious modes, tends to preserve the genuine text. Copies, prepared for such modes of recital, are spread in various parts of India, especially Benares, Jeyenagar, and the banks of the Gódavéri. Interpolations and forgeries have become impracticable since this usage has been introduced: and the Rígvéda, and both the Yajushes, belonging to the several Sáchás, in which that custom has been adopted, have been, therefore, long safe from alteration.

The explanatory table of contents, belonging to the several Védas, also tends to ensure the purity of the text; since the subject and length of each passage are therein specified. The index, again, is itself secured from alteration by more than one exposition of its meaning, in the form of a perpetual commentary.

It is a received and well grounded opinion of the learned in India, that no book is altogether safe from changes and interpolations until it have been commented: but when once a gloss has been published, no fabrication could afterwards succeed; because the perpetual commentary notices every passage, and, in general, explains every word.

* Mr. Pinkerton, in his Modern Geography, Vol. II.
Commentaries on the Védas themselves exist, which testify the authenticity of the text. Some are stated to have been composed in early times: I shall not, however, rely on any but those to which I can with certainty refer. I have fragments of Uvāṭa’s gloss; the greatest part of Sacyana’s on several Védas; and a complete one by Mahīḍhara on a single Vēda. I also possess nearly the whole of Śaṅcara’s commentary on the Upanishads; and a part of Gaudāpāda’s; with others, by different authors of less note.

The genuineness of the commentaries, again, is secured by a crowd of annotators, whose works expound every passage in the original gloss; and whose annotations are again interpreted by others. This observation is particularly applicable to the most important parts of the Védas, which, as is natural, are the most studiously and elaborately explained.

The Niructa, with its copious commentaries on the obsolete words and passages of scripture, further authenticates the accuracy of the text, as there explained. The references, and quotations, in those works, agree with the text of the Védas, as we now find it.

The grammar of the Sanscrit language contains rules applicable to the anomalies of the ancient dialect. The many and voluminous commentaries on that, and on other parts of the grammar, abound in examples cited from the Védas: and here, also, the present text is consonant to those ancient quotations.

Philosophical works, especially the numerous commentaries on the aphorisms of the Mimāṃsā 
Vol. VIII. I i
and Vedánta, illustrate and support every position advanced in them, by ample quotations from the Vedas. The object of the Mīmāṃsā is to establish the cogency of precepts contained in scripture, and to furnish maxims for its interpretation; and, for the same purpose, rules of reasoning, from which a system of logic is deducible. The object of the Vedánta is to illustrate the system of mystical theology taught by the supposed revelation, and to show its application to the enthusiastic pursuit of unimpassioned perfection and mystical intercourse with the divinity. Both are closely connected with the Vedas: and here, likewise, the authenticity of the text is supported by ancient references and citations.

Numerous collections of aphorisms, by ancient authors*, on religious ceremonies, contain, in every line, references to passages of the Vedas. Commentaries on these aphorisms cite the passages at greater length. Separate treatises also interpret the prayers used at divers ceremonies. Rituals, some ancient, others modern, contain a full detail of the ceremonial, with all the prayers which are to be recited at the various religious rites for which they are formed. Such rituals are extant, not only for ceremonies which are constantly observed, but for others which are rarely practised; and even for such as have been long since disused.

*The Sūtras of Aśwala'yana, Sa'n'hu'ya'yana, Baudd'ha'yana, Ca'ya'yana, Lat'ya'yana, Go'bhila, A'pa's-tamba, &C.

These, appertaining to various Sāch'has of the Vedas, constitute the calpa, or system of religious observances. I have here enumerated a few only. The list might be much enlarged, from my own collection; and still more so, from quotations by various compilers: for the original works, and their commentaries, as well as compilations from them, are very numerous.
In all, the passages taken from the *Védas* agree with the text of the general compilation.

The *Indian* legislators, with their commentators, and the copious digests and compilations from their works, frequently refer to the *Védas*; especially on those points of the law which concern religion. Here also the references are consistent with the present text of the *Indian* scripture.

Writers on ethics sometimes draw from the *Védas* illustrations of moral maxims; and quote from their holy writ, passages at full length, in support of ethical precepts*. These quotations are found to agree with the received text of the sacred books.

Citations from the *Indian* scripture occur in every branch of literature, studied by orthodox *Hindus*. Astronomy, so far as it relates to the calendar, has frequent occasion for reference to the *Védas*. Medical writers sometimes cite them; and even annotators on profane poets occasionally refer to this authority, in explaining passages which contain allusions to the sacred text.

Even the writings of the heretical sects exhibit quotations from the *Védas*. I have met with such in the books of the *Jainas*, unattended by any indication of their doubting the genuineness of the original, though they do not receive its doctrines, nor acknowledge its cogency †.

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* A work entitled *Niti manjari* is an instance of this mode of treating moral subjects.

† The *Satapat'ha Bráhmana*, especially the 14th book, or *Vrihadáran'yaca*, is repeatedly cited, with exact references to the numbers of the chapters and sections, in a fragment of a treatise by a *Jaina* author, the communication of which I owe to Mr.
In all these branches of Indian literature, while perusing or consulting the works of various authors, I have found perpetual references to the Vedas, and have frequently verified the quotations. On this ground I defend the authentic text of the Indian scripture, as it is now extant; and although the passages which I have so verified are few, compared with the great volume of the Vedas, yet I have sufficient grounds to argue, that no skill, in the nefarious arts of forgery and falsification, could be equal to the arduous task of fabricating large works, to agree with the very numerous citations, pervading thousands of volumes, composed on diverse subjects, in every branch of literature, and dispersed through the various nations of Hindus inhabiting Hindustan, and the Dekhin.

If any part of what is now received as the Veda, cannot stand the test of such a comparison, it may be rejected, as at least doubtful, if not certainly spurious. Even such parts as cannot be fully confirmed by a strict scrutiny, must be either received with caution, or be set aside as questionable. I shall point out parts of the fourth Veda, which I consider to be in this predicament. But, with the exceptions now indicated, the various portions of the Vedas, which have been examined, are as yet free from such suspicion; and, until they are impeached by more than vague assertion, have every title to be admitted as genuine copies of books, which (however little deserving of it) have been long held in reverence by the Hindus.

I am apprised that this opinion will find oppo-
ments, who are inclined to dispute the whole of Indian literature, and to consider it all as consisting of forgeries, fabricated within a few years, or, at best, in the last few ages. This appears to be grounded on assertions and conjectures, which were inconsiderately hazarded, and which have been eagerly received, and extravagantly strained.

In the first place, it should be observed, that a work must not be hastily condemned as a forgery, because, on examination, it appears not to have been really written by the person whose name is usually coupled with quotations from it. For if the very work itself show that it does not purport to be written by that person, the safe conclusion is, that it was never meant to be ascribed to him. Thus the two principal codes of Hindu law are usually cited as Menu's and Ya'jnyawalcya's; but in the codes themselves, those are dialogists, not authors: and the best commentators expressly declare, that these institutes were written by other persons than Menu and Ya'jnyawalcya*. The Surya Sidd'ánta is not pretended to have been written by Meya: but he is introduced as receiving instruction from a partial incarnation of the Sun; and their conversation constitutes a dialogue, which is recited by another person in a different company. The text of the Sánchya philosophy, from which the sect of Budd'ha seems to have borrowed its doctrines, is not the work of Capila himself, though vulgarly ascribed to him; but it purports to be composed by Is'wara Crish'n'a; and he is stated to have received the doctrine mediatly from Capila, through successive teachers.

* Vijnya'anayo'gi, also named Vijnya'ne'swara, who commented the institutes which bear the name of Ya'jnyawalcya, states the text to be an abridgement by a different author.
after its publication by Panchas'ic'ha, who had been himself instructed by Asuri, the pupil of Capila.

To adduce more instances would be tedious: they abound in every branch of science. Among works, the authors of which are unknown, and which, therefore, as usual, are vulgarly ascribed to some celebrated name, many contain undisguised evidence of a more modern date. Such are those parts of Purânas, in which the prophetic style is assumed, because they relate to events posterior to the age of the persons who are speakers in the dialogue. Thus Budd'ha is mentioned under various names in the Matsya, Vishn'iu, Bhâ-gavata, Garuda, Nrisinha, and other purânas. I must not omit to notice, that Sancara'cha'rya, the great commentator on the abstrusest parts of the Védas, is celebrated, in the Vrîhad d'harna purâña*, as an incarnation of Vishnu; and Gau-dap'âda is described, in the Sancara vijeya, as the pupil of Suka the son of Vya'sa‡.

