MISCELLANEOUS ESSAYS

BY

H. T. COLEBROOK.

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I.

On the Sanscrit and Prácr̥it Languages.

[From the Asiatic Researches, vol. vii. p. 199—231. Calcutta, 1801. 4to.]

In a treatise on rhetoric, compiled for the use of Mánicya Chandra, Rájá of Tírâbhûctí or Tírâhuít, a brief enumeration of languages used by Hindu poets is quoted from two writers on the art of poetry. The following is a literal translation of both passages.

"Sanscrita, Prácr̥ita, Paisáchí, and Mágadhí, are in short the four paths of poetry. The gods, &c. speak "Sanscrita"; benevolent genii, Prácr̥ita; wicked demons, "Paisáchí; and men of low tribes and the rest, Mágadhí. "But sages deem Sanscrita the chief of these four languages. It is used three ways: in prose, in verse, and in a mixture of both."

"Language, again, the virtuous have declared to be fourfold, Sanscrita [or the polished dialect], Prácr̥ita [or the vulgar dialect], Apabhranśa [or jargon], and Misra [or mixed]. Sanscrita is the speech of the celestials, framed in grammatical institutes; Prácr̥ita is similar to it, but manifold as a provincial dialect, and otherwise; and those languages, which are ungrammatical, are spoken in their respective districts."

The Paisáchí seems to be gibberish, which dramatic poets make the demons speak, when they bring these fantastic beings on the stage. The mixture of languages noticed in the second quotation, is that which is employed in dramas, as is expressly said by the same author in a
subsequent verse. It is not, then, a compound language, but a mixt dialogue, in which different persons of the drama employ different idioms. Both the passages above-quoted are therefore easily reconciled. They, in fact, notice only three tongues. 1. Sanscrit, a polished dialect, the inflections of which, with all its numerous anomalies, are taught in grammatical institutes. This the dramatic poets put into the mouths of gods and of holy personages. 2. Prācrit, consisting of provincial dialects, which are less refined and have a more imperfect grammar. In dramas it is spoken by women, benevolent genii, &c. 3. Māgadhī, or Apabhramśa, a jargon, destitute of regular grammar. It is used by the vulgar, and varies in different districts. The poets accordingly introduce into the dialogue of plays a provincial jargon, spoken by the lowest persons of the drama.*

The languages of India are all comprehended in these three classes. The first contains Sanscrit, a most polished tongue, which was gradually refined until it became fixed in the classic writings of many elegant poets, most of whom are supposed to have flourished in the century preceding the Christian era. It is cultivated by learned Hindus throughout India, as the language of science and of literature, and as the repository of their law, civil and religious.

* Sanscrita is the passive participle of a compound verb, formed by prefixing the preposition sam to the crude verbe crit, and by interposing the letter s when this compound is used in the sense of embellishment. Its literal meaning then is "adorned;" and when applied to a language it signifies "polished." Prācrita is a similar derivative from the same crude verb, with pra prefixed: the most common acceptance of this word is "outcast, or man of the lower class;" as applied to a language it signifies "vulgar." Apabhramśi is derived from bhraś, "to fall down:" it signifies a word, or dialect which falls off from correct etymology. Grammarians use Sanscrit as signifying "duly formed or regularly inflected;" and Apabhramśi for false grammar.
It evidently draws its origin (and some steps of its progress may even now be traced) from a primeval tongue, which was gradually refined in various climates, and became Sanscrit in India, Pahlavi in Persia, and Greek on the shores of the Mediterranean. Like other very ancient languages, Sanscrit abounds in inflections, which are, however, more anomalous in this than in the other languages here alluded to; and which are even more so in the obsolete dialect of the Vedas, than in the polished speech of the classic poets. It has nearly shared the fate of all ancient tongues, and is now become almost a dead language; but there seems no good reason for doubting that it was once universally spoken in India. Its name, and the reputed difficulty of its grammar, have led many persons to imagine that it has been refined by the concerted efforts of a few priests, who set themselves about inventing a new language; not, like all other tongues, by the gradually improved practice of good writers and polite speakers. The exquisitely refined system by which the grammar of Sanscrit is taught, has been mistaken for the refinement of the language itself. The rules have been supposed to be anterior to the practice, but this supposition is gratuitous. In Sanscrit, as in every other known tongue, grammarians have not invented etymology, but have only contrived rules to teach what was already established by approved practice.

There is one peculiarity of Sanscrit compositions which may also have suggested the opinion that it could never be a spoken language. I allude to what might be termed the euphonical orthography of Sanscrit. It consists in extending to syntax the rules for the permutation of letters in etymology. Similar rules for avoiding incompatible sounds in compound terms exist in all languages; this is sometimes effected by a deviation from orthography in the pronuncia-
tion of words; sometimes by altering one or more letters to make the spelling correspond with the pronunciation. These rules have been more profoundly investigated by Hindu grammarians than by those of any other nation; and they have completed a system of orthography which may be justly termed euphonical. They require all compound terms to be reduced to this standard, and Sanscrit authors, it may be observed, delight in compounds of inordinate length: the whole sentence, too, or even whole periods, may, at the pleasure of the author, be combined like the elements of a single word, and good writers generally do so. In common speech this could never have been practised. None but well-known compounds would be used by any speaker who wished to be understood, and each word would be distinctly articulated independently of the terms which precede and follow it. Such, indeed, is the present practice of those who still speak the Sanscrit language; and they deliver themselves with such fluency, as is sufficient to prove that Sanscrit may have been spoken in former times with as much facility as the contemporary dialects of the Greek language, or the more modern dialects of the Arabic tongue. I shall take occasion again to allude to this topic, after explaining at large what are, and by whom were composed, those grammatical institutes, in which the Sanscrit language is framed, according to the author above-quoted; or by which (for the meaning is ill-conveyed by a literal translation) words are correctly formed and inflected.

PĀṆINI, the father of Sanscrit grammar, lived in so remote an age, that he ranks among those ancient sages whose fabulous history occupies a conspicuous place in the Purāṇas, or Indian theogonies.* The name is a patro-

* Every Purāṇa treats of five subjects: the creation of the universe, its progress, and the renovation of worlds; the genealogy of
nymic, indicating his descent from Pāñin; but, according
to the Paurāṇica legends, he was grandson of Dévala
an inspired legislator. Whatever may be the true history
of Pāñini, to him the Sūtras, or succinct aphorisms of
grammar, are attributed by universal consent: his system
is grounded on a profound investigation of the analogies in
both the regular and the anomalous inflections of the
Sanscrit language. He has combined those analogies in
a very artificial manner; and has thus compressed a most
copious etymology into a very narrow compass. His pre-
cepts are indeed numerous,* but they have been framed
with the utmost conciseness; and this great brevity is the
result of very ingenious methods which have been contrived
for this end, and for the purpose of assisting the student's
memory. In Pāñini's system, the mutual relation of all
the parts marks that it must have been completed by its
author: it certainly bears internal evidence of its having
been accomplished by a single effort, and even the correc-
tions which are needed cannot be interwoven with the text.
It must not be hence inferred, that Pāñini was unaided
by the labours of earlier grammarians. In many of his
precepts he cites the authority of his predecessors, † some-
times for a deviation from a general rule, often for a gram-
matical canon which has universal cogency. He has even
employed some technical terms without defining them,
because, as his commentators remark, those terms were
already introduced by earlier grammarians. ‡ None of the

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* Gods and heroes; chronology, according to a fabulous system; and
herbic history, containing the achievements of demi-gods and heroes.
Since each Purāṇa contains a cosmogony, with mythological and
heroic history, the works which bear that title may not inaptly be
compared to the Grecian theogonies.
   * Not fewer than 3,996.
† Śācalya, Gāroya, Cāyapā, Gālava, Śacatāyana, and others.
‡ In a few instances he quotes former grammars to refute them.
more ancient works, however, seem to be now extant: being superseded by his, they have probably been disused for ages, and are now perhaps totally lost. *

A performance such as the Pāniniya grammar must inevitably contain many errors. The task of correcting its inaccuracies has been executed by Cátyáyana,† an inspired saint and lawgiver, whose history, like that of all the Indian sages, is involved in the impenetrable darkness of mythology. His annotations, entitled Várticas, restrict those among the Pāniniya rules which are too vague, enlarge others which are too limited, and mark numerous exceptions which had escaped the notice of Pānini himself.

The amended rules of grammar have been formed into memorial verses by Bhārutrā- hari, whose metrical aphorisms, entitled Cáricá, have almost equal authority with the precepts of Pānini and emendations of Cátyáyana. If the popular traditions concerning Bhārutrā-hari be well founded, he lived in the century preceding the Christian era;‡ for he is supposed to be the same with the brother of Vicramáditya, and the period when this prince reigned at Ujjayini is determined by the date of the Samvat era.

The studied brevity of the Pāniniya Sūtras renders

* Definitions of some technical terms, together with grammatical axioms, are also cited from those ancient works in the commentaries on Pānini. They are inserted in a compilation entitled Paribhdashá, which will be subsequently noticed. The various original authorities of Sanscrit grammar, as enumerated in a memorial verse, are eight in number, viz. Indra, Chandra, Cásacrítsna, Ápiśali, Sáca-

† This name likewise is a patronymic.

‡ A beautiful poem has been composed in his name, containing moral reflections, which the poet supposes him to make on the discovery of his wife's infidelity. It consists of either three or four Satacas, or centuries of couplets.
them in the highest degree obscure. Even with the knowledge of the key to their interpretation, the student finds them ambiguous. In the application of them when understood, he discovers many seeming contradictions; and, with every exertion of practised memory, he must experience the utmost difficulty in combining rules dispersed in apparent confusion through different portions of Panini's eight lectures. A commentary was therefore indispensably requisite. Many were composed by ancient grammarians to elucidate the text of Panini. A most copious one on the emendations of his rules was compiled in very ancient times by an uncertain author. This voluminous work, known by the title of Mahabhashya, or the great commentary, is ascribed to Patanjali, a fabulous personage, to whom mythology has assigned the shape of a serpent. In this commentary almost every rule is examined at great length. All possible interpretations are proposed: and the true sense and import of the rule are deduced through a tedious train of argument, in which all foreseen objections are considered and refuted, and the wrong interpretations of the text, with all the arguments which can be invented to support them, are obviated or exploded.

Voluminous as it is, the Mahabhashya has not exhausted the subject on which it treats. Its deficiencies have been supplied by the annotations of modern grammarians. The most celebrated among these scholiasts of the Bhaskya is Caiyata, a learned Cashmirian. His annotations are almost equally copious with the commentary itself. Yet they, too, are loaded by numerous glosses; among which the old and new Vivarañas are most esteemed.

The difficulty of combining the dispersed rules of grammar, to inflect any one verb or noun through all its variations, renders further aid necessary. This seems to have
been anciently afforded in vocabularies, one of which exhibited the verbs classed in the order implied by the system of Pāṇini, the other contained nouns arranged on a similar plan. Both probably cited the precepts which must be remembered in conjugating and declining each verb and noun. A catalogue of verbs, classed in regular order, but with few references to the rules of etymology, is extant, and is known by the title of Dhātupāta. It may be considered as an appendix to the grammar of Pāṇini; and so may his treatise on the pronunciation of vocal sounds, and the treatise of Yāsca on obsolete words and acceptations peculiar to the Vēda. A numerous class of derivative nouns, to which he has only alluded, have been reduced to rule, under the head of Unādi, or the termination u &c.; and the precepts respecting the gender of nouns have been, in like manner, arranged in Sūtras, which are formed on the same principles with Pāṇini’s rules, and which are considered as almost equally ancient. Another supplement to his grammar is entitled Gaṇapāta, and contains lists of words comprehended in various grammatical rules, under the designation of some single word, with the term “&c.” annexed to it. These supplements are due to various authors. The subject of gender alone has been treated by more than one writer reputed to be inspired; namely, by Cātyāyana, Gōbhila, and others.

These subsidiary parts of the Pāṇiniya grammar do not require a laboured commentary; excepting only the catalogue of verbs, which does need annotation; and which is, in truth, a proper groundwork for a complete review of all the rules of etymology that are applicable to each verb.*

* The number of verbal roots amounts to 1,750 nearly; exclusive of many obsolete words omitted in the Dhātupāta, but noticed in the Sūtras as the roots of certain derivatives. The crude verbs, however,
The *Vṛtti nyāsa*, a very celebrated work, is, I believe, a commentary of this sort.* It is mentioned by MAITREYA RACHSHA, the author of the *Dhātu pradīpa*, as the work chiefly consulted by him in compiling his brief annotations on the *Dhātupāṭha*. A very voluminous commentary on the catalogue of verbs, was compiled under the patronage of SAYAṆA, minister of a chieftain named BUCCA BAYA and is entitled *Mādhavīya vṛtti*. It thoroughly explains the signification and inflection of each verb; but at the same time enters largely into scholastic refinements on general grammar.

Such vast works as the *Mahābhāṣya* and its scholia, with the voluminous annotations on the catalogue of verbs, are not adapted for general instruction. A conciser commentary must have been always requisite. The best that is now extant is entitled the *Cāśicā vṛtti*, or commentary composed at VARĀHASI. The author, JAYĀDITYA, in a short preface explains his design: 'to gather the essence of a science dispersed in the early commentaries, in the *Bhāṣya*, in copious dictionaries of verbs and of nouns, and in other works.' He has well fulfilled the task which he undertook. His gloss explains in perspicuous language the meaning and application of each rule: he adds exami-
pleas, and quotes, in their proper places, the necessary emendations from the Vārticas and Bhāshya. Though he never deviates into frivolous disquisitions nor into tedious reasoning, but expounds the text as succinctly as could consist with perspicuity, his work is nevertheless voluminous; and yet, copious as it is, the commentaries on it, and the annotations on its commentaries, are still more voluminous. Amongst the most celebrated is the Pada-
manjārī of Haradatta Miśra, a grammarian whose authority is respected almost equally with that of the au-
thor on whose text he comments. The annotators on this, again, are numerous; but it would be useless to insert a long list of their names, or of the titles of their works.

Excellent as the Cāsicā vr̥tti undoubtedly is, it partakes of the defects which have been imputed to Pāṇini’s text. Following the same order in which the original rules are arranged, it is well adapted to assist the student in acquiring a critical knowledge of the Sanscrit tongue. But for one who studies the rudiments of the language a different arrangement is requisite, for the sake of bringing into one view the rules which must be remembered in the inflections of one word, and those which must be combined even for a single variation of a single term. Such a gram-
mar has been compiled within a few centuries past by Rāmāchandra, an eminent grammarian. It is entitled Pracriyā caumudī. The rules are Pāṇini’s, and the expla-
nation of them is abridged from the ancient commentaries; but the arrangement is wholly different. It proceeds from the elements of writing to definitions; thence to ortho-
graphy: it afterwards exhibits the inflections of nouns according to case, number, and gender; notices the inde-
clinables; and proceeds to the uses of the cases. It sub-
joins the rules of apposition, by which compound terms are formed; the etymology of patronymics and other
derivatives from nouns; and the reduplication of particles, &c. In the second part it treats of the conjugation of verbs arranged in ten classes: to these primitives succeed derivative verbs, formed from verbal roots or from nouns. The rules concerning different voices follow; they are succeeded by precepts regarding the use of the tenses; and the work concludes with the etymology of verbal nouns, gerunds, supines, and participles. A supplement to it contains the anomalies of the dialect in which the Veda is composed.

The outline of PAÑINI's arrangement is simple, but numerous exceptions and frequent digressions have involved it in much seeming confusion. The two first lectures (the first section especially, which is in a manner the key of the whole grammar) contain definitions; in the three next are collected the affixes, by which verbs and nouns are inflected. Those which appertain to verbs occupy the third lecture: the fourth and fifth contain such as are affixed to nouns. The remaining three lectures treat of the changes which roots and affixes undergo in special cases, or by general rules of orthography, and which are all effected by the addition or by the substitution of one or more elements.* The apparent simplicity of the design vanishes in the perplexity of the structure. The endless pursuit of exceptions and of limitations so disjoins the general precepts, that the reader cannot keep in view their intended connexion and mutual relation. He wanders in an intricate maze, and the clew of the labyrinth is continually slipping from his hands.

The order in which RÁMACHANDRA has delivered the rules of grammar is certainly preferable; but the Sútras of PAÑINI, thus detached from their context, are wholly unin-

* Even the expunging of a letter is considered as the substitution of a blank.
telligible. Without the commentator's exposition, they are indeed what Sir William Jones has somewhere termed them, "dark as the darkest oracle." Even with the aid of a comment, they cannot be fully understood until they are perused with the proper context. Notwithstanding this defect, Bháṭṭójí Dícshita,* who revised the Caumudí, has for very substantial reasons adhered to the Pániníya sútras. That able grammarian has made some useful changes in the arrangement of the Pracriyá: he has amended the explanation of the rules, which was in many places incorrect or imperfect; he has remedied many omissions, has enlarged the examples, and has noticed the most important instances where the elder grammarians disagree, or where classical poets have deviated from the strict rules of grammar. This excellent work is entitled Siddhánta caumudí. The author has very properly followed the example of Rámachandra, in excluding all rules that are peculiar to the obsolete dialect of the Véda, or which relate to accentuation; for this also belongs to the Véda alone. He has collected them in an appendix to the Siddhánta caumudí; and has subjoined, in a second appendix, rules concerning the gender of nouns. The other supplements of Pánini's grammar are interwoven by this author with the body of his work.

The Hindus delight in scholastic disputation. Their grammarians indulge this propensity as much as their lawyers and their sophists.† Bháṭṭójí Dícshita has provided an ample store of controversy in an argumentative commentary on his own grammar. This work is entitled

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* Descendants of Bháṭṭójí in the fifth or sixth degree are, I am told, now living at Benares. He must have flourished, then, between one and two centuries ago.
† Many separate treatises on different branches of general grammar are very properly considered as appertaining to the science of logic.
Praudha manóramá. He also composed a very voluminous commentary on the eight lectures of PÁÑINI, and gave it the title of Šabda caustubha. The only portion of it I have yet seen reaches no further than to the end of the first section of PÁÑINI's first lecture. But this is so diffusive, that, if the whole have been executed on a similar plan, it must triple the ponderous volume of the Mahá-bháshya itself. I have reason, however, for doubting that it was ever completed.

The commentaries on the Siddhánta caumudí and Manóramá are very numerous. The most celebrated shall be here briefly noticed. 1. The Tātva bódhini expounds the Siddhánta: it is the work of Jnyánendrá Saraswáti, an ascetic, and the pupil of Vamanendrá swámi. 2. The Sabléndu sáchára is another commentary on Bháttóji's grammar. It was composed by a successor, if not a descendant, of that grammarian. An abridgment of it, which is very generally studied, is the work of Nágésá, son of Siva Bháttá and pupil of Hári díçhita. He was patronised, as appears from his preface, by the proprietor of Sríngavéra purá.* Though called an abridgment, this Laghu Śubléndu is a voluminous performance. 3. The Laghu Šabdarátna is a commentary on the Manóramá of Bháttóji díçhita, by the author's grandson, Hári díçhita. This work is not improperly termed an abridgment, since it is short in comparison with most other commentaries on grammar. A larger performance on the same topics, and with the same title of Šubda ratna, was composed by a professor of this school. 4. Bála Sárman Págondiya, who is either fourth or fifth in succession from Bháttóji, as professor of grammar at Benares, has written commentaries on the Caustubha, Šabda ratna, and

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* A town on the Ganges, marked Singhore, in Rennel's maps. It is situated above Váhábód.
Sabdēndu sech'ara. His father, Baidyanāṭha bhaṭṭa, largely annotated the Paribhāshēndu sech'ara of Nāgēsa bhaṭṭa, which is an argumentative commentary on a collection of grammatical axioms and definitions cited by the glossarists of Pāṇini. This compilation, entitled Paribhāsha, has also furnished the text for other controversial performances bearing similar titles.

While so many commentaries have been written on the Siddhānta caunudī, the Pracriyā caunudī has not been neglected. The scholiasts of this, too, are numerous. The most known is Crīshna Paṅdīta; and his work has been abridged by his pupil Jayanta, who has given the title of Tatva chandra to a very excellent compendium.* On the other hand, Crīshna Paṅdīta has had the fate common to all noted grammarians, since his work has employed a host of commentators who have largely commented on it.

The Caunudīs, independently even of their numerous commentaries, have been found too vast and intricate for young students. Abridgments of the Siddhānta caunudī have been therefore attempted by several authors with unequal degrees of success. Of three such abridgments one only seems to deserve present notice. It is the Madhya caunudī, and is accompanied by a similar compendium of annotations, entitled Madhya manoramā. The name indicates, that it holds a middle place between the diffuse original and the jejune abstracts called Laghu caunudī, &c. It contains such of Pāṇini's rules as are most universal, and adds to each a short but perspicuous exposition. It omits only the least common exceptions and limitations.

* Finished by him, as appears from a postscript to the book, in the year 1687 of the Samvat era. Though he studied at Benares, he appears to have been born on the banks of the Tapati, a river marked Taptee in Rennel's map.
When Sanscrit was the language of Indian courts, and was cultivated not only by persons who devoted themselves to religion and literature, but also by princes, lawyers, soldiers, physicians, and scribes (in short, by the first three tribes, and by many classes included in the fourth), an easy and popular grammar must have been needed by persons who could not waste the best years of their lives in the study of words. Such grammars must always have been in use; those, however, which are now studied are not, I believe, of very ancient date. The most esteemed is the Sāraswata, together with its commentary named Chandricā. It seems to have been formed on one of the Cauṣumudīs, by translating Pāṇini’s rules into language that is intelligible independently of the gloss, and without the necessity of adverting to a different context.

Another popular grammar, which is in high repute in Bengal, is entitled Muddhahobhā, and is accompanied by a commentary. It is the work of Vopadhāva, and proceeds upon a plan grounded on that of the Cauṣumudīs; but the author has not been content to translate the rules of Pāṇini and to adopt his technical terms. He has, on the contrary, invented new terms and contrived new abbreviations. The same author likewise composed a metrical catalogue of verbs alphabetically arranged. It is named Cavicalpadruma, and is intended as a substitute for the Dhātupāta.

The chief inconvenience attending Vopadhāva’s innovation is, that commentaries and scholia, written to elucidate poems and works of science, must be often unintelligible to those who have studied only his grammar, and that the writings of his scholars must be equally incomprehensible (wherever a grammatical subject is noticed) to the students of the Pāṇinīya. Accordingly the Paṇāṭīs of Bengal are cut off, in a manner, from communication on grammatical topics with the learned of other provinces in India. Even
etymological dictionaries, such as the commentaries on the metrical vocabularies, which I shall next proceed to mention, must be unintelligible to them.

It appears from the prefaces of many different grammatical treatises, that works entitled Dhātu and Nāma pārāyaṇa were formerly studied. They must have comprehended, as their title implies, "the whole of the verbs and nouns" appertaining to the language; and, since they are mentioned as very voluminous, they must probably have contained references to all the rules applicable to every single verb and noun. Haradatta’s explanation of the title confirms this notion. But it does not appear that any work is now extant under this title. The Dhātupādāta, with its commentaries, supplies the place of the Dhātupārāyaṇa. A collection of dictionaries and vocabularies, in like manner, supplies the want of the Nāma pārāyaṇa. These then may be noticed in this place as a branch of grammar.

The best and most esteemed vocabulary is the Amera cósha. Even the bigotry of Śancara Áchárya spared this, when he proscribed the other works of Amera Sinha.* Like most other Sanscrit dictionaries, it is

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* Amera Sinha was an eminent poet and one of the nine gems (for so these poets were called), who were the ornament of Vicrama-ditya’s court. Unfortunately he held the tenets of a heterodox sect, and his poems are said to have perished in the persecutions fomented by intolerant philosophers against the persons and writings of both Jainas and Bauddhas. The persecution, instigated by Śancara and Udayana Áchárya, was enforced, perhaps from political motives, by princes of the Vṛṣṇihava and Śaiva sects, who compelled the Bauddha monarchs to retire from Hindustán, and to content themselves with their dominions of Lísāta and Bhóta. It would be curious to investigate the date of this important revolution. The present conjecture, (for it is little more than mere conjecture) is partly founded upon some acknowledgments made by Purãñits, who confess that Śancara and Udayana persecuted the heterodox sects and
arranged in verse to aid the memory. Synonymous words are collected into one or more verses, and placed in fifteen different chapters, which treat of as many different subjects. The sixteenth contains a few homonymous terms, arranged alphabetically, in the Indian manner, by the final consonants. The seventeenth chapter is a pretty full catalogue of indeclinables, which European philologists would call adverbs, prepositions, conjunctions, and interjections, but which Sanscrit grammarians consider as indeclinable nouns. The last chapter of the Amera cōśha is a treatise on the gender of nouns. Another vocabulary by the same author is often cited by his commentators, under the title of Amera mâlā.

Numerous commentaries have been written on the Amera cōśha. The chief object of them is to explain the deriva-

proscribed their books; and partly on the evidence of the engraved plate found at Mudgagiri, and of the inscription on the pillar found at Bedâl (See As. Res. vol. i. p. 123 and 133), from which it appears that Dēvâpâla Dēva belonged to the sect of Buddhâ, and that he reigned over Bengali and Carâkâ as well as Lâsâ and Bhôśa, and had successfully invaded Cambôja, after traversing as a conqueror the Vindha range of mountains. His descendants, as far as the fourth generation, governed a no less extensive empire; as appears from the inscription on the pillar at Bedâl. I must however acknowledge, that this last mentioned inscription does not indicate any attachment to the sect of Buddhâ. This may be accounted for, by supposing that the worshippers of Krishnâ and of Râma, or whatever other sects prevailed, were then as cordial to the followers of Buddhâ, as they now are towards each other. The king and his minister might belong to different sects.

Amera is mentioned in an inscription at Buddhâ gâya as the founder of a temple at that place. (As. Res. vol. i. p. 284.) This circumstance may serve to explain why his works have been proscribed with peculiar inveteracy, as it is acknowledged by many Pâdâits that they have been. He was probably a zealous sectarist.

This is, however, by no means certain: and Bhanujî Dîcshita, in his commentary on the Amera cōśha, denies that there is any evidence to prove that the author belonged to the sect of Jâinas.

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tions of the nouns and to supply the principal deficiencies of
the text. Sanscrit etymologists scarcely acknowledge a
single primitive amongst the nouns. When unable to trace
an etymology which may be consistent with the acceptation
of the word, they are content to derive it, according to
grammatical rules, from some root to which the word has
no affinity in sense. At other times they adopt fanciful
etymologies from Puranas or from Tantras: but, in gen-
eral, the derivations are accurate and instructive. The best
known among these commentaries of the Amera cόsha is
the Pada chandricā, compiled from sixteen older com-
mentaries by Vṛihaspati, surnamed Mucūṭā, or at full
length Rāya Mucūṭa maṇī. It appears from the incidental
mention of the years then expired of astronomical eras,
that Mucūṭā made this compilation in the 4532d year of the
Cali yug, which corresponds with A. D. 1430. Achyuta
Jallaci has abridged Mucūṭā’s commentary, but with-
out acknowledgment; and has given the title of Vyāchṛya
pradīpa to his compendium. On the other hand, Bhanujī
dīcshita has revised the same compilation, and has cor-
corrected the numerous errors of Mucūṭā, who often derives
words from roots that are unknown to the language, or
according to rules which have no place in its grammar.
Bhanujī has greatly improved the plan of the work, by
inserting from other authorities the various acceptations of
words exhibited by Amera in one or two senses only.
This excellent compilation is entitled Vyāchṛya sudhā.

The Amera cόsha, as has been already hinted, gives a
very incomplete list of words that have various acceptations.
This defect is well supplied by the Médint, a dictionary so
named from its author, Médinicarr. It contains words
that bear many senses, arranged in alphabetical order by
the final consonants; and a list of homonymous indeclin-
ables is subjoined to it. A similar dictionary, compiled by
Mahéswara and entitled Viśwa praccāsa, is much consulted, though it be very defective, as has been justly remarked by Médinícar. It contains, however, a very useful appendix on words spelt more than one way; and another on letters which are liable to be confounded, such as v and b; and another, again, on the gender of nouns. These subjects are not separately treated by Médinícar; but he has, on the other hand, specified the genders with great care in the body of the work. The exact age of the Médini is not certainly known; but it is older than Mucūṭa's compilation, since it is quoted by this author.

Amera's dictionary does not contain more than ten thousand different words; yet the Sanscrit language is very copious. The insertion of derivatives, that do not at all deviate from their regular and obvious import, has been very properly deemed superfluous. Compound epithets, and other compound terms, in which the Sanscrit language is peculiarly rich, are likewise omitted; excepting such as are especially appropriated, by a limited acceptation, either as titles of deities, or as names of plants, animals, &c. In fact, compound terms are formed at pleasure, according to the rules of grammar; and must generally be interpreted in strict conformity with those rules. Technical terms, too, are mostly excluded from general dictionaries and consigned to separate nomenclatures. The Amera cósha, then, is less defective than might be inferred from the small number of words explained in it. Still, however, it needs a supplement. The Hárávali may be used as such. It is a vocabulary of uncommon words compiled by Purushótama, the author of an etymological work, and also of a little collection of monograms, entitled Ēcācshara. His Hárávali was compiled by him under the patronage of Dhrīṭa Sīnha. It is noticed by Médinícar, and seems to be likewise anterior to the Viśwa.
The remaining deficiencies of the Amera cóśha are supplied by consulting other dictionaries and vocabularies; such as Heláyudha's, Váchespati's, the Dharáni cóśha, or some other. Sanscrit dictionaries are indeed very numerous. Purushóttama and Médinícar name the Upalini, Śabdárñava, and Sansdravarta, as works consulted by them. Purushóttamá adds the names of Váchespati, Vyádi, and Vicramáditya; but it is not quite clear whether he mentions them as the authors and patrons of these, or of other dictionaries. Médinícar adds a fourth vocabulary, called Námamalá, and with similar obscurity subjoins the celebrated names of Bháguri, Vararuchi, Sáswata, Bópalita, and Rantidéva. He then proceeds to enumerate the dictionaries of Amera, Subhánga, Heláyudha, Góverdhana, Rabhasa Pála, and the Ratna cóśha; with the vocabularies of Rudra, Dhananjaya, and Gangádhara; as also the Dharáni cóśha, Háraválí, Vr̥hod amara, Tricándla sésha, and Ratnamálá. Many of these are cited by the commentators on Amera and by the scholiasts on different poems. The following are also frequently cited; some as etymologists, the rest as lexicographers: Swámi, Durga, Sarvadhara, Vámána, Chandra, and the authors of the Vaijayanti, Námánidhana, Haima, Vr̥hat-nighánti, &c. To this list might be added the Anécdár'ha dhvani manjari, Nánárt'ha, and other vocabularies of homonymous terms; the Dwiructi, Bhúriprayóga cóśha, and other lists of words spelt in more than one way; and the various Nighántis or nomenclatures, such as the Dhanvantari-nighánta and Rája nighánta, which contain lists of the materia medica; and the Nighánti of the Véda, which explains obsolete words and unusual acceptations.*

* The Niructi, as explained in Sir William Jones's treatise on the literature of the Hindus, belongs to the same class with the Nighánti of
Before I proceed to mention other languages of India, it may be proper to mention, that the school of Benares now uses the Siddhânta caumudî, and other works of Bhaṭṭōji, as the same school formerly did the Câsica vṛtti. The Prakriyā caumudî, with its commentaries, maintains its ground among the learned of Mit’hîlî or Tirhût. In both places, however, and indeed throughout India, the Mahâbhâshya continues to be the standard of Sanscrit grammar: it is therefore studied by all who are ambitious of acquiring a critical knowledge of the language. The Haricârêc, with its commentaries by Hâlânâja and Punjarâjâ, was probably in use with a school that once flourished at Ujjayînî but it does not seem to be now generally studied in any part of India.

The second class of Indian languages comprehends the written dialects which are now used in the intercourse of civil life, and which are cultivated by lettered men. The author of a passage already quoted includes all such dialects under the general denomination of Prâcrít: but this term is commonly restricted to one language, namely, to the Saraswâtî bâla bâñî, or the speech of children on the banks of the Saraswâtî.* There is reason to believe that ten polished dialects formerly prevailed in so many different civilized nations, who occupied all the fertile provinces of Hindustân and the Dacshîn. Evident traces of them still exist. They shall be noticed in the order in which these Hindu nations are usually enumerated.

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the Vâda: and a small vocabulary under both these titles is commonly annexed to the Rigvâda to complete the set of Upavédas. There is, however, a much larger work entitled Niructî; and the commentators of it are often cited upon topics of general grammar. See vol. i. p. 26.

* The term will bear a different interpretation, but this seems to be the most probable explanation of it. The other (youthful speech of Saraswâtî) is generally received.
The Sāraswata was a nation which occupied the banks of the river Saraswāti. Brāhmaṇas, who are still distinguished by the name of their nation, inhabit chiefly the Penjāb or Panchanada, west of the river from which they take their appellation. Their original language may have once prevailed through the southern and western parts of Hindustān proper, and is probably the idiom to which the name of Prācīn is generally appropriated. This has been more cultivated than any other among the dialects which will be here enumerated, and it occupies a principal place in the dialogue of most dramas. Many beautiful poems composed wholly in this language, or intermixed with stanzas of pure Sanscrit, have perpetuated the memory of it, though perhaps it have long ceased to be a vernacular tongue. Grammars have been compiled for the purpose of teaching this language and its prosody, and several treatises of rhetoric have been written to illustrate its beauties. The Prācīnā manirāmad and Prācīnā Pingala are instances of the one, and the Saraswāti cantābharaṇa of Bhōja-Dāva, may be named as an example of the other, although both Sanscrit and Prācīn idioms furnish the examples with which that author elucidates his precepts. For the character of the Prācīn language I must refer the reader to Sir William Jones's remarks, in his preface to the translation of the Fatal Ring.

The Cānyacubjas possessed a great empire, the metropolis of which was the ancient city of Cānyacubja or Canój. Theirs seems to be the language which forms the groundwork of modern Hindustānī, and which is known by the appellation of Hindi or Hindevī. Two dialects of it may be easily distinguished, one more refined, the other less so. To this last the name of Hindi is sometimes restricted while the other is often confounded with Prācīnī. Numerous poems have been composed in both dialects, not only
before the Hindustání was ingrafted on the Hindi by a large intermixture of Persians, but also in very modern times, by Muhammedan as well as Hindu poets. Dóhrás or detached couplets, and Cubits or stanzas, in the Hindeví dialect, may be found among the works of Muslemán authors: it will be sufficient to instance those of Melic Muhammed Jaisí, Muhammed Afzel, and Amírkhán Anjám. Most poems in this dialect are, however, the exclusive production of Hindu poets.* On examining them, the affinity of Hindi with the Sanscrit language is peculiarly striking; and no person acquainted with both can hesitate in affirming that Hindi is chiefly borrowed from Sanscrit. Many words, of which the etymology shows them to be the purest Sanscrit, are received unaltered; many more undergo no change but that of making the final vowel silent; a still greater number exhibits no other difference than what arises from the uniform permutation of certain letters; the rest, too, with comparatively few exceptions, may be easily traced to a Sanscrit origin. That this is the root from which Hindi has sprung (not Hindi the dialect whence Sanscrit has been refined) may be proved by etymology, the analogy of which is lost in Hindi and preserved in Sanscrit. A few examples will render this evident.

* Among the most admired specimens of Hindi poetry, the seven hundred couplets of Bihári lál, and the amatory verses of Súnder and of Mátirám, are conspicuous. But their dialect is not pure Hindeví, since they sometimes borrow from the Persian language. Súnder wrote his poems in the reign of Sháhjehán, and seems to have been patronized by that prince, whom he praises in his preface. Bihári lál flourished at the court of Ambhér, towards the beginning of the sixteenth century of the Christian era. His poems were arranged in their present order for the use of the unfortunate prince Ázem Sháh, and the modern edition is therefore called Ázemsháhí. The old edition has been elegantly translated into Sanscrit verse by Haríprásáda Pañjíta, under the patronage of Chát Sinh, when Rájá of Benares.
Crtyā signifies action, and carma act, both of which are regularly derived from the root crī to do. They have been adopted into Hindustānī, with many other regular derivatives of the same root; (such, for example, as carāṇa [contracted into carndā] the act of doing; cartā the agent; cārah cause, or the means of doing; cārya [cāry, cāj,] the thing to be done, and the intent or purpose of the action.) But I select these two instances, because both words are adopted into Hindustānī in two several modes. Thus crīā signifies action, and ciridā expresses one metaphorical sense of the same Sanscrit word, viz. oath or ordeal. Again, ciridā-caram signifies funeral rites; but cām is the most usual form in which the Sanscrit carma is exhibited in the Hindustānī; and it thus assumes the same form with cām, desire, a very different word taken from the Sanscrit derivative of the root cām, to seek. Here then the Hindustānī confounds two very different words in one instance, and makes two words out of one in the other instance.

Sat literally signifies existent: it is employed in the acceptation of truth. Satya, a regular derivative from it, signifies true; or, employed substantively, truth. The correspondent Hindī word, sach, is corrupted from the Sanscrit satya, by neglecting the final vowel, by substituting j for y, according to the genius of the Hindevī dialect, and by transforming the harsh combination tj into the softer sound of ch. Here then is obviously traced the identity of the Hindustānī sach, and Bengālī shotyo, which are only the same Sanskrit word satya variously pronounced.

Yuvaṇ signifies young, and yauvana youth. The first makes yuvā in the nominative case: this is adopted into Hindustānī with the usual permutation of consonants, and becomes jubā, as yauvana is transformed into jōban. The same word has been less corrupted in Persian and Latin, where it stands juvenis and juvenis. In many inflections
the root of *yuvan* is contracted into *yún*: the possessive case, for example, forms in the three numbers, *yúnas*, *yúnd*, *yúndm*. Here, then, we trace the origin of the Latin comparative *junior*; and I cannot hesitate in referring to these *Sanskrit* roots, the Welsh *jewangk*, and Armorican *jovank*, as well as the Saxon *yeong*, and finally the English *young*. This analogy, which seems evident through the medium of the *Sanskrit* language, is wholly obscured in *Hindustani*.

These examples might be easily multiplied, but unprofitably, I fear; for, after proving that nine-tenths of the *Hindi* dialect may be traced back to the *Sanskrit* idiom, there yet remains the difficulty of accounting for the remaining tenth, which is perhaps the basis of the *Hindi* language. Sir William Jones thought it so; and he thence inferred, that the pure *Hindi* was primeval in Upper India, into which the *Sanskrit* was introduced by conquerors from other kingdoms in some very remote age.* This opinion I do not mean to controvert. I only contend, that where similar words are found in both languages, the *Hindi* has borrowed from *Sanskrit*, rather than the *Sanskrit* from *Hindi*. It may be remarked too, that in most countries the progress has been from languages rich in inflections, to dialects simple in their structure. In modern idioms, auxiliary verbs and appendant particles supply the place of numerous inflections of the root: it may, for this reason, be doubted, whether the present structure of the *Hindi* tongue be not a modern refinement. But the question which has been here hinted rather than discussed, can be decided only by a careful examination of the oldest compositions that are now extant in the *Hindi* dialect. Until some person execute this task, a doubt must remain,

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* See Sir W. Jones’ third anniversary discourse.
whether the groundwork of Hindi, and consequently of Hindustán, be wholly distinct from that of Sanscrit.

On the subject of the modern dialect of Upper India, I with pleasure refer to the works of a very ingenious member of this society, Mr. Gilchrist, whose labours have now made it easy to acquire the knowledge of an elegant language, which is used in every part of Hindustán and the Dekhín, which is the common vehicle of colloquial intercourse among all well-educated natives, and among the illiterate also, in many provinces of India, and which is almost every where intelligible to some among the inhabitants of every village. The dialects which will be next noticed are of more limited use.

Gaura,* or as it is commonly called Bengalah, or Bengáli, is the language spoken in the provinces of which the ancient city of Gaur was once the capital. It still prevails in all the provinces of Bengal, excepting perhaps some frontier districts, but is said to be spoken in its greatest purity in the eastern parts only; and, as there spoken, contains few words which are not evidently derived from Sanscrit. This dialect has not been neglected by learned men. Many Sanscrit poems have been translated, and some original poems have been composed in it: learned Hindus in Bengal speak it almost exclusively;

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* It is necessary to remark, that although Gaura be the name of Bengal, yet the Bráhmánas, who bear that appellation, are not inhabitants of Bengal but of Hindustán proper. They reside chiefly in the Suid of Delhi, while the Bráhmánas of Bengal are avowed colonists from Cánój. It is difficult to account for this contradiction. The Gaura Bráhmánas allege a tradition, that their ancestors migrated in the days of the Páthas, at the commencement of the present Càli yuga. Though no plausible conjecture can be founded on this tradition, yet I am induced to retract a conjecture formerly hazarded by me, that the Gar of our maps was the original country of the Gaura priests.
verbal instruction in sciences is communicated through this medium, and even public disputations are conducted in this dialect. Instead of writing it in the Dévanágari, as the Prácrit and Hindi are written,* the inhabitants of Bengal have adopted a peculiar character, which is nothing else but Dévanágari, difformed for the sake of expeditious writing. Even the learned amongst them employ this character for the Sanscrit language, the pronunciation of which, too, they in like manner degrade to the Bengáli standard. The labours of Mr. HALIÉD and Mr. FORSTER have already rendered a knowledge of the Bengáli dialect accessible; and Mr. FORSTER's further exertions will still more facilitate the acquisition of a language which cannot but be deemed greatly useful, since it prevails throughout the richest and most valuable portion of the British possessions in India.

Mait’híla, or Tirhutíya, is the language used in Míthíla (that is, in the Sircár of Tirhút), and in some adjoining districts, limited however by the rivers Cúscí (Causící), and Gandhací (Gándhací), and by the mountains of Népál. It has great affinity with Bengáli; and the character in which it is written differs little from that which is employed throughout Bengal. In Tirhút, too, the learned write Sanscrit in the Tirhutíya character, and pronounce it after their own inelegant manner. As the dialect of Míthíla has no extensive use, and does not appear to have been at

* Prácrit and Hindi books are commonly written in the Dévanágari; but a corrupt writing, called Nágari, is used by Hindus in all common transactions where Hindi is employed by them; and a still more corrupted one, wherein vowels are for the most part omitted, is employed by bankers and others in mercantile transactions. I must here confess that I can give no satisfactory explanation of the term. The common etymology of Nágari is unsatisfactory; unless Nágara be taken as the name of some particular place emphatically called the city.
any time cultivated by elegant poets, it is unnecessary to notice it further in this place.

Uttala, or Oḍrādeśa, is co-extensive with the Subā of Oṛésā, extending from Mādīnāpūr to Mānacapattana, and from the sea to Sammall-pūr. The language of this province, and the character in which it is written, are both called Urtya. So far as a judgment can be formed from imperfect specimens of this language, it contains many Sanscrit words variously corrupted, with some Persian and Arabic terms borrowed through the medium of Hindustānī, and with others of doubtful origin. The letters are evidently taken from the Dēvandgārī; and the Brāhmins of this province use the Urtya character in writing the Sanscrit language. Its deviations from the Dēvandgārī may be explained, from the practice of writing on palm leaves with an iron style, or on paper with a pen cut from a porcupine’s quill. It differs in this respect from the hand-writing of northern tribes, and is analogous to that of the southern inhabitants of the peninsula.

The five Hindu nations, whose peculiar dialects have been thus briefly noticed, occupy the northern and eastern portions of India; they are denominated the five Gaurs. The rest, called the five Drāvirs, inhabit the southern and western parts of the peninsula. Some Paṇḍits, indeed, exclude Cāndāla, and substitute Cāsmīra; but others, with more propriety, omit the Cāshmirian tribe; and, by adding the Cānaras to the list of Drāvirs, avoid the inconsistency of placing a northern tribe among southern nations. There is reason, too, for doubting whether Cāsmīra be occupied by a distinct nation, and whether the inhabitants of it be not rather a tribe of Cānyacubjas.

Drāvira is the country which terminates the peninsula of India: its northern limits appear to lie between the twelfth and thirteenth degrees of north latitude. The lan-
guage of the province is the Tāmel, to which Europeans have given the name of Malabar,* from Malay-wār, a province of Drāvīra. They have similarly corrupted the true name of the dialect into Tamul, Tamulic, and Tamuli,
† but the word, as pronounced by the natives, is Tāmla, or Támalah; and this seems to indicate a derivation from Tāmra, or Tāmpraparīt, a river of note which waters the southern Māṭhūra, situated within the limits of Drāvīra. The provincial dialect is written in a character which is greatly corrupted from the parent Dēvandgārī, but which nevertheless is used by the Brāhmaṇs of Drāvīra in writing the Sanscrit language. After carefully inspecting a grammar published by Mr. Drummond at Bombay, and a dictionary by missionaries at Madras, I can venture to pronounce that the Tāmla contains many Sanscrit words, either unaltered or little changed, with others more corrupted, and a still greater number of doubtful origin.

The Mahrāshtra, or Mahrāttā, is the language of a nation which has in the present century greatly enlarged its ancient limits. If any inference may be drawn from the name of the character in which the language is written, the country occupied by this people was formerly called Mūru;‡ for the peculiar corruption of the Dēvandgārī,

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* A learned Brāhmaṇ of Drāvīra positively assures me, that the dialect of Malabar, though confounded by Europeans with the Tāmel, is different from it, and is not the language to which Europeans have allotted that appellation.

† The Romish and Protestant missionaries who have published dictionaries and grammars of this dialect, refer to another language, which they denominate Grāndam and Grāndonīcum. It appears that Sanscrit is meant, and the term thus corrupted by them is Grant'ha, a volume or book.

‡ Mentioned in the royal grant preserved at a famous temple in Carāṭī. See As. Res. vol. iii. p. 48. However, the Mahrāttās themselves affirm, that the Mūru character was introduced amongst them from the island of Sidān.
which is employed by the Maháráshtras in common trans-
actions, is denominated by them Múr. Their books, it
must be remarked, are commonly written in Dévanágárí.
The Mahráttá nation was formerly confined to a moun-
tainous tract situated south of the river Nermádá and
extending to the province of Cócdn. Their language is
now more widely spread, but is not yet become the vernac-
cular dialect of provinces situated far beyond the ancient
bounds of their country. Like other Indian tongues, it
contains much pure Sanscrít, and more corruptions of that
language, intermixed with words borrowed from Persian
and Arabic, and with others derived from an unknown
source. If the bards of Múru were once famous, their
supposed successors, though less celebrated, are not less
diligent. The Mahráttás possess many poems in their own
dialect, either translated from the Sanscrít, or original
compositions in honour of Cárñoñá, Ramá, and other dei-
fied heroes. Treatises in prose, too, on subjects of logic
and of philosophy, have been composed in the Mahráttá
dialect.

Cárñáta, or Cánera, is the ancient language of Car-
ñátaca, a province which has given name to districts on
both coasts of the peninsula. This dialect still prevails in
the intermediate mountainous tract, but seems to be super-
seded by other provincial tongues on the eastern coast. A
peculiar character formed from the Dévanágárí, but like
the Támla, much corrupted from it through the practice of
writing on palm-leaves with an iron style, is called by the
same name with the language of Carñátac. Bráhmens of
this tribe have assured me that the language bears the
same affinity to Sanscrít as other dialects of the Dañshín.
I can affirm, too, from their conversation, that the Cáneras,
like most other southern tribes, have not followed the ill
example of Bengal and the provinces adjacent to it, in pro-
nouncing the Sanscrit language in the same inelegant manner with their own provincial dialects.

**Tailanga, Telingah, or Tilanga,** is at once the name of a nation, of its language, and of the character in which that language is written. Though the province of Telingāna alone retain the name in published maps of India, yet the adjacent provinces on either bank of the Črīshādi and Göda-vert, and those situated on the north-eastern coast of the peninsula, are undoubtedly comprehended within the ancient limits of Tilanga, and are inhabited chiefly by people of this tribe. The language, too, is widely spread: and many circumstances indicate that the Tailangas formerly occupied a very extensive tract, in which they still constitute the principal part of the population. The character in which they write their own language is taken from Dēvandgārī, and the Tailanga Brahmens employ it in writing the Sanscrit tongue, from which the Tailanga idiom is said to have borrowed more largely than other dialects used in the south of India. This language appears to have been cultivated by poets, if not by prose writers; for the Tailangas possess many compositions in their own provincial dialect, some of which are said to record the ancient history of the country.

The province of Gūrjara* does not appear to have been at any time much more extensive than the modern Gəzrət, although Brahmanaḥas, distinguished by the name of that country, be now spread over the adjoining provinces on both sides of the Nermādā. This tribe uses a language denominated from their own appellation, but very nearly allied to the Hindi tongue, while the character in which it

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* The limits of Gūrjara, as here indicated, are too narrow. It seems to have been co-extensive with the ancient, rather than the modern Gəzrət, and to have included the whole, or the greatest part of Candēśh and Malwa.
is written conforms almost exactly with vulgar Nāgarī. Considering the situation of their country, and the analogy of language and writing, I cannot hesitate in thinking that the Gūrjaras should be considered as the fifth northern nation of India, and the Uṛṛyas should be ranked among the tribes of the Dacshin.

Brief and imperfect as is this account of the Prācītiś of India, I must be still more concise in speaking of the languages denominated Māgadhī and Apabhṛṣṭa in the passages quoted at the beginning of this essay. Under these names are comprehended all those dialects which, together with the Prācītiś above-noticed, are generally known by the common appellation of Bhāṣā, or speech. This term, as employed by all philologists, from Pāṇini down to the present professors of grammar, does indeed signify the popular dialect of Sanscrit, in contradistinction to the obsolete dialect of the Vēda; but in common acceptation, Bhāṣā (for so the word is pronounced on the banks of the Ganges) denotes any of the modern vernacular dialects of India, especially such as are corrupted from the Sanscrit; these are very numerous. After excluding mountaineers, who are probably aborigines of India, and whose languages have certainly no affinity with Sanscrit, there yet remain in the mountains and islands contiguous to India, many tribes that seem to be degenerate Hindus. They have certainly retained some traces of the language and writing which their ancestors had been taught to employ.

Without passing the limits of Hindustān, it would be easy to collect a copious list of different dialects in the various provinces which are inhabited by the ten principal Hindu nations. The extensive region which is nearly defined by the banks of the Sarasvatī and Gango on the north, and which is strictly limited by the shores of the
eastern and western seas towards the south, contains fifty-seven provinces according to some lists, and eighty-four according to others. Each of these provinces has its peculiar dialect, which appears, however, in most instances, to be a variety only of some one among the ten principal idioms. Thus Hindustani, which seems to be the lineal descendant of the Cánycaka, comprises numerous dialects, from the Ordu zebán, or language of the royal camp and court, to the barbarous jargon which reciprocal mistakes have introduced among European gentlemen and their native servants. The same tongue, under its more appropriate denomination of Hindí, comprehends many dialects strictly local and provincial. They differ in the proportion of Arabic, Persian, and Sanscrit, either pure or slightly corrupted, which they contain; and some shades of difference may be also found in the pronunciation, and even in the basis of each dialect.

Not being sufficiently conversant with all these idioms, I shall only mention two, which are well known, because lyric poets have employed them in songs, that are still the delight of natives of all ranks. I allude to the Penjábí and to the Brij-bhākhá. The first is the language of Panchanada, or Penjáb, a province watered by the five celebrated rivers which fall into the Sindhu. The songs entitled Khéds and Tepps, which are no doubt familiar to all who have a taste for the vocal music of India, are composed almost exclusively in this dialect; as the Dhur-peds and regular Rágs are Hindí; and Rkhtah*, in the language of the court of Hindustán.

The Brij-bhākhá, or Vraja bhāshá, is the dialect supposed to have been anciently spoken among the peasants

* The author of the Tazavsh Shuárd Hind explains Rkhtah, as signifying a poetry composed in the language of the royal court of Hindustán, but in the style and metre of Persian poetry.
in the neighbourhood of Mathurá. It derives its name from the cow-pens (vraja) and dairies in the forest of Vrindá, where Críshña was educated among the wives and daughters of the cowherds. His amorous adventures with Radhá and the Gópís furnish the subject of many favourite songs in this dialect. It is still spoken with much purity throughout a great part of the Antarhé or Dóáb, and in some districts on the opposite banks of the Yamuná and Gángá.

To these cursory observations might be fitly added a specimen of each language, and of the character in which it is written, together with a list of the most common terms in the various dialects of India, compared with words of similar sound and import in the ancient languages of Europe. I have, indeed, made collections for this purpose: but the insertion of a copious list would exceed the limits of a desultory essay. For this reason, and because the collection is yet incomplete, I suppress it; and shall here close the present essay abruptly, with the intention of resuming the subject, should the further prosecution of these enquiries at any future time enable me to furnish the information called for by this Society, concerning the number of Hinduwi dialects, and the countries where they are spoken.
II.

Preface to the Author's 'Grammar of the Sanscrit Language.'

[Calcutta, 1805. Folio.]

Having accepted an honorable nomination to the post of Professor of the Sanscrit Language in the College of Fort William, early after the foundation of that useful institution, I felt it incumbent on me to furnish, through the press, the means of studying a language, which it was my duty to make known, but on which I had no intention of delivering oral instruction.

Among other undertakings adapted to this purpose, the publication of a Sanscrit Grammar was commenced, which was first intended to be brief and elementary, but of which the design has been enlarged in its progress. As the entire work will exceed the bounds of a single volume, a convenient break has been chosen to close the first, and a few remarks will be now prefixed to it, since a considerable time may elapse before the second volume be completed. I have the less scruple, in pausing upon this work, to devote my attention to other duties, because the deficient part of it may be supplied by the grammars which Mr. Forster and Mr. Carey will severally publish.

In the composition of this grammar, I have followed the system taught by writers, whose works are considered by the prevailing sects of Hindus to be sacred, and to form an appendage of their scriptures. My reasons for preferring these to the popular or profane treatises on Grammar, were stated in an essay on the Sanscrit lan-
guage inserted in the seventh volume of the Asiatic Researches.* I adhere to the opinion there expressed. The sacred grammar has been more cultivated, its agreement with ancient writings and classical authors has been more carefully verified, than any other grammar of the language: it is more usually cited, and more generally understood: and, as finally corrected by a long train of commentators, it is more accurate and complete.

The arrangement, indeed, is ill-adapted to facilitate study; both in the original work, and in the numerous illustrations of it. But I thought it practicable to frame a grammar upon the same system, which should be easily intelligible to the English student of Sanscrit. Without believing that I have succeeded, I still think it to be practicable: and the difficulties which may be experienced in the following pages, will in general be found owing merely to the want of examples; which have been omitted, under the apprehension of rendering the work too voluminous.

An improvement which has been recently effected in the types of the Nagari character, by reducing their size, without diminishing their distinctness, has removed the objection to ample illustrations by examples: and, if this work should be reprinted, examples of every rule will accordingly be inserted; and, at all events, they will be retained in the second volume of this grammar.

On the same supposition of a new edition of this first volume, I should be desirous of altering some of the terms adopted by me in place of technical words in Sanscrit grammar. An unwillingness to coin new words in English, led me to use some expressions, which are not sufficiently precise; others were selected by me, not anticipating objections to their use, which have since occurred: and, in some instances, I have inadvertently changed an appropriate term for one less suitable. The most material

* See page 15 of the present volume.
intended changes are mentioned in the margin;* and the reader is requested to notice them.

I shall be likewise glad to have an opportunity of inserting the original rules of Sanscrit Grammar. They are usually committed to memory by native students of the language; and are cited by Sanscrit authors, in words, and not by reference to their place or their import. The knowledge of them is, therefore, material to the student of Sanscrit: and they are framed, like the aphorisms of other sciences among the Hindus, with studied and ingenious brevity.

The author of these grammatical aphorisms is Panini. His rules, with the annotations of Catayana entitled Varticas, confirmed or corrected by Patanjali in the Mahabhashya, constitute the standard of Sanscrit gram-

* Letters, added by Sanscrit grammarians, as marks, but which are not sounded, nor retained in the inflections, are called by them Anubandha or It; which, in this grammar, has been translated mute: but the circumstance of such vowels being accented, leads to the inconsistency of speaking of accented mute vowels. They would be better designated by the word indicatory.

A class of derivative verbs, which in a former treatise I denominated Frequentatives, has been here named Intensives. On consideration, I revert to the first-mentioned term.

Under the head of tenses, I have used the word Aorist to signify indefinite in respect to a species of time, instead of indefinite as to time in general: the name of Remote past is not sufficiently descriptive of the import of the tense to which it has been assigned; and several others are open to a similar remark: I wish therefore to change the names of the tenses, according to the following scheme.

1. Present.
2. Pretorite unperceived (Remote past.)
3. Crastine future (Absolute future.)
4. Indefinite future (Aorist future.)
5. Aorist 1st. (Imperative, &c.)
6. Pridian past (Absolute past.)
7. Aorist 2d. (Imperative, &c.)
8. Indefinite past (Aorist past.)
9. Conditional (Conditional future.)
mar. From the three saints, as Hindu grammarians affect to call them, there is no appeal. Other authorities may be admitted, where they are silent: but a deviation even by a classical or an ancient writer, from a rule in which they concur, is deemed either a poetical license or a privileged barbarism.

The works of these sacred writers, with the notes of Caïyyaṭa on the Mahābhāṣya, interpreted by his scholiasts, and more especially the perpetual commentary of Vāmana on Pāṇini’s aphorisms, under the title of Cāsi-ca vṛtti, elucidated by the copious annotations of Haradatta Miśra in the Padamanjārī, are the basis of the grammar here printed. The Siddhānta caumudī, and Manoramā of Bhatṭojī, with their commentaries, have been frequently consulted by me. Much use has also been made of the Pracriyā caumudī, with its commentaries, the Prasāda and Tatwa chandra: and I have continually referred to Maitreya, Madhava, Vopadhēva, and the other interpreters of Sanscrit roots. A reader, who may be desirous of verifying my authorities, should be apprized, that the Cāsi-ca vṛtti, Siddhānta caumudī, and Madhavīya vṛtti have been my chief guides: and that others, besides the books enumerated, have been occasionally consulted; as the Guharatna mahālalhī, the Vṛtti sangraha, and the commentators of the Paribhāshās; and sometimes, though rarely, the popular grammars.

For the information of the Sanscrit student, a list of these and other grammatical works will be subjoined, including many treatises which have not been used for this grammar; but none, which I do not know to be extant; and few, of which I do not actually possess complete copies. The list might have been greatly enlarged by adding the names of books quoted by undoubted authorities: and I shall only remark, in regard to such works, that the earliest
grammarians are expressly stated by Vópadéva, to have been Indra, Chandra, Cášacrýtsna, Ápišalí, Śacatáyana, Pañini, Amera, and Jainendra. Among these Pañini remains; and some of the others: perhaps all.

The authorities, which have been mentioned by me, as generally followed in this grammar, differ materially in their arrangement. I have been guided sometimes by one, sometimes by another, as seemed best adapted to the two objects proposed, conciseness and perspicuity. I am apprehensive, that, in the pursuit of both objects, one has frequently been missed. It was, however, with the view of compressing much grammatical information in a small compass, that paradigmas have been multiplied, but exhibited in a succinct form; and that general rules only are usually inserted in the text, while exceptions and special rules are placed in the notes.

I have admitted no remarks on general grammar, though suggested by the numerous peculiarities of Sanscrit. These, with the observations which occur on a comparison of the ancient language of India with those of Europe, are deferred until the completion of the work.

In the meantime, one singularity of the Sanscrit language may be noticed: its admitting both the ancient and the modern systems of grammatical structure. It abounds in inflections for cases and genders; tenses and persons: and it also admits a simple construction of indeclinable nouns with prepositions, and of participles with auxiliary verbs.

This remark anticipates on a part of the grammar reserved for the second volume, in which composition and syntax will be explained, with other matters indicated in the note subjoined to the table of contents of the first volume.
LIST of SANSKRĪT GRAMMARS, with COMMENTARIES, &c.

Sūtra by PĀṆINI: rules of grammar in eight books entitled Aśṭāṅga-vaikāśika; comprising 3,996 aphorisms.
Vārtica by CĀTYĀYANA, amending or explaining PĀṆINI'S rules.
Mahābhāshya by PATANJALI, interpreting or correcting CĀTYĀYANA'S annotations.
Mahābhāshya pradīpa by CAIYYAṬA, annotating PATANJALI'S gloss.
Bhāshya pradīpa-ārohaṇa by NĀGÓJI BHATTA, commenting on CAIYYAṬA'S notes.
Bhāshya pradīpa vivaraṇa by ĪŚVARĀNANDA: another commentary on CAIYYAṬA'S notes.
Cārācā vr̥tti by JAYĀDITYA or VĀMANA JAYĀDITYA: a perpetual commentary on PĀṆINI'S rules.
Padamanjarī by HARADATTA MIṢRA: an exposition of the last mentioned work.
Nyāsa or Cārācā vr̥tti panjica by JINÉNDRA: another exposition of the same,* with explanatory notes by RACSHITA.
Vṛtti Sangraha by NĀGÓJI BHATTA: a concise commentary on PĀṆINI.
Bhāshā vr̥tti by PURUSHÓTTAMA DEVA: a commentary on PĀṆINI'S rules (omitting those which are peculiar to the dialect of the Vēdas).

* I state this with some distrust, not having yet seen the book. The Nyāsa is universally cited; and the Bōdhīṁyāsa is frequently so. Vr̥padēva's Cāvyā cāmuñghenu quotes the Nyāsa of JINÉNDRA and that of JINÉNDRA BUDDHI.
LIST OF SANSKRIT GRAMMARS, &c. 41

_Bhāshā vṛttyaṛtaḥ vivṛtti_ by Sṛṣṭidhara; explaining Prushottama's commentary.

Śabda caustubha by Bhāṭṭojī dīcshita, consisting of scholia on Pāṇini (left incomplete by the author).

Prabhā by Baidyanātha pāyagunda, also named Bālambhaṭṭa; a commentary on the Śabda caustubha.

Pracriyā caumudī by Rāmacandra āchārya: a grammar in which Pāṇini's rules are used, but his arrangement changed.

Prasāda by Vīṭhala āchārya; a commentary on the Pracriyā caumudī.

Tatwa chandā by Jayanta: another commentary on the same, abridged from one by Cṛṣṇa pāṇīta.

Ṣiddhānta caumudī by Bhāṭṭojī dīcshita: a grammar on the plan of the Pracriyā; but more correct and complete.

Manorāma or Praudha manorāma by the same author; containing notes on his own work.

Tatwa bōdhini by Jyāṇendrā saraswatī: a commentary on Bhāṭṭojī's Siddhānta caumudī.

Ṣabdendu sēchara by Nāgēśa bhāṭṭa (same with Nāgōjī bhāṭṭa): another commentary on the Siddhānta caumudī.

Laghu sābdendu sēchara: an abridgment of the last.

Chidasthimalā by Baidyanātha pāyagunda: a commentary on the abridged gloss of Nāgēśa.

Ṣabdaratna by Hari dīcshita: a commentary on Bhāṭṭojī's notes on the Manorāma.

Laghu sābdaratna: an abridgment of the same.

Bhāva pracaśicā by Baidyanātha pāyagunda: an exposition of Hari dīcshita's commentary.

Madhya caumudī by Barada rāja: an abridgment of the Siddhānta caumudī. There is also a Madhya ma-
nóramá; besides other abridgments of the Siddhánta itself, as the Laghu caumudi, &c.

Paribháshá: maxims of interpretation from ancient grammarians, cited in the Vártaics and Bháshya, as rules for interpreting Pánint’s sútras.

Paribháshá vr̥tti by Śíra déva: a commentary on the cited maxims of interpretation.

Laghu paribháshá vr̥tti by Bháscara bháttá: a succinct commentary on the same.

Paribháshárt’ha sangraha: another commentary on the same.

Chandricá by Swayampracáśánanda: interpreting the last mentioned commentary.

Paribháshéndu séch'ara by Nágéśá bháttá: a brief exposition of the same maxims.

Paribháshéndu séch'ara cásicá by Baidyanáth'ha páyagunda, commenting the gloss of Nágéśá.

Cáricá: metrical rules of grammar, cited in the Mahábáshya, Cásicá vr̥tti, &c.

Vácyá pradípa by Bhaːtrīhārī: metrical maxims chiefly on the philosophy of syntax. These are often cited under the name of Haricárícá.

Vaiyácarána bhúshaṇá by Cóndá bháttá: on syntax and the philosophy of grammatical structure.

Bhúshaṇá sára darpaṇa by Hariballabhá: a commentary on the work last mentioned.

Vaiyácarána bhúshaṇá sára: an abridgment of the same work.

Laghu bhúshaṇá cánti by Baidyanáth'ha páyagunda: a commentary on that abridgment.

Vaiyácarána siddhánta manjúshá, by Nágéśá bháttá: on syntax and the philosophy of grammatical structure. Laghu vaiyácarána siddhánta manjúshá: an abridgment of the same.
Call by Baidyanātha Payagunda: a commentary on last mentioned abridgment.
Other treatises on construction logically considered, which are very numerous, are omitted as belonging more properly to the science of logic.
Ganapāta: lists of words comprehended in rules of grammar, under general classes.
Ganaratna mahādāhi: a collection of such lists, with a commentary.
Dhātupāta by Pāṇini: the roots or themes systematically arranged, with their indicatory letters and their interpretations.
Dhātupradīpa or Tantrapradīpa by Maitreya Rachshita: an illustration of the list of roots, with examples of their inflections.
Mādhavīya vr̥tti by Sāyaṇa Āchārya, in the name of Mādhava Āchārya: a copious exposition of the roots with their derivatives.
The Bhati cāvya, a poem describing the adventures of Rāma, may be considered as a grammatical work, having been purposely written for a practical instruction on grammar. It has several commentaries.
The Śīsād of Pāṇini and Niructa of Yāsca, with the commentaries on the Nighantu included in the last, are there omitted, as they are of little use, except in the reading of the Vēdas. Treatises on particular branches of etymology are also omitted, as not very generally consulted. Such is the Yān lugantu śirōmuki on the formation of frequentative verbs.
Numerous other works, belonging to this grammar, have not been ascertained to be extant, being at present known only through quotations from them: as the Pāñinīya māta darpaṇa quoted in the Prasāda; and many others cited in the Mādhavīya vr̥tti.
LIST OF SANSKRIT GRAMMARS,

The following belong to other Systems of Grammar.

Sārasvatī pracriyā by Anubhūti Swarūpāchārya: a grammar founded on seven hundred rules or aphorisms, pretended to have been received by the author from the goddess Sarasvatī. This grammar is much used in Hindustān proper.

A commentary on the same by Punjarāja.

Another by Mahībhāṭṭa.

Siddhānta chandrīca: another commentary on the same grammar.

Pada chandrīca: another, in which Pañini's aphorisms are also exhibited.

Haimavīcaraṇa by Hēmachandra or Hēmasūri. A Sanscrit grammar is cited under this title, which is probably the same with Hēmachandra's commentary on the Śabdāṇuśāsana, entitled Laghu vrītti; comprised in eight books, including in the last the anomalies of the Prākrit language as derived from the Sanscrit. (The Cāmadhēnu cites a Śabdānuśāsana by Abhinava Sācatāyana besides Hēmasūri's work.) This grammar is used by the Jains.

A commentary, without the author's name, is annexed to Hēmachandra's grammar.

Prācrita manorāma: an abridged commentary on the Prācrita chandrīca of Vararuchi; showing the anomalies of Prācrit from Sanscrit.

Cātānta or Calāpa: a grammar, of which the rules or aphorisms are ascribed to the god Čumāra. It is much used in Bengal.

Dvurgasinhē: a commentary on the above by Durga-

sinha; but stated in the introductory couplet to be the work of Sarva Varman, who is accordingly cited in Vopadeva's Cāmadhēnu.
Cātāntra vr̥tā tīcā by Durgasinha: an exposition of the above mentioned commentary. (The Cāmadihēnu quotes the Durga tīcā of Durgagupta, and the Cātāntra vistāra of Vardhamāna Miśra.)

Cātāntra panjica by Trilóchanañadāsa: a commentary on the same grammar.

Cālāpa tatvadrāha by Raghunandana Āchārya śirōmaṇī: another commentary on the same grammar.

Cātāntra chandaicā: another commentary on the same.

Chaitracuti by Vararuchi: another on the same.

Vyāc'hyā sāra by Harirāma Chacrāvartī: another commentary.

Vyāc'hyā sāra by Rāmadāsa: another, under the same title.

Other commentaries on the same grammar by Sushēna Caviṭāja, Ramānāṭha, Umāpati, Culañchandra, and Murārī.

Cātāntra parīśiśṭā by Śrīpatidatta: a supplement to the Cātāntra.

Parīśiśṭā prabōdha by Gopināṭha: a commentary on the above.

Parīśiśṭā siddhānta ratnācāra by Śivārāma Chacrāvartī: another on the same.

Cātāntra guṇa dhātu: the roots or themes systematically arranged for the Cātāntra.

Manorāma by Ramānāṭha: a commentary on that list of verbs.

Many other treatises belong to this grammar; as the Cātāntra Shatcaṅkara by Rahasanandī, the Cātāntra Undāli vr̥tā by Śivadasa, the Cātāntra chatushtaya pradīpa, Cātāntra dhātu ghoṣhā, Cātāntra sabdu mālā, &c. Saneshiptasāra by Cramadīśwara: a grammar, corrected by Jumaranandī and often cited under the title of Jaumara. This grammar is in use in Bengal.
A commentary on the above, by Góyíchandra.

Vyācāra dīpika by Nyāya Panchānana: an exposition of Góyíchandra's commentary.

Another exposition of the same commentary by Vansivadaṇa.

Durghata ghatana: another commentary on the Sancshipūtasāra.

Other commentaries on the same grammar, by different authors, as Gópāla Chacavartī, &c.

A supplement to Jumaranandi's corrections of the Sancshipūtasāra by Góyíchandra.

Other treatises appertain to this grammar, as Śabdaghóśha, Dhátughóśha, &c.

Mugdhabodha by Vopādeva: a grammar of the Sanscrit language, much studied in Bengal.

A commentary by the author of the grammar.

Another by Durgadāsa, entitled Subōdhiṇi.

One by Miśra, entitled Chāhālī.

Other commentaries by Rāmānanda, Rāma tarcavāgīśa, Madhusūdana, Dévidāsa, Rāmabhadrā, Rāmaprastāda tarcavāgīśa, Śrīballabhāchārya, Dayārāma vāchespati, Bhόlānāṭha, Cārtica siddhānta, Raticānta tarcavāgīśa, Gōvīnda Rāma, &c.

Mugdhabodha parāsita by Cāśiśvara: a supplement to the Mugdhabodha.

Another by Nandaciśora.

Cavicalpadruma by Vopādeva: an alphabetical catalogue of roots, arranged in verse.

Odva cāmadhēnu by the same author, explaining his own list of verbs.

Dhātu dīpikā by Durgadāsa: a commentary on the same catalogue of verbs.
Cavicalpadruma vyac'hya by Rāma Nyāyālancāra: another commentary on the same.

D'hituratnāvali by Rād'hācrīshṇa: a metrical catalogue of roots.
Cavirahasya by Helāyudha: exhibiting in verse examples of the most common verbs.
A commentary on the same.

Supadma by Padmanābha Datta: a grammar of Sanscrit. It is in use in some parts of Bengal.
Supadma macaranda or Macaranda: a commentary on the above, by Vishṇu Miśra.
Other commentaries by various authors: as Candarpā siddhānta, Caśīswara, Śrīdhara Chacravarti, Rāmachandra, &c.
Supadma parisishta: a supplement to the grammar.
Supadma dhātupāta by Padmanābha Datta: a list of themes or roots for the author's grammar, called Supadma. The same author added other appendages to his grammar, viz. Paribhāshā and Unādivrāti.
Other treatises belong to this grammar; as the Caśīswarī gāña, and its commentary by Rāmacānta.

Ratnamālā by Purushottama: a grammar used in Cāmarāpa.
Druta bōdha by Bharatamalla: a grammar, with a commentary on it by the same author. This and the following are not much in use.
Śudhāśubōdha by Rāmaśwara: another grammar with a commentary by the author himself.
Harināmāmrita by Jīvaghoṣha Swāmī: another, with a commentary.
LIST OF SANSCRIT GRAMMARS,

Chaitanyāmrīṭa: another, also accompanied by a commentary.
Cārīcāvaḷī by RĀMA NĀRĀYANA: a grammar in verse.
Prabhōda praśā paḷaṇaṇaṇa: a grammar.
Rāpamāla by VIMA LA SARA S WATI: another grammar.
Jnyānāmrīṭa by CĀŚIŚWARA: another.
Āṣubōdhā, Lāghubōdhā, Śīghrabōdhā, Sārāmrīṭa, Divya,
Padāvalī, Udā; and many other grammars by various authors.

Besides VARARUCHI'S Prācṛīta praśā or Chandricā,
and BHĀMAHA'S commentary entitled Manorāma vrītti
before-mentioned, other grammars of Prācṛīt are known:
as the Prācṛīta cāmadhenu, Prācṛīta lancēswara, &c.

Authorities of Sanscrit grammar, cited in books which
have been used for the present volume, but not otherwise
known, nor in any manner ascertained to be now extant,
have been excluded from the foregoing list. Many of them
could not be confidently referred to any particular system
of grammar; and, in numerous instances, a doubt arises,
whether the same work be not quoted under different
names, in different places: sometimes, under the title of
the book; at other times, under the designation of the
author. A few of these names, which occur most fre-
quently, will he here enumerated, with a notice of the au-
thority by which they are quoted.

PĀṆIṆI himself names Śācālyā, GĀRGYA, CĀŚYAPA,
GĀLAVA, ĀPIŚALI, ŚACĀTĀYANA, BHĀRADWĀJA, ĀŚ-
walāyana, SP'HōṬĀYANA, and CHĀCRĀVARMAṆA.
The Mādhaviya vrītti quotes, among many other au-
thors, CHANDRA, ĀPIŚALI, ŚACĀTĀYANA, ĀṬRĒYA,
DHAṆAPALA, CAUŚIṆA, PURUSHACĀRA, SUDHĀCĀRA,
Madhusúdana, Yádava, Bháguri, Śríbhadra, Śivádëva, Rámadëva mísra, Déva, Nándí, Ráma, Bhíma, Bhója, Hélárája, Subhúti chandra, Púrña chandra, Yajñyanáráyaña, Cañwa, Swámí, Césava swámí, Śiva swámí, Dhúrta swámí, Cshíra swámí (this last is cited in the Prasáda as author of the Cshíra tarangini). The Mádhaviya likewise frequently cites the Tarangini, Ábharaña, Sábdicábharana, Samanta, Pracriya ratna and Pratípa.

The Várticas of Vyághra bhúti and Vyághra páda are mentioned by many authors; and so is the Dhátu páráyana. Vópadéva, in the Cámadhénu, has quoted the Panjicá pradípa of Cúsala (belonging perhaps to the grammar called Cátantra;) and the Saraswati cántábharana (ascribed by some to Bhója Déva.) The Prasáda often cites the RámaVyácaraña, and seems to name Vópadéva as the author of it.

The following are, among others, noticed in the Dhá- tu dípicá of Durgá dása, viz. Bhattacharjé, Góvinda bháti, Chaturbhuja, Gadisirhana, Góvardhana and Sarañadéva.
III.

Preface to the Author's Edition of the Amera cósha.

[Calcutta, 1808. 4to.]

The compilation of a Sanscrit dictionary having been undertaken early after the institution of the college of Fort William, it was at the same time thought advisable to print, in Sanscrit and English, the work which has been chosen for the basis of that compilation, as well for the sake of exhibiting an original authority to which reference will be frequently necessary, as with the view of furnishing an useful vocabulary, which might serve until an ampler dictionary could be prepared and published.

The celebrated Amera cósha, or Vocabulary of Sanscrit by Amera Sinha, is, by the unanimous suffrage of the learned, the best guide to the acceptations of nouns in Sanscrit. The work of Páñini on etymology is rivalled by other grammars, some of which have even obtained the preference in the opinion of the learned of particular provinces; but Amera's vocabulary has prevailed wherever the Sanscrit language is cultivated, and the numerous other vocabularies which remain, are consulted only where Amera's is either silent or defective. It has employed the industry of innumerable commentators, while none of the others (with the single exception of Hémacandara's) have been interpreted even by one annotator. Such decided preference for the Amera cósha, and the consequent frequency of quotations from it, determined the selection of this as the basis of an alphabetical dictionary, and sug-
gested the expediency of also publishing the original text with an English interpretation.

Like other vocabularies of Sanscrit, that of AMERA is in metre; and a considerable degree of knowledge of the language becomes requisite to discriminate the words from their interpretations, and to separate them from contiguous terms which affect their initials and finals. On this account, and to adapt the work to the use of the English student, the words, of which the sense is exhibited, are disjoined from their interpretation (which is included between crotchets); and the close of each word is marked by a roman letter over it indicating the gender of the noun. Where a letter has been permuted according to the Sanscrit system of orthography, a dot is placed under the line, to intimate that a letter is there altered or omitted: and a marginal note is added, exhibiting the radical final of the noun, or its initial, in every instance where either of them is so far disguised by permutation as not to be easily recognized upon a slight knowledge of the rudiments of the language, and of its orthography. An explanation in English is given in the margin, and completed when necessary at the foot of the page. The different interpretations proposed by the several commentators, and the variations in orthography remarked by them, are also specified in the same place.

According to the original plan of the present publication, the variations in the reading of the text (for which a careful collation has been made of several copies and of numerous commentaries) are noticed only where they affect the interpretation of a word or its orthography. It was not at first intended to insert those differences which are remarked by commentators upon other authority, and not upon the ground of any variation in the text itself. However, the utility of indicating such differences was after-
wards thought to counterbalance any inconvenience attending it; and after some progress had been made at the press, this and other additions to the original design were admitted, which have rendered a supplement necessary to supply omissions in the first chapters, and complete the work upon an uniform plan.

To avoid too great an increase of the volume, the various readings and interpretations are rather hinted than fully set forth: it has been judged sufficient to state the result, as the notes would have been too much lengthened, if the ground of disagreement had been every where exhibited and explained. For the same reason, authorities have not been cited by name. The mention of the particular commentator in each instance would have enlarged the notes, with very little advantage, as the means of verifying authorities are as effectually furnished by an enumeration of the works which have been employed and consulted. They are as follow:

I. The text of the Amera cόsha.

This vocabulary, comprised in three books, is frequently cited under the title of Tricánda,* sometimes under the denomination of Abhidhána (nouns), from its subject; often under that of Amera cόsha, from the name of the author. The commentators are indeed unanimous in ascribing it to AMERA SINHA. He appears to have belonged to the sect of BUDDHA (though this be denied by some of his scholiasts), and is reputed to have lived in the reign of VICRAMÁDITYA; and he is expressly named among the

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* i. e. the Three Books. But that name properly appertains to a more ancient vocabulary, which is mentioned by the commentaries on the Amera cόsha, among the works from which this is supposed to have been compiled.
ornaments of the court of Rájá Bhója,* one of the many princes to whom that title has been assigned. If this mention of him be accurate, he must have lived not more than eight hundred years ago; for a poem entitled Subhá-
shita ratna sandóha, by a Jaina author named A Mitaga-
Gáti, is dated in the year 1050 from the death of Vicra-
Máditya, and in the reign of Múna, who was uncle and predecessor of Rájá Bhója. It, however, appears in-
consistent with the inscription at Buddha gayá which is dated in the year 1005 of the era of Vicramáditya, and in
which mention is made of Amera déva, probably the same with the author of the vocabulary. From the fre-
quent instances of anachronism, both in sacred and profane
story as current among the Hindus, more confidence seems
due to the inscription than to any popular tales concerning
Rájá Bhója; and the Amera cósha may be considered
as at least nine hundred years old, and possibly more ancient.

It is intimated in the author's own preface that the work
was compiled from more ancient vocabularies: his com-
mentators instance the Tricánda,† Utpáliní, Rábhasa
and Cátáváyana, as furnishing information on the nouns,
and Vyádi and Vararúchi on the genders. The last
mentioned of these authors is reputed contemporary with
Vicramáditya, and consequently with Amera Sinha
himself.

The copies of the original which have been employed in
the correction of the text, in the present publication, are,

1st. A transcript made for my use from an ancient cor-
rected copy in the Tírhatúya character, and collated by
me with a copy in Dévanágarí, which had been carefully
examined by Sir William Jones. He had inserted in it

* In the Bhója prabandha. † See a preceding note.
an English interpretation, of which also I reserved a copy, and have derived great assistance from it in the present publication.

2d. A transcript in Dévanágarí character, with a commentary and notes in the Cánara dialect. It contains numerous passages, which are unnoticed in the most approved commentaries, and which are accordingly omitted in the present edition.

3d. Another copy in the Dévanágarí character, with a brief and imperfect interpretation in Hindí.

4th. A copy in the Bengal character, with marginal notes explanatory of the text.

5th. A copy in duplicate, accompanied by a Sanscrít commentary, which will be forthwith mentioned (that of Ramásrama). It contains a few passages not noticed by most of the commentators. They have been, however, retained on the authority of this scholiast. A like remark is applicable to certain other passages expounded in some commentaries, but not in others. All such have been retained, where the authority itself has been deemed good.

6th. Recourse has been occasionally had to other copies of the text in the possession of natives, whenever it has been thought any ways requisite.

II. Commentaries on the Amera cósha.

1. At the head of the commentaries which have been used, must be placed that of Ráya Mucúta, (or Vrîhas-pati, surnamed Ráya Mucúta Mañi). This work, entitled Pudachandricd, was compiled, as the author himself informs us, from sixteen earlier commentaries, to many of which he repeatedly refers; especially those of Cshíra swámí, Subhúti, Hadda Chandra, Calinga, Cón-
CATA, SARVADHARA, and the Vyāchryamrita, Tīcāsarvasva, &c.*

Its age is ascertained from the incidental mention of a date, viz. 1353 Śaera, or 4532 of the Cali yuga, corresponding to A. D. 1481.

Though the derivations in Mucuta’s commentary be often inaccurate, and other errors also have been remarked by later compilers, its authority is in general great; and accordingly it has been carefully consulted under every article of the present work.

2. Among the earlier commentaries named by Rāya Mucuta, that of Cṣhīra Swāmī is the only one, which has been examined in the progress of this compilation. It is a work of considerable merit; and is still in general use in some provinces of India, although the interpretations not unfrequently differ from those commonly received.

3. The Vyāchya pradīpa, a modern commentary by Rāmaśrama or by Bhānudīcshita (for copies differ as to the name of the author), is the work of a grammarian of the school of Benares. He continually refers to Rāya Mucuta and to Swāmī; and his work serves to confirm their scholia where accurate, and to correct them where erroneous. It has been consulted at every line.

4. The Vyāchya pradīpa, by Achyuta Upādhyāya, is a concise and accurate exposition of the text; but adds little to the information furnished by the works above-mentioned. It has been, however, occasionally consulted.

In these four commentaries, the derivations are given

* The following names may be selected from Mucuta’s quotations, to complete the number of sixteen: Mādhavi, Madhu mādhavi, Sarvananda, Abhinanda, Rājadēva, Gōverdhana, Drāvida, Bhōjaraśa. But some of these appear to be separate works, rather than commentaries on the Ame ra cōśa. Mucuta occasionally cites the most celebrated grammarians, as Paṇini, Jayādiṭya, Jīnendra, Maitrṣya rācshita, Purushottama, Mādhava, &c.
according to Pāṇini's system. In others, which are next to be enumerated, various popular grammars are followed for the etymologies. But, as the derivations of the words are not included in the plan of the present work, being reserved for a place in the intended alphabetical dictionary of Sanskrit, those commentaries have not been the less useful in regard to the information which was sought in them.

5. The commentary of Bharata Malla (entitled Mugdhabodhini) has been as regularly consulted as those of Mucuta and Ramastrama. It is, indeed, a very excellent work; copious and clear, and particularly full upon the variations of orthography according to different readings or different authorities: etymologies are given conformably with Vopadesa's system of grammar. The author flourished in the middle of last century.

6. The Sūra sundari, by Mathurēsa, has been much used. It is perspicuous and abounds in quotations from other commentaries, and is therefore a copious source of information on the various interpretations and readings of the text. The Supadma is the grammar followed in the derivations stated by this commentator. Mathurēsa is author likewise of a vocabulary in verse, entitled Sabdaratnadvali, arranged in the same order with the Amera cōsha, and which might serve therefore as a commentary on that work. It was compiled under the patronage of a Musleman chieftain, Murchḥa Khān, whose name is prefixed to it. The author wrote not more than 150 years ago.*

7. The Padārīha Caumudī, by Nārāyaṇa Chacravarti, is another commentary of considerable merit, which has been frequently consulted. The Calapa is the grammar followed in the etymologies here exhibited.

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* His work contains the date 1588 Śāca, or 1666.
8. A commentary by Ramánat'ha Vidýá Váchespáti, entitled Trícánda vivéca, is peculiarly copious on the variations of orthography, and is otherwise a work affording much useful information.

9. Another commentary, which has been constantly employed, is that by Nílacañt'ha. It is full and satisfactory on most points for which reference is usually made to the expositors of the Amera cósha.

10. The commentary of Rámatarca Vágiśa has been uniformly consulted throughout the work. It was recommended for its accuracy; but has furnished little information, being busied chiefly with etymology. This, like the preceding, follows the grammar entitled Calápa.

Other commentaries were also collected for occasional reference in the progress of this work; but have not been employed, being found to contain no information which was not also furnished, and that more amply, by the scholiasts above mentioned.

The list of them contained in the subjoined note may therefore suffice.*

III. Sanscrit dictionaries and vocabularies by other authors.

Throughout the numerous commentaries on the Amera cósha, the text itself is corrected or confirmed, and the interpretations and remarks of the commentators supported, by reference to other Sanscrit vocabularies. They are often cited by the scholiasts for the emendation of the text in

* Caumudi by Nayanánanda; Trícánda chintámani by Rághunat'ha Chácravartí; both according to Páñini's system of etymology. Paśthmya caumudi by RámaprasádaTarçálancára; Pada manjari by Lócanat'ha; both following the grammatical system of the Calápa. Pradípa manjari by Rámásráma, a jejune interpretation of the text. Príhat hárávali by Rámsáwa. Also commentaries by Cásamánasa, Trilóchanadása, Sundáránanda, Vánadíyabhattá, Vişvanat'ha, Gópála Chácravartí, Góvindánanda, Rámánanda, Bhólanat'ha, &c.
regard to the gender of a noun, and not less frequently for a variation of orthography, or for a difference of interpretation. The authority quoted has been in general consulted, before any use has been made of the quotations; or, where the original work cannot now be procured, the agreement of commentators has been admitted as authenticating the passage. This has been particularly attended to in the chapter containing homonymous words, it having been judged useful to introduce into the notes of that chapter the numerous additional acceptations stated in other dictionaries, and understood to be alluded to in the Amera cóśha.

The dictionaries which have been consulted are, 1st. The Médini, an alphabetical dictionary of homonymous terms by Médinícara.

2d. The Viśva pracása by Mahéśwara Vaidya, a similar dictionary, but less accurate and not so well arranged. It is the ground-work of the Médini, which is an improved and corrected work of great authority. Both are very frequently cited by the commentators.

3. The Haima, a dictionary by Héma Chandra, in two parts; one containing synonymous words arranged in six chapters; the other containing homonymous terms in alphabetical order. Both are works of great excellence.

4. The Abhidhána ratnamálá, a vocabulary by Helá-yudha, in five chapters; the last of which relates to words having many acceptations. It is too concise for general use, but is sometimes quoted.

5. The Dharaní, a vocabulary of words bearing many senses. It is less copious than the Médini and Haima; but being frequently cited by commentators, has been necessarily consulted.

6. The Tricánda sēsha, or supplement to the Amera cóśha, by Purushottama Déva.
7. The Hárāvalī of the same author.

The last of these two supplements to Amera, being a collection of uncommon words, has not been much employed for the present publication. The other has been more used. Both are of considerable authority.