I do not mean to say, that forgeries are not sometimes committed; or that books are not counterfeited, in whole or in part. Sir W. Jones, Mr. Blaquierè, and myself, have detected interpolations. Many greater forgeries have been at-

* In the 78th chapter of the 2d part. This is the Purâna mentioned by me with doubt in a former essay. I have since procured a copy of it.
‡ If this were not a fable, the real age of Vya'sa might be hence ascertained; and, consequently, the period when the Védas were arranged in their present form. Go'vindana'tha, the instructor of Sancara, is stated to have been the pupil of Gau-dap'âda; and, according to the traditions generally received in the peninsula of India, Sancara lived little more than eight hundred years ago.
tempted: some have for a time succeeded, and been ultimately discovered: in regard to others, detection has immediately overtaken the fraudulent attempt. A conspicuous instance of systematic fabrication, by which Captain Wilford was for a time deceived, has been brought to light, as has been fully stated by that gentleman. But though some attempts have been abortive, others may doubtless have succeeded. I am myself inclined to adopt an opinion supported by many learned Hindus, who consider the celebrated Sri Bhãgavata as the work of a grammarian, supposed to have lived about six hundred years ago.

In this, as in several other instances, some of which I shall have likewise occasion to notice, the learned among the Hindus have resisted the impositions that have been attempted. Many others might be stated, where no imposition has been either practised or intended. In Europe, as well as in the East, works are often published anonymously, with fictitious introductions: and diverse compositions, the real authors of which are not known, have, on insufficient grounds, been dignified with celebrated names. To such instances, which are frequent everywhere, the imputation of forgery does not attach.

In Europe too, literary forgeries have been committed, both in ancient and modern times. The poems ascribed to Orpheus, are generally admitted not to have been composed by that poet, if, indeed, he ever existed. Nani, or Annius, of Viterbo, is now universally considered as an imposter, notwithstanding the defence of his publication, and of himself, by some among the learned of his age. In our own country, and in recent times, literary frauds have been not unfrequent.
But a native of India, who should retort the charge, and argue from a few instances, that the whole literature of Europe, which is held ancient, consists of modern forgeries, would be justly censured for his presumption.

We must not then indiscriminately condemn the whole literature of India. Even Father Har- douin, when he advanced a similar paradox respecting the works of ancient writers, excepted some compositions of Cicero, Virgil, Horace, and Pliny.

It is necessary in this country, as every where else, to be guarded against literary impositions. But doubt and suspicion should not be carried to an extreme length. Some fabricated works, some interpolated passages, will be detected by the sagacity of critics in the progress of researches into the learning of the east: but the greatest part of the books, received by the learned among the Hindus, will assuredly be found genuine. I do not doubt that the Vedas, of which an account has been here given, will appear to be of this description.

In pronouncing them to be genuine, I mean to say, that they are the same compositions, which, under the same title of Veda, have been revered by Hindus for hundreds, if not thousands, of years. I think it probable, that they were compiled by Dwa'pa'yana, the person who is said to have collected them, and who is thence surnamed Vyása, or the compiler. I can perceive no difficulty in admitting, that those passages, which are now ascribed to human authors, either as the Rishis, or as the reciters of the text, were attributed to the same persons so long ago as when
the compilation was made; and probably, in most instances, those passages were really composed by the alleged authors. Concerning such texts as are assigned to divine persons, according to Hindu mythology, it may be fairly concluded, that the true writers of them were not known when the compilation was made; and, for this reason, they were assigned to fabulous personages.

The different portions which constitute the Védas, must have been written at various times. The exact period when they were compiled, or that in which the greatest part was composed, cannot be determined, with accuracy and confidence, from any facts yet ascertained. But the country may; since many rivers of India are mentioned in more than one text: and, in regard to the period, I incline to think, that the ceremonies called Yajnya, and the prayers to be recited at those ceremonies, are as old as the calendar, which purports to have been framed for such religious rites.

To each Véda a treatise, under the title of Jyótish, is annexed, which explains the adjustment of the calendar, for the purpose of fixing the proper periods for the performance of religious duties. It is adapted to the comparison of solar and lunar time with the vulgar or civil year; and was evidently formed in the infancy of astronomical knowledge. From the rules delivered in the treatises which I have examined*, it appears,

* I have several copies of one such treatise, besides a commentary on the Jyótish of the Rigveda, by an unknown author; which is accordingly assigned to a fabulous personage, Se'sha Naga.
that the cycle (Yuga) there employed, is a period of five years only. The month is lunar; but at the end, and in the middle, of the quinquennial period, an intercalation is admitted, by doubling one month. Accordingly, the cycle comprises three common lunar years, and two, which contain thirteen lunations each. The year is divided into six seasons; and each month into half months. A complete lunation is measured by thirty lunar days; some one of which must of course, in alternate months, be sunk, to make the dates agree with the nycthemera. For this purpose, the sixty-second day appears to be deducted*: and thus the cycle of five years consists of 1860 lunar days, or 1830 nycthemera; subject to a further correction, for the excess of nearly four days above the true sidereal year; but the exact quantity of this correction, and the method of making it, according to this calendar, have not yet been sufficiently investigated to be here stated. The zodiac is divided into twenty-seven asterisms, or signs, the first of which, both in the Jyotish and in the Vedas, is Crittica, or the Pleiads. The place of the colures, according to these astronomical treatises, will be forthwith mentioned; but none of them hint at a motion of the equinoxes. The measure of a day by thirty hours, and that of an hour by sixty minutes, are explained; and the method of constructing a clepsydra is taught.

This ancient Hindu calendar, corresponding, in its divisions of time, and in the assigned origin of

* The Athenian year was regulated in a similar manner; but, according to Geminus, it was the sixty-third day, which was deducted. Perhaps this Hindu calendar may assist in explaining the Grecian system of lunar months.
the ecliptic, with several passages of the *Védas*, is evidently the foundation of that which, after successive corrections, is now received by the *Hindus* throughout *India*. The progress of those corrections may be traced, from the cycle of five *, to one of sixty lunar years (which is noticed in many popular treatises on the calendar, and in the commentary of the *Jyotish*); and thence, to one of sixty years of *Jupiter*; and, finally, to the greater astronomical periods of twelve thousand years of the gods, and a hundred years of *Brahma*. But the history of *Indian* astronomy is not the subject of this essay. I shall only cite, from the treatises here referred to, a passage in which the then place of the colures is stated.

"*Swar ácramétë sómárecau yadi sácam sarásavacau;* syát tadádiyugam, mághas, tapas, s'uclo, 'yanan hy udac.

"*Prapadyétë s'ravish't'hádau súryachándramasáv udac; sárpa'rd'hé dáchshin'árcas tu: mág'ha-s'rava- nyóh sa'dá.

"*Gharma-vr'idd'hir, apám prast'hah, eshapá-

* The treatises in question contain allusions to the ages of the world: but without explaining, whether any, and what, specific period of time was assigned to each age. This cycle of five years is mentioned by the name of *Yuga*, in *Paraśara*’s institutes of law edited by *Suvrata*, and entitled *Vrihat Parásara*. It is there (Ch. 12. v. 83.) stated, as the basis of calculation for larger cycles: and that of 3600 years, deduced from one of sixty (containing twelve simple *yugas*), is denominated the *Yuga* of *Va'cpati*; whence the *yuga* of *Prajña'ítica*, containing 216,000 years, is derived; and twice that constitutes the *Calíyuga*. The still greater periods are afterwards described under the usual names.
hrása, udag gatau: dacshin'ė tau viparyastau, shan' muhúrt'y-ayánéna tu.'

The following is a literal translation of this remarkable passage, which occurs in both the treatises examined by me.

'When the sun and moon ascend the sky together, being in the constellation over which the Vasus preside; then does the cycle begin, and the [season] Mā'g'ha, and the [month] Tapas, and the bright [fortnight], and the northern path.

'The sun and moon turn towards the north at the beginning of Sravish't'há; but the sun turns towards the south in the middle of the constellation over which the serpents preside; and this [his turn towards the south, and towards the north,] always [happens] in [the months of] Mā'g'ha and Srávána.