The reader will find in the notes a list of other dictionaries quoted by the commentators, but the quotations of which have not been verified by reference to the originals, as these have not been procurable.*

Works under the title of Varñadésandá, Dwirúpa, and Unddí, have indeed been procured; but not the same with the books cited, many different compilations being current under those titles. The first relates to words, the orthography of which is likely to be mistaken from a confusion of similar letters; the second exhibits words which are spelt in more than one way; the third relates to a certain class of derivatives separately noticed by grammarians.

IV. Grammatical works.

Grammar is so intimately connected with the subject of this publication, that it has been of course necessary to advert to the works of grammarians. But as they are regularly cited by the commentators, it is needless to name them as authorities, since nothing will be found to have been taken from this source, which is not countenanced by some passage in the commentaries on the Amera cósha.

V. Treatises on the roots of Sanscrīt.

Verbs not being exhibited in the Amera cósha, which is a vocabulary of nouns only, the treatises of Maitréya,

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Mádhava, and others, on the Sanscrit roots, though furnishing important materials towards a complete dictionary of the language, have been very little employed in the present work; and a particular reference to them was unnecessary, as authority will be found in the commentaries on Amera, for any thing which may have been taken from those treatises.

VI. The Scholia of classic writings.

Passages from the works of celebrated writers are cited by the commentators on the Amera cóśha, and the scholiasts of classic poems frequently quote dictionaries in support of their interpretation of difficult passages. In the compilation of a copious Sanscrit dictionary ample use may be made of the scholia. They have been employed for the present publication so far only as they are expressly cited by the principal commentaries on the Amera cóśha itself.

Should the reader be desirous of verifying the authorities upon which the interpretation and notes are grounded, he will in general find the information sought by him in some one of the ten commentaries of AMERA, which have been before named, and will rarely have occasion to proceed beyond those which have been specified as the works regularly consulted.

In regard to plants and animals, and other objects of natural history, noticed in different chapters of this vocabulary, and especially in the 4th, 5th, and 9th chapters of the second book, it is proper to observe, that the ascertain-ment of them generally depends on the correctness of the corresponding vernacular names. The commentators seldom furnish any description or other means of ascertain-ment besides the current denomination in a provincial language. A view of the animal, or an examination of the plant, known
to the vulgar under the denomination, enables a person conversant with natural history to determine its name according to the received nomenclature of European Botany and Zoology: but neither my enquiries, nor those of other gentlemen, who have liberally communicated the information collected by them,* nor the previous researches of Sir William Jones, have yet discovered all the plants and animals, of which the names are mentioned by the commentators on the Amera cósha; and even in regard to those which have been seen by us, a source of error remains in the inaccuracy of the commentators themselves, as is proved by the circumstance of their frequent disagreement. It must be therefore understood, that the correspondence of the Sanscrit names with the generic and specific names in natural history is in many instances doubtful. When the uncertainty is great, it has usually been so expressed; but errors may exist where none have been apprehended.

It is necessary likewise to inform the reader, that many of the plants, and some animals (especially fish), have not been described in any work yet published. Of such, the names have been taken from the manuscripts of Dr. Roxburgh and Dr. F. Buchanan.

Having explained the plan and design of this edition of the Amera cósha, I have only further to state, that the delay which has arisen since it was commenced (now more than five years) has been partly occasioned by my distance from the press (the work being printed by Mr. Carey at Serampoor), and partly by avocations which have retarded the progress of collating the different copies of the text and commentaries: a task, the labour of which may be judged by those who have been engaged in similar undertakings.

Calcutta, December, 1807.

* Drs. Roxburgh, F. Buchanan, and W. Hunter: and Mr. William Carey.
III.

On Sanscrit and Pracrit Poetry.

[From the Asiatic Researches, vol. x. p. 389—474. Calcutta, 1808. 4to.]

The design of the present essay is not an enumeration of the poetical compositions current among the Hindus, nor an examination of their poetry by maxims of criticism recognized in Europe, or by rules of composition taught in their own treatises of rhetoric; but to exhibit the laws of versification, together with brief notices of the most celebrated poems in which these have been exemplified.

An inquiry into the prosody of the ancient and learned language of India will not be deemed an unnecessary introduction to the extracts from Indian poems, which may be occasionally inserted in the supplementary volumes of Asiatic Researches; and our transactions record more than one instance of the aid which was derived from a knowledge of Sanscrit prosody, in deyphering passages rendered obscure by the obsoleteness of the character, or by the inaccuracy of the transcript.* It will be found similarly useful by every person who studies that language, since manuscripts are in general grossly incorrect; and a familiarity with the metre will frequently assist the reader in restoring the text where it has been corrupted. Even to those who are unacquainted with the language, a concise explanation of the Indian system of prosody may be curious, since the artifice of its construction is peculiar, and not

devout of ingenuity; and the prosody of Sanscrit will be found to be richer than that of any other known language, in variations of metre, regulated either by quantity or by number of syllables, both with and without rhyme, and subject to laws imposing in some instances rigid restrictions, in others allowing ample latitude. I am prompted by these considerations to undertake the explanation of that system, premising a few remarks on the original works in which it is taught, and adding notices of the poems from which examples are selected.

The rules of prosody are contained in Sūtras, or brief aphorisms, the reputed author of which is Pingalānāga, a fabulous being, represented by mythologists in the shape of a serpent; and the same who, under the title of Patanjali, is the supposed author of the Mahābhāṣyā, or great commentary on grammar, and also of the text of the Yāga sūtra;* and to whom likewise the text or the commentary of the Jyotish annexed to the Vēdas† appears to be attributed. The aphorisms of Pingalāchārya, as he is sometimes called, on the prosody of Sanscrit (exclusive of the rules in Prācīt likewise ascribed to him), are collected into eight books, the first of which allots names, or rather literal marks, to feet consisting of one, two, or three syllables. The second book teaches the manner, in which passages of the Vēdas are measured. The third explains the variations in the subdivision of the couplet and stanza. The fourth treats of profane poetry, and especially of verses, in which the number of syllables, or their quantity, is not uniform. The fifth, sixth, and se-

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* Or Sānc'hya system of philosophy, distinguished from that of Capila. [See vol. i. p. 235, &c.]

† In the subscription to the only copy of this commentary which I have seen, it is ascribed to Sēshanāga; but, in the body of the work, the commentator calls himself Sómácarā.
venth, exhibit metres of that sort which has been called monoschematic, or uniform, because the same feet recur invariably in the same places. The eighth and last book serves as an appendix to the whole, and contains rules for computing all the possible combinations of long and short syllables in verse of any length.

This author cites earlier writers on prosody, whose works appear to have been lost: such as Saitava, Craushṭica, Tāṇḍin, and other ancient sages, Yāsca, Cāṣya-pa, &c.

Pingala’s text has been interpreted by various commentators; and, among others, by Ṣhelāyudha bhatta, author of an excellent gloss entitled Mrīta sanjīvinī.* It is the work on which I have chiefly relied. A more modern commentary, or rather a paraphrase in verse, by Nārāyana bhatta tāra, under the title of Vṛttōcī ratna, presents the singularity of being interpreted throughout in a double sense, by the author himself, in a further gloss entitled Parīṣhā.

The Agni purāṇa is quoted for a complete system of prosody,† founded apparently on Pingala’s aphorisms; but which serves to correct or to supply the text in many places; and which is accordingly used for that purpose by commentators. Original treatises likewise have been composed by various authors;‡ and, among others, by the

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* I possess three copies of it, two of which are apparently ancient; but they have no dates.
† It is stated by the authors who quote it (Nārāyana bhatta and others), to be an extract from the Agni purāṇa; but I have not been able to verify its place in that Purāṇa.
‡ Such are the Vādī bhūshana, Vṛttā derpaṇa Vṛttā caumudi, and Vṛttā reṇācara, with the Ch’handō manjari, Ch’handō marītānā, Ch’handō mālā, Ch’handō nivitti, Ch’handō gōvinda, and several tracts under the title of Vṛttā-muctāvalī, besides treatises included in works on other subjects. For example, Varāhanihira’s system of astrology, which contains a chapter on prosody.
celebrated poet CÁLIDÁSA. In a short treatise entitled Śruta bódha, this poet teaches the laws of versification in the very metre to which they relate; and has thus united the example with the precept. The same mode has been also practised by many other writers on prosody; and in particular, by PÍNGALA’s commentator NÁRÁYÁNA BHÁTTA; and by the authors of the Vṛttta retnácará and Vṛttta derpaná.

CÁLIDÁSA’s Śruta bódha exhibits only the most common sorts of metre, and is founded on PÍNGALA’s Prácrít rules of prosody; as has been remarked by one of the commentators* on the Vṛttta retnácará.

The rules generally cited under the title of Prácrít Pingala, have been explained in a metrical paraphrase, teaching the construction of each species of metre in a stanza of the same measure, and subjoining select examples. This Prácrít paraphrase, entitled Pingala vr̥tti, is quoted under the name of HAMMÍRA,† who is celebrated in more than one passage given as examples of metre, and who probably patronized the author. It has been imitated in a modern Sanskrit treatise on Prácrít prosody, entitled Vṛttta muñčávalí;‡ and has been copiously explained in a Sanskrit commentary named Pingala pracása.§

Though relative to Prácrít prosody, the rules are appli-

The Vṛttta retnácará of CÉDARA BHÁTTA, with its commentaries by DIVÁCARA BHÁTTA, NÁRÁYÁNA BHÁTTA, and HÁRI BHÁŚCARA, has been the most consulted for the present treatise. The Vṛttta derpaná, which relates chiefly to Prácrít prosody, has been also much employed.

* DIVÁCARA BHÁTTA.
† In the commentary on the Vṛtttócti ratna.
‡ The author, DURGÁDÁTTA, was patronized by the Hindábáti princes of Bundéchand. The examples, which like the text are Sanskrit in Prácrít measure, are in praise of these chieftains.
§ By VIŚVARAṬHA.

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cable, for the most part, to Sanscrit prosody also: since the laws of versification in both languages are nearly the same.

The Prácrít, here meant, is the language usually employed under this name by dramatic writers; and not, in a more general sense of the term, any regular provincial dialect corrupted from Sanscrit. Hémačandra in his grammar of Prácrít, declares it to be so called because it is derived from Sanscrit.*

Accordingly his and other grammars of the language consist of rules for the transformation of Sanscrit words into the derivative tongue: and the specimens of it in the Indian dramas, as well as in the books of the Jains, exhibit few words which may not be traced to a Sanscrit origin. This is equally true of the several dialects of Prácrít: viz. Śauraséni or language of Śuraséna,† and Mágadhí or dialect of Magadhā;‡ which according to grammarians, who give rules for deducing the first from Sanscrit, and the second from the first,§ or both from Sanscrit,|| are dialects nearly allied to Prácrít, and regularly formed by permutations, for which the rules are stated by them. The same may be said of the Paisáchí as a language, (and distinguished from the jargon or gibberish which either dramatic writers; or actors exhibiting their dramas, sometimes put into the mouths of demons); for

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* "Prácrítih sanscritam; tatrabhavam tata ágatam vá prácrítam."
† Cullúca Bháttā (on Menu 2. 19.) says, that Śuraséna is the country of Mathurá.
‡ Cícata or Bihár. But it does not appear, that either this, or the preceding dialect, is now spoken in the country from which it takes its name. Specimens of both are frequent in the Indian dramas.
§ Vararuchi, and his commentator Bhámaaha.
|| Hémačandra, who, after stating the special permutations of these dialects as derived from Sanscrit, observes in both places, that the rest of the permutations are the same with those of Prácrít.
the grammarians of Prácrít teach the manner of forming the Paiśáchi* from the dialect called Śauraséní.† That remark may be also extended to Apabhraṃsa, as a fixed language partaking of Prácrít and Śauraséní, but deducing many terms immediately from the Sanscrit under rules of permutation peculiar to itself.‡

The affinity of these dialects of Prácrít to the Sanscrit and to each other is so great, that they reciprocally borrow, notwithstanding their own particular rules, terms permuted in the manner of other dialects, and even admit, without alteration, words inflected according to the Sanscrit grammar.§ They may be therefore considered as dialects of a single language, the Prácrít or derivative tongue; so termed with reference to Sanscrit, from which it is derived.

Besides these cognate dialects, the dramatic writers introduced other languages as spoken by different persons of the drama. Such, according to the enumeration in the Sáhitya derpaṇa,|| are the Dácshínátya,¶ or language used in the south of India; the Drávidí, or dialect of the southern extremity of the peninsula; the Ávanticá (probably the language of Málava);** the Ardha mágadhí,

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* Or language of the Pí ṭ chás. “Píśáchánám bháṣá Paiśáchi,”

BHÁMAHA ON VARARUCHI.

† VARARUCHI and HÉMACANDRA. The last mentioned author notices a variation of this dialect under the name of Chulícápaiśáchi, which differs very little from the proper Paiśáchi.

‡ It is taught under this name by HÉMACANDRA, among other dialects of Prácrít. But the name usually signifies ungrammatical language.

§ HÉMACANDRA ad finem. ||Ch. 6. [p. 180, ed. Calc.]

¶ Same with Páidarbhí, according to the commentator of the Sáhitya derpaṇa. The country of Páidarbhí is said to be the modern Berar proper.

** Ávanti is another name of Ujjayání.
distinguished from Māgadhī properly so called; the Bāhlicabhāṣā (perhaps the language of Balkh in the Transoxiana); the Mahārāṣṭrī, or dialect of the Marhattas; the Prāchya, or language employed in the east of India;† the Abhirī and Chandalī, which, from their names, seem to be dialects used by herdsmen and by persons of the lowest tribes; the Sāncarī (Śācārī) and Śabari, concerning which nothing satisfactory can be at present suggested; and generally any provincial dialect.

It is not to be supposed, that the Pracrīt rules of prosody, as taught by Pingala, are suited to all these languages: but it is probable that they were framed for the same dialect of Pracrīt, in which they are composed; and they are applicable to those cognate dialects, which differ much less from each other (being very easily confounded), than they all do from Sanscrit, their acknowledged common parent. Generally those rules may be considered applicable to all the languages comprehended under the designation of Pracrīt,‡ as derivative from Sanscrit; and certainly so to the vernacular tongues of the ten nations of Hindus now inhabiting India. A writer on Sanscrit prosody§ pronounces the various kinds of metre to be admissible in the provincial languages, and has

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* Bāhlica or Bahllica (for the word is spelt variously) is a country famous for the breed of horses. *Amera*, 2. 8. 45. It appears to be situated north of India, being mentioned in enumerations of countries, with Turushca, C'hasa, Cāsmira, &c. (*Hāmchandra*, 1. 4. 25. *Trigandha* tēsha, 2. 1. 9.)

† The commentator on the Śāhitya dēparaṅa (*Rāma charaṅa*), interprets Prāchya by Gauḍiṅyā; meaning, no doubt, the language of Bengal. He was himself a native of this province; and his work is modern, being dated Ṣāca 1622 (A. D. 1700).


§ Nārāyaṇa Bhāṭṭa in a commentary on the *Vṛttā retnācara*, written in Samvat 1602 (A. D. 1546).
quoted examples in those of Mahārāṣṭra, Gurjara, and Cānyacakṣa. The last mentioned, which is the same with the old Hindī, as is demonstrated by this specimen of it, might furnish very numerous instances; especially the Hindī poetry of Čāśava Dāsa,* who has studiously employed a great variety of metre. Some examples will accordingly be quoted from the most distinguished Hindī poets. The sacred books of the Sikhs, composed in a Penjābī dialect, which is undoubtedly derived from the ancient Śāreswata,† abound in specimens of such metre. The language of Mithilā, and its kindred tongue, which prevails in Bengal, also supply proof of the aptitude of Sanscrit prosody: and the same is probably true of the other four national languages.‡

Pingala's rules of Sanscrit prosody are expressed with singular brevity. The artifice by which this has been effected is the use of single letters to denote the feet or the syllables. Thus l, the initial of a word signifying short (laghu.), indicates a short syllable: g, for a similar reason,§ intends a long one. The combinations of these two letters denote the several disyllables: lg signifying an iambic; gl a trochaeus or choreus; gg a spondee; ll a pyrrhichius. The letters m, y, r, s, t, j, ṣ, and n, mark all the trisyllabic feet, from three long syllables to as many short. A Sanscrit verse is generally scanned by these last-mentioned feet, with the addition of either a disyllable or a mono-

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* Contemporary with Jehangir and Shah Jahan.
† The remaining Śāreswata Brāhmaṇas inhabit chiefly the Penjāb.
‡ Those of Drāvida, Carīḍāca, Tēlinga, and Odra or Udiya. I omit Gaura. The Brāhmaṇas bearing this national designation are settled in the districts around Delhi: but, unless theirs be the language of Mat'hrā, it is not easy to assign to them a particular national tongue.
§ Being the initial of guru, long.
syllable at the close of the verse, if necessary. This may be rendered plain by an example taken from the Greek and Latin prosody.

Scanned in the Indian manner, a phalaeucian verse, instead of a sponde, a dactyl and three trochees, would be measured by a molossus, an anapæst, an amphibrachys and a trochee; expressed thus, \textit{m. s. j. g. l.} A sapphic verse would be similarly measured by a cretic, an antibacchius, an amphibrachys and a trochee; written \textit{r. t. j. g. l.}

To avoid the too frequent use of uncommon terms, I shall, in describing the different sorts of Sanscrit metre, occasionally adopt a mode of stating the measure more consonant to the Greek and Latin prosody, in which the iambic, trochee, and sponde, dactyl, anapæst, and tribrachys, are the only feet of two or three syllables which are commonly employed.

In Prācrīt prosody the variety of feet is much greater: verses being scanned by feet of different lengths, from two \textit{mātrās} (two short syllables or one long), to three, four, five, and even six \textit{mātrās} or instants. These various descriptions of feet have been classed, and denominated, by the writers on this branch of prosody.

The verse, according to the Sanscrit system of prosody, is the component part of a couplet, stanza, or strophe, commonly named a \textit{slōca}, although this term be sometimes restricted to one sort of metre, as will be subsequently shown on the authority of Cālidāsa. The stanza or strophe consists usually of four verses denominated \textit{pāḍa}; or, considered as a couplet, it comprises two verses subdivided into \textit{pāḍas} or measures. Whether it be deemed a stanza or a couplet, its half, called \textit{ardhaślōca}, contains usually two \textit{pāḍas}; and in general the pauses of the sense correspond with the principal pauses of the metre, which are accordingly indicated by lines of separation at the
close of the slóca and of its hemistich. When the sense is suspended to the close of a second slóca, the double stanza is denominated yugma; while one, comprising a greater number of measures, is termed culaca. In common with others, I have sometimes translated slóca by "verse," or by "couplet;" but, in prosody, it can only be considered as a stanza, though the pauses are not always very perfectly marked until the close of the first half: and, in conformity to the Indian system, it is generally treated as a tetrasstich, though some kinds of regular metre have uniform pauses, which might permit a division of the stanza into eight, twelve, and even sixteen verses.

In Prácrít prosody, a greater variety is admitted in the length of the stanza; some species of metre being restricted to a true couplet, and others extended to stanzas of six and even sixteen verses: independently of pauses, which, being usually marked by rhyme, would justify the farther subdivision of the stanza into as many verses as there are pauses. Even in Sanscrit prosody, instances occur of stanzas avowedly comprising a greater or a less number of verses than four: as three, five, six, &c. But these are merely exceptions to the general rule.

Concerning the length of the vowels in Sanscrit verse, since none are ambiguous, it is only necessary to remark, that the comparative length of syllables is determined by the allotment of one instant or mátrá to a short syllable, and two to a long one; that a naturally short vowel becomes long in prosody when it is followed by a double or conjunct consonant;* and that the last syllable of a verse

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* Or by the nasal termed Anuswára, or the aspirate Visarga. By poetical license, a vowel may be short before certain conjuncts (viz. ः and ः; as also ः and ः). This license has been borrowed from Prácrít prosody, by the rules of which a vowel is allowed to
is either long or short, according to the exigence of the metre,* whatever may be its natural length.

_Sanscrit_ prosody admits two sorts of metre. One governed by the number of syllables; and which is mostly uniform or monoschematic in profane poetry, but altogether arbitrary in various metrical passages of the _Védas_. The other is, in fact, measured by feet, like the hexameters of Greek and Latin: but only one sort of this metre, which is denominated _Áryá_, is acknowledged to be so regulated; while another sort is governed by the number of syllabic instants or _mátrás_.

I. _Gñach’handas_, or metre regulated by feet.

**ÁRYÁ or GÁT’HÁ.**

The metre named _Áryá_, or in _Prácrit_, Gáhá, from the _Sanscrit_ Gát’há, is measured by feet denominated _gaña_, or _mátrágana_, which are equivalent to two long syllables or to four short: it is described as a couplet, in which the first verse contains seven and a-half feet; and the sixth foot must consist of a long syllable between two short, or else of four short; while the odd feet (1st, 3d, 5th, and 7th) must never be amphibrachys.† In the second verse of the

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* This rule of prosody is applicable to any verse of the tetrasyllabic: but it is considered by writers on rhetoric inelegant to use the privilege in the uneven verses; and they thus restrict the rule to the close of the stanza and of its half, especially in the more rigid species of regular metre.

† If the rule be violated, the metre is named _Gurviñiya_; but this is reproved by writers on prosody.
couplet, the sixth foot (for here too it retains that name) consists of a single short syllable. Consequently the proportion of syllabic instants in the long and short verses is thirty to twenty-seven.* The same metre has, with some propriety, been described as a stanza of four verses:† for it is subdivided by its pauses into four pādās, which have the usual privilege of giving to the last syllable, whether naturally long or short, the length required by the metre. The pause is commonly restricted to the close of the third foot, and the measure is in this case denominated Paṭ'hyā; but if the pause be placed otherwise in either verse, or in both of them, the metre is named Vīpulā.

A particular sort of this measure, deduced from either species above described, is called Chapalā; and the laws of its construction require, that the second and fourth feet should be amphibrachys, and that the first foot should be either a spondee or an anapaest, and the fifth a dactyl or a spondee. The first verse of the couplet, the second, or both, may be constructed according to these rigid rules: hence three varieties of this sort of metre.

The regular Āryā consists of alternate long and short verses: but, if the short verse precede the long one, the metre is called Uḍgīī. If the couplet consist of two long verses, it is named Gīī: or of two short verses, Upaḍgīī. Another sort of this metre is named Āryā gīī: it is constructed by completing the eighth foot of the regular Āryā.‡

This measure admits therefore of eighty principal variations, deducible from the nine sorts abovementioned: for the pause may be placed at the close of the third foot in either verse of each couplet, in both, or in neither; and

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† Vṛttā mustdvalī.  
‡ It may be varied by alternating a long and a short verse, or a short and a long one, or by making both verses long.
either verse, both, or neither, may be constructed according to the strict rules of the Chapala measure; and the verse may consist of seven and a-half, or of eight feet; and may be arranged in couplets consisting of verses alternately long and short, or alternately short and long, or else uniformly long, or uniformly short.

The Áryá metre is very frequently employed by Indian poets; but works of great length in this measure are not common. It is oftener intermixed with verses of other kinds, though instances do occur of its exclusive use: thus the first and fourth cantos, and most part of the second and third, in the poem entitled Nálódáya, and the entire work of Góverdhana,* are in the Áryá metre. And so is the brief text of the Sánc’hya philosophy of Capila, as taught by Íswaracáryá;† and the copious treatise of astronomy by Brahmegupta.‡

The Nálódáya abovementioned, which is ascribed to the celebrated poet Cálidása, is a poem in four cantos comprising 220 couplets or stanzas,§ on the adventures of Nala and Damayantí: a story which is already known to the English reader.|| In this singular poem, rhyme and alliteration are combined in the termination of the verses: for

* Consisting of seven hundred (or with the introduction 755) stanzas of miscellaneous poetry; and entitled, from the number of stanzas, Sapta śati.

† Author of the Cárica or metrical maxims of this philosophy. Sútras, or aphorisms in prose, which are ascribed to Capila himself, are extant: but the work of Íswara Cáshá is studied as the text of the Sánc’hya, (As. Res., vol. viii. p. 466.)

‡ Entitled Brahmsa’hua siddhánta: other treatises, bearing the same or a similar title, are works of different authors.

§ Chiefly Áryá, with a few anapæstic stanzas (Tóíaca), and a still smaller number of iambics and trochaics (Pramáhi and Samáni.)

|| Translated by Mr. Kindersley of Madras, from a tale in the provincial language.
the three or four last syllables of each hemistich within the stanza are the same in sound though different in sense. It is a series of puns on a pathetic subject.

It is supposed to have been written in emulation of a short poem (of twenty-two stanzas) similarly constructed, but with less repetition of each rhyme; and entitled, from the words of the challenge with which it concludes, *Ghata carpāra*.

अालम्यचान्बुषषितः करकोशेन्य ।
भावानुरकविनितामुरैः शेषेन्य ।
जीवेव्येनकविनायकः परेण
तस्मैवहेयसुदंकघटकपरेण॥

"Thirsty and touching water to be sipped from the hollow palms of my hands, I swear by the loves of sprightly damsels, that I will carry water in a broken pitcher for any poet by whom I am surpassed in rhymes."

However, the epic poem of *Māgha*, which will be mentioned more particularly under the next head, contains a specimen of similar alliteration and rhyme; the last fourteen stanzas of the sixth canto (descriptive of the seasons) being constructed with like terminations to each half of the stanza. Instances will also be cited from *Bhāravyā’s* poem hereafter noticed.

The following example of a species of the *Āryā* metre is taken from the preface of the *Nalodāya*.

*Āryā gīti* (8 feet).

*Asti sa rdā nītē*
*Rāmālāhyō, yō gatīḥ pārd jāntītē,*
*yasya vardājī nītē*
*ratnāni janah kule dhārdjānī ’tē.*
"The king celebrated under the name of Ráma,* exists, who is conversant with the supreme ways of moral conduct; in whose family, exempt from calamity and enriched with the gems of the earth, dependants flourish." 1. 5.

The next is taken from Damayanti’s lamentation on finding herself deserted by her husband Nala. It is in the same species of metre.

26. Tatra, padé vyālīnām, 
at'ha vibhrántam vanē cha dévyā, 'līnām 
tanu-vrīndé vyālīnām 
tatin ād'háné, tayā ’spadé vyālīnām.

27. Véga-baldá ’pásitayā, 
vényā, Bhaimí yutá lalápá 'sitayā. 
"Nrīpa! sa-calápá ’sitayā 
hatvā ’rín, bändhavan cilá ’pásì taya.

28. Sa ca'th'ham mána-vanánām, 
nyávaníd! dcharasi sévyamána-vandnánām, 
dhríta-símá navanánām, 
dáránám tyágam, anupamá! 'navanánām.

29. Para-critam état tvénah [tu énah] 
smarámí, tan na smrító 'si mé tattvénā, 
dósha-samétatvénā 
pradúshayé ná 'tra sambhrámé tat tvénā! [twá, 
ina!]

तत्पद्येवास्त्रीयानामा०
तत्त्वभाषान्तुतिन्द्रधानि०॥

*Ráma raja by whose command the poem was composed. So the commentators remark: but it remains uncertain who he was, or where he reigned.
“Then the princess wandered in the forest, an abode of serpents, crowded with trees which resound with the sweet buzz of bees, the resort of flocks of birds. With her dark hair dishevelled through her haste, BHAIMI thus lamented: ‘King! thou slayest foes, but defendest thy kindred, with thy quiver and thy sword. Unrivalled in excellence and conversant with morality, how hast thou practised the desertion of a wife proud but left helpless in a forest; thus rendering thyself the limit of praise? But I consider this evil to be the act of another, and do not charge thee with it: I do not blame thee, my husband, as in fault for this terror.’” 3. 26—29.

In the passage here cited, some variations in the reading, and greater differences in the interpretation occur; with which it is, however, unnecessary to detain the reader. After consulting several scholia, the interpretation which appeared preferable has been selected. The same mode will be followed in subsequent quotations from other poems.
II. Mátrách'handas, or metre regulated by quantity.

1. Vaitálíya.

Another sort of metre, regulated by the proportion of mátrás or syllabic instants, is measured by the time of the syllables exclusively; without noticing, as in the gáha-ch'handas, the number of feet. It is therefore denominated mátrách'handas, and the chief metre of this kind is named Vaitálíya. It is a tetrastich, or strophe of four verses, the first and third containing the time of fourteen short syllables, and the second and fourth sixteen. The laws of its construction impose that each verse shall end in a cretic and iambic, or else in a dactyl and spondee,* or by bacchius.† In regard to the remaining moments, which are six in the odd verses, and eight in the even verses of the strophe, it must be observed as a general rule, that neither the second and third, nor the fourth and fifth moments should be combined in the same long syllable; nor, in the second and fourth verses, should the sixth mátrá be combined with the seventh. That general rule however admits of exceptions, and the name of the metre varies accordingly.‡

Although the Vaitálíya regularly consist of alternate

* This variety of the metre is named Ápatálíca.
† Thus augmented, the measure is called Aupach'handasica. The whole of the last canto of Mágha's epic poem hereafter mentioned is in this metre, and so is the first half of the 13th canto in Bráravi's Cirátárjuniya.
‡ In the even verses of the strophe, if the fourth and fifth moments be combined in one long syllable, contrary to the general rule above-mentioned, the metre is named Práchya vrítti: or, in the odd verses, if the second and third moments be so combined, the metre is denominated Udíchya vrítti: or the rule may be violated in both instances at the same time, and the measure then takes the name of Právríttaca.
short and long verses, it may be varied by making the stanza consist either of four short or four long verses, admitting at the same time the exception just now hinted.*

The following is an example of a stanza composed in a species of this metre:

Vaitálíya (Pravrēttaca).

Idam, Bharata-vansá-bhúbhrtitám,
śrúyatám, śruti-manórasáyanam,
pavitram, adhicam, subhódhayam,
Vyāsa-vactra-cat'hitam, Pravṛttacām.

॥-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-||-|
structured to exhibit the metre by words in which its denomination is included. This is confirmed by the circumstance of some of the words being incompatible with the measure which they designate: and, in such cases, the author apologizes on that ground for not exhibiting the name in the example.

The Vaitālīya metre has been employed by some of the most eminent poets; for instance, in the epic poem of Māgha, the sixteenth canto of which is chiefly in this measure, as the twentieth and last canto is in that species of it which is called Aupach'handasica.

The work here mentioned is an epic poem, the subject of which is the death of Śiśūpāla slain in war by Cṛśñā: it is entitled Śiśupāla badha, but is usually cited under the name of its author, whose designation, with praises of his family, appears in the concluding stanzas of the poem. Yet, if tradition may be trusted, Māgha, though expressly named as the author, was the patron, not the poet. As the subject is heroic, and even the unity of action well preserved, and the style of the composition elevated, this poem is entitled to the name of epic. But the Indian taste for descriptive poetry, and particularly for licentious description, has disfigured even this work, which is otherwise not undeserving of its high reputation. The two first cantos and the last eight are suitable to the design of the poem; but the intermediate ten, describing the journey of Cṛśñā with a train of amorous damsels, from Dwāracat to Indraprast'ha is misplaced, and in more than one respect exceptionable.

The argument of the poem is as follows. In the first canto Nāreda, commissioned by Indra, visits Cṛśñā and incites him to war with his cousin, but mortal enemy, Śiśūpāla king of the Chédis. In the second, Cṛśñā consults with his uncle and brother, whether war should be
immediately commenced, or he should first assist Yudhishtūra in completing a solemn sacrifice which had been appointed by him. The result of the consultation is in favour of the latter measure; and accordingly, in the third canto, Cṛiṣṇā departs for Yudhishtūra’s capital. In the thirteenth he arrives and is welcomed by the Pāṇḍavas. In the following canto the sacrifice is begun; and in the next, Śiśupāla, impatient of the divine honours paid to Cṛiṣṇā, retires with his partisans from the place of sacrifice. A negotiation ensues, which is however ineffectual, and both armies prepare for action. This occupies two cantos. In the eighteenth both armies issue to the field of battle, and the conflict commences. The battle continues in the next canto, which describes the discomfiture and slaughter of Śiśupāla’s army. In the last canto, the king, grown desperate, dares Cṛiṣṇā to the combat. They engage, and in the Indian manner fight with supernatural weapons. Śiśupāla assails his enemy with serpents, which the other destroys by means of gigantic cranes. The king has recourse to igneous arms, which Cṛiṣṇā extinguishes by a neptunian weapon. The combat is prolonged with other miraculous arms, and finally Cṛiṣṇā slays Śiśupāla with an arrow.

The following example is from a speech of Śiśupāla’s ambassador, in reply to a discourse of Sātyaci, brother of Cṛiṣṇā, at an interview immediately preceding the battle.
“A low man, poor in understanding, does not perceive his own advantage: that he should not comprehend it when shown by others, is surprising. The wise, of themselves, know the approach of danger, or they put trust in others; but a foolish man does not believe information without personal experience. The proposal which I made to thee, Cārīṣṭa, was truly for thy benefit: the generous are ready to advise even their enemies bent on their destruc-
tion. Peace and war have been offered at the same time
by me; judging their respective advantages, thou wilt
choose between them. Yet good advice addressed to those
whose understanding is astray, becomes vain, like the
beams of the cold moon directed towards lakes eager for
the warm rays of the sun.” 16. 39—43.

Another passage of the same poem is here subjoined as
a specimen of a different species of this metre. It is the
opening of the last canto, where Śiśupāla, impatient of
the discomfiture of his troops and those of his allies, dares
Chīshṇa to single combat.

Aupach'handasica.

मुखसुभसितचिरेखसुबैः
भिंदुरभूयुगभीषणंदधानः ।
समिताविविक्षमानम्स्यन्
गतभीरानांचैदिरार्टमुरारिः ॥

Muχ'ham ullaśita-tri-rēch'am uchčair
bhidura-bhrū-yuga-bhīśhaṇān dadhānāh,
Samitaś iti viercmān atmśhyan,
gatabhīr, dhwata Chēdirāt Murārim.

“Raising his head, and with a countenance terrible by
its forked brow and wrinkled forehead, the king of the
Chēdis, impatient of the prowess thus displayed in battle,
banished fear, and challenged the foe of MURA to the
fight.” 20. 1.

A further example of the same metre is the second
stanza of the following extract from the Cīrātdṛjūnīya* of
BHĀRAVĪ. The remaining stanzas exhibit variety of mea-
sure, with two instances of singular alliteration.

* Arjuna and the mountaineer. Cīrāta is the name of a tribe of
mountaineers considered as barbarians.
The subject of that celebrated poem is ARJUNA's obtaining celestial arms from ŚIVA, INDRA, and the rest of the gods, to be employed against DURYÓDHANA. It is by a rigid observance of severe austerities in the first instance, and afterwards by his prowess in a conflict with ŚIVA (in the disguise of a mountaineer), that ARJUNA prevails. This is the whole subject of the poem; which is ranked with the Cunára and Raghu of CÁLIDÁSA, the Naishadhíya of ŚRÍHARSHA, and MÁGHÁ's epic poem, among the six excellent compositions in Sanscrit. The sixth is the Méghadúta, also ascribed to CÁLIDÁSA; and, on account of its excellence, admitted among the great poems (Mahácávyá), notwithstanding its brevity.
The stanzas, which contain, alliteration, are here copied in Roman characters.

18. Iha duradhigamaihu
    cinchid evagamaihu
    satatam asutaram
        varhayantyantaram.
    Anum ativipinam
        vedā digvyāpinam
    purusham iva param
        Padmayonīḥ param.

20. Sulabhaiḥ sadda nayavatā 'yavatā
    nidhi-guhyaciddhipa-ramaḥ paramaiḥ
    amunā dhanaḥ cshitibhrītī 'tibhrītā
        samattiyā bhāti jagati jagati.

' Then ARJUNA, admiring the mountain in silent astonishment, was respectfully addressed by his conductor, CUVÉRA's attendant: for even loquacity is becoming in its season.

' "This mountain with its snowy peaks rending the cloudy sky in a thousand places, is, when viewed, able to remove at once the sins of man. An imperceptible something within it, the wise ever demonstrate to exist by proofs difficultly apprehended. But BRAHMĀ alone thoroughly knows this vast and inaccessible mountain, as he alone
knows the supreme soul. With its lakes overspread by
the bloom of lotus, and overshadowed by arbours of creep-
ing plants whose foliage and blossoms are enchanting, the
pleasing scenery subdues the hearts of women who main-
tained their steadiness of mind even in the company of a
lover. By this happy and well governed mountain, the
earth, filled with gems of easy acquisition and great excel-
ience, delightful to the god of riches, seems to surpass both
rival worlds.”* 5. 16—20.

2. Mátrásamaca.

The metre denominated Mátrásamaca consists of four
verses, each of which contains the quantity of sixteen short
syllables; and in which the last syllable must be a long
one; and the ninth syllabic moment must be in general
detached from the eighth and tenth, and be exhibited of
course by a short syllable: if the twelfth be so likewise,
the metre is distinguished by another name; or if the fifth
and eighth remain short, the denomination is again changed.
The last sort of metre is varied by deviating from the rule
respecting the ninth moment; and another variety exhibits
the fifth, eighth, and twelfth moments by short syllables. †
These five varieties of the metre called Mátrásamaca may
be variously combined in the same stanza; and in that

* The first and fourth stanzas, in this quotation, are in the Dra-
tavilambita metre, and the fifth in the Pramitácsharé; which will be
both noticed under a subsequent head. The third is in an uncommon
measure named Chandricé or Cshamé.

† The names of these four varieties are 1st, Vánavásicé, which exhib-
its the ninth and twelfth moments by short syllables, and the fifteenth
and sixteenth by a long one: the rest being optional. 2dly, Chitré,
exhibiting the fifth, eighth and ninth, by short syllables, the fifteenth
and sixteenth by a long one. 3dly, Upachitré, the fifth and eighth
short; the ninth and tenth long; also the fifteenth and sixteenth long.
4thly, Vishiça; fifth, eighth, and twelfth short; fifteenth and sixteenth
long; and the rest indeterminate.
case the measure is denominated Pádáculaca; a name which is applied with greater latitude in Prácrīt prosody, to denote a tetrastich wherein each verse contains sixteen moments, without any other restriction as to the number and place of the long and short syllables.

A poem inserted in the first volume of Asiatic Researches* is a specimen of the variety which this sort of metre admits. In a collection of tales entitled Vétāla panchavinsati, the author, Śivadāsa, has quoted several stanzas of that poem intermixed with others, in which the measure is still more varied: and I may here remark, that the introduction of rhyme into Sanscrit verse is not peculiar to this anapæstic metre: Jayadēva has adopted it with success in several other sorts of lyric measure, and it is frequent in Sanscrit poetry composed in any species of Prácrīt metre.

3. Gítyáryā.

Another species of metre regulated by quantity is named Gítyáryā. Like the preceding, it is a tetrastich, in which each verse consists of sixteen mátrās or moments, but all expressed by short syllables. In other words the stanza contains sixty-four short syllables distributed into four verses. From the mixture of verses of this description with others consisting exclusively of long syllables, arises another metre, distinguished into two sorts, according as the first couplet in the stanza consists of short syllables and the second of long; or, conversely, the first long and the second short.† The Gítyáryā may be further varied by making the last syllable of each couplet long and all the rest short; at the

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* Page 35.
† The mixed metre, in which one couplet of the stanza contains short syllables and the other long, is termed Sičhā or Chūdā. If the first couplet contain the short syllables, it is denominated Jyótish; but is called Saumyā or Anangancrīdā, when the first couplet consists of long syllables.
same time reducing both couplets to twenty-nine moments; or the first only to that measure, and the second to thirty-one; or the first couplet to thirty, while the second contains thirty-two.*

4. Prácrīt measures.

The foregoing are all comprehended under the general designation of Játi: and besides these, which are noticed in treatises on Sanscrit prosody, other kinds belonging to the class of metre regulated by quantity, are specified by writers on Prácrīt prosody. They enumerate no less than forty-two kinds, some of which comprehend many species and varieties. The most remarkable, including some of those already described as belonging to Sanscrit prosody, are the following, of which instances are frequent in Prácrīt, and which are also sometimes employed in Sanscrit poetry.

A stanza of four verses, containing alternately thirteen and eleven moments (and scanned $6+4+3$ and $6+4+1$), is named either Dóhá† (S. Dwipat'há) or Sórat'há (S. Sauráshtra), according as the long verse precedes the short one, or the contrary. This metre, of which no less than twenty-three species bear distinct names (from forty-eight short syllables to twenty-three long and two short), is very commonly used in Hindī poetry. As an instance of it, the work of Bihārilāl may be mentioned, which consists of seven hundred couplets (sat saì) all in this measure. It is a collection of descriptive poetry; of which Črīshna, sporting with Rádhá and the Gópis, is the hero. The following example is from that celebrated author.

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* This metre, concerning which authorities disagree, is called Chúdicā or Chúlicā; or, according to the Prīṭta retnácura, Atiruchívā.
† Corruptly Dóhra.
Macarácrita Gópála cē
cunḍala jhalacata cána,
Dhavyó manóhiya gadha samara:
dyódhí lasata nisána.

"The dolphin-shaped ring, which glitters in GÓPÁLA's ear, may be taken for the symbol of Cupid suspended at the gate, while the god is lodged in his heart."

To understand this stanza it must be remarked, that the symbol of the Indian cupid is the aquatic animal named Macara (which has in the Hindu zodiac the place of Capricorn). It is here translated dolphin, without however supposing either the deliverer of Arion, or any species of dolphin (as the term is appropriated in systems of natural history), to be meant.

The Gát'HA or GáHÁ has been already noticed as a name of the Áryá measure in Prácrit prosody. Including under this as a general designation the seven species of it, with all their numerous varieties, it is no uncommon metre in Prácrit poetry. A collection of amatory verses ascribed to the famous monarch ŚÁLIVÁHÁNA, comprising seven hundred stanzas,* and purporting to be a selection from many thousands by the same author, is exclusively in metre of this kind. The introductory verse intimates, that

"Seven hundred couplets (gáHás) are here selected out of ten millions of elegant couplets composed by the poet HÁLA."

HÁLA is a known title of ŚÁLIVÁHÁNA, and is so explained both here and in a subsequent passage by the

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* From their number, entitled Sat saī.
scholiast Gangadhara Bhatta. It is not, however, probable, that he really composed those verses: and it would be perhaps too much to conjecture, that the true author of them was patronized by that monarch, whose existence as an Indian sovereign has been brought in doubt.

The metre called Maharashtra (in Pracrit, Marahattá) is a tetrasyllabic, of which each verse contains twenty-nine matras, scanned by one foot of six, and five of four; with a terminating trochee. It has pauses at the eighteenth and twenty-ninth matras. This measure is evidently denominated from the country which gives name to the Marahatta nation: as another species, beforementioned, takes its designation from Saurashtra or Sivratt'ha.* The circumstance is remarkable.

Another tetrasyllabic, which it is requisite to notice, is denominated Róla. Each verse contains twenty-four matras: and this species of metre admits twelve varieties, from twenty-four short syllables to eleven long and two short, bearing distinct names.

The Shatpadica (Pr. Cikhappáda) is a stanza of six verses, arranged in a tetrasyllabic and couplet; the first termed Cavya, and the second Ullála. In the tetrasyllabic, each verse contains twenty-four moments (scanned 2 + five times 4 + 2, or else 6 + four times 4 + 2) with a pause at the eleventh moment; and each verse of the couplet contains twenty-eight moments, with a pause at the fifteenth. The varieties are extremely numerous, according to the

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* The peninsula, between the gulfs of Cambay and Cutch. The name remains, but the boundaries of the province are more restricted than in ancient times. It still, however, includes the remains of Caisar's city of Dwárcá; the celebrated temple of Sómanátha so frequently plundered by the Muhammedans; and the mountain of Girándra, held sacred by the Jainas no less than by the followers of the Véda.
number and the places of the long and short syllables. No fewer than forty-five variations of the tetrastich, and seventy-one of the whole stanza, have separate names. They are distinguished by the number of short and long syllables (from 152 short to 70 long and 12 short in the whole stanza, or from 96 short to 44 long and 8 short in the tetrastich). The following example is extracted from the Pingala vr̥ttī.

Ch' happād or Shatpadicā.

Pindhāvā dīdha sannāhā; bāha uppara pach'ch'ara daī, Bandhu samadī, raḥa dhaliu. Sāmī Hammīrā baāna laī, Uduu nāhā; paha bhamāu; c'hagga rīvī sīsā hi jhālāu. Pach'ch'ara pach'ch'ara, t'ellī pellī; pabbaā pappārāu. Hammīrā cajjā Jajjalla bhaṅa, cōhānala mahu maha jalaū.
Sulatāna sīsā carabāla daī, tējjī calēvara, dhīa chalāu.

पिंडुः दीधा सन्नाधा; बाहा उपपरा पाच्छ्हरा दाइ, बांधु समादी, राहा धलाय। सामी हम्मिरा बाणा लाइ, उदू नाधा; पाहा भमाय; चहग्गा रीवी सीसा हिय jहालाय। पाच्छ्हरा पाच्छ्हरा, ठेली पेली; पाबबै पापैर। हम्मिरा जा जाज्ञा भाना, कोहानाला माहु माहा जलाय।
सुलताना सीसा कराबाला दाइ, तेजी कलेवरा, दिया चलाय।

Jajjala, general of Hammīra’s forces, taking the field against the Muhammedan emperor, says vauntingly:

“İ put on strong armour, placing barbs on my horse, and taking leave of kinsmen, I hasten to the war. Having received the commands of my master Hammīra, I fly through the sky; I pursue the road; I flourish my scimitar on the head of the foe. Amid the bustle of horse
and foot I scale mountains. In Hammíra's cause, Jajjala declares, The fire of wrath burns within me; laying my sword on the head of the Sultan, and abandoning this corporeal frame, I ascend to heaven."

The emperor, whose death was thus vainly promised to Hammíra by his braggart general, must have been Sultan Muhammed Khúní, with whom he is stated to have been contemporary, and who reigned from A.D. 1325 to 1351.* Hammíra was sovereign of Sácambhari, which, with unfeigned deference for the opinion of Captain Wilford on a geographical question, I still think to be Sambher:† and for this simple reason, that the culinary salt brought from the lakes of Sambher is named in Sanscrit, Sácambhariya lavána, answering to the Hindi Sám- bher làùn. It is, however, proper to remark, that maps exhibit a place of the name of Sambhere between Újjyant and Indor.

The Utcach'há is a stanza of six verses, each comprising eleven moments (scanned 4 + 4 + 3). In admits eight species from sixty-six short syllables to twenty-eight long and ten short.

The Cuñdalica is composed of one stanza of the metre named Dóhá, followed by another in the measure called Rólá: the entire stanza consequently comprises eight verses. In this species of metre, rhyme and alliteration are so appropriate ornaments, that it admits the repetition of a complete hemistich or even an entire verse: as in the following example extracted from the Pingala vṛitti.

**Cuñdalica** or **Cuñdalía**.

*Dhóllá mária Dhilli maha, much'kia Méch'ha saríra,*

*Pura Jajjallá malla bara, chaliá bíra Hammíra.*

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Chalīa bīra Hammīra, pāḍ bhara méini campāi.
Dīga maga ṇaha andhāra dhūli sūraha rahā jhampai.
Dīga maga ṇaha andhāra ānū. Chūrasānaca ṭollā
Davalī, damasi vippac'hcha: márū Dhillī maha dhōlād.

ढोलामारिच्छिल्लिमद्धमुक्तियामेक्षरोर |
purjakalāmALkabarkalichchbīreIRbhīre |
chalichchbīreIRbhīreIRprāchbharmēdhikand |
digramagāndhārādhūlisūrghaRghaīnd |
digramagānḍhāraghāRghāruRkāchāRgha |
dvālādāmācchāpayukhāmārīchilāmārī.hdū |

"Having made the barbarians faint at the sound of the drum beaten in the midst of Dhillī and preceded by Jajjala, eminent above athletes, the hero Hammīra advances; and as the hero Hammīra advances, the earth trembles under his feet. The cloud of dust, raised by the march of his multitudes, obscures the chariot of the sun. Darkness spreads with the march of his multitudes. The hostages of the Khorasanian are slain; the foe is slaughtered, and the drum is beat in the midst of Dhillī."

A stanza of nine verses, composed of one of five with a tetastrich of the metre called Dōhā subjoined to it, is denominated Radāhā. Here the stanza of five contains three verses of fifteen moments each, with two of twelve and eleven interposed. The distribution of the feet, together with a restriction as to the terminating one, varies in each verse: and a difference in the regulation of the feet gives rise to six varieties which have distinct appellations.

The Chatushpadicā (Pr. Chāupaīra or Chauprdī) is a stanza of sixteen verses distributed into four tetrastichs, in which each verse contains thirty moments (scanned seven
times 4+2), and terminated by a long syllable. This measure is of very frequent use in the poetry of the modern languages. The Rámáyana of Tulaśídása, in seven cantos, a poem held in great estimation by Hindus of the middle tribes, is composed chiefly in a similar metre under the same name (Chauṇḍa), and containing the same number of verses (sixteen) in the stanza. It alternates with the Dohá, and very rarely gives place in that poem to any other metre.

In this metre the stanza contains the greatest number of verses of any admitted into Prácrít prosody. The other measures regulated by quantity are tetraстиchs, except the Ghallá and certain other couplets noticed at the foot of the page;* some of which might have been ranked with more propriety under the next head of uniform metre.

One other measure which is placed in this class, but which belongs rather to another, remains to be noticed. It is an irregular stanza of four verses, containing alternately seventeen and eighteen syllables, with no regulation of their length or of the quantity of the verse or stanza. It is termed Gandha, or in Prácrít Gandhána.

The rest of the Prácrít metres may be sought in the synoptical tables subjoined to this essay.

The present may be a proper place for noticing a class of poetry which has been even more cultivated in the Prácrít and provincial languages than in Sanscrít. I allude to the erotic poetry of the Hindus.

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* The Ghallá and Ghallánanda, consisting of two verses of thirty-one mātrás each. In the first species the pauses are after the tenth and eighteenth mātrás; in the other after the eleventh and eighteenth. There is also a slight difference in the distribution of the feet (7 times 4+3 short; and 6+3 times 3+5+6+3+3 short.) The Dwipadácdá has in each verse twenty-eight mātrás (6+five times 4+1 long). The Sicbá containing the like number, the C'hanjá with forty-one mātrás to the verse, and the Málá with forty-five, are couplets; but the feet are strictly regulated.
On its general character I shall briefly observe, that it is free from the grievous defects of the Hindi poems composed in the style and metre of Persian verse; but it wants elevation of sentiment and simplicity of diction. The passion, which it pictures, is sensual, but the language refined, with some tenderness in the expression and in the thoughts. Among the most celebrated poems in this class may be mentioned the Chaura panchāsīcā, comprising fifty stanzas, by Chaura, and Amaru sataca, containing twice that number, by Amaru. The first is supposed to be uttered by the poet Chaura, who, being detected in an intrigue with a king's daughter, and condemned to death, triumphs in the recollection of his successful love. The other, which is a collection of unconnected stanzas on amatory topics, is reputed to be the work of the great Śancara Āchārya, composed by him in his youth, before he devoted himself to the study of theology.

Some of the commentators on this poem have attempted to explain it in a devout and mystical sense, on the same principle upon which Jayadēva's lyric poems are interpreted as bearing a religious meaning. The interpretation, however, is too strained to be admitted; and though Jayadēva's intention may have been devout, and his meaning spiritual, Amaru, or whoever was the true author of the work bearing this name, is clearly the lover of an earthly mistress.

The most singular compositions in this class of poetry, and for which chiefly a notice of it has been here introduced, are those in which the subject is treated with the studied arrangement and formal precision of the schools. I shall instance the Rasamanjarī of Bhāṇudatta Miśra in Sanscrit, and the works of Matirāma and Sundara in Hindi. Here various descriptions of lovers and mis-
tresses distinguished by temper, age, and circumstances, are systematically classed and logically defined, with the seriousness and elaborate precision of scholastic writers. As ridicule was not intended, these poems are not humorous but trifling: and I should not have dwelt on the subject, if their number, and the recurrence of them in different languages of India, were not evidence that the national taste is consulted in such compositions.

III. Varṇa vrītta; metre regulated by the number of syllables.

The next sort of metre is that which is measured by the number of syllables; it is denominated Acsharachihandas or Varṇa vrītta, in contradistinction to the preceding kinds which are regulated by quantity; and it may be subdivided into three sorts, according as the verses composing the stanza are all similar, or the alternate alike, or all dissimilar.

This also is a stanza of four verses (pādas), each containing an equal number of syllables, the length of which is regulated by special rules. The number of syllables varies from twenty-four to a hundred and four, in each strophe: this is, from six to twenty-six in each verse. There are indeed names in Prākrit prosody for verses from one to five syllables, and instances of Sanskrit verse containing a higher number than above stated, viz. from twenty-seven to one less than a thousand. But these constitute distinct classes of metre. Between the limits first-mentioned, twenty-one kinds receive different appellations appropriated to the number of syllables contained in the stanza.

Each kind comprehends a great variety of possible metres, according to the different modes in which long and short syllables, as well as pauses, may be distributed; and
since the four quarters of each stanza may be either all alike, or only the alternate similar, or all different, the variety of possible metres is almost infinite. Pingala, however, gives directions for computing the number of species, and for finding their places, or that of any single one, in a regular enumeration of them; or conversely, the metre of any species of which the place is assigned: and rules have been given even for calculating the space which would be requisite for writing down all the various species.

In the first class or kind, wherein the verse consists of six syllables, sixty-four combinations are computed on the syllables of each verse; 4,096* on those of the half stanza; and 16,777,216† on the twenty-four syllables which constitute the complete stanza of this class. In the last of the twenty-one kinds, 67,108,864 combinations are computed on twenty-six syllables within each verse; nearly 4,503,621,000,000,000, on fifty-two syllables; and more than 20,282,388,000,000,000,000,000,000,000,000, on a hundred and four syllables which form the stanza.‡

The different sorts, which have been used by poets, are few in comparison with the vast multitude of possible metres. Still they are too numerous to be all described at full length. I shall therefore select, as specimens, those sorts of metre which are most frequently employed, or

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* Viz. 64 uniform and 4,032 half equal.
† Viz. 64 uniform, 4,032 half equal, and 16,773,120 unequal or dissimilar.
‡ A mode of calculating the possible varieties of metre is also taught in the Lilavati, a treatise of arithmetic and geometry, by Bhàscara. This truly learned astronomer was also a poet, and his mathematical works are composed in highly polished metre. If the reader figure to himself Euclid in Alcaic measure, Diophantus in anapests, or the Almagest versified with all the variety of Horatian metre, he will form an adequate notion of this incongruity.
which require particular notice; referring for the rest to the subjoined tables, in which the various kinds are succinctly exhibited by single letters descriptive of feet scanned in the Indian and in the Latin mode.

In the best Sanscrit poems, as those of Cālidāsa, Bhāravī, Śrīharsha, Māgha, &c. the poet usually adheres to the same, or at least to similar metre, throughout the whole of the canto;* excepting towards the close of it, where the metre is usually changed in the last two or three stanzas, apparently with the intention of rendering the conclusion more impressive. Sometimes, indeed, the metre is more irregular, being changed several times within the same canto, or even altering with every stanza.

The Rāghava pāṇḍavīya, by Cavirāja,† is an instance of a complete poem, every canto of which exhibits variety of metre. This extraordinary poem is composed with studied ambiguity; so that it may, at the option of the reader, be interpreted as relating the history of Rāma and other descendants of Daśaratha, or that of Yudhishtīra and other sons of Pāṇḍu. The example of this singular style of composition had been set by Subandhu in the story of Vāsavadatta, and Bānabhatta in his unfinished work entitled Cādambari; as is hinted by Cavirāja. Both these works, which like the Daśacumāra of Daṇḍi, are prose compositions in poetical language, and therefore reckoned among poems, do indeed exhibit continual instances of terms and phrases employed in a double sense: but not, like the Rāghava pāṇḍavīya, two distinct stories told in the same words.

* Writers on rhetoric (as the author of the Sāhitya darpana and others) lay it down as a maxim, that the metre and style should in general be uniform in each canto: but they admit occasional deviations in regard to the metre.
† So the author has called himself.
The following passage will sufficiently explain the manner in which the poem is composed. The first stanza is of the mixed sort of metre named Upajāti, which will be immediately described; the second is in one of the measures composing it, termed Upendravajra.

मातृ: प्रियंश्च द्विदिनुमया:
श्राधि: हर्त्कात्रजस्वीरुपति:।
श्रीप्रजापतिसङ्गन्ध्वभावा—
द्रज्ञेश्चक्षेमनसः प्रमोदं॥५२॥
त्रिचित्रविर्षिदिवंगतस्य
पितृ: सराज्यं प्रतिपदवाचे।
पुरीमयो धान्यायं धार्मिक्रां
सहस्तिश्रीमां सुखमधुवास्।॥५३॥

50. Mātuh śrīyaṃ sandadhdh Indumatyan
dāghyāh saratcālā ivōdūpanctēh,
Asau, prajāpalanadacshabhāvād,
Ajasya chaśre maṇasah pramōdam.

51. Vichitraviryasya divan gatasya
pituh sa rājyam pratipadya bālye,
Purīm Ayōdhyām, Dhruvāsrabhadhrām,
sa hastisōbhām suc'ham adhyuvāsa.

“Having the beauty of his mother INDUMATĪ, and admirable like the dewy season when it enjoys the beauty of the stars, he (DASARATH'HA) made glad the mind of ARA* by his skill in the protection of the people. Succeeding in youth to the kingdom of his variously valiant father, who departed for heaven, he dwelt happily in the

* ARA was father, and INDUMATĪ mother of DASARATH'HA.
city of Ayodhya, which was adorned with elephants and upheld the prosperity of his realm.”

Otherwise interpreted the same passage signifies,

“Having the beauty of his mother, and admirable like the dewy season when it enjoys the beauty of the stars and of the moon, he (Pándu) made glad the heart of the unborn god by his skill in the protection of creatures. Succeeding in youth to the kingdom of his father Vichitravírya* who departed for heaven, he dwelt happily in the peaceful city of Hastinápurá auspiciously inhabited by Dháta-ráshtra.” 1. 50. and 51.

To proceed with the subject. In general the different sorts of verse which are contained in the subjoined synoptical table of uniform metre, are used singly, and the stanza is consequently regular: but some of the species, differing little from each other, are intermixed. Thus the Indravajra, measured by a dactyl between two epitrites (third and second), and the Upéndravajra, which begins with a diam-bus, may be mixed in the same stanza. This sort of mixt metre (an example of which has been just now exhibited) is denominated Upajáti: it of course admits fourteen variations;† or, with the regular stanzas, sixteen. The relief which it affords from the rigorous laws of the uniform stanza, renders it a favourite metre with the best poets. It has been much employed by Cálidosá, in whose poem on the birth and marriage of Párvatí, three out of the seven cantos which compose it are in this metre; as are eight out of nineteen in his heroic poem on the glory of the race of Rághu.

The last mentioned work, which is entitled Raghuvansá,

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* Vichitravírya was husband of Pándu’s mother.
† They have distinct names, which are enumerated in the Ch’han-
dómártádá, cited by the commentator on the Vritta Retnácará: as Madiprabhá Cántimati, &c.
and is among the most admired compositions in the Sanscrit
tongue, contains the history of Ráma and of his predeces-
sors and successors, from Diliπa father of Raghû, to
Agniverña a slothful prince who was succeeded by his
widow and posthumous son. The first eight cantos relate
chiefly to Raghû, with whose history that of his father
Diliπa, and of his son Aja, is nearly connected. The
next eight concern Ráma, whose story is in like manner
intimately connected with that of his father Daśarat'ha
and of his sons Cuśa and Lava. The three concluding
cantos regard the descendants of Cuśa, from Atit'hi to
Agniverña, both of whom are noticed at considerable
length; each being the subject of a single canto, in which
their characters are strongly contrasted; while the inter-
mediate princes, to the number of twenty, are crowded
into the intervening canto, which is little else than a dry
genealogy.

The adventures of Ráma are too well known to require
any detailed notice in this place. The poet has selected
the chief circumstances of his story, and narrates them
nearly as they are told in the mythological poems and
theogonies, but with far greater poetical embellishments.
Indeed, the general style of the poems esteemed sacred (not
excepting from this censure the Ramáyaña of Válmíci,) is
flat, diffuse, and no less deficient in ornament than
abundant in repetitions; and it is for this reason that
examples have been selected, for the present essay, ex-
clusively from the celebrated profane poems. Ráma's
achievements have been sung by the profane as frequently
as by the sacred poets. His story occupies a considerable
place in many of the Puráṇas, and is the sole object of
Válmíci's poem, and of another entitled Adhyātma Ramá-
áyaña, which is ascribed to Vyāsa. A fragment of a
Ramáyaña, attributed to Baudháyana is current in the
southern part of the Indian peninsula; and the great
philosophical poem, usually cited under the title of Yóga 
vasisht'ha, is a part of a Rámdyáña, comprising the edu-
cation of the devout hero. Among profane poems on the 
same subject, the Raghuvans̄a and Bhatticávya with the 
Rághava pándaviya beforementioned, are the most esteemed 
in Sanscr̄īt, as the Rámdyáña of Tulaśídāsa and Ráma-
chandrič of Céśavádāsa are in Hindi. The minor 
poets, who have employed themselves on the same topic, 
both in Sanscr̄īt and in the Prácr̄īt and provincial dialects, 
are by far too numerous to be here specified.

The other poem of Cálidāsa abovementioned, though 
entitled Cúmāra sambhava or origin of Cúmāra (who is 
son of Párvatī), closes with Párvatī's wedding. It has 
the appearance of being incomplete; and a tradition runs, 
that it originally consisted of twenty-two books. However, 
it relates the birth of the goddess as daughter of mount 
Himálaya, and celebrates the religious austerities by 
which she gained Śiva for her husband; after Cándarpá, 
or Cupid, had failed in inspiring Śiva with a passion for 
her, and had perished (for the time) by the fiery wrath of 
the god. The personages, not excepting her father, the 
snowy mountain, are described with human manners and the 
human form, with an exact observance of Indian costume.

The following stanza from a poem in mixed language 
upon the same subject (the birth of Cúmára), is selected 
as a further example of Upajdtī metre, and as a specimen 
of the manner in which Sanscr̄īt and Prácr̄īt are some-
times intermixed. It is quoted for that purpose in the 
Pingalavŕtti.

बालःकुमारःकब्रुकुन्दधारी
उपाष्टीणा चमुं एक्रणारी।
स्वर्णिश्रिंश्वादविषंभिखारी
मतिभविची किलकाच्मारी॥
Balah cumárah; sa ch'ha-muḥḍa-dháři. Upáā-híná
hamu écca-nári.
Ahar-ñiśam ch'áã vísham bhíc'háři. Gatir bhavitri
cila cá hamári.

Dávi, grieving over her infant son Cumára or Scanda, says,

“The child is an infant, but he has six mouths [to be fed]: I am a helpless, solitary female: night and day my mendicant husband swallows poison: what resource is there, alas, for me?”

An instance of the same measure used in the Maháráṣṭra (Maháráshtra) language is quoted by the commentator on the Vṛttta retnácara. It appears, however, from the rhymes, that the verse is there subdivided by a pause after the fifth syllable.

The variety of the Upajáti metre is increased by the further mixture of two sorts of iambic measure named Vansástha and Indravansá. The first is composed of a choriambus between two diiambi; in the second, the first dissyllable is a spondee instead of an iambic. Instances of this mixt metre occur in Válmíci's Rámáyána,* in the Śrí Bhágavata purdáña, † and in a metaphysical and theological drama entitled Prábódha chandródaya.‡

The following example from the drama now mentioned, exhibits the combination of those four sorts of metre in a single stanza.

विद्याप्रबोधोदयजचम्मुचि-
वैराणण्यामुल्लिपुरीनिरञ्जया ।

* In a passage of the Sundara cánda.
† Book 10th.
‡ Among the persons of this drama are the passions and vices (pride, anger, avarice, &c.) with the virtues (as pity and patience,) and other abstract notions, some of which constitute very strange personifications. The author was Črīṣna Pañjita.
Vidyā-prabōḍhodāya-janma-bhūmir,  
Vārāṇasī muci-puri niratyaẏā  
Atah culōchchhēda-vidhīm vidhitṣur  
nivastum atrēch’hati nityam ēva saḥ.

"Vārāṇasī, the indestructible city of eternal salvation, is  
the native land of science and intellect: hence, one desirous  
of observing the precepts by which a continuance of family  
is cut off [and final beatitude obtained], is solicitous to  
dwell there continually."

The same term (Uṣpajāti), as descriptive of mixt metre,  
has been also applied to the intermixture of two spondaic  
measures named Vāiōrmī and Sālīnī; which are very simi-
lar, the first having an anapest, the other a cetic, between  
a dispondeus and second epitritus, with a pause at the  
fourth syllable. Analogous to the first of these are the  
Ratraḥdhatā and Svāgata, measured by an anapæst  
preceded by two trochees, and followed in the one by two  
iambics, and in the other by an ionic. These and the pre-
ceding are metres in very common use with the best poets;  
and instances of them will occur in subsequent extracts,  
chosen for the sake of other measures with which they are  
joined.

The several sorts of metre above described are, like the  
two last, also employed separately: for instance, the first  
cantos of the Naishadhiya of Śrīharṣa, and Cīrdtār-  
junīya of Bhāravī, as well as that of the epic poem of  
Māgha, are in the iambic measure called Vansastha;  
which recurs again in other parts of the same poems; espe-
cially in the Cīrāṭa, of which four books out of eighteen  
arē in this measure.

The first of the works just now mentioned is a poem
in twenty-two cantos, on the marriage of Nala, king of Nishadha, and Damayantí, daughter of Bhíma, king of Víderbha. It is a favourite poem on a favourite subject, and though confessedly not free from faults, is by many esteemed the most beautiful composition in the Sanscrit language. The marriage of Nala and Damayantí, his loss of his kingdom by gaming, through the fraudulent devices of Cali disguised in the human form, his desertion of his wife and his transformation, her distresses, her discovery of him, and his restoration to his proper form and to his throne, are related in another poem already noticed under the title of Nálodaya. Their adventures likewise constitute an episode of the Mahábhárata,* and are the subject of a novel in prose and verse, by Trivícráma Bháttá, entitled Nalachampú† or Damayantícatáhá. Śríhárshá's poem, though containing much beautiful poetry according to the Indian taste, is very barren of incident. It brings the story no further than the marriage of Nala and Damayantí, and the description of their mutual affection and happiness, which continues notwithstanding the machinations of Cali. The romantic and interesting adventures subsequent to the marriage, as told in the Nálodaya, are here wholly omitted; while the poet, with a degree of licentiousness, which is but too well accommodated to the taste of his countrymen, indulges in glowing descriptions of sensual love.

The following example of Vansástha metre is from the introduction of the Naishadhíya. To render the author's meaning intelligible, it may be necessary to premise, that the mere celebrating of Nala and Damayantí, is reckoned

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* From the 53d to the 79th chapters of the Vana parva.
† A composition, in which prose and verse are intermixed, is called Champú.
sufficient to remove the taint of a sinful age, and is so declared in a passage of the Mahābhārata.

Vansast'ha metre.

पतिच्चमचातुनुते जगद्दुः
स्त्रतारसचालनयेववत्कथा ।
कायंसमामद्विरमाविखामिपि
खेत्रियोभेपवतिच्चित्यति ॥

Pavitram atrātanutē jagad yugē,
smrītā, rasa-cshālanayēva yat, caṭha;
Caṭ'ham na sā mad-giram, āvilām api,
svasēvinēm ēva, pavitrayishyati.

"How should a story, which, being remembered, purifies the world in the present age, as it were by an actual ablu-
tion, fail of purifying my voice, however faulty, when em-
ployed on this narration." 1. 3.

In the following passage from BHARAVI's Cirdtārjunāya,
the last stanza is an example of the Mālinī metre, and the
preceding one of the Pushpitāgra; which will be noticed
further on: all the rest are in the Vansast'ha measure. It
is the close of a reproachful speech of DRAUPĀDĪ to her
eldest husband, YUDHISHT'HIRA, inciting him to break the
compact with DURYÓDHANA, by which the PĀṆḌAVAS
had engaged to remain twelve years in exile.

इमामहेवेदनतावकीधियं
विचित्राःखलुचिताःकथयं ।
विचित्रणव्याबद्रापदंपरां
दज्जनितिचित्तःप्रवभेममाधयः ॥२७॥
पुराधिकृतः श्रवणं महाधनं
विबोधेयः सतुतिन्यतिमङ्गले ।

श्रद्धाबद्धं मधिश्रवणंत्यलो
जालचिन्द्रानन्तिवैः शिवाहुतीं ॥ २८ ॥

अनार्तं यो मणिपीठभातिना-
वराध्राजशिरः चजारजः ।
निषिद्धस्तीत चरणोवनेपुते
मन्दिरिजालू चन्द्रिकः विन्दिख्याम् ॥ २८ ॥

पुरोपनीतन्तूर प्रामणिचक
होरातिशङ्केष्चत्तुद्दद्धन्यता ।

तदाबत्वन्यसत्वाशिनः परे
परैतिकाश्रयस्मासमंवः ॥ ४० ॥

द्विषबिन्नता यदीच्चंद्र शाततः
समुलमुखः चत्वीमेनः ।

परैरपोषणीतवैष्मिंपदां
पराभवोयुक्तवेवमानानां ॥ ४९ ॥

विद्याशानिसंतूपधामतपुनः
प्रशंस्त्वेद्विष्टिवधायविद्विषां ।

ब्रजनितश्चनूवधूयनः स्पष्टः
श्रेयस्मिन्द्रिमुनयोगभंसततः ॥ ४२ ॥
"I do not comprehend this thy prudence; for opinions are indeed various: but anguish forces itself on my mind when considering thy extreme distress. Thou, who didst formerly repose on a costly couch, and wert wakened with auspicious praise and song, now sleepest on the ground strewed with pungent grass, and art roused from thy
slumbers by the dismal howlings of shakals. Thy feet, which, resting on a footstool adorned with precious stones, were tinged by the dust of the blossoms in the chaplets worn by prostrate monarchs, now tread the wilderness, where the tips of sharp grass are cropped by the teeth of stags. Thy person, O king, which formerly gained beauty by feeding on the blessed remnant of the feast given to holy men, now wastes with thy glory, while thou feedest on the fruits of the forest. That thou art reduced to this condition by the act of thy enemies, harrows up my soul. To the valiant, whose courage is unsubdued by the foe, misfortune is a triumph. Relinquishing peace, O king, be active, and rouse thy energy for the slaughter of thy foes. Placid saints, not kings, attain perfection, disarming their enemies by patience. If persons such as thee, whose honour is their wealth, who are leaders of the brave, submit to such insupportable disgrace, then is magnanimity destroyed without resource. If, divested of courage, thou deem submission the means of lasting ease, then quit thy bow, the symbol of a sovereign, and becoming a hermit, feed here with oblations the purifying flame. Adherence to the compact is not good for thee, valiant prince, while thy foes compass thy disgrace; for kings, ambitious of victory, scruple not the use of stratagem in treating with enemies. Thee, who by force of fate and time art now sunk in the deep ocean of calamity, dull with diminished splendour, and slow to enterprise, may fortune again attend, as thou risest like the sun with the new born day, dispelling hostile gloom.” 1. 37—46.

To return to the enumeration of analogous sorts of metre. A true spondaic metre, named Vidyunmald, consisting of four spondees, with a pause in the middle of the verse, which virtually divides the tetrastich into a stanza of eight, is often mixed, as before observed, with the metre
termed Gótyáryá, containing the same quantity in a greater number of syllables.

Other measures, also containing the same quantity but in a greater number of syllables, occur among the species of uniform metre. The subjoined note* exhibits several species, in which the verse is divided by the position of the pauses into two parts equal in quantity, and some of them equal in number of syllables. Further instances are also stated in the notes, of metre containing the same quantity similarly reducible to equal feet.† Some of the species of metre which contain a greater number of syllables, are reducible, in conformity to the position of their pauses, to this class.‡

All these varieties of metre have a great analogy to the Mátrásamaca and other species before described, which similarly contain the quantity of sixteen short syllables or eight long, reducible to four equal feet.

Among the kinds of metre described at the foot of the preceding paragraphs, the Dódhaca, Tótaca, and Pramításchará are the most common. A stanza in the anapestic measure named Pramításchará, in which each verse exhibits alliteration at its close, has been already quoted

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* Rucmavatí or Champacamará, composed of alternate dactyls and spondees; Mattá, measured by three spondees with four short syllables before the last; Pañáva, containing a spondee and dactyl, and an anapest and spondee; Bhraravilasítá, measured by two spondees, four short syllables and an anapest; Jalóddhatátagá, composed of alternate amphibrachys and anapests; and several other species, as Cusuma vichitra, Mahiguña nicara, Cudmala dantí, Laland, &c.

† Dódhaca, composed of three dactyls and a spondee; Tótact containing four anapests; Pramításchará, measured by three anapests with an amphibrachys for the second foot; Mádá, a species of Chandravartá, and some others.

‡ Thus Mattácriá combines two simple kinds, the Vidyunmádá and Chandravartá. So Craunchapadá is composed of two species before-mentioned, the Champacamará and Mahiguña.
from the fifth canto of the Cīrātārjunīya of Bharavi. The specimen of anapaestic measure Tōtaca, which will be here cited from the close of the Nalodaya, is a further instance of alliteration introduced into every stanza of this singular poem.

Tōtaca.

चरियंहतिरखवनेषुरुषुचाः
पदमापदमापदमापदमा ।
मुखदंचयचेतजनायहरिः
यतमायतमायतमायतमा ॥

Ari-sanhatir asya vanēshu suchām
padam āpadam āpad amā 'padamā.
Suehathan cha yat'haiva janāya Harim
yatam āyatamāya tam āyata Md.

““The luckless and despondent crowd of his foes found in the forests a calamitous place of sorrow; and prosperity was constant to him, who gave happiness to a sincerely affectionate people, as she clings to Hari, who blesses the guileless.” 4. 46.

It has been before said, that, in several sorts of metre, the pauses would justify the division of the stanza into a greater number of verses than four, and instances have been shown, where either the number of syllables, or the quantity, would be the same in each verse of a stanza of eight, twelve, or even sixteen short verses. In the following species of metre, the verses of the stanza, subdivided according to the pauses, are unequal.

The Śārduḷavirūḍhita, a very common metre, of which examples occur in the former volumes of Asiatic Researches, is a tetrastich, in which the verse consists of

• Vol. i. p. 279.
nineteen syllables divided by the pause into portions of twelve and seven syllables respectively. The following instance of this metre is from the close of the first book of Māgha’s epic poem; where Nārēdā, having delivered a message from Indra, inciting Cṛiśṇa to war with Śiśupāla, king of the Chēdis, departs, leaving the hero highly incensed against his kinsman and enemy.

Oṁ ityucatvā ’tha śārngiṇa, iti
vyāḥṛtya vāchan, nabhās
Tasminn upatitē purah sura-munāv
indōh śrīyam bibhrati,
Śatrūnāṁ aniśam vināśa-piṣunah,
cruddhasya Chaidyam prati,
Vṛōmnīva, bhṛucuti ch’halēna, vadanē
cētus chaocdr’ despādam.

“While the divine sage, having delivered this discourse, ascended the sky, bearing on his front the radiance of the moon; the hero, armed with a bow, uttered an expression of assent; and the frown, which found place on his brow wreakful against the prince of the Chēdis, was as a portent in the heavens, foretokening destruction of his foes.” 1. 75.

The Mandācarāntā, which is the metre in which the Mēghadūta is composed, has pauses subdividing each verse of seventeen syllables into three portions, containing four, six, and seven syllables respectively: viz. two spondees; two pyrrhichii and an iambic; a cretic, trochee, and spondee. The Hariṇī differs from the preceding in trans-
posing the first and second portions of the verse, and making the third consist of an anapest between two iambics. An instance of it will be subsequently exhibited.

The example of the first mentioned metre, here inserted, is from the Mégha dāta. This elegant little poem, attributed as before observed to CAŁIDĀSA, and comprising no more than 116 stanzas, supposes a Yacsha or attendant of ČUVÉRA to have been separated from a beloved wife by an imprecation of the god ČUVÉRA, who was irritated by the negligence of the attendant, in suffering the celestial garden to be trodden down by INDRA’s elephant. The distracted demigod, banished from heaven to the earth, where he takes his abode on a hill on which RĀMA once sojourned,* entreats a passing cloud to convey an affectionate message to his wife.

**Mandacrānta metre.**

जातवेशभुवनविविधिते पुष्करावर्त्तकानाः
जानामिलांप्रस्ततिपुरुषकामस्यमधिपीतः ॥

तेनार्धिलत्यविविधिवशाहूरबन्धुर्गतिः
चाच्चामोघावरभविधिगुणेनाधमेलखकाम ॥

संतप्यनांलमविशरणंतत्वयोद्वियाया
सर्देशंमेहरधनपतिक्रोधविष्णुविश्वेथ ॥

गन्त्यातिवसतिरिक्तकानामयचेष्ट्राणां
वाच्चोदानस्थितहरस्तिरचन्द्रिकाधीतश्च ॥

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* Called Rāmagiri.
6. Jádam vánśe, bhuvana-vidité, pushcardvartacáñám,
Jánámi tvám, prácriti-purushan, cámarúpam, Maghéñah
Ténd'r'thitwan, twayi, vidhi-vasád dúrabanádhur, gátó
'hám.
Yáchnya mághá varam adhiguñe, nádhámé labdhaçádmá.

7. Santaptánán tvam asi sarañán; tat, payóda, priyáyáh
Sandésam mé hara, dhanapatí-cródha-víśléshitasya.
Gántvyá té vasatir Alacá náma yacshéswaráñám.
Váhyódyána-st'hita-Hara-síras-chandricá-dhauta-har-
myá.

"I know thee sprung from the celebrated race of dilu-
vian clouds, a minister of Índra, who dost assume any
form at pleasure: to thee I become an humble suitor, being
separated by the power of fate from my beloved spouse: a
request preferred in vain to the noble is better than success-
ful solicitation to the vile. Thou art the refuge to the in-
flamed: therefore do thou, O cloud, convey to my beloved
a message from me who am banished by the wrath of the
god of riches. Thou must repair to Alacá the abode of the
lord of Yácsíshas, a palace of which the walls are whitened by
the moonbeams from the crescent on the head of Síva,
who seems fixed in the grove without." 6 and 7.

The Sícharinií, also a common metre, distributes sevem-
ten syllables into portions of six and eleven: an iambic
and two spondees in the one, and a tribrachys, anapest
dactyl, and iambic in the other. This is the metre of the
Ananda laharí, a hymn of which Sáncarächárýa is the
reputed author, and which is addressed to Sívá, the Sáctí
or energy of Síva or Mahádévá. It comprises a hun-
dred stanzas of orthodox poetry held in great estimation by
the devout followers of Sáncara: the devotional poetry
of the Hindus does not usually employ metre of so high an
order.

Examples of this measure will be shown in a subsequent
extract from a work of a very different kind: a drama by Bhavabhūti entitled Mālatī madhava.

The Mālinī, consisting of fifteen syllables, places two tribrachys and a spondee in the one subdivided portion of the verse, and a cretic, trochee, and spondee, in the other. An instance of it occurs in a former extract from the Cirātārjunīya. The following example of this metre is from the drama abovementioned. The passage is descriptive of a love-sick maid.

Mālinī metre.

परिमलितम्यालोच्यानमान्यग्रंथनि:
कथमपिपरिवार्गा ध्यानाभिषे, चिन्यामुः।
कलयति चिहिमांशीनिन्ध्वकंकसखल्ले,
मन्नदिकरिदन्तां द्रवकानं: कपोऽः॥

$Parimrldita-mrnhali-mdlanam angam; pravrddik$  
$Cat'ham api parivdtra-prr'thanabhik criydsu$  
$Cdlavati cha himdnso'r nishcalancasya lacshmn$  
$Abhinava-carir-dantu-cholkhela-cdntah capoluk.$

“Her person is weary like bruised threads of a lotos; scarcely can the earnest entreaties of her attendants incite her to any exertion; her cheek, pale as new wrought ivory, emulates the beauty of a spotless moon.” 1. 22.

The Praharshiṇī, containing thirteen syllables, separates, a molossus from two pyrrhichii, as many trochees, and a spondee. An example of it will be shown in a subsequent extract from Bhavabhūti’s drama.

The Ruchrā, with the same number of syllables, disjoins two iambs from two pyrrhichii, a trochee, and cretic. The opening stanza of the Bhattachāvya may serve as an instance of this metre. The poem bearing that title is on the subject of the adventures of Rāma: it is comprised in
twenty-two cantos. Being composed purposely for the practical illustration of grammar, it exhibits a studied variety of diction, in which words anomalously inflected are most frequent. The style, however, is neither obscure nor inelegant; and the poem is reckoned among the classical compositions in the Sanscrit language. The author was Bhartrihari: not, as might be supposed from the name, the celebrated brother of Vicramaditya; but a grammatician and poet, who was son of Srídhara swámi, as we are informed by one of his scholiasts, Vidyávinóde.

Ruchírd metre.

चन्द्रभूमिपूर्वविशुद्धिकः परंतपः
धुताण्विताद्राधर्यवद्युद्राह्तः ।
गुणेवर्णभवनान्धित्वचलेनयं
वनातनं पितरसुपागमत्वचयं ॥

Abhún nriçpó, vibudha-sac'hah, parantapak,
Srútánwitó, Daśarat'ha ityuđákritah,
Guñhair varam, bhuvana-hita-chch'haléna, yam
Sandtanah pitaram upágamit swayam.

"He, whom the eternal chose for a father, that he might benefit the world [in a human form], was a king, a friend of the gods, a discomfiter of foes, and versed in science: his name was Daśarat'ha. He was a prince eminent for his virtues." 1. 1.

The Suvadánd distributes twenty syllables in three portions of the verse: one containing two spondees and a bacchius; the second four short syllables and an anapæst; the third a spondee, pyrrhichius, and iambic. The Srágdhard, a very common metre, differs from it only in the third portion of the verse, which contains a trochee, spondee, and
bacchius: but here the number of syllables in every subdivision is equal: viz. seven. In all the other instances above described, the subdivisions of the regular verses were unequal.

The following sorts of metre, which are usually employed, have no pauses but at the close of the verse. The Druta vilambitā contains in each verse two anapæstæ preceded by three short syllables and a long one, and followed by an iambic. Instances of this measure have been already cited in an extract from the Cirāṭārjunīya. The Sravāṅkī is measured by a trochee, spondee, and iambic repeated; as the Bhujangaprajāyātā is by a similar repetition of an iambic, trochee, and spondee. Both sorts of metre are of frequent occurrence in classic poems.

The Vasantatilaca, which consists of a spondee, iambic, tribrachy, dactyl, trochee, and spondee, is one of the metres in most general use. It commonly occurs as a change from other metre. But the whole fifth canto of Māgha’s poem is in this measure. The Chaura panchāśicā, a short poem before described, is in the same metre, and so is a pathetic elegy on the death of a beloved wife which occurs in the Bhāmanī vīlda, a collection of miscellaneous poetry by Jagannāṭha Paṇḍita rdja. It begins thus:

Vasantatilaca.

दैवेप्रागवद नशालिनिहंतजाते
चातिशस्यप्रतिदिबंप्रतिबन्धुरवने ।
कस्मैमःकथयितार्थिनिजालवस्त्र्यः
कस्मिन्तःश्रम्यितात्वचन्नैस्तवाधि ॥

"Since fate, alas! is become adverse, and the gem of kindred is departed towards heaven, to whom, O my soul,
wilt thou tell thy grief? and who will appease thy anguish with refreshing words?"

The following passage from some Hindi poem, is quoted in Nárāyána Bhatá’s commentary on the Vṛttta ret-nácará as a specimen of this metre in the Cánycubja dialect.

कन्दर्परुपजबैं तुम्हा लिन्हा, क्रिष्णा!
लोकपार्वम हमा हिन, बाहु-पिरा, चीहोरी।
जाव ब्हेति च विरहा-पिरा नसाइं मेरी।
याई भांतें दूती पाठाई, ताहि बाटा, गोपी।*

“Crishna, since thou didst assume the form of Cupid, I have neglected worldly affairs, suffering much anxiety. Relieve by thy presence the pain of separation which I endure. Such was the message, with which the Gopí dispatched her embassadress.”

V. Śloca or Vacra.

The most common Sanscrit metre is the stanza of four verses containing eight syllables each, and denominated from the name of the class, Anushtubh. Several species of it have been described. Two very simple kinds of it occur, consisting of iambic, or trochaic feet exclusively;†

* Short vowels, when final, are so faintly sounded, that they are usually omitted in writing the provincial languages of India in Roman character. But they have been here preserved at the close of words; being necessary, as in Sanscrit, for correctly exhibiting the metre.
† The first termed Pramānī, the other Samānī. Considered as a species of uniform metre, the first is also named Nagaswarupini or
the rest are included in one general designation.* But several analogous species are comprehended under the denomination of Vactra. Here the laws of the metre, leaving only the first and eighth syllables indeterminate, require either a bacchius or an amphibrachys† before the eighth syllable, and forbid an anapæst or tribrachys after the first; as also in the second and fourth verses of the stanza, an amphimacer. A variety of this metre introduces a tribrachys, before the eighth syllable in the first and third verses, and a bacchius in the second and fourth‡. And another sort.§ which admits five varieties, requires the penultimate syllable to be short in the second and fourth verses; and introduces before the eighth syllable of the first and third verses, a dactyl, anapæst, tribrachys, amphimacer, or molossus.

The metre which is most in use, is one of the species now described, in which the number of syllables is determinate (viz. eight), but the quantity variable. CÁLIDÁSA appropriates to this metre the term Ślóca (abbreviated from Anushṭubh ślóca); and directs, that the fifth syllable of each verse be short, the sixth long, and the seventh alternately long and short. The mythological poems under the title of Purána, and themetrical treatises on law and other sciences, are almost entirely composed in this easy verse; with a sparing intermixture of other analogous sorts, and with the still rarer introduction of other kinds of metre.

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*Matallicá, and the second is denominated Mallicá. There is also a regular measure which alternates trochees and iambics, and is denominated Māñavacáriādā: and another, named Chitrapadá consisting of two dactyls and a spondee.

* Vitána.

† The metre is named Paśhyá when an amphibibrachys is introduced in the second and fourth verses; some say in the first and third.

‡ Chapalá.

§ Vipulá.
The varieties of the Anushtubh śloca which most frequently occur, make the fifth, sixth, and seventh syllables of the first and third verse all long or all short; or else the fifth long with the sixth and seventh short. Thus varied, it is much used by the best poets. Cālidāsa has employed it in the second and sixth cantos of his poem entitled Cūmāra sambhava, and in the first, fourth, and several others of the Raghuvansa. The second and nineteenth cantos of Māgha's poem are in this metre, and so is the eleventh of the Cirātārjunaṃya.

The examples here subjoined are from Māgha's poem. One passage is part of a speech of Balarāma to Cṛṣṇa, urging him to the immediate commencement of hostilities against Śiśupāla: the other is extracted from Uдdhava's reply, dissuading Cṛṣṇa from instant war, and advising his previous compliance with Yudhīshṭhīra's invitation to assist at a solemn sacrifice which the king was on the point of celebrating at Indraprastha.