'In the northern progress, an increase of day, and decrease of night, take place, amounting to a prast'hā (or 32 palas) of water; in the southern, both are reversed (i. e. the days decrease, and the nights increase), and [the difference amounts] by the journey, to six mukhtiras*.'

Sravish't'há is given, in all the dictionaries of the Sanscrít language, as another name of D'hánish't'há; and is used for it, in more than one passage of the Védas. This is the constellation which is sacred to

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*I cannot, as yet, reconcile the time here stated. Its explanation appears to depend on the construction of the clepsydra, which I do not well understand; as the rule for its construction is obscure, and involves some difficulties, which remain yet unsolved.
the Vasus; as As\'léshá is, to the serpents. The deities, presiding over the twenty-seven constellations, are enumerated in three other verses of the Jyotish belonging to the Vajush, and in several places of the Vedas. The Jyotish of the Ritch differs in transposing two of them; but the commentator corrects this as a faulty reading.

In several passages of the Jyotish, these names of deities are used for the constellations over which they preside; especially one, which states the situation of the moon, when the sun reaches the tropic, in years other than the first of the cycle. Every where these terms are explained, as indicating the constellations, which that enumeration allots to them*. Texts, contained in the Vedas themselves, confirm the correspondence; and the connexion of As\'wini and the Aswins is indeed decisive.

Hence it is clear, that D'hanishť'há and As\'léshá are the constellations meant; and that when this Hindu calendar was regulated, the solstitial points were reckoned to be at the beginning of the one, and in the middle of the other: and such was the situation of those cardinal points, in the fourteenth century before the Christian era. I formerly† had occasion to show, from another passage of the Vedas, that the correspondence of seasons with months, as there stated, and as also suggested in the passage now quoted from the Jyotish, agrees with such a situation of the cardinal points.

I now proceed to fulfil the promise of indicating

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* I think it needless to quote the original of this enumeration.  
such parts of the fourth Vēda, as appear liable to suspicion. These are the remaining detached Upanishads, which are not received into the best collections of fifty-two theological tracts, belonging to the At’havva-vēda; and even some of those which are there inserted, but which, so far as my inquiries have yet reached, do not appear to have been commented by ancient authors, nor to have been quoted in the whole commentaries on the Vedānta. Two of these Upanishads are particularly suspicious: one entitled Rāma tāpaniya, consisting of two parts (Purva and Uttarā); another called Gopāla tāpaniya, also comprising two parts, of which one is named the Crīshnā Upanishad. The introduction to the first of these works contains a summary, which agrees in substance with the mythological history of the husband of Sīta, and conqueror of Lanka. The other exalts the hero of Mat’humā.

Although the Rāma tāpaniya be inserted in all the collections of Upanishads, which I have seen; and the Gopāla tāpaniya appear in some; yet I am inclined to doubt their genuineness, and to suspect that they have been written in times, modern, when compared with the remainder of the Vēdas. This suspicion is chiefly grounded on the opinion, that the sects, which now worship Ra’ma and Crīshnā as incarnations of Vishn’u, are comparatively new. I have not found, in any other part of the Vēdas, the least trace of such a worship. The real doctrine of the whole Indian scripture is the unity of the deity, in whom the universe is comprehended: and the seeming polytheism, which it exhibits, offers the elements, and the stars and planets, as gods. The three principal manifestations of the divinity, with other personified attributes and energies, and most of the
other gods of Hindu mythology, are indeed mentioned, or at least indicated, in the Védas. But the worship of deified heroes is no part of that system; nor are the incarnations of deities suggested in any other portion of the text, which I have yet seen; though such are sometimes hinted at by the commentators.

According to the notions, which I entertain of the real history of the Hindu religion, the worship of Ráma, and of Críshná, by the Vaishnávas, and that of Mahádeva and Bháva'ni by the Saivas and Sáctas, have been generally introduced, since the persecution of the Baudh'has and Jainas. The institutions of the Védas are anterior to Budd'ha, whose theology seems to have been borrowed from the system of Capila, and whose most conspicuous practical doctrine is stated to have been the unlawfulness of killing animals, which in his opinion were too frequently slain for the purpose of eating their flesh, under the pretence of performing a sacrifice or Yajnya. The overthrow of the sect of Budd'ha, in India, has not effected the full revival of the religious system inculcated in the Védas. Most of what is there taught, is now obsolete: and, in its stead, new orders of religious devotees have been instituted; and new forms of religious ceremonies have been established. Rituals founded on the Purán'as, and observances borrowed from a worse source, the Tantras, have, in great measure, antiquated the institutions of the Védas. In particular, the sacrificing of animals before the idols of Ca'li *

* In Bengal, and the contiguous provinces, thousands of kids and buffalo calves are sacrificed before the idol, at every celebrated temple; and opulent persons make a similar destruction
has superceded the less sanguinary practice of the \textit{Yajnya}; and the adoration of \textit{Ra'Ma} and of \textit{Krishna} has succeeded to that of the elements and planets. If this opinion be well founded, it follows, that the \textit{Upanishads} in question have probably been composed in later times, since the introduction of those sects, which hold \textit{Ra'Ma} and \textit{Gopa'la} in peculiar veneration.

On the same ground, every \textit{Upanishad}, which strongly favours the doctrines of these sects, may be rejected, as liable to much suspicion. Such is the \textit{Atmahbd'ha Upanishad*}, in which \textit{Krishna} is noticed by the title of \textit{Mad'hu-su'dana}, son of \textit{Devac'i}: and such, also, is the \textit{Sundaritapani†}, which inculcates the worship of \textit{Devi}.

The remaining \textit{Upanishads} do not, so far as I have examined them, exhibit any internal evidence of a modern date. I state them as liable to

of animals at their private chapels. The sect which has adopted this system is prevalent in \textit{Bengal}, and in many other provinces of \textit{India}: and the Sanguinary Chapter, translated from the \textit{Cleio Purana} by a member of this society, (\textit{ Asiatic Researches, Vol. V. p. 371.}) is one among the authorities on which it relies. But the practice is not approved by other sects of \textit{Hindus}.

* I have seen but one copy of it, in an imperfect collection of the \textit{Upanishads}. It is not inserted in other compilations, which nevertheless purport to be complete.

† According to the only copy that I have seen, it comprises five \textit{Upanishads}, and belongs to the \textit{Atharvya}; but the style resembles that of the \textit{Tantras} more than the \textit{Vedas}. It is followed by a tract, marked as belonging to the same \textit{Veda}, and entitled \textit{Tripura Upanishad}, or \textit{Traipurinya}; but this differs from another bearing the similar title of \textit{Tripuri Upanishad}, and found in a different collection of theological treatises. I equally discredit both of them, although they are cited by writers on the \textit{Mantra Sutra} (or use of incantations); and although a commentary has been written on the \textit{Tripura}, by \textit{Bhatt'a Bha'scara}. 
doubt, merely because I am not acquainted with any external evidence of their genuineness*. But it is probable, that further researches may ascertain the accuracy of most of them, as extracts from the Védas; and their authenticity, as works quoted by known authors. In point of doctrine, they appear to conform with the genuine Upa-nishads.

The preceding description may serve to convey some notion of the Védas. They are too voluminous for a complete translation of the whole: and what they contain, would hardly reward the labour of the reader; much less, that of the translator. The ancient dialect, in which they are composed, and especially that of the three first Védas, is extremely difficult and obscure: and, though curious, as the parent of a more polished and refined language (the classical Sanscrit), its difficulties must long continue to prevent such an examination of the whole Védas, as would be requisite for extracting all that is remarkable and important in those voluminous works. But they well deserve to be occasionally consulted by the oriental scholar.

* The same observation is applicable to several Upanishads, which are not inserted in the best collections, but which occur in others. For instance, the Scanda, Caula, Gópichandana, Dar-sana, and Vajrasáchi. I shall not stop to indicate a few questionable passages in some of these dubious tracts.
IX.

A Botanical and Economical Account of Bassia Butyracea, or East India Butter Tree.

By W. Roxburgh, M. D.

BASSIA BUTYRACEA.

Polyandria Monogynia.

Generic Character.

Calyx beneath, four or five leaved. Corol, one petaled: Border about eight cleft. Berry superior, with from one to five Seeds.

Bassia Butyracea. Roxburgh.

Calyx five-leaved; Stamens thirty or forty, crowning the subcylindric tube of the Corol.