यखाग्नियान्नचुरुश्कउत्तीखतिकार्थेतः ।
स्यातांमित्रौमित्रोमित्रोमघ्नप्राक्षतावपि ॥२६॥
उपकारालिकायनिधन्निधन्निधेशायकारिणा ।
उपकाराकारालिकंच्चंच्चंचेमेतयोः ॥३०॥
ध्याविष्कर्तनभौतिकिलियोंहरताहरे ।
बद्धमूलस्तूमत्तरहिमहद्देररोःसिच्चः ॥३४॥
ध्याविष्कर्तनभौतिकिलियोंहरताहरे ।
प्राणितार्ग्यम्यमितरन्धकारस्तादिविव ॥५६॥
श्राण्याखंतिच्चर्योव्यस्तारान्पाहतुः ।
Balarama speaks. "A proved enemy, and a tried friend, are most to be regarded; for they are known by their actions: others, presumed to be so, from temper or affinity, may be found in the end to be friend or foe. Peace may be maintained with a natural enemy, who confers benefits; not with a presumptive friend, who commits outrages; kindness or injury, is the proper test of both. The king of the Chedis was offended, O Hari, by the seizure of Rucmînî; for woman is the chief cause, that the tree of discord takes root. Whilst thou wert engaged in subduing the offspring of the earth, he besieged this city, as darkness encircles the skirts of Meru while the sun is remote. To hint, that he ravished
the wife of Vābhrū is enough: the narration of crimes is too disgusting. Thus aggrieved by thee, and having much injured us, the son of Śrutasrāvas is an enemy demonstrated by deeds. The man who is negligent, while an enraged foe meditates aggressions, sleeps in the wind with fire under his arm. What forbearing man, who would cheerfully dissemble a slight and single injury, can patiently endure repeated wrongs? At other times, patience becomes a man; and pudency, a woman: but valour befits the insulted warrior; as modesty should be laid aside by a woman in the nuptial bed. Whoever lives (may none so live!) tortured by the pain of insults from his enemy, would that he had never been born, vainly giving his mother anguish. Dust, which, kicked by the foot of the traveller, rises and settles on his head, is less contemptible than the dastard, who is contented under wrongs.” 2. 36—46.

Uddhava, in reply, addressed to Crūśṇa:

अभायवाचलामतिम्भरर्मकन्ध म्भाधान्यः ।
सहायमध्यरघुरांधर्मराजोविचारे॥१३२॥
महाबाधानीनाययहर्मन्तभगमानानरीनि ।
वपन्टीःप्राप्यन्यसिंधिविन्यन्योनगनिन्नगा: ॥१३४॥
चिरान्निवललात्कारीविविन:सिन्द्रेषिरिषु ।
कन्दानुष्टित्वा:साधा:सुद्द्रोविविननायतः: ॥१३५॥
मन्वशेषरिवधःश्यव्रीतेर्महस्ताभिमिति ।
पुरोहिताभुजाधिपितमितिकुमजंतरारं ॥१३६॥
स्मरितानवस्थन्तोमंचकिरियुजगति ।
श्रीभैवमदरतुभुजुभिमताभीधिवर्षना ॥१३७॥
The just king and his kinsmen, relying on thee for an associate capable of sustaining the heaviest burden, are willing to undertake the task of a solemn sacrifice. Even to enemies, who court them, the magnanimous show kindness; as rivers convey to the ocean the rival torrents from the mountains. Violence, used against foes by the strong, is at length successful; but friends, once offended, are not easily reconciled even by compliances. Thou thinkest, that the slaughter of the foe will most gratify the inhabitants of heaven; but far better is it to present offerings, which are desired by the deities who devour oblations. What the virtuous offer, under the name of ambrosia, in flames, whose tongues are holy prayers, was the splendid ornament of the ocean churned by the mountain Mandara. The promise made by thee to thy father's venerable sister, to forgive her son a hundred offences, should be strictly observed. Let the intellect of a good man be sharp without wounding; let his actions be vigorous, but conciliatory; let his mind be warm without inflaming: and let his word, when he speaks, be rigidly maintained. Before the appointed hour, even thou art not able to destroy the tyrant, on whom thyself conferred that boon; no more than the sun can prematurely close the day, which he himself enlightens." 2. 103—110.
V. Compound metre.

Instances of compound metre have been already exhibited under the designation of Upajāti, consisting of two kinds of simple metre variously combined: two of these combinations are repeated under the head of half equal metre, with the contrasted names of Āchyānacī and Viparītāc'hyānacī. Other species of metre belonging to this class are in use among eminent poets: particularly the Pushpītāgrā and Aparavacatrā. In the first, both verses are terminated by two trochees and a spondee, and begin with four short syllables, one verse interposing a pyrrhichius, and the other a dactyl. In the next species, both verses are terminated by three iambics, and begin like the preceding with four short syllables; but one verse interposes a single short syllable, and the other a trochee.

Examples of the first of these mixed measures are very common. One instance has been already exhibited in a quotation from the first canto of Bhāravy’s poem of Arjuna and the mountaineer. The whole tenth canto of the same poem, and the seventh of Māgha’s death of Śiśupāla, are in this mixt metre. The second is less common: but an instance occurs in the eighteenth canto of the Cīrātarjunya.

The close of the ninth canto of Cālidāsa’s Raghu-vansā, exhibiting a variety of metre, in which two of the species now mentioned are included, is here cited, for the sake of these and other species which have been before described. The subject is Daśarat’ha’s hunt, in which he slew the hermit’s son: a story well known to the readers of the Rāmdyaṇa.
परिच्छेदरागममनुन्नवेदया
मग्नाजखारचतुरुक्काल्यिनी \(\text{\textit{\textasciitilde}}\) ॥७४॥
सुखकितकुडमप्रवालशयाः
वजितमधृष्टधिदीपिकासनायाः

नरपतिरतिवाहयांसत्त्वः
कथिदरमेतपरिच्छेदर्दस्तियांमाः \(\text{\textit{\textasciitilde}}\) ॥७५॥
उषषिसगजयूधकर्णताले:
पत्रपट्टच्वचनिमिर्मिनीतिनिधः

अर्नतम्भुरखराणिश्लेषण\
विद्वानविक्रुजितवन्दिमङ्कानि \(\text{\textit{\textasciitilde}}\) ॥७६॥
प्रयजातुरूर्यहीतवर्मा
विपिनपार्श्वचरैरचच्चमाणः

अस्मफेनमुचातपखिगाढः
तम्बांस्रापनदीतुरजमेण \(\text{\textit{\textasciitilde}}\) ॥७७॥
कुम्भपूरणभवःपटुचैः
हच्चारविनदेवभसितसः

तचवदिरदवृंहितशंकी
शब्दपातिनमिष्पंविसमर्ज \(\text{\textit{\textasciitilde}}\) ॥७८॥

नृपते\textsuperscript{\textit{प्रविष्टमेन्तत}}\nक्षतवान्यानित्रोविलिंश्ययत्
अपयपदः मर्यर्याणि
श्रुतवन्तोऽपि वाचानिमोलिताः ॥७५॥
हातातित्रिकः न्दितमाक्ष्यविश्वा
स्तम्भानिविश्वेतस्गुढः ग्रस्मवस् ।
श्रव्योऽपि वेच्यस्तु कुसेर्मुनिपुरः
तापाद्वन्तः श्रव्यावाचावपितिः ॥८०॥
तेनावतीथ्युर्गात्राचिनान्येन
प्रथान्यः सकल कुशनिप्पदेहः ।
तत्सैर्दित्यरतपिक्ष्मुतस्तवलिङ्गः
राजानमचरपदैः कथात्मकवः ॥८१॥
तत्त्वोदित्वतमनुः हृद्वश्वमेव
पिच्छिः सकाशमवस्त्रदृश्यो निन्यायः ।
ताप्यान्तयागमुपेयतमेकपुरः
ग्राहनतः समरितनृपति: श्रांस ॥८२॥
तौ देवस्तीव्हिवविश्वश्रो: प्रच्छरू: ।
श्रव्यनिष्ठातमुर्दहारयतमुरस्तः ।
वीरभृत्यरामरुष्यभृंमोपितिः श्रापः
कस्तापितेन्यनवारिमिरिवच्चदः ॥८३॥
द्रिष्यान्तमायस्तिभवान्निपुरचशीकः ।
द्रृष्टवष्यश्च निश्चितमुकवन्तः ॥
नातपूर्वमुक्तविषयं

प्रेताचिकोशशल्पति: प्रथमापराय: || ८४ ||

शापोशष्टि यतनयापनवपद्यशेरे

सनुयद्धभगवतामधिपातीताः

सञ्जयदहनपदिकुञ्जलिचितिसिध्देऽ

वीजप्ररोहणनीच्चलनः करोति || ८५ ||

द्रत्यं गतेगतमृतः किमं विभन्तता

वध्यस्तेवं भिमहितेवसुधाधिपेन

एयान्जताशनवत: समुनिव्याचे

पुच्चियपरसुमनुगन्तुमना: सदारः || ८६ ||

मान्यानुगः सपदीशणसम्बराजः

सम्याक्यपातकविक्षु कष्टिनिंत्रतः

खाननिन्विशपदमायविनाशेः

शान्तेशज्जवलनमौर्यमिवामुराशि: || ८७ ||

तद्रित्यमर्याजगतेगतचप:

किमेषंवाभयंजनोऽनुतिष्ठतु

सवक्ष्यसंस्कारमथाचतान

सदारमूनोविंद्धवेचतं नूपः || ८८ ||

समीचियाचघुष्टथभोवशेनिके

सम्मन्निर्दश्चित्तिलघुत्तिनेवयति
Thus did the chase, like an artful mistress, allure the king, forgetful of all other business, and leaving to his ministers the burthen of the state, while his passion grew by indulgence.

The king, without his retinue, passed the night in some sequestered spot, reposing on a bed of leaves and blossoms, and enlightened by the flame of wild herbs. At dawn, being awakened by the flapping of the elephant's ears in place of the royal drums, he delighted in listening to the sweet and auspicious tones of chirping birds.

One day, pursuing an antelope, and outstripping his attendants, he arrived, with his horse foaming with fatigue, on the bank of the Tamasā, a stream frequented by the devout. In its waters a deep sound, caused by the filling of a vase, was mistaken by the king for the grumbling of an elephant, and he directed an arrow towards the spot whence the sound proceeded. By this forbidden act* Daśarat'ha transgressed: for even the wise, when blinded by passion, deviate into the pathless waste. 'Ah father!' was the piteous cry which issued: and the king, anxious, sought its cause among the reeds. He found the vase, and near it a hermit's son pierced by his arrow, and he stood amazed as if internally wounded. The king, of glorious lineage, who had already alighted from his horse, eagerly inquired the parentage of the youth; who, resting on the vase, with feeble accents said 'he was the son of a hermit, but no priest.' Instructed by him, the king conveyed the wounded youth to his blind parents: and to them, as they approached

* The royal and military tribe is prohibited from killing elephants unless in battle.
their only son, he related his mistaken deed. The unhappy pair, lamenting, conjured the king to draw the arrow from the breast of their wounded son. The youth was dead. The aged hermit ratifying his curse with tears instead of water for a libation, pronounced this imprecation on the king: 'In thy extreme age thou shalt reach thy fated time, with grief like mine for a beloved son.' While he spoke, as it were a serpent assailing first and then discharging fatal venom, CAUSALYA'S lord, conscious of the first offence, addressed him thus: 'Thy curse has fallen like a boon on me, who have not seen the beauteous countenance of offspring; as fire, fed with fuel, fertilizes the soil which it burns.' The king then said, 'For me, who merciless deserves death at thy hands, what are thy commands?' The holy hermit asked fuel for the funeral pile; he and his wife resolving to follow their son in death. The king, whose attendants were now arrived, promptly fulfilled his command, and remained dejected, bearing with him the hermit's curse, a cause of his future destruction, as the ocean embraces the devouring fire. Again the king addressed him. 'Wise hermit! what shall this shameless criminal, who deserves death from thee, now perform.' He desired the funeral flame to be duly lighted: and the king presented the fire for him, and his wife and son.

"The chief of the race of RAGHU, attended by his army now returned to his palace, dejected, bearing in his mind the heavy imprecation of the saint, as the ocean holds within itself the fire of destruction." 9. 74—89.

This extract exhibits, besides two stanzas of *Pushpitāgrā* and as many of *Sundari* metre,† both belonging to the present head, and one, of which an example was promised

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* 75 and 76.  
† 77 and 79, most properly the last.
in this place, several others which have been before exemplified, and two which are less common.

A singular species of variable metre is mentioned by writers on prosody, who describe it as a stanza in which the verses increase in arithmetical progression. In the instance exhibited by them the four verses of the stanza increase regularly from eight to twenty syllables. Varieties of it are noticed in which the progression is not regular, the short verse exchanging places with the second, third, or fourth. The quantity of the syllables is in general indeterminate; but varieties are stated in which the verse consists of short syllables, either ending or beginning with a spondee, or both ending and beginning with spondees.

A class of metre which admits an inordinate length of the verse, is known under the general designation of Dañḍaca. The verse may consist of any number of syllables, from twenty-seven to nine hundred and ninety-nine; and the specific name varies accordingly. The construction of the metre requires that the first six syllables be short, and the remainder of the verse be composed of cretic feet; or, instead of the cretic foot, the bacchius. These two kinds of metre are distinguished by different names. A verse consisting of any number of anapæsts within the limitation abovementioned, is also comprehended under this general designation; as are verses of similar length consisting exclusively of iambic or trochaic feet. They have their peculiar denominations.

Examples of these extravagantly long verses are to be

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* Swágatá 78.
† Vasanta tilaca 81—87 and Upóndrávajra 88. Bucirád 89.
‡ Manjúbhāshini 74 (P. T. D. 3 I.) and Mattamayúra 80 (2S + T. I. D. S.)
§ For example, Aráka which comprises ten feet; Aráhava eleven; Vydála twelve; Jímúta nineteen, &c.
found in the works of the poet Vána. It is unnecessary to
insert any specimen of them in this place, as an example will
occur in a subsequent quotation from Bhavabhúti's drama.

That class of metre, which is termed half equal, because
the alternate verses are alike, comprises various sorts, which
appear to be compounded of two simple kinds with an
appropriate number of syllables of a determinate quantity.

Another class, in which every verse of the stanza is dif-
ferent, appears more complex. But, here also, the quantity
as well as the number of syllables being regulated, the
stanza is in fact composed of four kinds of uniform metre.

The most common metre of this class is that called
Udgátá. Here the number of syllables in each verse, as
well as their quantity, differs; the first verse comprising an
anapæst, iambic, tribrachys, and trochee; the second, a
tribrachys and anapæst with two iambs; the third, a
trochee, tribrachys, and two anapæstas;* and the fourth,
an anapæst, iambic, and pyrrhichius with three iambs.

The twelfth canto of the Cirátúrjuniya is in this metre;
and so is the fifteenth canto of Mágila's epic poem. It
begins thus:

अथत्रवापात्तनखेनवसदृविविसिन्तमधुद्रिषः ।
मानसहत्तनचेदपति:परवद्विमाबरिमनीति
 मानिनां ॥

"But the king of the Chédis was impatient of the ho-
nours which the son of Pánóu commanded to be shown in
that assembly to the foe of Mālhu; for the mind of the
proud is envious of the prosperity of others."

* Or the third verse may consist of a trochee and dactyl, with two
anapæstas; or of two trochees, with two anapæstas; and the metre is
denominated, in the first instance, Saurabhacá; in the second,
Lalitá.
Other kinds of metre, in which every verse of the stanza differs in the number and quantity of syllables, are comprehended under the general name of Gāthā; under which also some writers on prosody* include any sort of metre not described by Pingala, or not distinguished by a specific appellation. The same denomination is applicable also to stanzas consisting of any number of verses other than four.† An instance of a stanza of six verses has been remarked in the Mahābhārata, and another example occurs at the beginning of Magha’s poem.‡

दिधाय्यात्माकिमयंदिवाकरी
विभूमरोचि:किमयंझताशन: ।
गततिरशीनमनूहसारसः:
प्रसिद्धमूर्गिज्ञचनंदिविभुजः ।
पतत्वधोधामविवारिरिभत:
किमेतदियात्कुलमीविचित्रञ्जने: ॥

Dwirdhā crītātma, cim ayaṁ divācaró?
Vidhúma-róchik, cim ayaṁ hutasanah?
Gatan tiraschtīnam anvūru-sarāt‘heḥ.
Prasiddham úrddhawajvalanam havirbhujah.
Patatyadhó dháma-visāri sarvatah.
Cim étad? ityāculam ışhitam janaĩḥ.

* Helayudha and Narayana Tára.
† Divácaro on the Vṛttika rotnácaro.
‡ It is cited by Divácaro Bhagá as an instance of a stanza of six. Yet the scholiasts of the poem omit the two first verses and read the stanza as a tetrastich. One commentator, however, does remark, that copies of the poem exhibit the additional verses; and another commentator has joined them with two more verses in a separate stanza.
NAREDA descending from the heavens to visit CRISHNA, is thus described:

"'Is this the sun self-parted into two orbs? Is it fire shining with light divested of smoke? The motion of the luminary whose charioteer has no legs, is distinguished by its curvature; the ascent of flame is a known property of fire. Then what is this, which descends diffusing light around?' Thus was the sight contemplated with wonder by the people." Magha 1. 2.

VI. Prose; and Verse mixed with Prose.

I follow the example of Sanscrit writers on prosody, in proceeding to notice the different species of prose. They discriminate three, and even four sorts, under distinct names. 1st. Simple prose, admitting no compound terms. It is denominated Muctaca. This is little used in polished compositions; unless in the familiar dialogue of dramas. It must undoubtedly have been the colloquial style at the period when Sanscrit was a spoken language. 2d. Prose, in which compound terms are sparingly admitted. It is called Culaca. This and the preceding sort, are by some considered as varieties of a single species named Churnica. It is of course a common style of composition; and when polished, is the most elegant as it is the chastest. But it does not command the admiration of Hindu readers. 3d. Prose, abounding in compound words. It bears the appellation of Utclicó práya. Examples of it exhibit compounds of the most inordinate length; and a single word exceeding a hundred syllables is not unprecedented. This extravagant style of composition being suitable to the taste of the Indian learned, is common in the most elaborate works of their favourite authors. 4th. Prose, modulated so as frequently to exhibit portions of verse. It is named Vritttagandhi. It will occur without study, and even
against design, in elevated compositions, and may be expected in the works of the best writers.

Some of the most elegant and highly wrought works in prose are reckoned among poems, as already intimated, in like manner as the "Télémaque" of Fénelon and "Tod Abels" of Gessner. The most celebrated are the Vāsa-vadattā of Subandhu, the Daśa cumāra of Daññi, and the Cādambarā of Vāna.

The first of these is a short romance, of which the story is simply this. Candarpacētu, a young and valiant prince, son of Chintāmaṇi king of Cusumāpura,* saw in a dream a beautiful maiden, of whom he became desperately enamoured. Impressed with the belief, that a person, such as seen by him in his dream, had a real existence, he resolves to travel in search of her, and departs, attended only by his confidant Macaranda. While reposeing under a tree in a forest at the foot of the Vīndhya mountains, where they halted, Macaranda overhears two birds conversing, and from their discourse he learns that the princess Vāsavadatta, having rejected all the suitors who had been assembled by the king her father for her to make choice of a husband, had seen Candarpacētu in a dream, in which she had even dreamt his name. Her confidant, Tamālicā, sent by her in search of the prince, was arrived in the same forest, and is discovered there by Macaranda. She delivers to the prince a letter from the princess, and conducts him to the king's palace. He obtains from the princess the avowal of her love; and her confidant, Calavatī, reveals to the prince the violence of her passion.

The lovers depart together: but, passing through the

* Same with Pañali pura or Pañali putra; the ancient Palibothra now Patna. As. Res., vol. iv., p. 11.
forest, he loses her in the night. After long and unsuccessful search, in the course of which he reaches the shore of the sea, the prince, grown desperate through grief, resolves on death. But at the moment when he was about to cast himself into the sea, he hears a voice from heaven which promises to him the recovery of his mistress, and indicates the means. After some time, CANDARPACÉTU finds a marble statue, the precise resemblance of VÁSAAVA-DATTÁ. It proves to be her; and she quits her marble form and regains animation. She recounts the circumstances under which she was transformed into stone.

Having thus fortunately recovered his beloved princess, the prince proceeds to his city, where they pass many years in uninterrupted happiness.

The story, told in elegant language, and intermixed with many flowery descriptions in a poetical style, is the VÁSAAVA-DATTÁ of SUBAN DHU. There is an allusion, however, in BHAVABHÚTI'S drama,* to another tale, of VÁSAAVA-DATTÁ's having been promised by her father to the king SANJAYA, and giving herself in marriage to UDA-
YÁNA. I am unable to reconcile this contradiction otherwise than by admitting an identity of name and difference of story. But no other trace has been yet found of the story to which BHAVABHÚTI has alluded.

In the work above described, as in various compositions of the same kind, the occasional introduction of a stanza or even several, either in the preface or in the body of the work, does not take them out of the class of prose. But other works exist, in which more frequent introduction of verse makes of these a class apart. It bears the name of Champú: and of this kind is the Nala champú of TRIVI-
CRAMA before mentioned. This style of composition is not

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* Málati mádhava. Act 2d.
without example in European literature. The "Voyage de Bachaumont et de la Chapelle," which is the most known, if not the first instance of it in French, has found imitators in that and in other languages. The Sanscrit inventor of it has been equally fortunate; and a numerous list may be collected of works expressly entitled Champú.*

The Indian dramas are also instances of the mixture of prose and verse; and, as already mentioned, they likewise intermixed a variety of dialects. Our own language exhibits too many instances of the first to render it necessary to cite any example in explanation of the transition from verse to prose. In regard to mixture of languages, the Italian theatre presents instances quite parallel in the comedies of Angelo Belloco surnamed Ruzanti:† with this difference, however, that the dramas of Ruzanti and his imitators are rustic farces, while the Indian dramatists intermingle various dialects in their serious compositions.

Notwithstanding this defect, which may indeed be easily removed by reading the Prācīt speeches in a Sanscrit version, the theatre of the Hindus is the most pleasing part of their polite literature, and the best suited to the European taste. The reason probably is, that authors are restrained more within the bounds of poetic probability when composing for exhibition before an audience, than in writing for private perusal or even for public recital.

The Śācuntalā by Cālidāsa, which certainly is no unfavorable specimen of the Indian theatre, will sufficiently justify what has been here asserted. I shall conclude this essay with a short extract from Bhavabhūti's unrivalled drama, entitled Mālatīmadhava; prefixing a concise argument of the play, the fable of which is of pure invention.

* As the Nṛśinha champū, Gangā champū, Vṛindāvana champū &c.
† Walker's Memoir on Italian tragedy.
BHÚRIVASU, minister of the king of PADMÁVATI, and DÉVARÁTA in the service of the king of VÍDERBHA, had agreed, when their children were yet infants, to cement a long subsisting friendship, by the intermarriage of MÁLATI, daughter of the first, with MÁDHAVA, son of the latter. The king having indicated an intention to propose a match between BHÚRIVASU's daughter and his own favourite NANDANA, who was both old and ugly, the minister is apprehensive of giving offence to the king by refusing the match; and the two friends concert a plan with an old priestess, who has their confidence, to throw the young people in each other's way, and to connive at a stolen marriage. In pursuance of this scheme, MÁDHAVA is sent to finish his studies at the city of PADMÁVATI, under the care of the old priestess CÁMANDACI. By her contrivance, and with the aid of MÁLATI's foster sister LÁVANGICA, the young people meet and become mutually enamoured. It is at this period of the story, immediately after their first interview, that the play opens. The first scene, which is between the old priestess and her female pupil ÁVALÓCITÁ, in a very natural manner introduces an intimation of the previous events, and prepares the appearance of other characters, and particularly a former pupil of the same priestess named SAUDÁMINI, who has now arrived at supernatural power by religious austerities; a circumstance which her successor ÁVALÓCITÁ has learnt from CÁPALACUÑDALA, the female pupil of a tremendous magician, AGRÓRAGHAÑTA, who frequents the temple of the dreadful goddess near the cemetery of the city.

The business of the play commences; and MÁDHAVA, his companion MACARANDA, and servant CALABHANSA, appear upon the scene. MÁDHAVA relates the circumstances of the interview with MÁLATI, and acknowledges himself deeply smitten. His attendant produces a picture
which MĀLATĪ had drawn of MĀDHAVA, and which had come into his hands from one of her female attendants. In return MĀDHAVA delineates the likeness of MĀLATĪ on the same tablet, and writes under it an impassioned stanza. It is restored; and being in the sequel brought back to MĀLATĪ, their mutual passion, encouraged by their respective confidants, is naturally increased. This incident furnishes matter for several scenes. Meantime, the king had made the long expected demand; and the minister has returned an answer that "the king may dispose of his daughter as he pleases." The intelligence reaching the lovers throws them into despair. Another interview in a public garden takes place by the contrivance of CĀMANDACĪ. At this moment a cry of terror announces that a tremendous tiger has issued from the temple of ŚIVA; an instant after, NANDANA's youthful sister, MADAYANTICA, is reported to be in imminent danger. Then MĀDHAVA's companion, MACARANDA, is seen rushing to her rescue. He has killed the tiger. He is himself wounded. This passes behind the scenes. MADAYANTICA, saved by the valour of MACARANDA, appears on the stage. The gallant youth is brought in insensible. By the care of the women he revives; and MADAYANTICA, of course, falls in love with her deliverer. The preparations for MĀLATĪ's wedding with NANDANA are announced. The women are called away. MĀDHAVA in despair resolves to sell his living flesh for food to the ghosts and malignant spirits, as his only resource to purchase the accomplishment of his wish. He accordingly goes at night to the cemetery. Previous to his appearance there, CAPALACTUṆĀLA, in a short soliloquy, has hinted the magician's design of offering a human sacrifice at the shrine of the dreadful goddess, and selecting a beautiful woman for the victim. MĀDHAVA appears as a vendor of human flesh; offering, but in vain,
to the ghosts and demons the flesh off his limbs as the purchase of the accomplishment of his wish. He hears a cry of distress and thinks he recognizes the voice of MÁLATÍ. The scene opens, and she is discovered dressed as a victim, and the magician and sorceress preparing for the sacrifice. They proceed to their dreadful preparatives. MÁDHAVA rushes forward to her rescue: she flies to his arms. Voices are heard as of persons in search of MÁLATÍ. MÁDHAVA, placing her in safety, encounters the magician. They quit the stage fighting. The event of the combat is announced by the sorceress, who vows vengeance against MÁDHAVA for slaying the magician her preceptor.'

The fable of the play would have been perhaps more judiciously arranged if this very theatrical situation had been introduced nearer to the close of the drama. BHAVABHÚTI has placed it so early as the fifth act. The remaining five (for the play is in ten acts) have less interest.

'MÁLATÍ, who had been stolen by the magician, while asleep, being now restored to her friends, the preparations for her wedding with NANDANA are continued. By contrivance of the old priestess, who advised that she should put on her wedding dress at a particular temple, MACARÁNDA assumes that dress, and is carried in procession, in place of MÁLATÍ, to the house of NANDANA. Disgusted with the masculine appearance of the pretended bride, and offended by the rude reception given to him, NANDANA, to have no further communication with his bride, vows and consigns her to his sister’s care. This, of course, produces an interview between the lovers, in which MACARÁNDA discovers himself to his mistress, and she consents to accompany him to the place of MÁLATÍ’s concealment. The friends accordingly assemble at the
garden of the temple: but the sorceress, Capalacun-
ála, watches an opportunity when Málati is unpro-
tected, and carries her off in a flying car. The distress of
her lover and friends is well depicted: and, when reduced
to despair, being hopeless of recovering her, they are hap-
pily relieved by the arrival of Saudámini, the former
pupil of the priestess. She has rescued Málati from
the hands of the sorceress, and now restores her to her
despairing lover. The play concludes with a double wed-
ding.'

From this sketch of the story it will be readily perceived,
that the subject is not ill suited to the stage: and making
allowance for the belief of the Hindus in magic and super-
natural powers, attainable by worship of evil beings as well
as of beneficent deities, the story would not even carry the
appearance of improbability to an Indian audience. Set-
ting aside this consideration, it is certainly conducted with
art; and notwithstanding some defects in the fable, the
interest upon the whole is not ill preserved. The incidents
are striking; the intrigue well managed. As to the style,
it is of the highest order of Sanscrit composition; and the
poetry, according to the Indian taste, is beautiful.

I shall now close this essay with the promised extract
from the play here described. It contains an example,
among other kinds of metre, of the Dandaça or long
stanza, and is selected more on this account than as a
fair specimen of the drama. This disadvantage attends all
the quotations of the present essay. To which another
may be added: that of a prose translation, which never
conveys a just notion of the original verse.
Extract from *Mālatī mādhava*. Act 5.

MĀDHAVA continues to wander in the cemetery.

"Human flesh to be sold: unwounded, real flesh from the members of a man. Take it. Take it."*

'How rapidly the Paisāchas flee, quitting their terrific forms. Alas! the weakness of these beings.'

He walks about.

'The road of this cemetery is involved in darkness. Here is before me "the river that bounds it; and tremendous is the roaring of the stream, breaking away the bank, while its waters are embarrassed among the fragments of skulls, and its shores resound horribly with the howling of shakals and the cry of owls screeching amidst the contiguous woods."†

Behind the scenes.

'Ah! unpitying father, the person whom thou wouldst make the instrument of conciliating the king's mind, now perishes.'

MĀDHAVA, listening with anxiety.] "I hear a sound

* Anushtubh.

अश्वश्चिपतमथा जुपुष्पांगोपकलिचिमितः।
विक्रीयते महामांगसंग्रहतां यन्त्रातामिदं॥

† Sārdula visṛṣiṣṭa.

गुच्छकुशकुटयोकषिकघटाच्छन्नकारसंवलितः
ऋणन्दोरवचण्डपताहतिस्त्रांमान्त्रभीमैस्तः॥
अन्: श्रीरेणकरंकर्मकर्यः संरेध्यूर्धक्षषः
खोतेनिगमोधर्यरवारिभाशामर्गितः॥
piercing as the eagle’s cry, and penetrating my soul as a voice but too well known. My heart feels rent within me; my limbs fail; I can scarcely stand. What means this?*  

"That piteous sound issued from the temple of CARALÁ. Is it not the resort of the wicked? a place for such deeds?† Be it what it may, I will look."

He walks round.

The scene opens; and discovers CAPALACUÑDALÁ and AGHÓRAGHÁNṬA, engaged in worshipping the idol: and MÁLATĪ dressed as a victim.

MÁL.] ‘Ah unpitying father! the person whom thou wouldst make the instrument of conciliating the king’s mind, now perishes. Ah fond mother! thou too art slain by the evil sport of fate. Ah venerable priestess! who lived but for MÁLATĪ, whose every effort was for my prosperity, thou has been taught by thy fondness a lasting

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* Mandácrántā.

नादस्तावद्वितिक्षुकररीक्कृतिजितिख्चिताग्न्यातः
खितताकर्षीपरिचितिद्वशोपञ्चवाद्यमेव
अन्तर्भितमंत्रिट्वद्वाद्विभिक्षङ्कवंगः
दैहिष्ठश्च:खितातिचाग्लिकःप्रकारंकिमेतत्

† Vactra.

कराखायतनायमुचचरक्करक्षणभविः
विभायतनेनुम्हामनिष्ठानांतरे०


dh


dh


dh

sorrow. Ah gentle LAVANGICÁ! I have been shown to thee but as in a dream.'

MÁDH.] 'Surely it is she. Then I find her living.'

CAPĀLACUṆḌALĀ worshipping the idol CARALĀ.] 'I bow to thee, divine CHĀMUṆḌÁ.'

"I revere thy sport, which delights the happy court of ŚIVA, while the globe of the earth, sinking under the weight of thy stamping foot, depresses the shell of the tortoise and shakes one portion of the universe, whence the ocean retires within a deep abyss that rivals hell."†

"May thy vehement dance contribute to our success and satisfaction; amidst the praise of attendant spirits, astonished by the loud laugh issuing from thy necklace of heads which are animated by the immortalizing liquid that drops from the moon in thy crest, fractured by the nails of the elephant's hide round thy waist, swinging to the violence of thy gestures: when mountains are overthrown by the jerk of thy arm, terrible for the flashes of empioned flame which issue from the expanded heads of hissing serpents closely entwined. The regions of space meantime are contracted, as within a circle marked by a flaming brand, by the roll-

* The Prākrit original of this passage, though prose, is too beautiful to be omitted.


† Sáṛdúla vicrídita.
ing of thy head terrific for the wide flame of thy eye red as raging fire. The stars are scattered by the flag that waves at the extremity of the vast skeleton which thou bearest. And the three-eyed god exults in the close embrace of Gauri, frightened by the cries of ghosts and spirits triumphant.*

They both bow before the idol.

MĀDH.] 'Ah! what neglect.'

"The timid maid, clad as a victim in clothes and garlands stained with a sanguine die, and exposed to the view

* The original stanza is in Daṇḍaka metre, of the species denominated Prachita and Sinkavīrānta. The verse contains eighteen feet (2 Tr. 16 C.) or fifty-four syllables, and the stanza comprises 216 syllables.
of these wicked and accursed magicians, like a fawn before 
wolves, is in the jaws of death; unhappy daughter of the 
happy BHŪRĪVASU. Alas! that such should be the relent-
less course of fate."*

CAPĀL.] "Now, pretty maid, think on him who was thy beloved. Cruel death hastens towards thee."†

MĀLATĪ.] 'Beloved, MĀDHAVA! remember me when I am gone. That person is not dead who is cherished in the 
memory of a lover.'

CAPĀL.] 'Ah! enamoured of MĀDHAVA she will be-
come a faithful dove. However that be, no time should be lost.'

AGHŪR. lifting the sword.] "Divine CHĀMUNDĀ! accept this victim vowed in prayer and now offered to 
thee."‡

* Śdrāḍāla vicrīḍita.

† Praharśiḍī.

‡ Praharśiḍī.

CHĀMUNDĀBHAGAVATISĀNTAVĀDHANA-

DVĪṬHĀSPRĪṢHITĀMBHĀSĀPURAŚÁNA ||

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MÁDH. rushing forward, raises MÁLATÍ in his arms.] ‘Wicked magician! thou art slain.’

CAPÁL.] ‘Avaunt villain. Art thou not so?’

MÁL.] ‘Save me, prince!’ She embraces MÁDHAVA.

MÁDH.] ‘Fear nothing. “Thy friend is before thee, who banishing terror in the moment of death, has proved his affection by the efforts of despair. Cease thy trembling. This wicked wretch shall soon feel the retribution of his crime on his own head.”’

AGHÓR.] ‘Ah! who is he that dares to interrupt us?’

CAPÁL.] ‘Venerable Sir! he is her lover; he is MÁDHAVA, son of CAMANDACÍ’s friend, and a vender of human flesh.’

MÁDH. in tears.] ‘How is this? auspicious maid!’

MÁL. sighing.] ‘I know not, Prince! I was sleeping on the terrace. I awoke here. But how came you in this place?’

MÁDH. blushing.] ‘Urged by the eager wish that I may be blessed with thy hand, I came to this abode of death to sell myself to the ghosts. I heard thy weeping. I came hither.’

• Harińi.

मरणसमयेवऽकाशांकांप्रतापनिरर्गच्छ
प्रकटितसिन्धुःविशाखस्मिपुरपवते ।
सुतुनविसृजोत्कप्यसंग्रामसामाधिपिंपानः
फलमल्लभवामुपचापःप्रतीयविपाकिनः ॥

† Vasanta tilaca.

लत्याणिपिन्निर्परिभ्रुपुष्कङ्कम्
भुयायतिदभिनिविशेषकर्मस्यनात् ॥
MÁL.] 'Alas! for my sake wert thou wandering regardless of thyself!'

MÁDH.] 'Indeed, it is an opportune chance.'

"Having happily saved my beloved from the sword of this murderer, like the moon's orb from the mouth of devouring Ráhu, how is my mind distracted with doubt, melted with pity, agitated with wonder, inflamed with anger, and bursting with joy."*

AGHÓR.] 'Ah! thou Bráhmen boy! "Like a stag drawn by pity for his doe, whom a tiger has seized, thou seekest thy own destruction, approaching me engaged in the worship of this place of human sacrifice. Wretch! I

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भाम्ब्रमांसपणायपरेतभूमा -
वाकर्षेभीवदितानितवागनाति शिम	||

* Şárdála vicríśita.

राहोऽकलकामिवाननचरिमैवालमाघामे
दृखोऽकलपाण्यणातिरियादाहिन्दूतःप्रेयसीः ।
श्रान्तकादिकलेंकुरंतुकुण्ड्याविचरित्विस्मयात्
श्रैकेनज्जलितमुद्राविकसित्चेतःकत्यंवर्ततां	||

† Şárdála vicríśita.

व्याघ्राचामगीक्षणपारंकस्तगन्याचेनङिंसारः
पापाण्युपहारकेतनजुष्प्रासितावर्मिगोचरः ।
क्षोजंप्रामाण्येवतन्तजननीम्भोभूमिक्ष्णाहिति -
यस्तस्तम्भकानवंदरन्नम्भिरधारामार्णि:क्षणिना	||
will first gratify the great mother of beings with thy blood flowing from a headless trunk."

MADH.] 'Thou worst of sinful wretches! "How couldst thou attempt to deprive the triple world of its rarest gem, and the universe of its greatest excellence, to bereave the people of light, to drive the kindred to desperation, to humble love, to make vision vain, and render the world a miserable waste!"*

'Ah wicked wretch! "Hast thou dared to lift a weapon against that tender form, which even shrunk from the blow of light blossoms thrown in merry mood by playful damsels. This arm shall light on thy head like the sudden club of Yama."†

AGHÓR.] 'Strike, villain! Art thou not such?'

MAL to MADH.] 'Be pacified, dear MADHAVĀ! The

* Śīc'hariṇī.

चवारंस्वारंपरिमुखितरन्तरचिभुवनं
निरालोकलोकसमर्णशरणवास्यवजनं ।
श्रद्धयकन्द्रपंजननयननिर्माणमाफलं
जगद्गीर्णार्णकंयमचिविवातान्वविषतः: ॥

† A very uncommon metre named Avitā'ha or Narcutaca.

प्रणविष्क्षेलोकपरिद्राहशरखाधिगते—
बंखितशिरोपुष्पचन्दनेरपिताम्बितिषित् ।
वुपिषविवायतनतवशस्तमपछिपत:
पततुशिरकाम्णदकेष्वेषभुजः ॥
cruel man is desperate. Abstain from this needless hazard.

CAPAL. to AGHOR. 'Venerable Sir, be on your guard. Kill the wretch.'

MADH. and AGHOR, addressing the women. 'Take courage. The wretch is slain. Was it ever seen that the lion, whose sharp fangs are fitted to lacerate the front of the elephant, was foiled in fight with deer?'

A noise behind the scenes. They listen.

'Ho! ye guards who seek MALATI. The venerable and unerring CAMANDACI encourages BHURIVASU and instructs you to beset the temple of CARALA. She says this strange and horrid deed can proceed from none but AGHORAGHANTA; nor can aught else, but a sacrifice to CARALA, be conjectured.'

CAPAL. 'We are surrounded.'

AGHOR. 'Now is the moment which calls for courage.'

MAL. 'Oh father! Oh venerable mother!'

MADH. 'Tis resolved. I will place MALATI in safety with her friends, and slay this wicked sorcerer.'

MADH. conducts MALATI to the other side, and returns towards AGHORAGHANTA.

AGHOR. 'Ah wretch! 'My sword shall even now cut thee to pieces, ringing against the joints of thy bones.

* Vasanta tilaka.

धैर्यंनिधिष्ठितं येहथतएषपापः
विवाहोऽहाचिदपक्षिनचिदनभाविः
सारंगसंगरविधाविभक्कुक्रूट-
कुष्टाकपाणिकुशिश्वधरेःप्रमादः॥
passing with instantaneous rapidity through thy tough muscles, and playing unresisted in thy flesh like moist clay."*

*They fight. The scene closes.

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- *Śic'harīni*

कठोरास्थिययंथियतिकरणत्कारसुखः

खरस्नायुक्तेवचणविजितवेगब्यपरमः ||

निरावित्वः पद्मचिवपिश्तपिण्डे पुविलब्

निषिद्धालंगाचंसपदिचः स्वस्तेविविकरतु ||
SYNOPTICAL TABLES
OF
INDIAN PROSODY.

Feet used in Sanscrit Prosody.

TRISYLLABIC.

M. —— Molossus. M.
Y. ◊ —— Bacchius. B.
R. ◊ —— Creticus or Amphimacer. C.
S. ◊ ◊ —— Anapæstus. A.
T. —— ◊ Antibacchius, Palimbacchius, or Hypobacchius. H.
J. ◊ —— Amphibrachys or Scolius. Sc.
Bh. ◊ ◊ Dactylus. D.
N. ◊ ◊ Tribrachys. Tr.

MONOSYLLABIC.


Feet used in Pracrit Prosody.

1 c. One Mátra or Calás. Sara: Brevis ◊ Br.
2 c. Two Mátras of Calás.
    Hára: Longus — L.
    Supriya: Pyrrhichius or Periambus. ◊ ◊ P.
3 c. Three Mátras of Calás.
    Tála: Trochæus — T.
    Dwaja: Iambus ◊ — I.
    Tánḍava: Tribrachys ◊ ◊ Tr.

Haya: 4 c. Mátras of Calás.
    Carña: Spondeus —— S.
    Payódhara: Scolius ◊ — Sc.
    Hastam: Anapæstus ◊ ◊ A.
    Charana: Dactylus — ◊ D.
    Vipra: Proceleusmaticus ◊ ◊ Pr.
**Indrásana:** 5 c. Five Métras or Calás.

**Creticus C., Bacchius B., Pemon P., &c.**

**Sarója:** 6 c. Six Métras or Calás.

**MoLóssus M. &c.**

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**Metre of the Védas; regulated by the number of syllables.**

Seven classes subdivided into eight orders.

**CLASSES.**

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**Distribution of the Syllables in Triplets, Tetrastichs, &c.**

**I. Gáyatři.**

1. Tripád ............. $8 \times 3 = 24$
2. Chatushpád ............. $6 \times 4 = 24$
3. Pádanívřt ............. $7 \times 3 = 21$
4. Atripádanívřt ............. $6 + 8 + 7 = 21$
5. Nágí ............. $9 + 9 + 6 = 24$
6. Váráfi ............. $6 + 9 + 9 = 24$
7. Vardhamáná ............. $6 + 7 + 8 = 21$
8. Pratisht’há ............. $8 + 7 + 6 = 21$
9. Dwipádviráj ............. $12 + 8 = 20$
10. Tripádviráj ............. $11 \times 3 = 33$

**II. Usñíh.**

1. Tripád (12 + 8 $\times 2$).
   1. Cacubh ............. $8 + 12 + 8 = 28$
   2. Pura Usñíh ............. $12 + 8 + 8 = 28$
   3. Paróshtìh ............. $8 + 8 + 12 = 28$
   2. Chatushpád ............. $7 \times 4 = 28$

**III. AnushÍubh.**

1. Chatushpád ............. $8 \times 4 = 32$
2. Tripád (8 + 12 $\times 2$), viz. 12 + 8 + 12, or 12 + 12 + 8, or $8 + 12 + 12 = 32$.

**IV. Vríhatì.**

1. Chatushpád ............. $9 \times 4 = 36$
2. ............. $8 \times 2 + 10 \times 2 = 36$
3. ............. $8 \times 3 + 12 = 36$
4. Páthìyá ............. $8 + 8 + 12 + 8 = 36$
5. Nyancusáráhí (Scandhógrívá or Uróvríhatì), $8 + 12 + 8 = 36$.
3. Uparishhádvíratì, $8 \times 3 + 12 = 36$.
4. Purastádvíratì $12 + 8 \times 3 = 36$
5. Mahávríhatì (Satóvríhatì), 12 $\times 3 = 36$. 3 = 36.
V. PANCt.
1. Chatushpád (12 × 2 + 8 × 2).
   1. Śatah-p. 12 + 8 + 12 + 8 = 40
   or 8 + 12 + 8 + 12 = 40
2. Astára-p. 8 + 8 + 12 + 12 = 40
3. Prastára-p. 12 + 12 + 8 + 8 = 40
4. Vistára-p. 8 + 12 + 12 + 8 = 40
5. Sanstára-p. 12 + 8 + 8 + 12 = 40
2. 1. Aescharapancti. 5 × 4 = 20
    2. Alpaahpancti. 5 × 2 = 10
    3. Padapanci. 5 × 5 = 25
4. 4 × 6 + 5 × 3 = 25
3. Pat’hyá..............8 × 5 = 40
4. Jagatí.............8 × 6 = 48

VI. TRISHTUBH.
1. Jyótishmatí.....11 + 8 × 4 = 43
2. Jagatí.............12 + 8 × 4 = 40
3. Purastódyjštishmatí....12 + 8 × 3
4. Madhyá.8 + 11 (12) + 8 + 8
5. Uparishhád .8 + 8 + 8 + 8 + 11
(12).

Deficient and exuberant Metre.
1. Śancumatí=5 + a × 3, ex. (Gáyatrí) 5 + 6 × 3 = 23.
2. Cacudmatí=6 + a × 3.
3. Pipálica madhyá = (Tripád) = many + few + many, ex. 8 + 4 + 8.
4. Yavamadhyá = (Tripád) = few + many + few, ex. 8 + 10 + 8.
5. Nivrit=a—1, ex. (Gáyatrí) 24—1=23.
6. Bhurij=a+1, ex. (Gáyatrí) 24+1=25.
7. Viráj=a—2, ex. (Gáyatrí) 8 + 8 + 6 = 22.
8. Swaráj=a+2, ex. (Gáyatrí) 8 + 8 + 10 = 26.*


1. Áryá or Gáthá, Pr. Gáthá. Each verse ends in L.
30 + 27 = 57 c.
Odd verse: 30 c. = 7½ ft. (6th = Sc. or Pr.).
Even* verse: 27 c. = 7½ ft. (6th = Br.).
Pause in 1st verse before 7th ft. if Pr. But if 6th ft. be Pr., then pause after 1st syllable.
Pause in 2d verse before 5th ft. if Pr.

* If there be room to doubt whether the metre be reduced from the next above, or raised from the next below, the first verse determines the question; for it is referred to the class to which the first verse or páda belongs. If this do not suffice, the metre is referred to that class, which is sacred to the deity, to whom the prayer is addressed. Should this also be insufficient, other rules of selection have been provided. Sometimes the metre is eked out by substituting iya or uva for correspondent vowels. This in particular, appears to be practised in the Sámañáda.

L 2
16 Species: Pat'hyá: Pause after 3d ft. \(3 + 4\frac{1}{3} = 7\frac{1}{3}\) ft. and 12 + 18 + 12 + 15 = 57 c.). Vipulá: Pause placed otherwise. Hence Ádivipulá, Anyāvipulá and Ubbhaya-vipulá, with 1st verse, 2d, or both, irregularly divided by the pause. Chapalá 1st f. S. or A. 2d Sc. 3d S. 4th Sc. 5th S. or D. 6th Sc. or Pr. (in the short verse, Br.), 7th S. D. A. or Pr. Hence Muc'hachapalá, Jaghanya chapalá and Mahachapalá, with 1st, 2d or both verses so constructed. Therefore Áryá + 3 Chapalá's \(\times\) Pat'hyá + 3 Vipulás = 16 species.

Variations: Áryá, 1st verse 10,800. 2d verse 6,400. Chapalá 1st verse 32, 2d verse 16.

In Prácrit prosody, 27 species: from 27 L. + 3 Br. = 30 syll. to 1 L. and 55 Br. = 56 syll.

Specific varieties. Culiná containing 1 Sc. Cula'á, 2 Sc. Vi'hyá, many Sc. Richá, no Sc. Gurvi'á, Sc. 1st, 3d, 5th or 7th ft. But this is against rule: which excludes amphibrachys from the odd feet.

2. Udgitá or Vígát'há, Pr. Vi'gáhá 27 + 30 = 57 c. viz. 12 + 15 + 12 + 18.


4. Giti or Udgit'há, Pr. Uggáhá. 30 + 30 = 60 c. viz. 12 + 18 + 12 + 18.

5. Áryagiti or Chánadhaca, Pr. Scandha. 32 + 32 = 64 c.

8 ft. complete. \(3 + 5 = 8\) ft. and 12 + 20 + 12 + 20 = 64 c.

Species 16 (Pat'hyá, &c.), variations of each verse 10,800.

In Prácrit prosody, 28 species from 28 L. & 8 Br. to 1 L. and 62 Br.

6. Chandrícá, Sangiti or Gá't'hini, Pr. Gáhini. 30 + 32 = 62 c. viz. 12 + 18 + 12 + 20,

7. Sugiti, or Parigiti, Pr. Sinhini 32 + 30 = 62 c. viz. 12 + 20 + 12 + 18.

Also


Áryá \(9\frac{1}{3}\) ft. + L. in both verses.

7. Sugiti, 32 + 27 = 59 c.

L. in first verse only.

8. Pragiti, 30 + 29 = 59 c.

+ L. in second verse only.


Reverse of Sugiti.

10. Manjugiti, 29 + 30 = 59 c.

Reverse of Pragiti.

11. Vígiti, 29 + 29 = 58 c.

Upagiti + L. in both verses.


Reverse of Sangiti.

13. Vallari. 32 + 30 = 62 c.

Áryágiti—L. in last verse.


—L. in first verse.

15. Pramádá, 29 + 27 = 56 c.

Upagiti + L. in first verse.


+ L. in last verse.

All these kinds admit 16 species as above: viz. Pat'hyá, &c.
II. Mátrá vrūtta or Mátrá ch’handas, of Sanscrit

Prosody.

1. Vaitáliya, 56 to 68 c.
   1. Vaitáliya, 14 + 16 + 14 = 60 c.
       End in C. + I.
   Short syllables by pairs (even verses not to begin with 2 Tr.)
2. Āpatálika, End in D. & S.
3. Aupach’handasica, 16 + 18 + 16 + 18 = 68 c. End in C.
   & B.

Each kind admits 8 varieties of the short verse and 13 of the long; from 3 long
syl. to 6 short beginning the one, and from 4 long syl. to 1 long and 6 short in the
other.

Also the following species under each kind.

1. Dacshiántica, begin with I.
   Comprising 2 varieties of the odd verses.
   I. I. (or Tr.); and 4 of the even verses.
   I. B. (or Pr. 2d or 4th or 5 Br.)

2. Udichya vṛtta, odd verses
   begin with I.

3. Práchya vṛtta, even verses.
   C. or Pr. 4.

4. Pravṛttaca, the two proced-
   ing combined.

5. Aparántica, 16 × 4 = 64 c.
   (Prāchh.)

6. Cháruhádini, 14 × 4 = 56 c.
   (Udichh.)

2. Mátrā samaca, 16 (4 × 4) × 4 = 64 c.
   End S. or A. Begin S. A. D. or Pr.

1. Mátrā samaca, 2d ft. S. A. or D. 3d ft. A.
2. Viśóca, 2d Sc. or Pr. 3d S.
   or D.
3. Vánavísícá, 2d S. A. or D.
   3d Sc. or Pr.
4. Chitrá, 2d Sc. or Pr. 3d A.
   Sc. or Pr.
5. Upachitrá, 2d. S. A. or D. 3d
   S. or D.
6. Pádáculaca, the above inter-
   mixed.

The 1st species admits 24 varieties; the 2d, 32; and the
3 next, 48 each. The variations of the last species very
numerous.

3. Ḡityákya or Achaladhṛti, 16 × 4.
   All short syllables.

4. Dwic’hánṅficā; or Couplet.
   1. Śic’hé or Chídé, 32 Br. + 16 L.

   Two species: Jyātish, 1st verse
   32 Br. 2d 16 L.

   Saumyé or Anangacridé, 1st
   verse 16 L. 2d 32 Br.

   Also 1 Śic’hé 30 + 32 = 62 c.
   1st Verse 28 Br. + L. 2d 30
   Br. + L.

   2. C’hánjé, 32 + 30 = 62 c.
   1st 30 Br. + L. 2d 28 Br.
   + L.

   3. Chúlicé or Atiruchirá 29 +
   29 = 58 c. 27 Br. + L.

   Also 3 Chúlicé 29 + 31 = 60 c.
   1st Verse 27 Br. + L. 2d 29
   Br. + L.
III. *Mātra vṛtta of Prākrit prosody continued from Table I.

3 ft., viz. odd verse 6 + 4 + 3;
even verse 6 + 4 + 1.
23 species from 23 L. + 2 Br. to 48 Br.

9. Uccach'hā, Pr. *Uccach'hā,
11 × 6 = 66 c.
6 verses, 3 ft. each, 4 + 4 + 3.
8 species, from 66 Br. to 28 L. + 10 Br.

10. Rōlā or Lōlā, 24 × 4 = 96 c.
Pause 11 + 13. Usually end in L.
12 species, from 12 L. to 24 Br.

12. Chatushpādā or Chatushpadicā, Pr. Chāupāta, Chāupātā,
30 × 4 × 4 = 480 c.

16 verses: 7½ ft. 4 × 7 + L.

13. Gha't'ā & Ghat't'ānanda, 31 × 2 = 62 c.
10 + 8 + 13 = 4 × 7 + 3 Br. or 11 + 7 + 13 = 6 + 3 × 3 + 5 + 4 + 3 + 2 + 2 Br.

14. Shat'pada or Shut'padicā, Pr. Ch'hoppā, 96 + 56 = 152 c.
Cāvya 24 (11 + 13 = 6 + 4 × 4 + 2 Br.) + 4 = 96, Ullala 28 (15 + 13) × 2 = 56. Varieties of the Tetrastich 45, from 96 Br. to 44 L. + 8 Br. Varieties of the whole stanza 71, from 70 L. + 12 Br. to 152 Br.

15. Prajjat'ica Pr. *Pajjalā, 16 × 4 = 64 c. 4 ft. End in Sc.
16. Atlilīha At'hillā Pr. Atlā, 16 × 4 = 64 c. No Sc. End in P.
17. Pēdācuculāca, Pr. Culpādā, 16 × 4 = 64 c. 6 + 4 × 2 + 2 L.
18. Raddā stanza of nine = 116 e. viz.

1st = 15 c. = 4 ft. viz. 3 + 4 + 4 + 4. End in Sc. or Pr.
2d = 12 c. = 4 ft. End in Pr.
3d = 15 c. End in D.
4th = 11 c. = 3 ft. End in Tr.
5th = 15 c. End in D.
6th to 9th = Dōhā as before.

Five species.

20. Cun'd'alica, Pr. Cudālīdā, stanza of eight = 142 c.
Dōhā + Rōlā or Cāvya.
22. Dwipādā or Dwipāda, 28 × 2 = 56 c. 6½ ft. viz. 6 + 4 + 5 + L.
23. Chanjā, 41 × 2 = 82 c.
10 ft. viz. 9 Pr. + C.
24. Sic'hā, 28 × 2 = 56 c.
7 ft. viz. 6 Pr. + Sc. See Sanskrit metre.

25. Mālā, 45 × 2 = 90 c.
11 ft. viz. 4 × 9 + c. + S.
Also 25. Mālā 45 + 27 = 72 c.
1st verse as above, 2d verse Áryā.
37. Saurāsh't'ra, Pr. Sōrāl'ha, 11 + 13 + 11 + 13 = 48 c.
Reverse of the Dōhā.
28. Hácali, 14 × 4 = 56 c.
3½ ft. viz. 4 × 3 + L. (syl. 11 or 10), ft. D. Pr. or A. sometimes S. Not end in P. S.
29. Madhubhāva, 8 × 4 = 32 c.
2 ft. End in Sc.
30. Abhīra, 11 × 4 = 44 c.
7 + Sc. or D. + I. + Sc. or Sc. + Tr. + Sc.
4 × 4 + 6 + 2 + 8 or 10 + 8 + 14.
End in L.
32. Dīpaca, 10 × 4 = 40 c.
4 + 5 + Brn. usually end in Sc.
33. Sinhávalóca, Pr. Sinhálād
16 × 4 = 64 c.
4 ft. A. or Prn. but end in A.
34. Plavangamá, Pr. Parangamá,
21 × 4 = 84 c.
6 × 3 + 1. Begin with L.
35. Līlāvatī, 24 or less × 4 =
96 or less. 6 ft. or less: not end in A.
36. Harigítá, 28 × 4 = 112 c.
5 + 6 + 5 × 3 + L. Should begin
with Prn. and end in S.
37. Tribhangí, 32 × 4 = 128 c.
8 ft. No Sc. End in L.
38. Durmilá or Durmilicá, 32 × 4 = 128 c.
10 + 8 + 14. ft. 8.
39. Híra or Híraca, 23 × 4 =
92 c.
4 ft. viz. 6 × 3 + 5. ft. 6 Brn. or 1
L. with 4 Brn. End in L.
40. Jaladhrā or Jalahan’ā,
32 × 4 = 128 c.
Pauses 10 + 8 + 6 + 8. ft. 8. Gene-
rally Prn. End in A.
41. Madanagriha or Madana-
hará 40 × 4 = 160 c.
10 + 8 + 14 + 8 = 40.
42. Maháráśtra, Pr. Mara-
hattā, 29 × 4 = 116 c.
10 + 8 + 11 + or 6 + 4 × 5 + L. +
Brn.
Also the following kinds:
43. Ruchirá, 30 × 4 = 120 c.
7½ ft. end in L.
44. Calicá, 14 × 4 = 56 c.
Pauses 8 + 6.
45. Vásan’a 20 × 4 = 80 c.
4 ft. End in C. Pause before the last.
46. Chaurūla, 16 + 14 + 16 +
14 = 60 c. ft. A. or Prn.
47. Jhallaná, 37 × 4 = 148 c.
7½ ft. 5 × 7 + L. Pauses 10 + 10 +
10 + 7.
48. Ashá’dha, 12 + 7 + 12 + 7 =
38 c.
49. Málaví, 16 + 12 + 16 + 12 =
56 c.
Long verse 4 ft., short verse end
in L.
50. Mattá, 20 × 4 = 80 c.
5 ft. no Sc.
51. Rasamala, 24 × 4 = 96 c.
6 ft.
52. Avalambaca, 13 × 4 = 52.
3 ft. 4 × 2 + 5. End in L.

IV. Metre regulated by number of syllables.

VāCTRA. 8 × 4 = 32 syll.
2 ft. between 2 syll. The spe-
cies vary in the 2d ft. or 3d
place.
1. Simple Vāctra.
L. or Brn. + M. &c. (except
Tn. & A. and, in the even
verse, C.) + B. + L. or Brn.
Therefore 1st 4th & 8th syll.
either long or short. 5th short.
6th and 7th long. Either 2d or
3d long.
Variations of the 1st verse 24;
of the 2d 20.
2. Pathyā.
1st verse as above; 2d with
Sc. for 2d ft. Hence 7th syll.
short.
3. *Viparita pat'hyā.*
The preceding transposed.

4. *Chapulá.*
1st verse with Tr. for 2d ft.
Therefore 6th and 7th syll. short.

5. *Vipulá.*
2d verse (some say 1st, others all) with 7th syll. short.
Therefore 2d ft. D. Sc. H. or Tr.

No instance occurs with an ana-pæst for the 2d ft. or 3d place.

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V. *Acs̄hara ch'handas* or *Varṇa vr̥ttā.* Metre regulated by number and quantity.

Regular or uniform metre; the stanza being composed of equal and similar verses. From one to five syllables in the verse, or from four to twenty in the stanza.

I. *Uctā* or *Uct'ha.* 1 × 4=4.

1. Śrī, g.=L. 2 Mahī, l.=Br.

II. *Atvuctā.* 2 × 4=8.

1. Strī, or Cāma, 2 g.=S. 2 Rati, or Mahī, l. g.=I. 3 Sāru, g. l.=T. 4. Madhu, Pr. Mahu, 2 l.=P.

III. *Mādhyā.* 3 × 4=12.

1. Nārī, or Tālī, m.= M. 2 Sāsī, Pr. Sasī, g.=B. 3. Priyā, Pr. Piṭā; or Mrigī, r.=C. 4. Raman'ī, or Raman'ā, s.=A. 5. Panchāla, or Panchāla, t.= H.


IV. *Pratisht'ha.* 4 × 4×16.

1. Canyā, or Tīr'ā, Pr. Tīn-nā, m. g.=2 S. 2. Ghārī, or Hārīcā, r. l.=2 T. 3. Nagālīcā, Lagālīcā, Nagānī, or Nagānīcā, Pr. Nagānī, or Nagānī, j. g.=2 I. 4. Satī, n. g.=P. I.

V. *Supratisht'ha* 5 × 4=20.

1. Panchi, Acs̄hara-panchi, or Hansa, bh. 2 g.=D. S. 2. Sammohā, m. 2 g.=M. S. 3. Hari-tabanda, or Hārī, 2 g. l. 2 g. or t. 2 g.=S. B. 4. Priyā, 2 l. r.=A. I. 5. Yamaca, Pr. Jamaca, n. 2 l.=P. Tr.
From six to twenty-syllables in the Verse.

I. GÁYATRÍ. 6 x 4 = 24.


II. USHNÍH 7 x 4 = 28.

1. Cumáralalíti, (2 + 5) j s g = I + Tr. S. 2. Madalec'há, m s g = SDS. 3. Hansamálá, s r g = A TS. 4. Madhumátí 2 n g = 2 PA. 5. Sumánícá, r g l = 2 TC. 6. Suvasá, n j l = 2 PD. 7. Carahanchá, n s l = 2 PS. 8. Sírshá, Pr. Sisá, 2 m g = 2 SM.

III. ANUŚTUBH 8 x 4 = 32.

1. Chitrpadá, 2 bh. 2 g = 2. D S. 2. Vidyunmálá, Pr. Bij- jumálá, (4 + 6) 2 m 2 g = 2 S + 2 S. 3. Mán'avaca, or Ma- n'vacácidá, (4 + 4) bh. t l g = T I + T I. 4. Hanaruta, m n 2 g + S DB. 5. Pramán'icá, Nagaswarúpiní, or Matalícia, j r l g = 4 I. 6. Samánícá, or Mal- lícia, r j g l = 4 T. 7. Vítána, j t 2 g = 2 I TS. 8. Tungá, 2 n 2 g = 3 PS. 9. Camala, 2 l n r = 2 P 2 I. 10. Hansapá, 2 g m s = 2 STI. 11. Mátangí, m 2 l m = S TIS. 12. Rambhá, n l g m = 2 P 2 S.

IV. VRÍHATÍ 9 x 4 = 36.


V. PÁNCTI 10 x 4 = 40.

1. Śuddhavirájá, m s j g = S T 3 I. 2. Panava, (5 + 5) mn y g = SD + AS or m n j g = SD + A I. 3. Mayúrasarí', r j r g = 4 TS. 4. Mattá, (4 + 6), m bh. s g = 2 S + 2 PS. 5. Upas'thíta, (2 + 8) t 2 j g = S + 2 A I. 6. Rucmavatí or Champacamálá (5 + 5§) bh. m s g SD + D S. 7. Manórama, n r j g = P 4 I. 8. Sanyucta, Pr. Sanyútá, s 2 j g = PT 2 I. 9. Sárvatí, 3 bh. g = 2 D T I. 10. Sushamá, t y bh. g = S ASA. 11§ Amrítamati, or Amritagati, n j n g = P A PA. 12. Hansí, (4 + 6), m bh. m g = 2 S Tn. S. 13. Chá- rumuc'hi, n y bh. g = P ASA. 14. Chandramuc'hí, t n bh. g = S P 2 A.
VI. Trishṭūbh 11 × 4 = 44.

1. Indravajrā, 2 t j 2 g = S I D T S. 2. Upėndravajrā, j t j 2 g = 2 I D T S. 3. Upajāti, or Āch'yānacī, (14 species). The two foregoing intermixed. 4. Dōd'haca, Bandhu or Nīlaswarāpa, 3 bh. 2 g = 3 D S. 5. Sālinī, (4 + 7†), m 2 t 2 g = 2 S + C T S. 6. Vātòrmī, (4 + 7†), m bh. t 2 g = 2 S + A T S. 7. Bhramaravilasita, (4 + 7†), m bh. n l g = 2 S + 2 P A. 8. Rat'hōdhātra, r n r l g = 2 T A 2 I. 9. Śwāgatā, r n bh. 2 g = 2 T A P S. 10. Vṛintā or Vṛittā, (4 + 7†), 2 n s 2 g = 3 P A S. 11. Śyēnicā, or Śrēnicā, r j r l g = 4 T C. 12. Sumuchī, (5 + 6†), n 2 j l g = P A + 2 A. 13. Bhadricā, 2 n r l g = 2 P A 2 I. 14. Mauticamāla, Śrī, Anuculā or Cudmaladantī (5 + 6), bh. t n 2 g = D S + 2 P S. 15. Upāsthitā, j s t 2 g = I T a n S T S. 16. Upachitrā or Viśēshicā, 3 s l g = 3 A I. 17. Cupurushajanita, 2 n r 2 g = P A 1 S. 18. Anavasitā, n y bh. 2 g = 2 P S D S. 19. Mōt'anaca, t 2 j l g = S 3 A. 20. Málat'imālā, 3 m 2 g = 4 S. 21. Damanaca, r n l g = 4 P A. 22. Madāndhā, m s j 2 g = S 2 T S.

VII. Jagatī 12 × 4 = 48:


VIII. Atijagatī, 13 × 4 = 52:

1. Praharshinī, (3 + 10) m n j r g = M + 2 P 2 T S. 2. Ru-
chirā, or Atiruchirā, (4+9) j bh.  
ṣ j g = 2 I + 2 P T C. 3. Māttamayūra, or Māyā, (4 + 9) m  
t y s g = 2 S + T I D S. 4. Gaurī,  
2 n 2 r g = 3 P T S B. 5. Manjubhāshīnī, Prabhodhitā,  
Suhandinī, or Canaca prabhā s j s j g =  
A I + P 3 I. 6. Chandricā,  
Cshamāt, Upalāni, or Cutīlagati, (7 + 6) 2 n 2 t g = P A + T S  
I. 7. Calahansa, Chitravatī, or  
Sihantadā, s j s 2 g = P 2 T P  
D S. 3. Chancharicāvati, y m 2  
rg = I 2 S C T S. 9. Chandraladehā, (6 + 7) n s r y g = 2  
P I + 2 T M. 10. Vidyut, (6  
+ 7) n s 2 t g = 2 P I + S I  
C. 11. Mrigendramuchā, n 2 j  
rg = P A P 2 T S. 12. Tāraka,  
4 s g = S A P S. 13. Calācanda, or  
Canda 4 y l = B I T  
S I T. 14. Pancayavati, or Panca  
vati, bh. n 2 j l = D 2 P 2 D.  
15. Chandī 2 n 2 s g = 4 P D S.  
16. Prabhavati, (4 + 9) t bh. s j g  
= S I + 2 P T C.

IX. Śaccarī, 14 × 4 = 56.

1. Asambadhā, (5 + 9) m t n  
s 2 g = M S + 2 P A S. 2.  
Aparajitā, (7 + 7) 2 n r s l g =  
2 P A + I A I or s n r s l g =  
P T A I A I. 3. Praharanacalitā, or  
Cādu, (7 + 7) 2 bh. n l g =  
2 P A + 2 P A. 4. Vasanti  
laca, Sinhonātā, Uddharshūnī,  
Madhumadhavī, or Šobhavati, t  
 bh. 2 j 2 g = S I P I P T S. 5.  
Loṭā, or Alōṭā, (7 + 7) m s m bh.  
2 g = S D S + S D S. 6. Indu  
vadana, or Varasundari, bh. j s n  
2 g = T P T P T P S. 7. Nādi,  
(7 + 7) 2 n t j 2 g = 2 P A +  
D T S. 8. Lacshīnī m s t bh.  
2 g = S D S T D S. 9. Supavitraw,  
(8 + 6) 4 n 2 g = 4 P + 2 P S.  
10. Madhyacchāmā, (4 + 10) or  
Cutīlā, (4 + 6 + 4) m bh. n y 2  
g = 2 S + 3 P + 2 S. 11. Pramadā,  
n j bh j l g = 2 P 2 T P T I. 12.  
Manjarī, (5 + 9) s j s y l g =  
P 2 T P T S I. 13. Cumārī, (8  
+ 6) n j bh. j 2 g = 2 P 2 T P  
T S. 14. Sucēsara, n r n r l g =  
P 2 I P 3 I. 15. Vāsanī, m t n m  
2 g = 2 S D A 2 S. 16. Nādir  
muchī, (7 + 7) 2 n 2 t 2 g = 3  
P S I T S. 17. Chacra, or Cha  
crapūta, bh. 3 n l g = T 5 P I. 18.  
Līlōpavati, (4 + 10) 4 m 2 g = 2  
S + 5 S. 19. Nātāgati, 4 n 2 g  
= 6 P + S. 20. Cōpavati, bh. m  
st l g = D S D S T I.

X. Ātisaccarī 15 × 4 = 60.

1. Chandravartā, (7 + 8) 4 n s =  
2 P T r + P T r. A 2, Mālā, or Sraj.  
(6 + 9) 4 n s = 2 T r + 2 T r.  
A. 3. Manīgunsāicara, (8 +  
7) 4 n s = 4 P + 2 P A. 4.  
Mālinī, or Nānīdī mučhi, (8  
+ 7) 2 n m 2 y = 3 P S + C T  
8. 5. Chandraladhā, (7 + 8)  
m r 2 y = 2 S B + S I T S.  
6. Cāmačīdā, Līlācchā, or Sā  
brangica, and Sarangaca, 5 m  =  
6 S M. 7. Prabhadraca and Sucēsara, (7 + 8)  
n j bh. j r = 2 P C + P 3 I. 8.  
Elā, (5 + 10) s j 2 n y = A I  
+ 4 I T. 9. Upamālinī, (8 +  
7) 2 n t bh. r = 3 P T + S A I. 10.  
Vipinatilaca, n s n 2 r = 2  
P T T r . T S I. 11. Chitrā, 3 m  
2 y = 3 S M I T S. 12. Tun  
āca, or Chārama (8 L 7 Br. =  
23 c.) = 6 T C. 13. Bhramara  
vati, 5 s = 5 A. 14. Manahansā,
XI. ASHTI, 16 × 4 = 64.

1. Rishabhagajavilasita, or Gajaturangavilasita, (7 + 9) bh. r 3 n g = D 2 T + 3 P A. 2. Vān'īnī, n j bh. j r g = 2 P 2 T P 2 T S. 3. Chitra, Chitraśanga, Atisundara or Chančalā (double Śa'mānicā) r j r j r l = 8 T. 4. Panchachāmara, Nārāchā or Nārā'chā, (double Pramāricā), j r j r j g = 8 T. 5. Dhīralalīta, bh. r n r n g = D 2 T P 2 T A. 6. Čhā'gatī, Niša, Līlā or Aśwagatī, 5 bh. g = 4 D T I. 7. Chacita (8 + 8) bh. m t n g = D A S + S D A. 8. Madanālalita, (4 + 6 + 6) m bh. n m n g = 2 S + F I + S P I. 9. Pravaralālita, m n s r g = I 2 S 2 P I T S. 10. Garud'aruta, n j bh. j t g = 2 P 2 T P T S I. 11. Śa'ilāśic'hā, (16 or 5 + 6 + 5) bh. r n 2 bh. g = D 2 T 3 A or D T + B T P + T A. 12. Varayuvatī, bh. r y 2 n g = D 2 T S 2 P A. 13. Brahmerūpaca, (double Vidyun'mulā) 5 m g = 8 S. 14. Achaladhrita, or Gītyārdā, 5 n l = 8 P. 15. Pfinanitambā, (4 + 5 + 7) m t y m s g = 2 S + D S + S D S. 16. Vauvananattā, (5 + 11) bh. 3 m s g = D S + 3 S D S.

XII. ATYASHTI, 17 × 4 = 68.

1. Sic'harin'i, (6 + 11) y m n s bh. l g = 12 S + 2 P I D I. 2. Prīth'hwī, (8 + 9) j s j s y l g = 1 P 2 I + T r. T S I. 3. Vansapātrapita, or Vansapat craftsmanship. (10 + 7) bh. r n bh. n l g = D 2 T A + 2 P A. 4. Harīn'ti, (6 + 4 + 7 or 4 + 6 + 7) n s m r s l g = 2 P I + 2 S + 1 A I. 5. Mandācrāntā, (4 + 6 + 7) m bh. n 2 t 2 g = 2 S + 2 P I + C T S. 6. Narcuta'ca, or Nardhat'ca (7 + 10), or Avitatt'ha (17+), n j bh. 2 j l g = Tr. 21 + Tr. T I A. 7. Cōci'ca, (7 + 6 + 4+ or 8 + 5 + 4+ = Tr. 2 I + P I P + T I. 8. Harī, (6 + 4 + 7) 2 n m r s l g = 3 P + 2 S + I A I. 9. Cāntā, or Črantā, (4 + 6 + 7) y bh. n r s l y = I S + 2 P I + I A I. 10. Chitrālec'hā, or Atiśayanī, (10 + 7) 2 s j bh. j 2 g = 2 A 2 I + T r. T S. 11. Mālādharar, or Vanamālādhara, n s j s y l g = 2 P 2 I T r. T S I. 12. Harīn'ti, (4 + 6 + 7) m bh. n m y l g = 2 S + 2 P I + S B I.

XIII. DHIRTI, 18 × 4 = 72.

1. Cusumitālata vellitā, (5 + 6 + 7) m t n 3 y = M S + 2 P I + C T S. 2. Mahāmālicā, Nārachā, Latā, Vanamālā, (10 + 8+ 2 n 4 r = 3 P T S + I T S I. 3. Sudhā, (6 + 6 + 6) y m n s t s = I 2 S + 2 P I + S P I. 4. Harin'apluta, (8 + 5 + 5) m s j bh. r = S T 2 I + A I + A I. 5. Aśwagatī, 5 bh. s = 5 D A. 6. Chitrālec'hā, (4 + 7 + 7) m 2 n 2 t m = S T + P Tr. S + I T M. 7. Bhramarapada, bh. r 3 n m = D 2 T 3 P A S. 8. Śard'dalalita, (12 + 6) m s j s t s = S D 2 T A + S P I. 9. Śard'ūla, (12 + 6) m s j s r m = S D 2 T A + T 2 S. 10. Česara, (4 + 7 + 7) m bh. n y 2 r = 2 S + 2 P A + S I C. 11. Nandana, (11 + 7) n j bh. j 2 r = 2 P T D I + 2 I
C. 12. Chitasálá, Chitraléch'há, (4+7+7) m b'h. n 3 y=2 S +2 P A + C T S. 13. Chala, 4+7+7 m b'h. n j b'h. r=2 S +2 P A + I A I. 14. Vihadhapiyuva. (8+10+) r s 2 j b'h. r =2 T 2 I + P 2 T 2 I. 15. Manjia, 2 m b'h. m s m=3 S S D 2 S. 16. Cridhachandra, 6 y=1 P I T P I T P. 17. Charcharfi, r s 2 j b'h. r=T D I D T 2 T I.

XIV. ATIDHRIITI, 19 x 4 = 76.

1. Sárdulavicridita, or Sárdula, (12+7) m s j s 2 t g=S D 2 T A + S I C. 2. Meghavishurjita, or Vismita, (6+6+7) y m n s 2 r g=I 2 S + 2 P I + C T S. 3. Panchchámana, 2 n + alternate g l=Tn. P 7 I. 4. Pushpadáma, (5+7+7) m t n s 2 t g= M S +2 P A + C T S. 5. Bimbéa, (5+7+7) m t n s 2 t g=M S +2 P A + H S I. 6. Ch'háyá, (6+6+7+7 or 12+7) y m n s b'h. t g=I 2 S + 2 P I + D S L. 7. Macarandica, (6+6+7) y m n s 2 j g= I 2 S + 2 P I + I A I. 8. Samudratata, (8+4+7) j s j s t b'h. g=I P 2 I + P I + S I A. 9. Surasá, (7+7+5) m r b'h. n y n g=M T S +2 P A + D I. 10. Man'imanjarí, y b'h. n y j g=I S 2 P A 2 T 2 I. 11. Chandrabháma, or Chandra, (10+9) 3 n j 2 n t=5 P + D 3 P. 12. Dhavaláca, or Dhavala, 6 n g=S 8 P A. 13. Sambhú, (7+6+6) s t y b'h. 2 m g=A S A S A 3 S.

XV. CRITI, 20 x 4 = 80.

1. Suvadana, (7+7+6) m r b'h. m y b'h. l g=2 S B +2 P A + S P I. 2. Vritta, or Gandaca, r j r j r j g l=10 T. 3. Sóbhá, (6+7+7) y m n 2 n t 2 g=I 2 S +2 P A + T S B. 4. Gitica, or Gité, s 2 j b'h. r s t g=A I P 2 T 2 I A I.

XVI. PRACRITI, 21 x 4 = 84.

1. Sragdhara, (7+7+7) m r b'h. n 3 y=2 S B +2 P A + T S B. 2. Satilani, Sarsa, Siddhaca, Sáśivada, or Dhrata, n j b'h. 3 j r=2 P T D I + 2 A 2 I. 3. Narénda, b'h. r n 2 j y=D 2 T 3 P 2 D S.

XVII. ÁCRITI, 22 x 4 = 88.

1. Bhadraca (10+12) b'h. r n r n g=D 2 T A + I Tn. T 2 T A. 2. Madirá, or Lálitá, 7 b'h. g=6 D T I. 3. Hansí, (8+14) 2 m 2 g 4 n 2 g=4 S +6 P S.

XVIII. VICRITI, 23 x 4 = 92.

1. Aśwalamita, or Adritanayá, (11+12) n j b'h. j b'h. j b'h. l g=2 P T D I + I Tn. T D I. 2. Mattácrfa, or Vájiváhana, (8+15) 2 m t 4 n l g=4 S +6 P A. 3. Sundari, (7+6+10) 2 s b'h. s t 2 j=APS + 2 PS + 2 D 4. Málati, or Madamattá, 7 b'h. 2 g=7 D S. 5. Chitrappa, 7 b'h. l g=7 D I. 6. Mallicá, 7 j l g=I P T I P T I A.

XIX. SACRITI, 24 x 4 = 96.

1. Tanwí, (5+7+12 or 12+12) b'h. t n s 2 b'h. n y=D S +2 P A +2 D 2 P S. 2. Durmiá, 8 s=8 A. 3. Círita, 8 b'h.=8 D. 4. Janá-cí, 8 r=TS TS I TS I TS I TS I. 5. Madhávacá, 7 j y=I P T I P T I P T I P S.
ON SANSKRIT AND

XX. ATICRĪTI, 25 × 4 = 100.
1. Craunchpadā (5 + 5 + 8 + 7) bh. m s bh. 4 n g = D S + D S + 4 P + 2 P A.
2. Sambhu, 8 m g = 11 S M.

XXI. UTCRĪTI, 26 × 4 = 104.
1. Bhujangavijrīmbhita, (8 + 11 + 7) 2 m t 3 n r s l g = 4 S + 4 P A + I A I.
2. Apavāha, (9 + 6 + 6 + 5) m 6 n s 2 g = S D 2 P + 3 P + 3 P + A S.
3. Gaurī, 8 m 2 g = 13 S.

From 27 to 999 syllables in the verse.

DAHĀCA, 27 × 4 = 108 to 999 × 4 = 3,996.
1. Chanḍa/vrīṣṭi/pryāta, 2 n 7 r = 2 Tr. 7 C.
2. Prachita, 2 n 8 &c. r.
325 species from 9 to 333 feet, viz.
2d Arn’ā, 2 n 8 r.
3d Arna’va, 2 n 9 r.
4th Vyāla, 2 n 10 r.
5th Jfjmūta, 2 n 11 r &c.
Or 3. Prachita, 2 n 7 &c. y = 2 Tr. 7 &c. B.

4. Mattamātangalilācara, 9 &c. r = 9 &c. C.
5. SinHAVicrānta, 2 n 10 &c. r.
6. Cusumastavaca, 9 &c. S = 9 &c. A.
7. Anangas’ec’ha, l g l g &c. = 15 &c. I.
8. Asocamanjarī, r j &c. = 15 &c. T.
Also Sālitra, 2 g 8 n s = S 12 P A.

VI. Half equal Metre; the stanza being composed of equal and similar couplets; but the couplets, of dissimilar verses.

1. Upachitra, (Upajāti + Tāmarasa) 1st 3 verse 3 s l g = 3 A I.
2. Drutamadhyā, (Dadhaca + Tāmarasa) 1st 3 bh. 2 g = 3 D S.
3. Vēgavatī, (Upachitra—pennut Br. in 1st verse) 1st 3 s g = 2 A P S.
4. Bhadraviraj (species of Au-pac’handasica) 1st t j r g = S P 2 T S.
5. Cētumatī, 1st s j s g = A I Tr. S.
6. Āc’hyānacī (Upajāti viz. alternate Indravajra and Upēndravajra; some say one verse Indravajra, three Upēndravajra.) 1st (and 3d) 2 t j 2 g = S I D T S. 2d (and 4th, some say 3d) j t j + 2 g = 2 I D T S.
7. Viparitāc’hyānacī (the converse of the preceding) 1st j t j 2 g = 2 I D T S. 2d t j t j 2 g = S I D T S.
8. Harin’aclutā (Drutavitambita—one syllable) 1st 3 s l g = 3 A I.
9. Aparavacatra (species of Paitāliya or Bhedracī + Mālatī) 1st 2 r l g = 2 P A 2 I.
10. Puṣpitagā (species of
PRÁČRĪT POETRY.

1. Lalitā, 1st r s l g = 2 T 2
2d s n j g = A Tr. 2 I.

15. Caumudī. (Bhadricā + Chanchalācchici 3) 1st 2 n r l g = Tr. P 3 I. 2d 2 n 2 r = 3 P.

16. Manjussurabha (Mālati + Manjubhāshīni) 1st n 2 j r = 2 P T 3 I. 2d s j s j g = A I P 3 I.

VII. Unequal Metre; the stanza being composed of dissimilar verses.

1. Udgatā, 1st verse s j s l = A I Tr. T. 2d n s j g = Tr. A 2 I. 3d bh. n j l g = T Tr. 2 A. 4th s j s j g = A I P 3 I. 2 varieties; viz. Saurabhaca, 3d verse r n bh. g = T D 2 A. Lalita 3d verse 2 n 2 s = Tr. 2 A.

2. Upasthitprachupita, 1st verse m s j bh. 2 g = S D 2 T D S. 2d s n j r g = A 2 P 2 T S. 3d 2 n s = 3 P A. 4th 3 n j y = 5 P D S. 2 varieties; viz. Vardhamāna, 3d verse 2 n s 2 n s = 3 P A 3 P A; Sudhavirānirshabha, 3d verse t j r = S A 2 I.

3. Padachatururdha, increasing in arithmetical progression from 8 to 20 syll. viz. 1st verse 8, 2d 12. 3d 16. 4th 20.

6 species: viz. Apiḍā, End in S. Rest Br. Pratyāpida, Begin with S or begin and end with S. Manjari or Calica, 1st and 2d verses transposed 12 + 8 + 16 + 20. Lavali, 1st and 3d transposed 16 + 12 + 8 + 20. Amritadhārā, 1st and 4th transposed 20 + 12 + 16 + 8.

VIII. Supplement, under the denomination of CĀT'HĀ.

1. Stanzas comprising four unequal verses, constituting a metre not described by writers on prosody.

2. Stanzas comprising more or fewer verses than four; viz. three, five, six, &c.

3. Any metre not specified by Pingala.

4. Metre not specified by any writer on prosody.
V.

Introductory Remarks,

Prefixed to the Edition of the Hitopadēṣa,

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To promote and facilitate the study of the ancient and learned language of India, in the College of Fort William, it has been judged requisite to print a few short and easy compositions in the original Sanscrit. The first work chosen for this purpose, and inserted in the present volume, under its title of Hitopadēṣa, or 'Salutary Instruction,' had been translated by Mr. Wilkins, and by the late Sir William Jones, as the text of a very ancient collection of apologues, familiarly known, in the numerous versions of it, under the name of 'Fables of Pilpay.' The great advantage, which may be derived by students, from consulting correct translations, at their first acquaintance with Sanscrit literature, has indicated this work as the fittest for selection; although it be not strictly the original text, from which those beautiful and celebrated apologues were transferred into the languages of Persia, and of the West.

In the concluding line of the poetical preface to the Hitopadēṣa, it is expressly declared to have been drawn from the Panchatantra and other writings. The book, thus mentioned as the chief source, from which that collection of fables was taken, is divided into five chapters, as its name imports: it consists, like the Hitopadēṣa, of apologues, recited by a learned Brāhman named Vishnu Sarman for the instruction of his pupils, the sons of an Indian
monarch; but it contains a greater variety of fables; and a more copious dialogue, than the work, which has been chiefly compiled from it; and, on comparison with the Persian translations now extant, it is found to agree with them more nearly, than that compilation, both in the order, and the manner in which the tales are related.

To compare them, it has been first necessary to exclude all the additions, which have been made by translators. These have been explained by Abu’lfażl, with the history of the publication itself, in the preface to his own version, entitled Ayár dánish; and by Husain Wáez, in the introduction to the Anwári Suhailí.

They recite from Abu’lmálá’s preface to his translation of the Calílah u Damnáh, that Barzúyah, an eminent and learned physician, being purposely sent into Hindustán by Néshírván, king of Persia, brought a transcript of this with other books, which were preserved among the best guarded treasures of the kings of India: and it was immediately translated into Pehleví, for the gratification of the Persian monarch, under the superintendence of his minister Buzerchumíhr.

From this version in Pehleví, by Buzerchumíhr, or by Barzúyah, (and which is said to have borne the title of Humáyún námeh, Jáwidán khírd, and testament of Húshenkh,) the book was translated into the Arabic language by Imám Abu’lhasán Abdullah Benu’l Mukaffa, in obedience to the commands of Abu’ljafer Mansúr, second khalíf of the house of Abbás. From Arabic, it was restored into Persian, by direction of Abu’l Hasan Nasru’ddín Ahmed, a prince of the race of Sámán; and was clothed in verse by the poet Rúdácí, for Sultán Mahmúd Sabactagín. It was again translated into prose, from the Arabic of Abdullah, by desire of Abu’muzáfr Bahrám sháh, son of Sultán Masáúd, a de-
scendant of Sultán MAHMÚD of Ghazna: and this version, the author of which was ABU’LMALA ‘NASRULLAH, is the same which has been since current under the title of Calilah u Dánnah. It underwent a revision, and received the embellishment of flowery language from HUSAIN WÁEZ CÁSHAFÍ, at the suggestion of Amír Shaikh AHMED, surnamed SUHAILÍ, a chieftain commanding under Sultán HUSAIN MÍRZÁ, of the house of TÁMÚR; and this highly polished version is named from the author’s patron Anvárí Suhailí. It was lastly revised, and put into plainer, but elegant language, by ABU’LFAZL, in obedience to the orders of the Emperor AGBAR.

This amended translation comprises sixteen chapters; ten of which, as ABU’LFAZL states in his preface, were taken from the Hindi original entitled Caratac and Dawanac; and six were added by BUZERCHUMIH, namely, the four last, containing stories recited by the Bráhman Bídpái, in answer to the questions of the King DÁBISHLÍM; and the two first, consisting of a preface by BUZERCHUMIH, with an introduction by BARZÚYAH. Both these introductory chapters had been omitted by HUSAIN WÁEZ, as foreign to the original work: but he substituted a different beginning, and made other additions, some of which are indicated by him, and the rest are pointed out by ABU’LFAZL; who has nevertheless retained them, as appendages not devoid of use, and therefore admissible in a composition intended solely to convey moral instruction. The whole of the dramatic part, including all the dialogue between DÁBISHLÍM, king of India, and Bídpái or Pílpái, a Bráhman of Sarándap, as well as the finding of HUSHENK’s legacy, (from both which the work itself has derived two of the names, by which it has been most frequently distinguished;) appears to have been added by the translators, although the appellations of the king, and of
the philosopher, are stated to be of Indian origin.* For Abu’l-Fazl has inserted the story at the close of the second chapter; after expressly declaring, in one place, that the substance of the work begins with the third; and in another, that the two first were added by the author of the Pehlevi translation.

Setting apart then the dramatic introduction, in which the Persian differs from both the Panchatantra and the Hitopadesa, and beginning the comparison from the third chapter of the Calilah u Damnah, it is found, that the fable of the ox† and lion, with all the subsequent dialogue between the shakals Carataca and Damanaca, constituting the first chapter of the Panchatantra, corresponds with the Persian imitation; excepting, however, a few transpositions and the omission of some apologues, as well as the insertion of others.