Fulwah, Phulwarah, or Phulkwara, of the inhabitants of the Almorah hills, where the tree is indigenous. Flowering time, in its native soil, the month of January; Seeds ripe in August.

Trunk of the larger trees, straight, and about five or six feet in circumference. Bark of the young branches smooth, brown, and marked with small ash-coloured specks.

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ACCOUNT OF BASSIA BUTYRACEA;

Leaves alternate, about the ends of the branchlets, petioled, obovate-cuneate, obtuse-pointed, entire; smooth above, villous underneath; veins simple, and parallel; length, six to twelve inches; breadth, three to six.

Petioles, from one to two inches long.

Stipules, if any, minute, and caducous.

Flowers numerous, round the base of the young shoots, and from the axils of the lower leaves, peduncled, large, pale-yellow, drooping.

Calyx, four, five, or six leaved (five is by far the most common number); ovate, obtuse, covered externally with ferruginous pubescence, permanent.

Corol; tube subcylindric, length of the calyx; border of eight, spreading, oblong, obtuse divisions, longer than the tube.

Stamens; filaments from thirty to forty, about as long as the tube of the Corol, and inserted on its mouth. Anthers linear-oblong.

Pistil, germ conical, (ten or twelve celled, one seeded,) downy, surrounded with a downy nectarial ring. Style longer than the stamens; stigma acute.

Berry oblong, generally pointed by a remaining portion of the style; smooth, fleshy, containing one, two, or three, rarely more, large seeds; the rest not ripened.

Seeds oblong, rather round than flat, but differ-
ing in shape according to the number contained in each fruit; smooth, shining, light brown, with a long, lanceolate, lighter coloured, less smooth, umbilical mark on the inside.

This tree, which is rendered interesting on account of its seeds yielding a firm butyraseous substance, resembles Bassia Latifolia, (see Coromandel Plants, Volume I, No. 19, also Asiatic Researches, Volume I, Page 300,) so much as scarce to be distinguished from it, except by the Corol and Stamina.

Here (in Bassia butyrasea) the Corol is of a thin texture, with a tube nearly cylindric, and border of eight, large, spreading, oblong segments. There (in Bassia latifolia) it is thick and fleshy, with a gibbous, indeed almost globular tube; and border of generally more than eight, small, cordate, rather incurved segments.

Here, the Stamina, from thirty to forty in number, have long filaments inserted on the mouth of the tube of the Corol. There they are fewer in number; have very short filaments, and are arranged in two, or three series, completely within the tube, to which they are affixed.

It may not be improper to notice here some other species of the same genus. The following Botanical description of Bassia longifolia. Linn. Mant. page 563, I have been favoured with by Doctor Klein, of Tranquebar, and the account of its economical uses by the Reverend Doctor John, of the same place.
Description by Doctor Klein.

Calyx, Perianth: monophyllum, 4-partitum; laciniiis ovatis, acutis, coriaceis, extus tomento ferrugineo obductis, persistentibus.

Corolla monophylla, campanulata; tubo cylindraceo, inflato, carnoso, limbo 8-partito; laciniiis lanceolatis, erectis.

Stamina, filamenta 16, brevissima, in duos ordines divisa, quorum octo ad incisuras laciniarum, octo in tubo corollae inserta. Antherae lineares, setaceae, acutae, extus pilose, limbo breviores.


Pericarp: drupa oblonga, 1-3 sperma, carnosa, lactescens. Seminibus subtrigonis oblongis.

Arbor magna; ramis sparsis, erectis, horizontalisbusque.

Folia sparsa, petiolata, lanceolata, acuta, integrima, glabra, venosa.

Flores longe-pedunculati, axillares, solitarii, et aggregati.
ECONOMICAL USES of the OIL, or ILLEEPEI TREE,

Bassia longifolia.

BY THE REVEREND DOCTOR JOHN.

1st. The oil, pressed from the ripe fruit, is used as a common lamp oil, by those who cannot afford to buy the oil of the coco-nut. It is thicker, burns longer, but dimmer, smokes a little, and gives some disagreeable smell.

2d. It is a principal ingredient in making the country soap, and, therefore, often bears the same price with the oil of the coco-nut.

3d. It is, to the common people, a substitute for ghee, and coco-nut oil, in their curries and other dishes. They make cakes of it, and many of the poor get their livelihood by selling these sweet oil cakes.

4th. It is used to heal different eruptions, such as the itch, &c.

5th. The cake (or Sakey) is used for washing the head; and is carried, as a petty article of trade, to those countries, where these trees are not found.

6th. The flowers, which fall in May, are gathered by the common people, dried in the sun, roasted, and eaten, as good food. They are also bruised, and boiled to a jelly, and made into small K k 4
ACCOUNT OF BASSIA BUTYRACEA;

balls, which they sell or exchange, for fish, rice, and various sorts of small grain.

7th. The ripe fruit, as well as the unripe, is eaten by the poor, as other fruits. Of the unripe, the skin is taken off, and after throwing away the unripe kernel, boiled to a jelly, and eaten with salt and Capsicum.

8th. The leaves are boiled with water, and given as a medicine, in several diseases, both to men, and to cattle.

9th. The milk of the green fruit, and of the tender bark, is also administered as a medicine.

10th. The bark is used as a remedy for the itch.

11th. The wood is as hard, and durable, as teak wood, but not so easily wrought, nor is it procurable of such a length for beams, and planks, as the former; except in clay ground, where the tree grows to a considerable height; but, in such a soil, it produces fewer branches, and is less fruitful, than in a sandy, or mixed soil, which is the best suited for it. In a sandy soil, the branches shoot out nearer to the ground, and to a greater circumference, and yield more fruit. These trees require but little attention; beyond watering them during the first two or three years, in the dry season. Being of so great use, we have here whole groves of them, on high, and sandy grounds, where no other fruit trees will grow.

12th. We may add, that the owls, squirrels, lizards, dogs and jackals, take a share of the
flowers; but the vulgar belief is, that the latter, especially in the time of blossom, are apt to grow mad, by too much feeding on them.

_Bassia obovata, Forster's Prod._ No. 200: a native of the Isle of Tanna, in the South Sea. Of this species, I possess no other account than the definition, which corresponds with the habit of the genus. If _Forster_ has left us no account of the uses of the tree, it may be worth while to make inquiry, when an opportunity offers.

_Park's Shea_, or butter tree of _Africa_, we have reason, from his description, and figure, as well as from analogy, to suppose a species of this same genus. At page 352 (of his travels in the interior of _Africa_) he says, "The appearance of the fruit evidently places the _Shea_ tree in the natural order of _Sapotce_, (to which _Bassia_ belongs,) and it has some resemblance to the _Madhuca_ tree (_Bassia latifolia_), described by Lieutenant _Charles Hamilton_, in the _Asiatic Researches_, Volume I, page 300.

"The people were everywhere employed in collecting the fruit of the _Shea_ trees, from which they prepare a vegetable butter, mentioned in the former part of this work*. These trees grow in great abundance all over this part of _Bambarra_.

* This commodity, _Shea toulou_, which, literally translated, signifies _Tree-butter_, is extracted, by means of boiling water, from the kernel of the nut, has the consistence and appearance of butter; and is in truth an admirable substitute for it. It forms an important article in the food of the natives, and serves also for every domestic purpose in which oil would otherwise be used. The demand for it is therefore great. _Park's Travels in Africa_. Page 26.
They are not planted by the natives, but are found growing naturally in the woods; and in clearing woodland for cultivation, every tree is cut down but the Shea. The tree itself, very much resembles the American oak, and the fruit, from the kernel of which, first dried in the sun, the butter is prepared, by boiling the kernel in water, has somewhat the appearance of a Spanish olive. The kernel is enveloped in a sweet pulp, under a thin green rind; and the butter produced from it, besides the advantage of its keeping the whole year without salt, is whiter, firmer, and to my palate, of a richer flavour, than the best butter I ever tasted made of cows milk. The growth and preparation of this commodity, seem to be amongst the first objects of African industry, in this and the neighbouring states; and it constitutes a main article of their inland commerce.” Park’s Travels in Africa, page 202-3.

In the following account of the Bassia Butyracea, by Mr. Gott, we find the people of Almorah eat the dregs, left after the finer parts have been extracted; consequently there can be little doubt of the wholesomeness of the pure vegetable butter itself. The thick oil of Bassia latifolia, and longifolia, the natives of various parts of India, either use alone, or mixed with ghee (clarified butter), in their diet.

On Captain Hardwicke’s departure for England, in the beginning of 1803, he gave me a small quantity of the above-mentioned substance, observing, that the only account he could give me of it was, that it was reported to him to be a vegetable product from Almorah, or its neighbourhood, where it is called Fulwah, or Phukwarah. In consequence of this information, I applied to
Mr. Gott, (who is stationed in the vicinity of that country,) to make the necessary inquiries; and from him I procured an abundance of well preserved specimens, at various times, in leaf, flower, and fruit. From these, and that gentleman's account of the tree, and its product, the foregoing description, and the annexed figures, were taken.

The same sample, which I got from Captain Hardwicke, in January 1803, I have still by me. It remains perfectly sweet, both in taste and smell. Its flavour is that of cloves; having, I presume, been perfumed with that spice, previously to its falling into his hands, a practice mentioned in the following narrative. At this instant the thermometer is at ninety-five, and for these six weeks, it has rarely been below ninety, and has often risen to one hundred, or more, yet it continues about as firm as butter is in England during winter.

Mr. Gott's account of the tree, and its product, is as follows:

The tree producing a fat-like substance, known in this country by the name of Phulwah, is a native of the Almorah hills, and known there by the same name. The tree is scarce, grows on a strong soil, on the declivities of the southern aspects of the hills below Almorah, generally attaining the height, when full grown, of fifty feet, with a circumference of six. The bark, of such specimens as I have been able to obtain, is inclined to smoothness, and speckled; it flowers in January, and the seed is perfect about August, at which time the natives collect them, for the purpose of extracting the above substance. On opening
the shell of the seed or nut, which is of a fine chesnut colour, smooth, and brittle; the kernel appears of the size and shape of a blanched almond: the kernels are bruised, on a smooth stone, to the consistency of cream, or of a fine pulpy matter; which is then put into a cloth bag, with a moderate weight laid on, and left to stand, till the oil, or fat, is expressed, which becomes immediately of the consistency of hog's-lard, and is of a delicate white colour. Its uses are in medicine; being highly esteemed in rheumatism, and contractions of the limbs. It is also much esteemed, and used by natives of rank, as an unction, for which purpose, it is generally mixed with an Utr of some kind. Except the fruit, which is not much esteemed, no other part of the tree is used.

This tree is supposed to bear a strong affinity to the Mawa, (Madhuca, or Bassia latifolia;) but the oil or fat, extracted from the seeds, differs very materially. The oil from the Mawa, is of a greenish-yellow colour, and seldom congeals. That from the Phulwah congeals, immediately after expression, is perfectly colourless; and, in the hottest weather, if melted by art, will, on being left to cool, resume its former consistency. The oil from the seed of the Mawa, if rubbed on woollen cloth, leaves as strong a stain as other oils or animal fat. The fatty substance from the Phulwah, if pure, being rubbed on woollen cloth, will leave no trace behind.

The oil of Mawa is expressed in considerable quantities, about Cawnpoor, and Furruckabad, and being mixed with, is sold as ghee.

This fatty substance very rarely comes pure from
the hills, and receives more and more adulteration, (by adding the purest ghee,) as it passes down to the lower provinces: age gives it the firmness of pure tallow.

ADDITIONAL REMARKS BY THE SAME, IN CONSEQUENCE OF A FEW QUERIES TRANSMITTED TO MR. GOTT.

It is supposed there might be annually procured from twenty to thirty maunds, at the price of fourteen or fifteen rupees the maund.

1st. It is never taken inwardly as a medicine, nor is it used in diet; further than that the dregs, after the purer fatty substance is expressed, are eaten, as a substitute for ghee, by the peasants, or labourers, who extract the fat.

2d. I have some pure, which has been by me ten months, and it has neither acquired colour, nor bad smell.

3d. After it is imported into Rohilkund, it is scented with Utr, (an essential oil,) and a little of the flour of the Indian corn (Zea Mays) is added, to increase its consistency. N. B. This flour is added on account of its peculiar whiteness.

4th. If it is clean, and free from dirt, it never undergoes any purification; if the contrary, it is heated, and filtered through a coarse cloth.

5th. The flowers are never used. The pulp of the fruit is eaten by some; it is of a sweet, and flat taste.
The timber is white, soft, and porous; and is never made any use of by the natives. It is nearly as light as the Semul, or cotton tree (Bombax heptaphyllum).
CAYAL.
Description of a Species of Ox, named Gayal.

Communicated by H. T. Colebrooke, Esq.

The Gayal was mentioned in an early volume of the researches of the Asiatic Society*, by its Indian name, which was explained by the phrase, 'cattle of the mountains.' It had been obscurely noticed (if indeed the same species of ox be meant,) by Knox, in his historical relation of Ceylon†; and it has been imperfectly described by Captain Turner, in his journey through Bootan‡. Herds of this species of cattle have been long possessed by many gentlemen, in the eastern districts of Bengal, and also in other parts of this province: but no detailed account of the animal, and of its habits, has been yet published in India. To remedy this deficiency, Dr. Roxburgh undertook, at my solicitation, to describe the Gayal, from those seen by him in a herd belonging to the Governor General. Dr. Buchanan has also obligingly communicated his observations on the same cattle: and both descriptions are here laid before the society; with information obtained from several gentlemen at Tipura, Silhet, and Chatguon, relative to the habits of the animal. The original drawing, from which the plate has been taken, is

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* In the second volume, (p. 188,) published in 1790.
† P. 21.
‡ Embassy to Tibet, p. 160.
in the collection of Sir John Anstruther, for whom it was drawn by a native artist in his service.

From the information which was first received, it was supposed that the Gayal would not engender either with the buffalo, or with the common bull and cow, and must therefore constitute a distinct species in every system of classification. Although that be not confirmed, by the correcter information now obtained, yet on account of the considerable, and apparently permanent, difference between the common cow and the Gayal, this ought still, perhaps, to be considered as a distinct species, rather than as a variety. Its generic, and trivial names, with the synonyma, may be stated as follows.

*Bos Gavæus.*

Synonyma: Sansc. Gavaya; Hind. Gavai, or Gayal; Beng. Gobaygoru; Pers. Gaujangali; mountaineers (Cucis, &c.) east of Silhet, Méthana; mountaineers (Cucis) east of Chatgaon, Shiāl; Mugs, J’hongnua. Burmas, Nunec. Ceylon, Gauvera*.

*Bos Bubalus Gauvera: Pennant†.*

'The Gayal,' says Dr. Roxburgh, 'is nearly of the size and shape of the English bull. It has short horns, which are distant at their bases, and

* Knox’s historical relation of Ceylon, p. 21.
† History of Quadrupeds, I. p. 27.
rise in a gentle curve directly out and up: a transverse section, near the base, is ovate; the thick end of the section being on the inside. The front is broad, and crowned with a tuft of lighter coloured, long, curved hair. The dewlap is deep and pendent. It has no mane, nor hump; but a considerable elevation over the withers. The tail is short; the body covered with a tolerable coat of straight, dark-brown hair: on the belly, it is lighter coloured; and the legs and face are sometimes white.'

Doctor Buchanan thus describes it:

'The Gayal generally carries its head with the mouth projecting forward like that of a buffalo. The head, at the upper part, is very broad and flat, and is contracted suddenly towards the nose, which is naked, like that of the common cow. From the upper angles of the forehead proceed two thick, short, horizontal processes of bone, which are covered with hair. On these are placed the horns, which are smooth, shorter than the head, and lie nearly in the plane of the forehead. They diverge outward, and turn up with a gentle curve. At the base they are very thick, and are slightly compressed, the flat sides being toward the front and the tail. The edge next the ear is rather the thinnest, so that a transverse section would be somewhat ovate. Toward their tips, the horns are rounded, and end in a sharp point. The eyes resemble those of the common ox; the ears are much longer, broader, and blunter than those of that animal.

'The neck is very slender near the head, at some distance from which a dewlap commences; but this is not so deep, nor so much undulated.
as in the *Bos Zebu*, or Indian ox. The dewlap is covered with strong longish hair, so as to form a kind of mane on the lower part of the neck; but this is not very conspicuous, especially when the animal is young.