Thus the fable of ‘The Ape and the Carpenter’s wedge,’ which is first in both works, is immediately followed, in the Panchatantra, by that of ‘The Shakal and the drum;’ but the Persian translators have here introduced a different apologue. They have placed the story of ‘The Thief and the Mendicant,’ with others included in it, immediately after

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* Husain Wazir and Abu’l-Fazl explain Bidpai, as equivalent to the Persian term Hacim mehrban; and, according to the ingenious conjecture of Sir William Jones, that appellation is corrupted from the Sanscrit Vaidya priya. The name of Danislim, interpreted Padshah buzzurg, or great King, has not so striking a resemblance to any Sanscrit term of the same signification. Pilpai appears to be Persian; and in some copies of the Anwari Suhaili (for the passage is wanting in others), it is mentioned to have been translated from the Hindi Hastipat; which, in Sanscrit, bears the same meaning, viz. elephant’s foot.

† The Persian name Shansabak (for so the word should be read, and not, as written in many copies, Shuterbak), is evidently formed on the Sanscrit name for this ox, Sanjivaca.
that of 'The Fox and the drum;,' but the *Panchatantra* interposes another tale, the omission of which, however, induces no imputation on the good taste of the translators. They have next substituted two fables, ('The Sparrow, the Hawk, and the Sea,' and 'The Reformed Tyrant;') for a story of a wheelwright's marriage with a king's daughter.

The next three fables are alike in the *Sanskrit* and Persian; but two, which follow (*viz.* 'The Louse and the Bug,' and 'The Blue Shakal,) are omitted by the translators; who have evinced their judgment in the rejection of the first.

The fable of 'The Three Fish,' is placed next by the Persian authors, and is followed by five others, which do not occur in the *Panchatantra*. These are succeeded by three more, which are placed by the *Sanskrit* author; immediately after the fable of 'The Blue Shakal,' and before that of 'The Three Fish;'

Here the *Panchatantra* introduces a story of an elephant, whose death was procured through the means of a gad-fly, by birds whom he had aggrieved. But it has been omitted in the Persian, and so has the next fable, of 'The Lion and the Leopard.'

The remaining apologues, belonging to the first chapter, are alike in both works; excepting that of 'The Gardener, the Bear, and the Fly,' which is inserted last but one, in the Persian translation; but which does not occur in the *Panchatantra*.

Many of these fables are also found in the *Hitopadèsa,* but arranged in quite a different order, being interspersed with others, through the three last chapters of that compilation.

Without further particularizing the variations of the Persian from the *Sanskrit,* it may be sufficient to say, that the five chapters of the *Panchatantra* agree, in the subject, and in the general arrangement of the fables, with the third, fifth, sixth, seventh, eighth, and ninth, chapters of the *Ayâr*
dánish: and that more than half of the fables, contained in that part of the Persian work, which purports to have been derived from the Indian text, corresponds exactly to similar apalogues in the Sanscrit. In most instances of omission, a reason may be easily conjectured for the rejection of the original stories: and those, which have been substituted for them, as well as the few contained in the remaining chapters, which are not avowedly additional, may have been taken by the first translator, either from other Indian works, (for Barzúyah is stated to have brought more than one book from Hindustán;) or, though not acknowledged by him, may have been drawn from different sources. It probably was more his design to present to the King of Persia a pleasing collection of apalogues, than a strictly faithful translation of a single Indian work.

This collection of fables has been translated more frequently, and into a greater variety of languages, than any other composition not sacred; and, although the earliest paraphrase, in Pehlevi, be now lost, its Arabic version is extant, or lately was so; and may be easily verified through the translations made into more than one language, upon the Arabic text.

It is unnecessary to speak of another Arabic version said to have been taken from the original text of a pretended king of India named Isam, three hundred years before the time of Alexander; or to mention that made from the testament of Hushenk (entitled Jávidán khríd), by Hasan, son of Suhal, Minister of Al Mamún, the seventh Khalif of the Abbásid dynasty. For both these pretended versions are probably the same with Abdüllah's, but erroneously ascribed to other authors.

From his Arabic text, a Greek translation, entitled Stephanites and Ichnelalates, was completed, seven hundred years ago, by Simeo Sethus, for the Emperor Alexius
COMNENUS. One in Syriac, under the title of Calaileg and Damnaq, is probably taken from the Arabic, though purporting to be derived immediately from the Indian text. The Turkish versions (for there are more than one) have been derived mediately or immediately from the Arabic; and several Latin and Italian translations have been drawn from the Greek of Sethus; not to mention another Latin one from the Hebrew, nor the German and Spanish versions from the Latin and the Italian. All these, as well as the French translations of Gaulmin, David Said, Galland and Cardonne, from the Persian Calilah u Damnah, and from the Turkish Humayun nameh and Anwari Suhailit, as also the English version from the French, appear to have been compared with considerable attention by various persons: but, excepting two unfaithful imitations in Latin and Italian, the general correspondence of the rest seems to be acknowledged. *

We may conclude, therefore, that the Persian Calilah u Damnah, and Aydr davanish, exhibit a sufficiently exact representation of the Arabic translation from the Pehlevi; and that, after rejecting avowed additions, we ought to find there a near resemblance to the Indian original. From a careful collation of both Sanscrit works with the genuine parts of the Persian translation, it is evident, as has been already shown, that the Panchatantra corresponds best with them: and there can be little hesitation in pronouncing this to be the original text of the work, which was procured from India by Noushirwan more than twelve hundred years ago.

This fact is not without importance in the general history of Indian literature; since it may serve to establish the greater antiquity of authors who are quoted in the *Panchatantra*; and amongst others, that of the celebrated astrologer *Vārāha Miśira*, who is cited by name in one passage of the first chapter.

The *Hitopadēśa*, containing nearly the same fables told more concisely and in a different order, has been translated into Persian, in comparatively recent times, by Maulavī *Tāju'dīn*, who entitled it *Muferrehu'lkulub*; and who does not appear, from his preface, to have been aware, that the work, translated by him, was any way connected with the *Calīlah u Damnah*.

This, as well as the *Hindī* version of it, by Mīr *Behādur Ali*, which has been printed for the use of the College of Fort William, and which is entitled *Akhlāki Hindī*, may afford some help to a student, reading the *Hitopadēśa*, for his first exercise in the Sanscrit language. He will find still more effectual assistance in the English translations by Sir *William Jones* and Mr. *Wilkins*; and, for this advantage, no less than for its easy style, the *Hitopadēśa* has the first place in the present collection of Sanskrit works.

The second place in it has been allotted to a short story in verse, which is abridged from a celebrated poem of *Daṇḍī's*. This distinguished poet, famous above all other Indian bards for the sweetness of his language, and therefore ranked by *Cālidāsa* himself (if tradition may be credited) next to the fathers of Indian poetry, *Vālmīkī* and *Vyāsa*, composed a pleasing story in harmonious verse, under the title of *Dasā cumāra charita*, or 'Adventures of the Ten Youths.' It is divided into two parts: the first comprising five chapters, and ending with the marriage of the principal hero; the other containing, through eight
more chapters, the adventures of the same prince and his nine companions. The first part has been abridged by more than one author; among others, by Vinayaca in about two hundred couplets collected into three sections; and by Apayya, in as many sections, and nearly the same number of couplets. This abridgment, being composed in easy, correct, and smooth language, is preferable to the other, and has been selected for its merits in those respects; though the story be told with too great conciseness to preserve much interest.

Concerning the author of this epitome, or argument, of Dandi's poem, no information has been yet obtained. He calls himself a counsellor and minister, and was probably in the service of some Hindu Raja.

The present volume ends with three Satacas or centuries of verses by Bhartrhari. They were recommended for selection, partly by their prevailing moral tendency, though some passages be far from unexceptionable; and partly as a fit specimen of polished Sanscrit verse. The poetical beauties, which are most admired by the Hindu learned, and which are inculcated by their writers on rhetoric, are scattered in these couplets of Bhartrhari, with a more sparing hand than in most of the laboured performances of Indian poets: and, from this cause, his poetry is less obscure than theirs.

These Satacas are ascribed by the unanimous consent of the learned, to Bhartrhari, the brother of Vicaramaditya. He is also the reputed author of a grammatical treatise. It is possible, perhaps it might be said probable, that these may have been composed by a different person in his name. But it is clear from the first couplet of the Niti sataca, that they have been written either in the real, or in the assumed character of Bhartrhari
HARI, since that couplet alludes to a circumstance conspicuous in the traditional story of his life.

The authentic history of BHRTRI HARI, is too intimately blended with that of ancient India, and involves questions of too great intricacy, to be stated, or discussed, in this preface. It remains only to say a few words respecting the present edition of the three works which have been here mentioned.

The editor, Mr. CAREY, undertook the publication, on a suggestion from the Council of the College of Fort William, and under the patronage of Government. He has, at the same time, risked a larger edition than was required for the College, in the expectation of encouragement from the public.

In printing the Hitopadesa, six manuscript copies were collated. They were found to differ much, in the quotation of whole passages, as well as in the reading of single words. Either the reading most suitable to the context, or that which was found in the greatest number of copies, has been selected, according as circumstances have dictated the propriety of following one rule or the other.

The abridgment of the Daśa cūmāra has been printed from a single copy; and the Śataca of BHRTRI HARI from three manuscripts; every one of which was incomplete: but the deficiencies did not occur in the same places.

With the last Śataca, the style of which is, in general, less clear than that of the preceding, the scholia have been printed. They will serve to make the reader acquainted with the manner of Sanscrit commentators: and owing to the peculiar difficulties of the language, the student will find it long necessary, and always useful, to consult the commentaries, while perusing Sanscrit compositions. To
lesson one of those difficulties, which arises from the frequent permutation of letters at the beginning and close of words, the editor has marked, by a dot under the syllable, places where the elision of a letter is found, or any other permutation, that is not obvious.

In this first attempt to employ the press in multiplying copies of Sanscrit books with the Dévanagaré character, it will be no matter of surprise, nor any cause of imputation on the editor’s diligence, that the table of corrections should be large. The whole volume has been carefully examined by several Pandits; and there is reason to believe, that no error of consequence can have escaped their notice.

Calcutta, 17th September 1804.
VI.

Enumeration of Indian Classes.


The permanent separation of classes, with hereditary professions assigned to each, is among the most remarkable institutions of India; and, though now less rigidly maintained than heretofore, must still engage attention. On the subject of the mixed classes, Sanscrit authorities, in some instances, disagree: classes mentioned by one, are omitted by another; and texts differ on the professions assigned to some tribes. A comparison of several authorities, with a few observations on the subdivisions of classes, may tend to elucidate this subject, in which there is some intricacy.

One of the authorities I shall use, is the Jātimalā, or Garland of Classes; an extract from the Rudra yāmala tantra, which in some instances corresponds better with usage, and received opinions, than the ordinances of Menu, and the great Dharma purāṇa.* On more important points its authority could not be compared with the Dharmaśāstra; but, on the subject of classes, it may be admitted; for the Tantras form a branch of literature highly esteemed, though at present much neglected.† Their fabulous origin derives

* The text are cited in the Vivaddhāvaha sūtu, from the Vṛhad dharma purāṇa. This name I therefore retain; although I cannot learn that such a purāṇa exists, or to what treatise the quotation refers under that name. [See vol. i. p. 103 of the present work.]
† [See vol. i. p. 199 of the present work.]
them from revelations of ŚIVA to PĀRVATĪ, confirmed by VISHŃU, and therefore called Āgama, from the initials of three words in a verse of the Tōdāla tantra.

"Coming from the mouth of ŚIVA, heard by the moun-
tain-born goddess, admitted by the son of VASUDÉVA, it
is thence called Āgama."

Thirty-six are mentioned for the number of mixed classes; but, according to some opinions, that number includes the fourth original tribe, or all the original tribes, according to other authorities: yet the text quoted from the great Dharma purāṇa, in the digest of which a version was trans-
lated by Mr. HALHED, name thirty-nine mixed classes;
and the Jātimālā gives distinct names for a greater number.

On the four original tribes it may suffice, in this place, to quote the Jātimālā, where the distinction of Brāhmaṇas, according to the ten countries to which their ancestors be-
longed, is noticed: that distinction is still maintained.

"In the first creation, by BRAHMĀ, Brāhmaṇas pro-
ceeded, with the Vēda, from the mouth of BRAHMĀ.
From his arms Cshatriyas sprung; so from his thigh,
"Vaiśyas: from his foot Śúdras were produced: all with
"their females.

"The Lord of creation viewing them, said, 'What shall
"be your occupations?' They replied, 'We are not our
"own masters, oh, God! command us what to undertake.'

"Viewing and comparing their labours, he made the
"first tribe superior over the rest. As the first had great
"inclination for the divine sciences, (Brāhme vēda,) there-
"fore he was Brāhmaṇa. The protector from ill (cshayate)
"was Cshatriya. Him whose profession (vēsa) consists in
"commerce, which promotes the success of wars, for the
"protection of himself and of mankind, and in husbandry,
"and attendance on cattle, he called Vaiśya. The other
"should voluntarily serve the three tribes, and therefore
“he became a Śūdra: he should humble himself at their feet.”

And in another place:

“...and to the twice-born tribe was brought by Viśnū’s eagle from Śaṅca dvīpa: thus have Śaṅca dvīpa Brāhmaṇās become known in Jambu dvīpa.

“In Jambu dvīpa, Brāhmaṇās, are reckoned tenfold; Śaṅsvaratā, Čānyacubja, Gauda, Mait’hila, Uccha, Dravida, Mahārāṣṭra, Tailanga, Gujjara, and Čāsmira, residing in the several countries whence they are named.*

Their sons and grandsons, are considered as Čānyacubja priests, and so forth. Their posterity, descending from Mena, also inhabit the southern regions: others reside in Anga, Benga, and Calinga; some in Čāma-rūpa and Odra. Others are inhabitants of Śumbhadēsa: and twice-born men, brought by former princes, have been established in Rāda, Māgadha, Varṇendra, Chōla, Swerhagrama, Chīna, Čūla, Śaṅca, and Berbera.”†

* These several countries are, Śaṅsvaratā, probably the region watered by the river Sersutty, as it is marked in maps; unless it be a part of Bengal, named from the branch of the Bhāgirat’hi, which is distinguished by this appellation; Čānyacubja or Canaj; Gauda probably the western Gār, and not the Gaur of Bengal; (∗) Mait’hila, or Tirabhucti, corrupted into Tirhut; Uccha, said to be situated near the celebrated temple of Jagannath’ha; Dravida, pronounced Dravira; possibly the country described by that name, as a maritime region south of Carintta, (As. Res. vol. ii. p. 117); Mahārāṣṭra, or Marhatta; Telinga, or Telingēna; Gujjara, or Guzrat; Čāsmira, or Cáshmir.

† Anga includes Bhágāipur. Benga, or Bengal Proper, is a part only of the Suba. Varṇendra, the tract of inundation north of the Ganges, is a part of the present Zilla of Rajeshāhi. Calinga is watered by the Godāvari, (As. Res. vol. iii. p. 48.) Čāmarupa, an ancient empire, is become a province of Asám. Odra I understand to be Orisa Proper. Rāda (if that be the true reading) is well known as the country west of the Bhāgirat’ha. Māgadha, or Magadha, is Bahār Proper. Chōla is part of Birbhūm. Another region of this name is mentioned in the Asiatic Researches, vol. iii. p. 48. Swerhagrama,

* [See the note at page 27 of the present volume.]
I shall proceed, without further preface, to enumerate the principal mixed classes, which have sprung from intermarriages of the original tribes.

1. Mūrdhābhikṣhita, from a Brāhmaṇa by a girl of the Cshatriya class; his duty is the teaching of military exercises. The same origin is ascribed in the great Dharmapuraṇa to the Cumbhaḍra,* or potter, and Tantravāya,† or weaver; but the Tantravāya, according to the Jātimāla, sprung from two mixed classes; for he was begotten by a man of the Manibandha on a woman of the Manicāra tribe.

2. Ambasṭha, or Vaidya,‡ whose profession is the science of medicine, was born of a Vaisya woman, by a man of the sacerdotal class. The same origin is given by the Dharmapuraṇa to the Cansacāra,|| or brazier, and to the Śanc'hadāra,§ or worker in shells. These again are stated, in the tantra, as springing from the intermarriages of mixed classes; the Cansacāra from the Tāmracūta and the Śanc'hadāra; also named Śanc'hadūreca, from the Rājaputra and Gāndhica: for Rājaputra not only denotes Cshatriyas as sons of kings, but is also the name of a mixed class, and of a tribe of fabulous origin.

Rudra yāmala tantra: "The origin of Rājaputras is "from the Vaisya on the daughter of an Ambasṭha. "Again, thousands of others sprung from the foreheads of "cows kept to supply oblations."

3. Nīshāda, or Pārasava, whose profession is catching fish, was born of a Śudra woman by a man of a sacerdotal class. The name is given to the issue of a legal marriage

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vulgarily Sunargau, is situated east of Dacca. China is a portion of the present Chinese empire. On the rest I can offer no conjecture. Śāca and Berbēra, here mentioned, must differ from the Dwipa and the region situated between the Cuta and Śanc'ha dwīpas.

* Vulgarly, Cūmār. † Vulgarly, Tāntī. ‡ Vulgarly, Baidya. § Vulgarly, Casérā. || Vulgarly Sāchērā.
between a Brāhmaṇa and a woman of the Śūdra tribe. It should seem that the issue of other legal marriages in different ranks, were described by the names of mixed classes springing from intercourse between the several tribes. This, however, is liable to some question; and since such marriages are considered as illegal in the present age, it is not material to pursue the inquiry.

According to the Dharma purāṇa, from the same origin with the Nishāda springs the Varājīvī, or astrologer. In the tantra, that origin is given to the Brāhma-sūdra, whose profession is to make chairs or stools used on some religious occasions. Under the name of Varajīvī* is described a class springing from the Gōpa and Tantravāya, and employed in cultivating betel. The profession of astrology or, at least, that of making almanacks, is assigned in the tantra, to degraded Brāhmaṇas.

"Brāhmaṇas, falling from their tribe, became kinsmen of the twice-born class: to them is assigned the profession of ascertaining the lunar and solar days."

4. Māhishyā is a son of a Cshatriya by a woman of the Vaisya tribe. His profession is music, astronomy, and attendance on cattle.

5. Ugra was born of a Śūdra woman by a man of the military class. His profession, according to Mena, is killing or confining such animals as live in holes: but, according to the tantra, he is an encomiast or bard. The same origin is attributed to the Nāpita† or barber; and to the Maudaca, or confectioner. In the tantra, the Nāpita is said to be born of a Cuverina woman by a man of the Patticāra class.

6. Carana‡ from a Vaisya, by a woman of the Śūdra

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* Vulgarly, Baraiya. † Vulgarly, Nāya or Nā. ‡ Vulgarly, Caran.
class, is an attendant on princes, or secretary. The appellation of Cáyast'ha* is in general considered as synonymous with Carañā; and accordingly the Carañā tribe commonly assumes the name of Cáyast'ha: but the Cáyast'has of Bengal have pretensions to be considered as true Śúdras, which the Jātimála seems to authorize; for the origin of the Cáyast'ha is there mentioned, before the subject of mixed tribes is introduced, immediately after describing the Gópa as a true Śúdra.

One, named Bhútidatta, was noticed for his domestic assiduity;† therefore the rank of Cáyast'ha was by Bráhmaṁas assigned to him. From him sprung three sons, Chitrángada, Chitráséna, and Chitragnāta: they were employed in attendance on princes.

The Dharmá puráṇa assigns the same origin to the Tambuli, or betel-seller, and to the Tanlīca, or areca-seller, as to the Carañā.

The six before enumerated are begotten in the direct order of the classes. Six are begotten in the inverse order.

7. Súta, begotten by a Cshatriya on a woman of the priestly class. His occupation is managing horses and driving cars. The same origin is given, in the puráṇa, to the Málácára‡ or florist; but he sprung from the Carmaedra and Tailīca classes, if the authority of the tantra prevails.

8. Mágaptha, born of a Cshatriya girl, by a man of the commercial class, has, according to the sástra, the profession of travelling with merchandize; but, according to the puráṇa and tantra, is an encomiast. From parents of those

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* Vulgarly, Cáit.
† Literally, Staying at home, (cáyé sanst'hitak,) whence the etymology of Cáyast'ha.
‡ Māli.
classes sprung the Gópa* if the puráña may be believed, but the tantra describes the Gópa as a true Śúdra, and names Gópajívi† a mixed class, using the same profession, and springing from the Tantraváya and Mánibandha tribes.

9 and 10. Vaidéha and Ayógava. The occupation of the first, born of a Bráhmañi by a man of the commercial class, is waiting on women: the second, born of a Vaisya woman by a man of the servile class, has the profession of a carpenter.

11. Cshattré, or Cshattá, sprung from a servile man by a woman of the military class, is employed in killing and confining such animals as live in holes. The same origin is ascribed by the puráña to the Carmacára, or smith, and Dása, or mariner. The one is mentioned in the tantra without specifying the classes from which he sprung; and the other has a different origin, according to the sástra and tantra.

All authorities concur in deriving the Chándála from a Śúdra father and Bráhmañi mother. His profession is carrying out corpses, and executing criminals; and officiating in other abject employments for the public service.

A third set of Indian classes originate from the intermarriages of the first and second set: a few only have been named by Ménú; and, excepting the Ablíra, or milkman, they are not noticed by the other authorities to which I refer. But the puráña names other classes of this set.

A fourth set is derived from intercourse between the several classes of the second: of these also few have been named by Ménú; and one only of the fifth set, springing from intermarriages of the second and third; and

* Góp.  † Góari- Góp.
another of the sixth set, derived from intercourse between
classes of the second and fourth. Mênú adds to these
tribes four sons of outcasts.

The tantra enumerates many other classes, which must
be placed in lower sets,* and ascribes a different origin to
some of the tribes in the third and fourth sets. To pursue
a verbose comparison would be tedious, and of little use;
perhaps, of none; for I suspect that their origin is fanciful;
and, except the mixed classes named by Mênú, that the
rest are terms for professions rather than tribes; and they
should be considered as denoting companies of artisans,
rather than distinct races: The mode in which AMERA
SINHA mentions the mixed classes and the professions of
artisans, seems to support this conjecture.

However, the Játimalá expressly states the number of
forty-two mixed classes, springing from the intercourse
of a man of inferior, with a woman of superior class.
Though, like other mixed classes, they are included under
the general denomination of Śúdra, they are considered as
most abject, and most of them now experience the same
contemptuous treatment as the abject mixed classes men-
tioned by Mênú. According to the Rudrā yámala, the
domestic priests of twenty of these tribes are degraded.

"Avoid," says the tantra, "the touch of the Chándála,
"and other abject classes; and of those who eat the flesh
"of kine, often utter forbidden words, and perform none of
"the prescribed ceremonies; they are called Mléch’ha
"and going to the region of Yávana, have been named
"Yávanas.

"These seven, the Rajaca, Marcaára, Náta, Barúña,
"Caúvera, and Médabhilla, are the last tribes. Whoever
"associates with them, undoubtedly falls from his class;
"whoever bathes or drinks in wells or pools which they
"have caused to be made, must be purified by the five
"productions of kine; whoever approaches their women, "is doubtless degraded from his rank.
"For women of the Nāta and Cāpāla classes, for pro-
stitutes, and for women of the Rājaca and Nāpita tribes,
a man should willingly make oblations, but by no means "daily with them."

I may here remark, that, according to the Rudra yāmala, the Nāta and Nātaca are distinct; but the professions are not discriminated in that tantra. If their distinct occupa-
tions, as dancers and actors, are accurately applied, dramas are of very early date.

The Puṇḍraca and Pātatasūtracara, or feeder of silk-
worms, and silk-twister, deserve notice; for it has been said, that silk was the produce of China solely until the reign of the Greek Emperor Justinian, and that the laws of China jealously guarded the exclusive production. The frequent mention of silk in the most ancient Sanscrit books would not fully disprove that opinion; but the mention of an Indian class, whose occupation it is to attend silk-worms, may be admitted as proof, if the antiquity of the tantra be not questioned. I am informed, that the tantras collectively are noticed in very ancient compositions; but, as they are very numerous, they must have been composed at different periods; and the tantra which I quote, might be thought comparatively modern. However, it may be presumed that the Rudra yāmala is among the most authentic, and, by a natural inference, among the most ancient; since it is named in the Durgā mohattwa where the principal tantras are enumerated.*

* Thus enumerated, "Cali tantra, Mūndmālā, Tārā, Nirvāṇa tantra, Sūra sāran, Bīrā tantra, Śingārachana, Bhūta tantra, Uddēśan and Cālīcī calpa, Bhairavi tantra, and Bhairavi calpa, Tīḍala, Mātrī-
bbhēdanaca, Māyā tantra, Birēśvara, Viśwasāra, Samayā-tantra, Brah-
ma-yāmala-tantra, Rudra-yāmala-tantra, Śancu-yāmala-tantra, Gāya-
In the comparative tables to which I have referred, the classes are named, with their origin, and the particular professions assigned to them. How far every person is bound, by original institutions, to adhere rigidly to the profession of his class, may merit some enquiry. Lawyers have largely discussed the texts of law concerning this subject, and some difference of opinion occurs in their writings. This, however, is not the place for entering into such disquisitions. I shall therefore briefly state what appears to be the best established opinion, as deduced from the texts of Menu, and other legal authorities.

The regular means of subsistence for a Brāhmaṇa, are assisting to sacrifice, teaching the Vēdas, and receiving gifts; for a Čshatriya, bearing arms; for a Vaiśya, merchandize, attending on cattle, and agriculture; for a Śādra, servile attendance on the higher classes. The most commendable are, respectively for the four classes, teaching the Vēda, defending the people, commerce, or keeping herds or flocks, and servile attendance on learned and virtuous priests.

A Brāhmaṇa, unable to subsist by his own duties, may live by those of a soldier: if he cannot get a subsistence by either of these employments, he may apply to tillage, and attendance on cattle, or gain a competence by traffic, avoiding certain commodities. A Čshatriya, in distress, may subsist by all these means; but he must not have recourse to the highest functions. In seasons of distress, a further latitude is given. The practice of medicine, and other learned professions, painting and other arts, work for wages, menial service, alms, and usury, are among the

tri-tantra, Cālicācula servaswa, Cūlārāva, Yōginī-tantra, and the Tantra Mehesiveamardini. These are here universally known, Oh Bhairavi, greatest of souls! And many are the tantrās uttered by Sambhu."
modes of subsistence allowed to the Brāhmaṇa and Cśhatriya. A Vaiśya, unable to subsist by his own duties, may descend to the servile acts of a Śūdra. And a Śūdra, not finding employment by waiting on men of the higher classes, may subsist by handicrafts; principally following those mechanical occupations, as joinery and masonry; and practical arts, as painting and writing; by following of which he may serve men of superior classes: and, although a man of a lower tribe is in general restricted from the acts of a higher class, the Śūdra is expressly permitted to become a trader or a husbandman.

Besides the particular occupations assigned to each of the mixed classes, they have the alternative of following that profession which regularly belongs to the class from which they derive their origin on the mother’s side: those, at least, have such an option, who are born in the direct order of the tribes, as the Mūrdhābhishīcā, Ambashṭha, and others. The mixed classes are also permitted to subsist by any of the duties of a Śūdra; that is, by a menial service, by handicrafts, by commerce, or by agriculture.

Hence it appears that almost every occupation, though regularly it be the profession of a particular class, is open to most other tribes; and that the limitations, far from being rigorous, do, in fact, reserve only one peculiar profession, that of the Brāhmaṇa, which consists in teaching the Vēda, and officiating at religious ceremonies.

The classes are sufficiently numerous; but the subdivisions of them have further multiplied distinctions to an endless variety. The subordinate distinctions may be best exemplified from the Brāhmaṇa and Cśyastha, because some of the appellations, by which the different races are distinguished, will be familiar to many readers.

The Brāhmaṇas of Bengal are descended from five priests, invited from Cāṇyacubja, by Ádīśwara, king of
Gaura, who is said to have reigned about nine hundred years after Christ. These were Bhaṭṭa Nārāyaṇa, of the family of Saṅdīla, a son of Caśyapa; Dacsha, also a descendant of Caśyapa; Vēdağarva, of the family of Vatśa; Chandra, of the family of Saverṇa, a son of Caśyapa; and Sṛi Hersha, a descendant of Bharadvāja.

From these ancestors have branched no fewer than a hundred and fifty-six families, of which the precedence was fixed by Ballāla Sēna, who reigned in the eleventh century of the Christian æra. One hundred of these families settled in Vārėndra, and fifty-six in Rārā. They are now dispersed throughout Bengal, but retain the family distinctions fixed by Ballāla Sēna. They are denominated from the families to which their five progenitors belonged, and are still considered as Cānyacubja Brāhmaṇas.

At the period when these priests were invited by the king of Gaura, some Sāreswata Brāhmaṇas, and a few Vaidicas, resided in Bengal. Of the Brāhmaṇas of Sāreswata, none are now found in Bengal; but five families of Vaidicas are extant, and are admitted to intermarry with the Brāhmaṇas of Rārā.

Among the Brāhmaṇas of Vārėndra, eight families have pre-eminence, and eight hold the second rank.* Among

* VĀRENDRA BRAHMAṆAS.

<table>
<thead>
<tr>
<th>Maṭtra</th>
<th>Bhima, or Cāli.</th>
<th>Rudra-Vāgisi.</th>
<th>Sanyamini, or Sandydl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lāhari</td>
<td>Bhaduri.</td>
<td>Śādhu-Vāgisi.</td>
<td>Bhadara.</td>
</tr>
</tbody>
</table>

The last was admitted by election of the other seven.

ŚUDHA ŚRÖTRIYA 8.
CASNŢA ŚRÖTRIYA 84.

The names of these 92 families seldom occur in common intercourse.
those of Rárá, six hold the first rank.* The distinctive apppellations of the several families are borne by those of the first rank; but in most of the other families they are disused; and sérman or sérma, the addition common to the whole tribe of Bráhmañás, is assumed. For this practice, the priests of Bengal are censured by the Bráhmañás of Mit'hlá, and other countries, where that title is only used on important occasions, and in religious ceremonies.

In Mit'hlá, the additions are fewer, though distinct families are more numerous; no more than three surnames are in use in that district, Thácura, Miśra, and Ojhá; each appropriated to many families.

The Cásast'has of Bengal claim descent from five Cásast'has who attended the priests invited from Cánycubjá. Their descendants branched into eighty-three families; and their precedence was fixed by the same prince Ballála séná, who also adjusted the family rank of other classes.

In Bengal and Dacshiña Rárá, three families of Cásast'has have pre-eminence; eight hold the second rank.† The

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* RÁRIYA BRÁHMAÑÁS.

CÚLÍNA 6.

Muç'huti, Ganguli, Cánjelála.
vulgarly, Muç'herjá.
Ghóshála.

Bándyagáti, Chałáti,
vulgarly, Danoji, vulgarly, Chatoji.
Śrótríya 50.

The names of these 50 families seldom occur in common intercourse.

† CÁYAST'HAS OF DACSHIÑA RÁRÁ AND BENGAL.

CÚLÍNA 3.

Ghósha Mitrá.
Vasú, Vulg. Bósó.
SANMAULICA 8.


MAU-
Cayast'has of inferior rank generally assume the addition of Dāsa, common to the tribe of Śúdras, in the same manner as other classes have similar titles common to the whole tribe. The regular addition to the name of a Cshatriya is Verman; to that of a Váisyá, Gupta; but the general title of Déva is commonly assumed; and, with a feminine termination, is also borne by women of other tribes.

The distinction of families is important in regulating intermarriages. Genealogy is made a particular study; and the greatest attention is given to regulate the alliance according to established rules, particularly in the first marriage of the eldest son. The principal points to be observed are, not to marry within the prohibited degrees; nor in a family known by its name to be of the same primitive stock; nor in one of inferior rank; nor even in an inferior branch of an equal one; for within some families gradations are established. Thus, among the Cúlina of the Cíyast'has, the rank has been counted from thirteen degrees; and in every generation, so long as the marriage has been properly assorted, one degree has been added to the rank. But, should a marriage be contracted in a family of a lower degree, an entire forfeiture of such rank would be incurred.

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Maulica 72.

Sán̄ya, or Sain. Suin, &c.
Sáma, &c.
Téja, &c.
Cháći, &c.

The others are omitted for the sake of brevity; their names seldom occur in common intercourse.
VII.

Observations on the Sect of Jains.

[From the Asiatic Researches, vol. ix. p. 287—322. Calcutta, 1807. 4to.]

The information collected by Major Mackenzie, concerning a religious sect hitherto so imperfectly known as that of the Jainas, and which has been even confounded with one more numerous and more widely spread (the sect of Buddha), may furnish the ground of further researches, from which an exact knowledge of the tenets and practice of a very remarkable order of people may be ultimately expected. What Major Mackenzie has communicated to the Society, comes from a most authentic source; the declarations of two principal priests of the Jainas themselves. It is supported by similar information, procured from a like source, by Dr. F. Buchanand, during his journey in Mysore, in the year following the reduction of Seringapatam. Having the permission of Dr. Buchanand to use the extracts, which I had his leave to make from the journal kept by him during that journey, I have inserted, in the preceding article, the information received by him from priests of the Jain sect.

I am enabled to corroborate both statements, from conversation with Jain priests, and from books in my possession, written by authors of the Jain persuasion. Some of those volumes were procured for me at Benares; others were obtained from the present Jagat Set, at Morshedabad, who, having changed his religion, to adopt the wor-
ship of Vishnu, forwarded to me, at my request, such books of his former faith as were yet within his reach.

It appears, from the concurrent result of all the inquiries which have been made, that the Jainas constitute a sect of Hindus, differing, indeed, from the rest in some very important tenets; but following, in other respects, a similar practice, and maintaining like opinions and observances.

The essential character of the Hindu institutions is the distribution of the people into four great tribes. This is considered by themselves to be the marked point which separates them from Melchhas or Barbarians. The Jainas, it is found, admit the same division into four tribes, and perform like religious ceremonies, termed sanscaras, from the birth of a male to his marriage. They observe similar fasts, and practise, still more strictly, the received maxims for refraining from injury to any sentient being. They appear to recognise as subordinate deities, some, if not all, of the gods of the prevailing sects; but do not worship, in particular, the five principal gods of those sects; or any one of them by preference; nor address prayers, or perform sacrifice, to the sun, or to fire: and they differ from the rest of the Hindus, in assigning the highest place to certain deified saints, who, according to their creed, have successively become superior gods. Another point in which they materially disagree is the rejection of the Vedas, the divine authority of which they deny; condemning, at the same time, the practice of sacrifices, and the other ceremonies which the followers of the Vedas perform, to obtain specific promised consequences, in this world or in the next.

In this respect the Jainas resemble the Bauddhas or Saugatas, who equally deny the divine authority of the Vedas; and who similarly worship certain pre-eminent saints, admitting likewise, as subordinate deities, nearly
the whole pantheon of the orthodox Hindus. They differ, indeed, in regard to the history of the personages whom they have deified; and it may be hence concluded, that they have had distinct founders; but the original notion seems to have been the same. In fact, this remarkable tenet, from which the Jainas and Bauddhas derive their most conspicuous peculiarities, is not entirely unknown to the orthodox Hindus. The followers of the Vėdas, according to the theology, which is explained in the Vėdánta, considering the human soul as a portion of the divine and universal mind, believe, that it is capable of perfect union with the divine essence: and the writers on the Vėdánta, not only affirm, that this union and identity are attained through a knowledge of God, as by them taught; but have hinted, that by such means the particular soul becomes God, even to the actual attainment of supremacy.*

So far the followers of the Vėdas do not virtually disagree with the Jainas and Bauddhas. But they have not, like those sects, framed a mythology upon the supposed history of the persons, who have successively attained divinity; nor have they taken these for the objects of national worship. All three sects agree in their belief of transmigration. But the Jainas are distinguished from the rest by their admission of no opinions, as they themselves affirm, which are not founded on perception, or on proof drawn from that, or from testimony.

It does not, however, appear, that they really withhold belief from pretended revelations: and the doctrines which characterize the sect, are not confined to a single tenet; but form an assemblage of mythological and metaphysical ideas found among other sects, joined to many visionary and fantastic notions of their own.

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* Vrihad ârañyaka upanishad.
Their belief in the eternity of matter, and perpetuity of the world, is common to the Sánch'ya philosophy, from which it was, perhaps, immediately taken. Their description of the world has much analogy to that which is given in the Puráñas, or Indian theogonies: but the scheme has been rendered still more extravagant. Their precaution to avoid injuring any being, is a practice inculcated in the orthodox religion, but which has been carried by them to a ludicrous extreme.*

In their notions of the soul, and of its union with body, and of retribution for good and evil, some analogy is likewise observable. The Jainas conceive the soul (jíva) to have been eternally united to a very subtil material body, or rather to two such bodies, one of which is invariable, and consists (if I rightly apprehend their metaphysical notions) of the powers of the mind; the other is variable, and is composed of its passions and affections: (this, at least, is what I understand them to mean by the tāijasa and cármaña sarivas). The soul, so embodied, becomes, in its successive transmigrations, united with a grosser body denominated audárca, which retains a definite form, as man and other mundane beings; or it is joined with a purer essence, varying in its appearance at pleasure, as the gods and genii. This last is termed vaicárca. They distinguish a fifth sort of body, under the name of dhárca, which they explain as a minute form, issuing from the head of a meditative sage, to consult an omniscient saint; and returning with the desired information to the person whence that form issued, or rather from which it was elongated; for they suppose the communication not to have been interrupted.

* Jainas priests usually bear a broom adapted to sweep insects out of their way; lest they should tread on the minutest being.
The soul is never completely separated from matter, until it obtain a final release from corporeal sufferance, by deification, through a perfect disengagement from good and evil, in the person of a beatified saint. Intermediately it receives retribution for the benefits or injuries ascribable to it in its actual or precedent state, according to a strict principle of retaliation, receiving pleasure or pain from the same individual, who, in a present or former state, was either benefitted or aggrieved.

Major Mackenzie's information confirms that which I had also received, concerning the distribution of these sectaries into clergy and laity. In Hindustán the Jainas are usually called Syauras; but distinguish themselves into Sravacas and Yatis. The laity (termed Sravaca) includes persons of various tribes, as, indeed, is the case with Hindus of other sects: but, on this side of India, the Jainas are mostly of the Vaisya class.* The orthodox Hindus have a secular, as well as a regular, clergy: a Brähmana, following the practice of officiating at the ceremonies of his religion, without quitting the order of a householder, may be considered as belonging to the secular clergy; one who follows a worldly profession, (that of husbandry for example,) appertains to the laity; and so do people of other tribes: but persons, who have passed into the several orders of devotion, may be reckoned to constitute the regular clergy. The Jainas have, in like manner, priests who have entered into an order of devotion; and also employ Brähmaṇas at their ceremonies; and, for want of Brähmaṇas of their own faith, they even have recourse to the secular clergy of the orthodox sect. This subject is sufficiently explained by Major Mackenzie

* I understand that their Vaisya class includes eighty-four tribes: of whom the most common are those denominated O'swāl, Agarwāl Pariwār, and C'handēwāl.
and Dr. Buchanan; I shall, however, add, for the sake of a subsequent remark, that the Jainas apply the terms Vati and Śramaṇa, (in Prākrit and Hindi written Samana,) to a person who has devoted himself to religious contemplation and austerity; and the sect of Buddha uses the word Śramaṇa for the same meaning. It cannot be doubted, that the Sommonacodom of Siam, is merely a corruption of the words Śramaṇa Gautama, the holy Gautama or Buddha.*

Having been here led to a comparison of the Indian sects which follow the precepts of the Védas, with those which reject their authority, I judge it necessary to notice an opinion, which has been advanced, on the relative antiquity of those religions; and especially the asserted priority of the Bauddhas before the Bráhmaṇas.

In the first place, it may be proper to remark, that the earliest accounts of India, by the Greeks who visited the country, describe its inhabitants as distributed into separate tribes.† Consequently, a sect which, like the modern Bauddhas, has no distinction of caste, could not have been then the most prevalent in India.

It is indeed possible that the followers of Buddha may, like the Jainas, have retained the distribution into four tribes, so long as they continued in Hindustán. But in that case, they must have been a sect of Hindus; and the question, which is most ancient, the Bráhmaṇa or the Baudda, becomes a solecism.

If it be admitted that the Bauddhas are originally a sect of Hindus, it may be next questioned whether that, or any of the religious systems now established, be the most

* See As. Res. vol. vii. p. 415.
† Seven tribes are enumerated: but it is not difficult to reconcile the distributions which are stated by Arrian and Strabo, with the present distribution into four classes.
ancient. I have, on a former occasion,* indicated the notions which I entertain on this point. According to the hypothesis which I then hinted, the earliest Indian sect of which we have any present distinct knowledge, is that of the followers of the practical Védas, who worshipped the sun, fire, and the elements; and who believed the efficacy of sacrifices, for the accomplishment of present and of future purposes. It may be supposed that the refined doctrine of the Védántis, or followers of the theological and argumentative part of the Védas, is of later date: and it does not seem improbable that the sects of Jīna and of Buddha are still more modern. But I apprehend that the Vaishnāvas, meaning particularly the worshippers of Ráma and of Crīshñā,† may be subsequent to those sects, and that the Śaivas also are of more recent date.

I state it as an hypothesis, because I am not at present able to support the whole of this position on grounds which may appear quite satisfactory to others; nor by evidence which may entirely convince them. Some arguments will,

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* As. Res. vol. viii. p. 474. [vol. i. pp. 110, 111, of the present work.]
† In explanation of a remark contained in a former essay [vol. i. p. 110, &c. of the present work] I take this occasion of adding, that the mere mention of Ráma or of Crīshñā, in a passage of the Védas, without any indication of peculiar reverence, would not authorize a presumption against the genuineness of that passage, on my hypothesis; nor, admitting its authenticity, furnish an argument against that system. I suppose both heroes to have been known characters in ancient fabulous history; but conjecture, that, on the same basis, new fables have been constructed, elevating those personages to the rank of gods. On this supposition, the simple mention of them in genuine portions of the Védas, particularly in that part of it which is entitled Brāhmaṇa, would not appear surprising. Accordingly, Crīshñā, son of Dávaci, is actually named in the Chīhándōgya Upanishad (towards the close of the 3d Chapter) as having received theological information from Ghóra, a descendant of Angrās. This passage, which had escaped my notice, was indicated to me by Mr. Speke, from the Persian translation of the Upanishad.
however, be advanced, to show that the supposition is not gratuitous.

The long sought history of Câshmîr, which in the original Sanscrit, was presented to the emperor AČBER, as related by ABÚ'L-FAZIL in the Áyín AČberî,* and of which a Persian translation exists, more ample than ABÚ'L-FAZIL's brief abstract, has been at length recovered in the original language.† A fuller account of this book will be hereafter submitted to the society: the present occasion for the mention of it, is a passage which was cited by Dr. BUCHANAN,‡ from the English translation of the Áyín AČberî, for an import which is not supported by the Persian or Sanscrit text.

The author, after briefly noticing the colony established in Câshmîr by CAŚYAPA, and hinting a succession of kings to the time of the Curus and Pândavas, opens his detailed history, and list of princes, with GÓNARDA, a contemporary of YUDHISHṬ'HIRA. He describes AŚÓCA (who was twelfth in succession from GÓNARDA,) and his son JALÓCA, and grandson Dâmódara, as devout worshippers of ŚIVA; and JALÓCA, in particular, as a conqueror of the Mléch'has, or barbarians. Dâmódara, according to this history, was succeeded by three kings of the race of Turushca; and they were followed by a Bódhisatwa, who wrested the empire from them by the aid of ŚÁCYASINHA, and introduced the religion of BUDDHA into Câshmîr. He reigned a hundred years; and the next sovereign was ABHI-MANYU, who destroyed the Bauddhas, and re-established the doctrines of the Nîla purâña. This account is so far

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† The copy which I possess, belonged to a Bráhmaṇa, who died some months ago (1805) in Calcutta. I obtained it from his heirs.
‡ As. Res. vol. vi. p. 165.
from proving the priority of the Bāuddhas, that it directly avers the contrary.