In place of the hump, which is situated between the shoulders of the *Zebu*, the *Gayal* has a sharp ridge, which commences on the hinder part of the neck, slopes gradually up till it comes over the shoulder joint, then runs horizontally almost a third part of the length of the back, where it terminates with a very sudden slope. The height of this ridge makes the neck appear much depressed, and also adds greatly to the clumsiness of the chest, which, although narrow, is very deep. The sternum is covered by a continuation of the dewlap. The belly is protuberant, but in its hinder part is greatly contracted. The rump, or *os sacrum*, has a more considerable declivity than that of the *European* ox, but less than that of the *Zebu*.

The tail is covered with short hair, except near the end, where it has a tuft like that of the common ox; but, in the *Gayal*, the tail descends no lower than the extremity of the *tibia*.

The legs, especially the fore ones, are thick and clumsy. The false hoofs are much larger than those of the *Zebu*. The hinder parts are weaker in proportion than the forehand; and, owing to the contraction of the belly, the hinder legs, although in fact the shortest, appear to be the longest.

The whole body is covered with a thick coat of short hair, which is lengthened out into a
OF OX, NAMED GAYAL.

515

mane on the dewlap, and into a pencil-like tuft on the end of the tail. From the summit of the head there diverges, with a whirl, a bunch of rather long coarse hair, which lies flat, is usually lighter coloured than that which is adjacent, and extends towards the horns, and over the forehead. The general colour of the animal is brown, in various shades, which very often approaches to black, but sometimes is rather light. Some parts, especially about the legs and belly, are usually white; but in different individuals, these are very differently disposed.

In the first column of the following table is the measurement of a full grown cow: in the second is that of a young male.

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<td>From the nose to the summit of the head</td>
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<td>Distance between the roots of the horns</td>
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<td>From the shoulder to the insertion of the tail</td>
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<td>Circumference at the loins</td>
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<td>Length of the horns</td>
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<td>Length of the ears</td>
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The different species of the ox kind may be readily distinguished from the Gayál by the following marks. The European and Indian oxen by the length of their tails, which reach to the false hoofs; the American ox by the gibbosity on
its back; the Boves moschatus, Cafer, and pumilus, by having their horns approximated at the bases; the Bos grunniens by its whole tail being covered with long silky hairs; the Bos Bubalus, at least the Indian buffalo, by having the whole length of its horns compressed, and by their being longer than the head, and wrinkled; also by its thin coat of hair, by its want of a dewlap, and, above all, by its manners; the Bos barbatus by the long beard on its chin.

'The cry of the Gayál has no resemblance to the grunt of the Indian ox, but a good deal resembles that of the buffalo. It is a kind of lowing, but shriller, and not near so loud as that of the European ox. To this, however, the Gayál approaches much nearer than it does to the buffalo.'

The result of inquiries made by Mr. Macrae, at Chatgaon, has been communicated by that gentleman, in the following answer to questions which were transmitted to him.

'The Gayál is found wild in the range of mountains that form the eastern boundary of the provinces of Aracan, Chittagong (Chatgaon), Tipura, and Silhet.

'The Clícís, or Lunctas, a race of people inhabiting the hills immediately to the eastward of Chatgaon, have herds of the Gayál in a domesticated state. By them he is called Shiál; from which, most probably, his name of Gayál is derived; as he is never seen on the plains, except when brought there. By the Mugs he is named Thongnuah; and by the Burmas, Núnc. In the Hindu sástra he is called Gabay. It appears,
OF OX, NAMED GAY′L.

however, that he is an animal very little known beyond the limits of his native mountains, except to the inhabitants of the provinces above-mentioned.

'The Gayal is of a dull heavy appearance; but, at the same time, of a form which indicates much strength and activity, like that of the wild buffalo. His colour is invariably brown; but of different shades, from a light to a dark tinge; and he frequently has a white forehead, and four white legs, with the tip of the tail also white. He has a full eye, and, as he advances in age, often becomes blind; but it is uncertain whether from disease, or from a natural decay. His disposition is gentle; even when wild, in his native hills, he is not considered to be a dangerous animal, never standing the approach of man, much less bearing his attack. The Cucis hunt the wild ones for the sake of their flesh.

'The Gayal delights to range about in the thickest forest, where he browses, evening and morning, on the tender shoots and leaves of different shrubs; seldom feeding on grass, when he can get these. To avoid the noonday heat, he retires to the deepest shade of the forest; preferring the dry acclivity of the hill, to repose on, rather than the low swampy ground below; and never, like the buffalo, wallowing in mud.

'Gayals have been domesticated among the Cucis from time immemorial; and without any variation, in their appearance, from the wild stock. No difference whatever is observed in the colour of the wild and tame breeds: brown of different shades being the general colour of both. The
wild Gayál is about the size of the wild buffalo of India. The tame Gayál, among the Cúcís, being bred in nearly the same habits of freedom, and on the same food, without ever undergoing any labour, grows to the same size with the wild one.

'He lives to the age of fifteen, or twenty, years: and, when three years old, the Gayál cow receives the bull; goes eleven months with young; and will not again admit his embrace until the following season after she has brought forth.

'The Gayál cow gives very little milk, and does not yield it long; but, what she gives is of a remarkably rich quality; almost equally so with the cream of other milk, and which it also resembles in colour. The Cúcís make no use whatever of the milk, but rear the Gayáls entirely for the sake of their flesh and skins. They make their shields of the hides of this animal. The flesh of the Gayál is in the highest estimation among the Cúcís; so much so, that no solemn festival is ever celebrated without slaughtering one or more Gayáls, according to the importance of the occasion.

'The Cúcís train their Gayáls to no labour; although, from the great strength and gentle disposition of the animal, he must be very competent to every purpose, either of draught, or carriage, to which the buffalo, or the ox, is applicable.

'The domesticated Gayáls are allowed by the Cúcís to roam at large, during the day, through the forest, in the neighbourhood of the village:
but, as evening approaches, they all return home, of their own accord; the young Gayá'l being early taught this habit, by being regularly fed every night with salt, of which he is very fond: and, from the occasional continuance of this practice, as he grows up, the attachment of the Gayá'l to his native village, becomes so strong, that, when the Cúcís migrate from it, they are obliged to set fire to the huts which they are about to leave, lest their Gayáls should return thither from their new place of residence, before they become equally attached to it, as to the former, through the same means.

'The wild Gayá'l sometimes steals out from the forest in the night, and feeds in the rice fields bordering on the hills. The Cúcís give no grain to their cattle. With us, the tame Gayáls feed on Caláí (phaseolus mar); but, as our hills abound with shrubs, it has not been remarked, what particular kind of grass they prefer.

'The Hindus, in this province, will not kill the Gáhay, which they hold in equal veneration with the cow. But the Aš̲l Gayá'l, or Seló̲i, they hunt, and kill, as they do the wild buffalo. The animal, here alluded to, is another species of Gayá'l found wild in the hills of Chatgaon; a correct description of which will be given hereafter. He has never been domesticated; and is, in appearance and disposition, very different from the common Gayá'l, which has been just described. The natives call him the Aš̲l Gayá'l in contradistinction to the Gáhay. The Cúcíś distinguish him by the name of Seló̲i, and the Mugs and Burmas by that of P'hanj; and they consider him, next to the tiger, the most dangerous and the fiercest animal of their forests.'
DESCRIPTION OF A SPECIES

The Gayal (Mr. Eliot writes from Tipura,) is little known to the natives here; it is principally considered as an inhabitant of the Chatgaon hills. In conversation with people belonging to the Raja of Tipura, on the subject of this animal, I have understood, that it is known in the recesses of the more eastern part of the Tipura hills, but has never been caught. In the past year, some of these animals were seen in a herd of elephants, and continued some time with the herd: but they were alarmed by the noise used in driving the elephants, and escaped being secured in the fenced enclosure. The K'hêda of that season was nearly five hours journey from the skirts of the hills.

The animal is found wild, but is easily domesticated, though, in this state, he essentially partakes of wild habits. I have some Gayâls at Munnamutty; and, from their mode of feeding, I presume, that they keep on the skirts of the valleys, to enable them to feed on the sides of the mountain, where they can browse. They will not touch grass, if they can find shrubs.

While kept at Camerlah, which is situated in a level country, they used to resort to the tanks, and eat on the sides; frequently betaking themselves to the water, to avoid the heat of the sun. However, they became sickly, and emaciated; and their eyes suffered much. But, on being sent to the hills, they soon recovered, and are now in a healthy condition. They seem fond of the shade; and are observed in the hot weather to take the turn of the hills, so as to be always sheltered from the sun. They do not wallow in mud like buffaloes; but delight in water, and stand in it, during the greatest heat.
of the day, with the front of their heads above the surface.

Each cow yields from two and a half, to about four sér*s, of milk *, which is rich, sweet, and almost as thick as cream; it is of a high flavour, and makes excellent butter.

Information, decisive of the question, whether
the Gayál engender with the common Indian bull, has been received from Mr. Bird, at Dacca; who
having brought a domesticated female Gayál from
Chittagong to that place, and not being able to
procure a male Gayál at Dacca, directed a common
bull † to be presented to her, which the female
received, upon being blinded by a cloth thrown
over her eyes: the issue was a cow resembling
mostly the Gayál mother; and from that cow,
impregnated by a bull of the same common breed,
another cow was produced, which also had grown
up and was in calf by a common bull, at the
date of Mr. Bird's letter.

Mr. Dick communicated the following answer
from Silhet.

'Not being able to procure, here, any satisfac-
tory information respecting the Gayál, I trans-
mittened questions to my Vakil at Cach'hár (having
understood, that those animals had been sent hi-
ther, from that place,) and desired him to obtain
the most correct information on the subject.

* From five to eight pounds.
† Of the breed named Déswâli. It is a Zebu of the common kind, found in the middle districts of Bengal.
'With regard to the Hindus scrupling to kill a Gayál, I could not obtain a direct answer: as the word "Go" is affixed to one of the names, from which they infer that it partakes of the cow, and are afraid positively to declare, that it is not improper to kill the animal; quoting a passage from the Sástra, "Gósadrí'sah Gavayah," 'a Gavaya is like an ox.' However, the Rája of Cúchhár, who is a Cšatriya of the Súryabansi race, occasionally sends several Gayáls to be sacrificed on certain hills in his country, in order to conciliate the Dévatá of the place; as his Vakíl informs me.'

The answers received from the Vakíl at Cúchhár, to the questions forwarded by Mr. Dick, contain the following information.

'The Gayál is called Gaujangali in the Persian language, Gavaya in Sanskrit, and Mé'haná by the mountaineers: but others name the animal Gobay-goru.

'Gayáls are not confined to the woods: they are domesticated. But wild Gayáls are found in the mountains of Bhótant, &c. They are kept, in a tame state, by the people who inhabit the Cálá-nágá hills, near the district of Ch'ilhét (Silhet), on the eastern border of the province of Cúchhár, west of Manipúr, and north of a tract dependant on Tripura, Cálánágás, Cúcis, and Khás'sis (tribes of mountaineers), keep Gayáls for the sake of the flesh, not for the milk, which they do not use; nor for burden, since they have no such employment for their cattle.

'The Gayál lives to the age of twenty, or twenty-five, years: it has reached its full growth at
five years; and the female is generally higher than the male. She receives the bull in her fifth year, and bears after ten months. If milked, she yields from two, to two and a half, ſérs of milk*, or sometimes more.

'The tame Gayáls, however long they may have been domesticated, do not at all differ from the wild; unless in temper: for the wild are fierce and untractable. The colour of both is the same; namely, that of the antelope; but some are white, and others black: none are spotted, nor piebald. They graze and range like other cattle; and eat rice, mustard, chiches, and any cultivated produce; as also chaff and chopped straw.

"The Gavaya is like a cow;" consequently, not the same with a cow; a Hindu, therefore, commits no offence by killing one. But natives of Bengal, or of the mountains, who are Hindus, scruple to kill a Gayál themselves, because it is named Gobay-goru (or the Gavaya cow).'

To this answer, an addition was made by the Raja's Vakil, at Silhet.

'Mét'hanás are sacrificed, especially by Nágás and Cúcís, before the mountain gods, Nákharáöm and Máirám. The Cúcís and Nágás are fond of the meat; and, therefore, constantly keep such cattle, and eat their flesh; and often make presents of them to the Rájá of Cách'hár. The Rájá preserves them, and sometimes offers Mét'hanás in sacrifices to deities; or entertains, with their flesh, Nágás and Cúcís, who come to visit him. The

* From four to five pounds.
mountaineers are much pleased with that compliment, and eat the meat with delight.'

This information has established (what I had previously conjectured), that the animal mentioned by many Sanscrit authors, under the name of Gavaya, is no other than the Gayál. AMERA SINHA, in a chapter of his dictionary relating to animals, mentions the Gavaya with many wild animals; among which are the black antelope, the spotted axis, the porcine deer, the painted or white-footed antelope, the grunting ox, and the musk deer. One of his commentators (ra'ya-mucuta) says of the Gavaya, that, in shape, it resembles the ox. He had previously compared the form of the grunting ox (Bos grunniens,) to that of a buffalo. Another annotator states Gavaya, as a name received into the common dialects. Both agree in deriving the word from Gó, a bull or cow, and aya knowledge; because, as they remark, 'one might take it for an ox.'

The Rája-nighanti, an excellent catalogue of natural productions, with their reputed qualities in the Materia Medica, states Gavaya as synonymous with Vana-gó, or wild ox: also called in Sanscrit, Balabhadra and Mákágava: and, in the vulgar dialect, Gaváí. Another vocabulary has added Gavánica to the Sanscrit synonyma; and, according to the Rája-nighanti, the female is likewise named Bhilagavi, or cow of the Bhilas, (a tribe of pillagers and mountaineers).

No further evidence would seem necessary, had not the Bhavapracása, a celebrated medical work, confounded the Gavaya with the Ríšya, or Rishya, (in Hindi, Rójh), which is the painted or white-footed antelope, called Nílgau. MADA-
Napala, in a similar catalogue of animals considered relatively to their medical uses*, has fallen into the same error; and so, probably, other writers may have done, who inhabit countries where the Gayal is little known.

To correct this mistake, (without relying on the separate mention of the two animals in the Ameraebsha,) I shall cite no less an authority, than the Indian scripture. The twenty-fourth chapter of the Vájasanéyi Yajurveda, enumerates the animals, which should be consecrated to various deities, at an Aswamétha. It is there directed (v. 27), that three Risyas, (white-footed Antelopes,) shall be consecrated to the deities named Vasus; and, towards the close of the next verse (v. 28), it is required, that three buffaloes shall be presented to Varunâ, as many Gavayas to Vrihaspati, and the same number of camels to Twasht'ri. The commentator on the Védas, (Mähidhara,) explains Gavaya, as signifying, 'wild cattle resembling kine.' It is evident, that this suits better with the Gayal, than with any other animal known in India.

From the authorities above quoted, the Sanscrit synonyma may be safely concluded. But it is not so easy to determine a Persian name of this species of ox. Gaujangali, or cow of the forest, mentioned by Mr. Dick's Vakil at Câch'hár, is a suitable designation; but it does not occur, so far as I can learn, in any Persian work of authority. It may be necessary to caution the reader, not to suppose the Persian Gáucóhi (which literally signifies, as Mr. Gladwin translated it†,  

* In the Madana-vínóde-nighanti.  
† Alfp Adviyeh, 347.
mountain cow), to be this, or any other species of the ox. The Tohsatu’lmumínin, and Makhzemíl-adjíyeh, two celebrated treatises by Persian physicians, concur in describing the three varieties of Gaucóhi, also named Gauzen, or Gózen, and in Arabic, Iyyal, or Uyyal, as three sorts of deer: and the last mentioned work declares it to be the same with the Hindi Bárehsing’há, or Cervus Elaphus.

I take this opportunity, while treating of a species of ox, to notice an error which crept into Kerr’s unfinished translation of the animal kingdom in Linnaeus’s Systema Naturæ; and which has been followed by Doctor Turton in translating the general system of nature by Linnaeus. Mr. Kerr described and figured, under the name of Bos Arnee, an animal, which, notwithstanding the exaggerated description, given on the authority of ‘a British officer, who met with one in the woods, in the country above Bengal*’, is evidently nothing else but the wild buffalo, an animal very common throughout Bengal, and known there, and in the neighbouring provinces of Hindostan, by the name of Arna. Though neither fourteen feet high, as Mr. Kerr has stated, or rather as the officer, on whose information he relied, had affirmed; nor even eight feet, as Doctor Turton, following Kerr’s inference from a drawing, asserts; yet it is a large and very formidable animal, conspicuous for its strength, courage, and ferocity. It may not be true, that the buffaloes of Asia and Europe constitute a single species; but, certainly, the wild and tame buffaloes of India do

* Kerr, page 336.
not appear to differ in any thing, except the supe-
rior size, and more uniform figure, of the wild
animal. A better description of the buffalo, than
has been yet given, is perhaps wanted; but the
_Bos Arnee_, of _Kerr_ and _Turton_, must be re-
jected from systems of _zoology_, as an erroneous
description taken from a loose drawing, assisted
by the fragment of a skeleton.
APPENDIX.

Introductory Remarks, intended to have accompanied Captain Mahony's Paper on Ceylon, and the Doctrines of Buddha, published in the Seventh Volume of the Asiatic Researches, but inadvertently omitted in publishing that Volume.

BY J. H. Harington, Esq.

I have the pleasure of laying before the Society a paper on the island of Ceylon, and on the religious opinions of the greater part of its inhabitants, the worshippers of Boodh, or Buddha, whose religion and philosophy appeared to Sir W. Jones, "connected with some of the most curious parts of Asiatic history," and the period of his appearance an important epoch in Hindoo Chronology.

This paper, which has been procured by the Honourable Mr. Duncan, from Captain Mahony, an officer of the Bombay establishment, for some time resident on the Island of Ceylon, has, with another paper already communicated to the Society by Captain Mackenzie, anticipated and superseded some cursory remarks written by myself, during a short residence at Columbo, in the year 1797; and which I had hoped to render more worthy of perusal, on receiving a translation of the Peerównaná Pótá, an ancient book composed in the Páli language by 'Anunda Ma'Rea Tíru'na'shee,

* Asiatic Researches, Volume I, page 354.
† Discourse on the Hindus, Asiatic Researches, Volume I.

Vol. VIII. M in
which was given to me by a priest of Buddha, as containing a full account of his religion; and which I left to be translated at Columbo, by Monsieur De Hoan, with the assistance of Lewis De Sylva. But the French version made by them was unfortunately put on board the Greenwich, captured by a vessel from the Isle of France; and it has consequently never reached me. We shall not, however, have to regret this accident, if Captain Mahony, who has given an extract from an historical work, the Maha Raja Vullieh, or as a copy of it shewn to me was called, the Rájaácuculée Puttur, shall hereafter favour the society with the communication of the authentic materials for a history of the Singalese, their religion, manners, and customs, which I understand to be in his possession.

In the mean time I beg the Society's accept-ance (for their Museum) of two small images of Boodh, which I procured at Columbo; and of two others brought from the Burmah dominions by Captain Cox, late resident at Rangoon; the identity of which proves incontestibly that the object of worship on the Eastern peninsula, and the Island of Ceylon, is the same. I also beg to deposit in the Society's library the accompanying copy of the Peeróváná Pótá above-mentioned, of which, at some future period, we may hope to procure another translation, if that carried to Bourbon or Mauritius, should not find its way to Europe, and the public.

I shall only add my testimony to that of Captain Mahony, as to the period at which the Singalese compute the appearance of Goutama Buddha; whose death, or rather disappearance from the earth, they state to have been 2339 years be
fore 1797 A. C. or 542 years before the birth of Christ; and as their sacred era is reckoned from this epoch, it may be esteemed deserving of credit. It also corresponds, almost exactly, with the computation of the same era in Siam, as stated by Mr. Marsden, in his tract on the chronology of the Hindus; wherein, speaking of Siam, he observes, "the civil reckoning is by lunar years, consisting "ordinarily of twelve months each, with an inter- "calation of seven months in the period of nine- "teen years, and commencing with the new moon "that precedes the winter solstice. This era is "computed from the supposed time of the intro- "duction of their religion by Summonacodom, "544 years before Christ; or in the year of the "Julian period 4169."

The real time at which Buddha, the son of Sudhodun, (from whom he has the appellation Soúdhó-dáñi, in the Amara-cósha,) propagated the heterodox doctrines ascribed to him by his followers, and for which they have been branded as atheists, and persecuted as heretics, by the Bráh- mens, is, however, a desideratum which the learned knowledge, and indefatigable research, of Sir W. Jones have still left to be satisfactorily ascer- tained. His usual candour induced him to ac- knowledge his original error, in supposing this Buddha to have been the Woden of the Goths, and genius of the planet Mercury*; and the pas- sage from the Bhágvatamrita, quoted in his dis- sertation on the chronology of the Hindus, which states that Buddha, (the ninth Acátáir), "be- "came visible the thousand and second year of the

* Dissertation on the chronology of the Hindus, Asiatic Re- searches, Volume II.
"Cali-age being past," is, I find, open to another reading, which makes it the second thousandth year, or the year 2000, instead of 1002. At least it was so interpreted to me by Radha'ca'nt, the very Pundit who is mentioned by Sir William Jones, as having produced to him the book, from which the passage in question is quoted, and who is now one of the Pundits of the court of Sudr Deewanee A'dalut. His interpretation was also confirmed to me by Survó Te'waree, the other Pundit of the court; but in justice to our revered Founder, whose regard to truth I have but imitated in this remark, I must add, that Mr. Blaquiere, whose knowledge of the Sanscrit language is too well known to need my testimony, concurs in the reading and version of Sir William Jones.

Another point yet to be ascertained is, whether Buddha, the ninth 'Avatar of the Hindus, be the same with the heretic Buddha, now worshipped at Ceylon, and in the eastern peninsula; as well as in China, Bootan, and Tibet. Sir William Jones, in his dissertation on the Gods of Greece, Italy, and India*, observes on Buddha, that "he seems to have been a reformer of the doctrines contained in the Vedas; and though his good nature led him to censure these ancient books, because they enjoined sacrifices of cattle, yet he is admitted as the ninth Avatar, even by the "Brahmens of Casi." Captain Wilford, in his dissertation on Egypt and the Nile†, after mentioning the subversion of the religion and government of Deva'dasa, the sovereign of Benares, by

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* Asiatic Researches, Volume I.
† Asiatic Researches, Volume III.
Vishnu, in the character of Jina, Ma'ha'de'va in the form of Arhan, or Mahima'n, and Brahma in the figure of Buddha, remarks, "most of the Bráhmens insist that the Buddha, who perverted De'va'da'sa, was not the ninth incarnation of Vishnu, whose name, some say, should be written Boudha, or Bóddha; but not to mention the Amarcósh, the Mughdha-bodh, and the Gita-góvind, in all of which, the ninth A'vatar is called Buddha, it is expressly declared in the Bhágavat, that Vishnu should appear ninthly in the form of "Buddha," son of Jina, for the purpose of confounding the Daityas, at a place named Cicata, when the Céli-age should be completely begun."

In this quotation, the ninth A'vatar is called the son of Jina; (perhaps as a descendant from Jina, or as having adopted part of his doctrines;) but the present worshippers of Buddha state him to be the son of Sudhódun, and those from whom Aboolfuzul took his account of Boodh in the Ayeen Akbery, gave him the same information; in which they are supported by the Amura-cósha, as already noticed. The followers of Boodh, at Ceylon, although their long intercourse with the Hindus (especially since they have been governed by a Hindu prince) has introduced some Hindu tenets and observances, in addition to what may have been originally derived from them, also positively deny that their Boodh is the Hindu A'vatar. The conclusion of Sir W. Jones*, that a second Buddha, assuming the name and character of the first, attempted to overset the system of the

* Dissertation on the chronology of the Hindus, Asiatic Researches, Volume II.
Brāhmens, and was the cause of their persecution of the Boudhas, corresponds with, and is supported by, the information given to Aboolfuzul, who says, "The Brāhmens call Boodh the ninth Avatār, but assert that the religion which is ascribed to him is false, and fabricated by some other person*.”

* See further his account of this religion, in the Third Volume of Gladwin’s Translation of the Ayeen Akbery, page 157.
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**DIRECTIONS TO THE BINDER,**

*For placing the Tables and Plates.*

| Tables I, II, and III, to front | 34 |
| Figures of JAGANATH, &c. | 62 |
| Plate of *Egyptian Hieroglyphics* | 74 |
| **Durga's combat with Mahish-Asura** | 76 |
| Map of the Trigonometrical Survey | 194 |
| Table of *Hindu Historical Periods* | 224 |
| Plates illustrative of *Hindu Geography*, Nos. 1—6 | 376 |
| Figure of *Bassia Butyraeca* | 499 |
| **— Gayul** | 511 |