From the legendary tales concerning the last Buddha current in all the countries, in which his sect now flourishes,* and upon the authority of a life of Buddha in the Sanscrit language, under the title of Lalita purāṇa, which was procured by Major Knox, during his public mission in Népál, it can be affirmed, that the story of Gautama Buddha has been engrafted on the heroic history of the lunar and solar races, received by the orthodox Hindus; an evident sign, that his sect is subsequent to that, in which this fabulous history is original.

The same remark is applicable to the Jainas, with whom the legendary story of their saints also seems to be engrafted on the paurānic tales of the orthodox sect. Sufficient indication of this will appear, in the passages which will be subsequently cited from the writings of the Jainas.

Considerable weight might be allowed to an argument deduced from the aggravated extravagance of the fictions admitted by the sects of Jīna and Buddha. The mythology of the orthodox Hindus, their present chronology adapted to astronomical periods, their legendary tales, their mystical allegories, are abundantly extravagant. But the Jainas and Bāuddhas surpass them in monstrous exaggerations of the same kind. In this rivalship of absurd fiction, it would not be unreasonable to pronounce that to be most modern, which has outgone the rest.

The greater antiquity of the religion of the Védas is also rendered probable, from the prevalence of a similar worship of the sun and of fire in ancient Persia. Nothing forbids the supposition, that a religious worship, which was there established in times of antiquity, may have also existed

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* Tachard, Voyage de Siam. Laloubère, Royaume de Siam.
from a remote period in the country between the Ganges and the Indus.

The testimony of the Greeks preponderates greatly for the early prevalence of the sect, from which the present orthodox Hindus are derived. Arrian, having said that the Brachmanes were the sages or learned among the Indians,* mentions them under the latter designation (σοφισται) as a distinct tribe, 'which, though inferior to the others in number, is superior in rank and estimation: bound to no bodily work, nor contributing anything from labour to the public use; in short, no duty is imposed on that tribe, but that of sacrificing to the gods, for the common benefit of the Indians; and, when any one celebrates a private sacrifice, a person of that class becomes his guide; as if the sacrifices would not else be acceptable to the gods.'†

Here, as well as in the sequel of the passage, the priests of a religion consonant to the Védas, are well described: and what is said, is suitable to them; but to no other sect, which is known to have at any time prevailed in India.

A similar description is more succinctly given by Strabo, 'It is said, that the Indian multitude is divided into seven classes, and that the philosophers are first in rank, but fewest in number. They are employed, respectively, for private benefit, by those who are sacrificing or worshipping, &c.'‡

In another place he states, on the authority of Mega-

stenes, 'two classes of philosophers or priests; the Brachmanes and Germanes: but the Brachmanes are best

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* Ἐὰν τῶν Βραχμάνων οἱ δὲ σοφισταὶ τοῖς Ἱνδοῖς εἰσίν, κ. 7. λ. Εἰσορ. Αἰ.
† Νένεμνησαι οἱ πάντεσ Ἰνδοὶ ἐς ἐπτὰ μάλιστα γενεὰς ἐν μὲν αὐτοῖς ἐς σοφισταὶ εἰσίν, κ. 7. λ. ΑΡΡΙΑΙΟ. Ίνδικ. κ. 11.
‡ Φησὶ δὴ τὸ τῶν Ἰνδοῖν πλῆθος εἰς ἐπτὰ μέρη διηρήσθαι, καὶ πρῶτος μὲν τοὺς φιλοσόφους εἶναί, κ. 7. λ. ΣΤΡΑΒ. ΧV. κ. 1. (p. 703 ed. Casaub.)
esteemed, because they are most consistent in their doctrine." The author then proceeds to describe their manners and opinions: the whole passage is highly deserving of attention, and will be found, on consideration, to be more suitable to the orthodox Hindus, than to the Baudhās or Jainas: particularly towards the close of his account of the Brāhmaṇas, where he says, 'In many things they agree with the Greeks; for they affirm, that the world was produced and is perishable; and that it is spherical: that God, governing it as well as framing it, pervades the whole: that the principles of all things are various; but water is the principle of the construction of the world: that, besides the four elements, there is a fifth nature, whence heaven and the stars: that the earth is placed in the centre of all. Such and many other things are affirmed of reproduction, and of the soul. Like Plato, they devise fables concerning the immortality of the soul, and the judgment in the infernal regions; and other similar notions. These things are said of the Brāhmaṇas.'

Strabo notices likewise another order of people opposed to the Brāhmaṇas, and called Pramnae: he characterizes them as 'contentious cavillers, who ridiculed the Brāhmaṇas for their study of physiology and astronomy.'

Philostatus, in the life of Apollonius, speaks of the Brāhmaṇas as worshipping the sun. 'By day they pray to the sun respecting the seasons, which he governs, that he would send them in due time; and that India might thrive: and, in the evening, they intreat the solar

* "Ἀλλὰν δὲ δαίρεσιν ποιεῖται περὶ τῶν φιλοσόφων, δύο γένη φύσεων, δὲν τοὺς μὲν Β्रαχμάνας καλεῖ, τοὺς δὲ Γερμάνας, κ. τ. λ. Strab. xν. c. i. pag. 712.

† Φιλοσόφους τε τοὺς Βραχμάσιν ἀντιδιαφοροῦνται Πράμνας ἐφιστικοὺς τινὰς καὶ ἐλεγχικούς. κ. τ. λ. Strab. i. c. pag. 718. 719.
ray not to be impatient of night, and to remain as conducted from them."

Pliny and Solinus† also describe the Gymnosophists contemplating the sun: and Hierocles, as cited by Stephanus of Byzantium,‡ expressly declares the Brachmanes to be particularly devoted to the sun.

This worship, which distinguishes the orthodox Hindus, does not seem to have been at any time practised by the rival sects of Jina and Buddha.

Porphyrius, treating of a class of religious men, among the Indians, whom the Greeks were accustomed to call Gymnosophists, mentions two orders of them; one, the Brachmanes; the other, the Samaneans: 'the Brachmanes receive religious knowledge, like the priesthood, in right of birth; but the Samaneans are select, and consist of persons choosing to prosecute divine studies.' He adds, on the authority of Bardesanes, that 'all the Brachmanes are of one race; for they are all descended from one father and one mother. But the Samaneans are not of their race; being selected from the whole nation of Indians, as before mentioned. The Brachman is subject to no domination, and contributes nothing to others.'§

In this passage, the Brachman, as an hereditary order of priesthood, is contrasted with another religious order; to which persons of various tribes were admissible: and the Samaneans, who are obviously the same with the Germanes of Strabo, were doubtless Sannyásis; but may have be-

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* Mes' ἡμέραν μὲν οὖν ἡλιον ὑπὲρ τῶν ὀφίων, κ. τ. λ. lib. iii. cap. 4.
† Plin., lib. vii. c. 2. Solin. i. 52.
‡ τὸ Ἐραχμάνων φῶλον ἄνδρῶν φιλοσόφων, καὶ θεοῖς φίλων, ἡλίων δὲ μα-

†† ἱστα καθοσιομένων. Stephan. de Urbibus, ad vocem Brachmanes.
§ Porph. de Abstinencia, lib. iv.
longed to any of the sects of Hindus. The name seems to bear some affinity to the Śramaṇas, or ascetics of the Jainas and Bauddhas.

Clemens Alexandrinus does indeed hint, that all the Brachmanes revered their wise men as deities;* and in another place, he describes them as worshipping Hercules and Pan.† But the following passage from Clemens is most in point. Having said, that philosophy flourished anciently among the barbarians, and afterwards was introduced among the Greeks, he instances the prophets of the Egyptians, the Chaldees of the Assyrians; the Druids of the Gauls (Galatæ); the Samaṇeans of the Bactrians; the philosophers of the Celts; the Magi of the Persians; the Gymnosophists of the Indians: and proceeds thus:—

‘They are of two kinds, some called Sarmanes, others Brachmanes. Among the Sarmanes, those called Allobii,‡ neither inhabit towns, nor have houses; they are clad with the bark of trees, and eat acorns, and drink water with their hands. They know not marriage, nor procreation of children; like those now called Eneratetai (chaste). There are likewise, among the Indians, persons obeying the precepts of Butta, whom they worship as a god, on account of his extreme venerableness.’§

Here, to my apprehension, the followers of Buddha are

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* Καὶ μοι δοκοῦσιν, &c. Strom. lib. i. c. 15. p. 130. ed. Sylb.
† Strom. lib. iii. c. 7. p. 194. ed Sylb.
‡ Same with the Hylodii of Strabo.
§ Διτόν ἐν τοῖς τὸ γένος, οἱ Σαρμανάς αὐτῶν, οἱ δὲ Βραχμάναι καλοῦμενοι, καὶ τῶν Σαρμανῶν οἱ Ἀλλόβιοι προσαγορεύομενοι, οὕτε πόλεις ὀκοῦσιν, οὕτε στέγας ἕχουσιν, δεύδρον δὲ ἀμφιεύνυμοι φλοιῶσι, καὶ ἀκρόδρυς σιτοῦνται, καὶ ὕδωρ ταῖς χερου πίνουσιν ὦ γάμῳν, οὐ παιδοποιαὶ ἑσσοῦσιν, ὡσπερ ὅν ὦν Ἔγχροταὶ καλοῦμενοι, εἰς δὲ τῶν ἱεῶν οἱ τοῖς Βούτα πειθομενοί παραγγέλμασιν ὦν δὲ ὑπερβολὴν σεμνότητος εἰς Θεόν τετιμῆκας. Strom. lib. i. c. 15. p. 131. ed. Sylb.
clearly distinguished from the Brachmanes and Sarmanes.* The latter, called Germanes by Strabo, and Samanœans by Porphyrius, are the ascetics of a different religion; and may have belonged to the sect of Jina, or to another. The Brachmanes are apparently those who are described by Philostratus and Hierocles, as worshipping the sun; and, by Strabo and by Arrian, as performing sacrifices for the common benefit of the nation, as well as for individuals. The religion which they practised, was so far conformable with the precepts of the Vedas: and their doctrine and observances, their manners and opinions, as noticed by the authors above cited, agree with no other religious institutions known in India, but the orthodox sect. In short, the Brähmanas are distinctly mentioned by Greek authors as the first of the tribes or casts, into which the Indian nation was then, as now, divided. They are expressly discriminated from the sect of Buddha by one ancient author, and from the Sarmanes, or Samanœans, (ascetics of various tribes) by others. They are described by more than one authority, as worshipping the sun, as performing sacrifices and as denying the eternity of the world, and maintaining other tenets incompatible with the supposition that the sects of Buddha or Jina could be meant. Their manners and doctrine, as described by these authors, are quite conformable with the notions and practice of the orthodox Hindus. It may therefore be confidently inferred, that the followers of the Vedas flourished in India when it was visited by the Greeks under Alexander: and continued to flourish from the time of Megasthenes, who described them in the fourth century before Christ, to that of Porphyrius, who speaks of

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* The passage has been interpreted differently; as if Clemens said, that the Allobii were those who worshipped Buttâ. (See Moreti, Art. Samandens.) The text is ambiguous.
them, on later authority, in the third century after Christ.

I have thus stated, as briefly as the nature of the subject permitted, a few of the facts and reasons by which the opinion, that the religion and institutions of the orthodox Hindus are more modern than the doctrines of Jīna and of Būdha, may, as I think, be successfully resisted. I have not undertaken a formal refutation of it, and have, therefore, passed unnoticed, objections which are founded on misapprehension.

It is only necessary to remark, that the past prevalence of either of those sects in particular places, with its subsequent persecution there by the worshippers of Śiva, or of Viṣṇu, is no proof of its general priority. Hindustān proper was the early seat of the Hindu religion, and the acknowledged cradle of both the sects in question. They were foreigners in the Peninsula of India; and admitting, as a fact, (what need not, however, be conceded,) that the orthodox Hindus had not been previously settled in the Carnātaka and other districts, in which the Jainas or the Bauddhas have flourished, it cannot be thence concluded, that the followers of the Vēdas did not precede them in other provinces.

It may be proper to add, that the establishment of particular sects among the Hindus who acknowledge the Vēdas, does not affect the general question of relative antiquity. The special doctrines introduced by Śācāra Āchārya, by Rāmānuja, and by Mādhavāchārya, and of course the origin of the sects which receive those doctrines, may be referred, with precision, to the periods when their authors lived: but the religion in which they are sectaries, has undoubtedly a much earlier origin.

To revert to the immediate object of these observations, which is that of explaining and supporting the information
communicated by Major Mackenzie: I shall, for that purpose, state the substance of a few passages from a work of great authority among the Jainas, entitled Calpa sūtra, and from a vocabulary of the Sanskrit language by an author of the Jaina sect.

The Abhidhāna chintāmani, a vocabulary of synonymous terms, by Hémachandra Áchārya, is divided into six chapters (cdādas), the contents of which are thus stated in the author's preface. 'The superior deities (Dēvādhidévas) are noticed in the first chapter; the gods (Dēvas) in the second; men in the third; beings furnished with one or more senses in the fourth; the infernal regions in the fifth; and terms of general use in the sixth.' 'The earth,' observes this author, 'water, fire, air, and trees, have a single organ or sense (indriya); worms, ants, spiders, and the like, have two, three, or four senses; elephants, peacocks, fish, and other beings moving on the earth, in the sky, or in water, are furnished with five senses: and so are gods and men, and the inhabitants of hell.'

The first chapter begins with the synonyma of a Jina or deified saint: among which the most common are Arhat, Jinēśwara, Tīrthāncara or Tīrthācara: others, viz. Jīna, Sarvañjña, and Bhagavat, occur also in the dictionary of Āmera as terms for a Jīna or Buddha; but it is deserving of remark, that neither Buddha, nor Sugata, is stated by Hémachandra among these synonyma. In the subsequent chapter, however, on the subject of inferior gods, after noticing the gods of Hindu mythology, (Indra and the rest, including Brahma, &c.) he states the synonyma of a Buddha, Sugata, or Bódhisatva; and afterwards specifies seven such, viz. Vipaśyī, Śīchī, Vīśwanna, Cucuch'Handa, Cānchana, and Casyapa,* expressly

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* Two of these names occur in Captain Mahony's and Mr. Joinville's lists of five Buddhas. As. Res. vol. vii. p. 32 and 414.
mentioning as the seventh Buddha, Śācyasinha, also named Servārthasiddha, son of Suddhodana and Maya, a kinsman of the sun, from the race of Gautama.

In the first chapter, after stating the general terms for a Jina or Arhat, the author proceeds to enumerate twenty-four Arhats, who have appeared in the present Avasarpini age: and afterwards observes, that excepting Munisuvrata and Nemi, who sprung from the race of Hari, the remaining twenty-two Jinas were born in the line of Iśhwācū.* The fathers and mothers of the several Jinas are then mentioned; their attendants; their standards or characteristics; and the complexions with which they are figured or described.

The author next enumerates twenty-four Jinas who have appeared in the past Utsarpini period; and twenty-four others who will appear in the future age: and, through the remainder of the first book, explains terms relative to the Jaina religion.

The names of the Jinas are specified in Major Mackenzie's communication.† Wherever those names agree with Hemaśandra's enumeration, I have added no remark; but where a difference occurs I have noticed it, adding in the margin the name exhibited in the Sanscrit text.

I shall here subjoin the information gathered from Hemaśandra's vocabulary, and from the Calpa sūtra and other authorities, relative to the Jinas belonging to the present period. They appear to be the deified saints, who are now worshipped by the Jaina sect. They are all figured in the same contemplative posture, with little varia-

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* I understand that the Jainas have a mythological poem entitled Harivanka purāṇa different from the Harivanka of the orthodox. Their Iśhwācū, likewise, is a different person; and the name is said to be a title of their first Jina, Rishabha deva.

† [In the Asiatic Researches, vol. ix. p. 244, &c.]
tion in their appearance, besides a difference of complexion: but the several Jinas have distinguishing marks or characteristic signs, which are usually engraved on the pedestals of their images, to discriminate them.

1. Rīshabha, or Vṛīshabha, of the race of Icshwācu, was son of Nābhi by Marudēvā: he is figured of a yellow or golden complexion; and has a bull for his characteristic. His stature, as is pretended, was 500 poles (dhanush;) and the duration of his life, 8,400,000 great years (pūrva varsha.) According to the Calpa sūtra, as interpreted by the commentator, he was born at Cōśalā or Ayōdhya (whence he is named Cauśalika), towards the latter part of the third age. He was the first king, first anchoret, and first saint; and is therefore entitled Prat'hamā Rājā, Prat'hama Bhiṣhācara, Prat'hama Jīna; and Prat'hama Tīrthācara. At the time of his inauguration as king, his age was 2,000,000 years. He reigned 6,300,000 years; and then resigned his empire to his sons: and having employed 100,000 years in passing through the several stages of austerity and sanctity, departed from this world on the summit of a mountain, named Ashtāpada. The date of his apotheosis was 3 years and 8½ months before the end of the third age, at the precise interval of one whole age before the deification of the last Jīna.

2. Ajita was son of Jītaśatru by Viṣaya: of the same race with the first Jīna, and represented as of the like complexion; with an elephant for his distinguishing mark. His stature was 450 poles; and his life extended to 7,200,000 great years. His deification took place in the fourth age, when fifty lācchas of crōrs of oceans of years had elapsed out of the tenth crór of crōrs.*

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* The divisions of time have been noticed by Major Mackenzie, As. Res. vol. ix. p. 257, and will be further explained.
3. Sambhava was son of Jitari by Sena; of the same race and complexion with the preceding; distinguished by a horse; his stature was 400 poles; he lived 6,000,000 years; and he was deified 30 lacshas of crórs of ságaras after the second Jina.

4. Abhinandaná was son of Sambara by Sidhártha: he has an ape for his peculiar sign. His stature was 300 poles; and his life reached to 5,000,000 years. His apotheosis was later by 10 lacshas of crórs of ságaras than the foregoing.

5. Sumati was son of Mágha by Mangalá: he has a curlew for his characteristic. His life endured 4,000,000 years, and his deification was nine lacshas of crórs of ságaras after the fourth Jina.

6. Padmaprabha was son of Srídvara by Susímá; of the same race with the preceding, but described of a red complexion. He has a lotus for his mark: and lived 3,000,000 years, being 200 poles in stature. He was deified 90,000 crórs of ságaras after the fifth Jina.

7. Supárśwa was son of Pratishthá by Prithhwí; of the same line with the foregoing, but represented with a golden complexion; his sign is the figure called Swastica. He lived 2,000,000 years; and was deified 9,000 crórs of ságaras subsequent to the sixth Jina.

8. Chandraprabha was son of Maháséna by Lachshmaná; of the same race with the last, but figured with a fair complexion: his sign is the moon: his stature was 150 poles, and he lived 1,000,000 years; and his apotheosis took place 900 crórs of ságaras later than the seventh Jina.

9. Pushpadanta, also named Suvidhi, was son of Supriya by Rámá: of the same line with the preceding,
and described of a similar complexion: his mark is a marine monster (*macara*): his stature was 100 poles, and the duration of his life 200,000 years. He was deified 90 *crórs* of *ságaras* after the eighth *Jīna*.

10. Śītāla was son of Drīḍharat‘ha by Nándá: of the same race, and represented with a golden complexion: his characteristic is the mark called *Śrivatsa*. His stature was 90 poles; and his life 100,000 great years; his deification dates 9 *crórs* of *ságaras* later than the preceding.

11. Śrāyān (*Śrēyās*) or Śrēyānsa, was son of Vīṣhṇu by Vīṣhṇá; of the same race, and with a similar complexion; having a rhinoceros for his sign. He was 80 poles in stature, and lived 8,400,000 common years. His apotheosis took place more than 100 *ságaras* of years before the close of the fourth age.

12. Vāsupújya was son of Vāsupújya by Jaya: of the same race, and represented with a red complexion, having a buffalo for his mark; and he was 70 poles high, lived 7,200,000 years, and was deified later by 54 *ságaras* than the eleventh *Jīna*.

13. Vimala was son of Črītavarmān by Śyāmā; of the same race: described of a golden complexion, having a boar for his characteristic; he was 60 poles high, lived 6,000,000 years, and was deified 30 *ságaras* later than the twelfth *Jīna*.

14. Ananta, also named *Ananta* Ījit, was son of Sīnasēna by Suvasah. He has a falcon for his sign; his stature was 50 poles, the duration of his life 3,000,000 years, and his apotheosis 9 *ságaras* after the preceding.

15. Dharma was son of Bhānu by Suvaratā; characterised by the thunderbolt: he was 45 poles in stature and lived 1,000,000 years: he was deified 4 *Ságaras* later than the foregoing.
16. Śánti was son of Viśwasāna by Achīrā, having an antelope for his sign; he was 40 poles high, lived 100,000 years and was deified 2 sāgaras subsequent to the last mentioned.*

17. Cunṭhu was son of Śūra, by Śrī; he has a goat for his mark; his height was 35 poles, and his life 95,000 years. His apotheosis is dated in the last palya of the fourth age.

18. Ara was son of Sudarśana by Dāvī; characterised by the figure called Nandāvarta:

\[\text{Image of a diagram}\]

his stature was 30 poles, his life 84,000 years, and his deification 1,000 cūrās of years before the next Jīna.

19. Malli was son of Cumbha by Prabhāvatī; of the same race with the preceding; and represented of a blue complexion; having a jar for his characteristic; he was 25 poles high, and lived 55,000 years; and was deified 6,584,000 years before the close of the fourth age.

20. Munīsuvarata, also named Suvarata, or Munī, was son of Sumitra by Padma, sprung from the race called Harivanśa; represented with a black complexion, having a tortoise for his sign: his height was 20 poles, and his life extended to 30,000 years. His apotheosis is dated 1,184,000 years before the end of the fourth age.

* The life of this Jīna is the subject of a separate work entitled Śánti purāṇa.
21. **Nimi** was son of **Vijaya** by **Vipra**; of the race of **Icshwácu**; figured with a golden complexion; having for his mark a blue water-lily (*-nilótpala*); his stature was 15 poles; his life 10,000 years; and his deification took place 584,000 years before the expiration of the fourth age.

22. **Némi**, also called **Arishtanémi**, was son of the king **Samudrajaya** by **Siva**; of the line denominated **Harivanśa**; described as of a black complexion, having a conch for his sign. According to the **Calpa sūtra**, he was born at **Sóriyapura**; and, when 300 years of age, entered on the practice of austerity. He employed 700 years in passing through the several stages of sanctity; and, having attained the age of 1,000 years, departed from this world at **Ujjinta**, which is described as the peak of a mountain, the same, according to the commentator, with **Giranára**.* The date of this event is 84,000 years before the close of the fourth age.

23. **Páśwa** (or **Páśwanátha**) was son of the king **Aśwaséna** by **Váma**, or **Bámádeví**; of the race of **Icshwácu**; figured with a blue complexion, having a serpent for his characteristic. The life of this celebrated **Jina**, who was perhaps the real founder of the sect, is the subject of a poem entitled **Páśwanátha charitrá**. According to the **Calpa sūtra**, he was born at **Bándrasi**,† and commenced his series of religious austerities at thirty years of age; and having completed them in 70 years, and having consequently attained the age of 100 years, he died on Mount **Samméya** or **Samé**.‡ This happened precisely

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* I understand this to be a mountain situated in the west of India; and much visited by pilgrims.
† **B délápuru**, in the suburbs of Benares, is esteemed holy, as the place of his nativity.
‡ **Samé tičhara**, called in Major Rennel's map **Parsonaut**, is
250 years before the apotheosis of the next Jīna: being stated by the author of the *Calpa sūtra* at 1,230 years before the date of that book.

24. *Vardhamāna*, also named *Vīra, Mahāvīrā*, &c. and surnamed *Charama tīrthākṛt*, or last of the *Jīnas*: emphatically called *Śramaṇa*, or the saint. He is reckoned son of *Śiddhārtha* by *Trīśalā*; and is described of a golden complexion, having a lion for his symbol.

The subject of the *Calpa sūtra*, before cited, is the life and institutions of this *Jīna*. I shall here state an abstract of his history as there given, premising that the work, like other religious books of the *Jainas*, is composed in the *Prākrit* called *Magadhī*; and that the *Sanskrit* language is used by the *Jainas* for translations, or for commentaries, on account of the great obscurity of the *Prākrit* tongue.*

According to this authority, the last *Tīrthāncara*, quitting the state of a deity, and relinquishing the longevity of a god, to obtain immortality as a saint, was incarnate towards the close of the fourth age, (now past,) when 75 years and 8½ months of it remained. He was at first conceived by *Dévanandā*, wife of *Rīshabhadatta*, a *Brahmaṇa* inhabiting *Brahmaṇacunda grāma* a city of *Bhārata varsha*, in *Jambu dwipa*. The conception was announced to her by

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situated among the hills between *Bihār* and *Bengal*. Its holiness is great in the estimation of the *Jainas*: and it is said to be visited by pilgrims from the remotest provinces of India.

* This *Prākrit*, which does not differ much from the language introduced by dramatic poets into their writings, and assigned by them to the female persons in their dramas, is formed from *Sanskrit*. I once conjectured it to have been formerly the colloquial dialect of the *Śrāswata Brāhmens* [*p. 21* of the present volume]; but this conjecture has not been confirmed by further researches. I believe it to be the same language with the *Pāli* of *Ceylon*. 

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dreams. **Indra**, or Śacra, who is the presiding deity on the south of Mēru, and abides in the first range of celestial regions, called Saudharma, being apprized of Mahāvíra's incarnation, prostrated himself, and worshipped the future saint; but reflecting that no great personage was ever born in an indigent and mendicant family, as that of a Brāhmaṇa, **Indra** commanded his chief attendant Hariṇāigumēshi, to remove the fetus from the womb of Dévānanda to that of Trīsalā, wife of Siddhārt'ha, a prince of the race of IcshwācU, and of the Cāsyapa family. This was accordingly executed; and the new conception was announced to Trīsalā by dreams; which were expounded by soothsayers, as foreboding the birth of a future Jīna. In due time, he was born; and his birth celebrated with great rejoicings.

His father gave him the name of Vardhamāna. But he is also known by two other names, Śramaṇa and Mahāvíra. His father has similarly three appellations, Siddhārt'ha, Śreyānśa, and Yaśaswī; and his mother likewise has three titles, Trīsalā Viḏēhadīnna and Prīticariṇī. His paternal uncle was Supārśwa, his elder brother, Nandivarhadāna, his sister (mother of Jamāli) Sudarśana. His wife was Yaśōdā, by whom he had a daughter, (who became wife of Jamāli,) named Anōjja and Priyadarśana. His grand-daughter was called Śēshavatī and Yaśovatī.

His father and mother died when he was twenty-eight years of age; and he afterwards continued two years with his elder brother: after the second year he renounced worldly pursuits, and departed amidst the applause of gods and men, to practise austerities. The progress of his

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*The Jaina admit numerous Indras; but some of the attributes, stated in this place by the Caipa Sūtra, belong to the Indra of the Indian mythology.*
devout exercises, and of his attainment of divine knowledge is related at great length. Finally, he became an Arhat, or Jīna, being worthy of universal adoration, and having subdued all passions;* being likewise omniscient and all-seeing: and thus, at the age of seventy-two years, he became exempt from all pain for ever. This event is stated to have happened at the court of king Hastipāla, in the city of Pādāpurī or Pāpāpurī;† and is dated three years and eight and a-half months before the close of the fourth age, (called Dulc'hamá suc'hamá) in the great period named avasarpinì. The author of the Calpa sûtra mentions, in several places, that, when he wrote, 980 years had elapsed since this apotheosis.‡ According to tradition, the death of the last Jīna happened more than two thousand four hundred years since; and the Calpa sûtra appears, therefore, to have been composed about fifteen hundred years ago.§

The several Jīnas are described as attended by numerous followers, distributed into classes, under a few chief disciples, entitled Gaṇadharas, or Gaṇādhipas. The last Jīna had nine such classes of followers, under eleven disciples. Indrabhūti, Agnibhūti, Vāyubhūti, Vyacta, Sudharma, Manditaputra, Mauryaputra, Acampita,

* So the commentator expounds both terms.
† Near Rājagriha, in Bihār. It is accordingly a place of sanctity. Other holy places, which have been mentioned to me, are Champāpuri, near Bhāgalpur, Chandrāvatī distant ten miles from Benares, and the ancient city Hastināpura in Hindustān: also Śatrunjaya, said to be situated in the west of India.
‡ Samanassa bhagavān Mahābrāhma jāva duhc'ha hīnassa maya-bāsa sayáin bieuantāin dasamassaya bāsa sayassa ayam asi ime sam-bach'hare cále gach'haï. "Nine hundred years have passed since the adorable Mahābīra became exempt from pain; and of the tenth century of years, eighty are the time which is now elapsed."
§ The most ancient copy in my possession, and the oldest one which I have seen, is dated in 1614 samvat: it is nearly 250 years old.
ACHALABHRÁTÁ, MÉVÁRYA, PRABHÁSA. Nine of these disciples died with MAHÁVÍRA; and two of them, INDRA-
BHÚTI and SUDHARMÁ, survived him, and subsequently attained beatitude. The Calpa sútra adds, that all ascetics, or candidates for holiness, were pupils in succession from SUDHARMÁ, none of the others having left successors. The author then proceeds to trace the succession from SUDHARMÁ to the different sác'hás, or orders of priests, many of which appear still to exist. This enumeration disproves the list communicated to Major MACKENZIE by the head priest of Belligola.

The ages and periods which have been more than once alluded to in the foregoing account of the Jainas, are briefly explained in HÉMACHANDRA’s vocabulary. In the second chapter, which relates to the heavens and the gods, &c. the author, speaking of time, observes, that it is distinguished into Avasarpini and Utsarpini, adding that the whole period is completed by twenty cótis of cótis of ságaras; or 2,000,000,000,000,000 oceans of years. I do not find that he any where explains the space of time denominated ságara, or ocean. But I understand it to be an extravagant estimate of the time, which would elapse, before a vast cavity filled with chopped hairs could be emptied, at the rate of one piece of hair in a century: the time requisite to enter such a cavity, measured by a yójana every way, is a palya; and that repeated ten cótis of cótis of times,* is a ságara.

Each of the periods above-mentioned, is stated by HÉMACHANDRA, as comprising six aras; the names and duration of which agree with the information communicated to Major MACKENZIE: In the one, or the declining period, they pass from the extreme felicity (écánta suc’ha) through

* 1,000,000,000,000,000 palyas=one ságara, or ságarapama.
intermediate gradations, to extreme misery (évánta duhc'ha). In the other, or rising period, they ascend, in the same order, from misery to felicity. During the three first ages of one period, mortals lived for one, two, or three palyas; their stature was one, two, or three leagues (gavyútis); and they subsisted on the fruit of miraculous trees; which yielded spontaneously food, apparel, ornaments, garlands, habitation, nurture, light, musical instruments, and household utensils. In the fourth age, men lived ten millions of years; and their stature was 500 poles (dhanush); in the fifth age, the life of man is a hundred years: and the limit of his stature, seven cubits: in the sixth, he is reduced to sixteen years, and the height of one cubit. In the next period, this succession of ages is reversed, and afterwards they recommence as before.

Here we cannot but observe, that the Jainas are still more extravagant in their inventions than the prevailing sects of Hindus, absurd as these are in their fables.

In his third chapter, Hémachandra, having stated the terms for paramount and tributary princes, mentions the twelve Chacravartis, and adds the patronymics and origin of them. Bharata is surnamed Árshabhi, or son of Rishabha; Maghavan is son of Vijaya; and Sanatcumara, of Áswaséna. Sánti, Cunt'hu, and Ara are the Jinás so named. Sagara is described as son of Sumitra; Subhúma is entitled Cartavírya; Padma is said to be son of Padmottara; Harishéna of Hari; Jaya of Vijaya; Brahmadatta of Brahma; and all are declared to have sprung from the race of Icshwácu.

A list follows, which, like the preceding, agrees nearly with the information communicated to Major Mackenzie. It consists of nine persons, entitled Vásudévas, and Crishnás. Here Trípríshṭha is mentioned with the patronymic Prájápatya; Dwípríshṭha is said to have sprung from
Brahme; Swayambhù is expressly called a son of Rudra; and Purushottama, of Sóma, or the moon. Purushasinha is surnamed Saivi, or son of Śiva; Purushapundarica, is said to have sprung from Maháśiras. Datta is termed son of Agnisinha; Nárayána has the patronymic Dáśarat'hi (which belongs to Ráma-chandra); and Críshña is described as sprung from Vasudéva.


It is observed, that, with the Jinas, these complete the number of sixty-three eminent personages, viz. 24 Jinas, 12 Chacrvartis, 9 Vásudévas, 9 Baladévas, and 9 Prativásudévas.

It appears from the information procured by Major Mackenzie, that all these appertain to the heroic history of the Jaina writers. Most of them are also well known to the orthodox Hindus, and are the principal personages in the Puránas

Hémacandra subsequently notices many names of princes, familiar to the Hindus of other sects. He begins with Príthu son of Véna, whom he terms the first king: and goes on to Mándháta, Hariśchandra, Bharata son of Dushyanta, &c. Towards the end of his enumeration of conspicuous princes, he mentions Carña king of Champá and An ga; Hálá or Śáliváhana; and Cumá-
RAPÁLA, surnamed CHAULUCYA, a royal saint, who seems, from the title of Paramárhata, to have been a Jaina, and apparently the only one in that enumeration.

In a subsequent part of the same chapter, HÉMA-
CHANDRA, (who was himself a theologian of his sect, and author of hymns to JINA,*) mentions and discriminates the various sects; viz. 1st, Árhatas, or Jainas. 2dly, Saugatas, or Bauddhas, and, 3dly, six philosophical schools, viz. 1st. Naïyáyika; 2d. Yóga; 3d. Cápilás Sánc'hya; 4th. Vaiséshica; 5th. Várhaspatya, or Nástica; and 6th. Chár-
váca, or Lóckyata. The two last are reputed atheistical as denying a future state and a providence. If those be omitted, and the two Mímánsás inserted, we have the six schemes of philosophy familiar to the Indian circle of the sciences.

The fourth chapter of HÉMACANDRA'S vocabulary re-
lates to earth and animals. Here the author mentions the distinctions of countries which appear to be adopted by the Jainas; viz. the regions (varsha) named Bharata, Airá-
vata, and Vidéhá, to which he adds Curu; noticing also other distinctions familiar to the Hindus of other sects, but explaining some of them according to the ideas of the Jainas. 'Áryavarta,' he observes, 'is the native land of Jinas, Chacris, and Arddhachacrís, situated between the Vindhya and Himádri mountains.' This remark confines the theatre of Jaina history, religious and heroic, within the limits of Hindustán proper.

* A passage in BHAŚCARA'S treatise on the sphere, will suggest further observations concerning the opinions of the Jainas on the divisions of the earth. Having noticed, for the purpose of confuting it, a notion maintained by the

* A commentary on these hymns is dated in Śūca 1214 (A.D. 1292); but how much earlier HÉMACANDRA lived, is not yet ascertained.
Buddhas (whom some of the commentators, as usual among orthodox Hindus, confound with the Jainas,) respecting the descent or fall of the earth in space; he says,* the naked sectaries and the rest affirm, that two suns, two moons, and two sets of stars, appear alternately; against them I allege this reasoning. How absurd is the notion which you have formed of duplicate suns, moons, and stars; when you see the revolution of the polar fish.'†

The commentators‡ agree that the Jainas are here meant; and one of them remarks, that they are described as 'naked sectaries, &c.' because the class of Digambaras is a principal one among these people.

It is true that the Jainas, do entertain the preposterous notion here attributed to them: and it is also true, that the Digambaras, among the Jainas, are distinguished from the Śuclidmaras, not merely by the white dress of the one, and the nakedness (or else the tawny apparel) of the other; but also by some particular tenets and diversity of doctrine. —However, both concur in the same ideas regarding the earth and planets, which shall be forthwith stated, from the authority of Jaina books; after remarking, by the way, that ascetics of the orthodox sect, in the last stage of exaltation, when they become Paramahansa, also disuse clothing.

The world, which according to the Jainas, is eternal, is figured by them as a spindle resting on half of another; or, as they describe it, three cups, of which the lowest is inverted; and the uppermost meets at its circumference the middle one. They also represent the world by comparison to a woman with her arms akimbo.§ Her waist, or accord-

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* Góḍādhya, § 3. v. 8 & 10. † Ursa minor.
‡ Laçshmīdāsa, Muniśwara, and the Vāsanābhāshya.
§ The Sangrahānī raśa and Lōcanād sūtra, both in Prācrit, are the authorities here used.
ing to the description first mentioned, the meeting of the lower cups, is the earth. The spindle above, answering to the superior portion of the woman’s person, is the abode of the gods; and the inferior part of the figure comprehends the infernal regions. The earth, which they suppose to be a flat surface, is bounded by a circle, of which the diameter is one *raju.* The lower spindle comprises seven tiers of inferior earths or hells, at the distance of a *raju* from each other, and its base is measured by seven *raju*s. These seven hells are *Ratná prabhá, S’arcará prabhá, Balucá prabhá, Panca prabhá, Dhúma prabhá, Tama prabhá, Tamatama prabhá.* The upper spindle is also seven *raju*s high; and its greatest breadth is five *raju*s. Its summit, which is 4,500,000 *yójanas* wide, is the abode of the deified saints: beneath that are five *Vimánas,* or abodes of gods: of which the centre one is named *Sarvárt’hasiddha:* it is encompassed by the regions *Apárajita, Jayanta, Vvija-yanta,* and *Vijaya.* Next, at the distance of one *raju* from the summit, follow nine tiers of worlds, representing a necklace (*graivéyaca*), and inhabited by gods, denominating, from their conceited pretensions to supremacy, *Ahamindra.* These nine regions are, *Áditya, Pritincara, Sómanasa, Sumanasa, Suvisála, Sarvatóbhadra, Manórama, Suprayaddha,* and *Sudarśana.*

Under these regions are twelve (the Digambarás say sixteen) other regions, in eight tiers, from one to five *raju*s above the earth. They are filled with *Vimánas,* or abodes of various classes of gods, called by the general name of *Calpavástis.* These worlds, reckoning from that nearest the earth, are, *Saudhama* and *Isána; Sanatcicumdra and*

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*This is explained to be a measure of space, through which the gods are able to travel in six months, at the rate of 2,057,152 *yójanas,* (of 2,000 *crito* each,) in the twinkling of an eye.*
Mahéndra; Brahmé; Lántaca; Śucra; Sahasrára; Ánta and Pránáta; Áraña and Achyuta.

The sect of Jina distinguish four classes of deities, the Vaimánicas, Bhuvanapatis, Jyótishis, and Vyántaras. The last comprises eight orders of demigods or spirits, admitted by the Hindus in general, as the Rácshasas, Piśáchas, Cinnaras, &c. supposed to range over the earth. The preceding class (Jyótishis), comprehends five orders of luminaries; suns, moons, planets, constellations, and stars, of which more hereafter. The Vaimánicas belong to the various Vimánas, in the twelve regions, or worlds, inhabited by gods. The class of Bhuvanapati includes ten orders, entitled Aśvacumára, Nágacumára, &c.; each governed by two Indras. All these gods are mortal, except, perhaps, the luminaries.

The earth consists of numerous distinct continents, in concentric circles, separated by seas forming rings between them. The first circle is Jambu dwípa, with the mountain Sudárśa Mérú in the centre. It is encompassed by a ring containing the salt ocean; beyond which is the zone named Dhátucí dwípa; similarly surrounded by a black ocean. This is again encircled by Pusheca dwípa; of which only the first half is accessible to mankind: being separated from the remoter half, by an impassable range of mountains, denominated Mánushóttara parvata. Dhátucí dwípa contains two mountains, similar to Suméru, named Vijónga and Achala; and Pusheca contains two others, called Mandirá and Vidyuñmáli.

The diameter of Jambu dwípa being 100,000 great yójanas,* if the 190th part be taken, or 5261, we have the breadth of Bharata varsha, which occupies the southern segment of the circle. Airávata is a similar northern seg-

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* Each great yójana contains 2,000 cóś.
ment. A band (33648 yójanas wide) across the circle, with Sudarśa Mérū in the middle of it, is Vidēha varsha, divided by Mérū (or by four peaks like elephant’s teeth, at the four corners of that vast mountain) into east and west Vidēha. These three regions, Bharata, Airāvata, and Vidēha, are inhabited by men who practise religious duties. They are denominated Carmabhūmi, and appear to be furnished with distinct sects of Tirthanacaras, or saints entitled Jīna. The intermediate regions north and south of Mérū are bounded by four chains of mountains; and intersected by two others: in such a manner, that the ranges of mountains, and the intermediate vallies, increase in breadth progressively. Thus Himavat is twice as broad as Bharata varsha (or \( \frac{1052}{10} \)) ; the valley beyond it is double its breadth (2105 \( \frac{5}{10} \)); the mountain Mahāhimavat is twice as much (4210 \( \frac{1}{9} \)); its valley is again double (8421 \( \frac{1}{9} \)); and the mountain Nishadha has twice that breadth (16842 \( \frac{1}{9} \)). The vallies between these mountains, and between similar ranges reckoned from Airāvata (viz. Śīchāri, Ruomī, and Nīla) are inhabited by giants (Yugala), and are denominated Bhōgabhūmi. From either extremity of the two ranges of mountains named Himavat and Śīchāri, a pair of tusks project over the sea; each divided into seven countries denominated Antara dvīpas. There are consequently fifty-six such; which are called Cubhōgabhūmi, being the abode of evil doers. None of these regions suffer a periodical destruction; except Bharata and Airāvata, which are depopulated, and again peopled at the close of the great periods before-mentioned.

We come now to the immediate purpose for which these notions of the Jainas have been here explained. They conceive the setting and rising of stars and planets to be caused by the mountain Sumēru: and suppose three times
the period of a planet’s appearance to be requisite for it to pass round *Suméru*, and return to the place whence it emerges. Accordingly they allot two suns, as many moons, and an equal number of each planet, star, and constellation, to *Jambu dwipa*; and imagine that these appear on alternate days, south and north of *Méru*. They similarly allot twice that number to the salt ocean; six times as many to *Dhátucí dwipa*; 21 times as many, or 42 of each, to the *Cálódadhi*; and 72 of each to *Pushcara-dwipa*.

It is this notion, applied to the earth which we inhabit, that Bháscaía refutes. His argument is thus explained by his commentators.

‘The star close to the north pole, with those near it to the east and west, form a constellation figured by the Indian astronomers as a fish. In the beginning of the night (supposing the sun to be near *Bharánt* or Musca), the fish’s tail is towards the west, and his head towards the east; but at the close of the night, the fish’s tail, having made a half revolution, is towards the east, and his head towards the west: and since the sun, when rising and setting, is in a line with the fish’s tail, there is but one sun; not two.’ This explanation is given by *Muníswarda* and *Lacshmídásā*. But the *Vásaná bháshya* reverses the fish; placing his head towards the west at sun-set, when the sun is near *Bharánt*. 
VIII.


[From the Asiatic Researches, vol. vii. p. 338—344. Calcutta 1801. 4to.]

The Bóhrāhs, numerous in the provinces of the Indian peninsula, but found also in most of the great cities of Hindustán, are conspicuous by their peculiar customs; such, for example, as that of wearing at their orisons an appropriate dress, which they daily wash with their own hands. Their disposition for trade to the exclusion of every other mode of livelihood, and the government of their tribe by a hierarchy, are further peculiarities, which have rendered them an object of inquiry, as a singular sect.

Researches made by myself, among others, were long unsuccessful. My informers confounded this tribe with the Ismadīliyāhs, with the Allī-īlāhīyāhs, and even with the unchaste sect of Cherāgh-cush. Concerning their origin, the information received was equally erroneous with that regarding their tenets. But at length a learned Sayyad referred me to the Mejlālisulmustminīn composed by Nūr-ullah of Shúster, a zealous Shīā, who suffered for his religious opinions in the reign of Jehāngīr. In the passage, which will be forthwith cited from that work, the Bóhrāhs are described by the author as natives of Guj-rāt, converted to the Muhammedan religion about three hundred years before his time, or five centuries ago.

To that passage I shall subjoin extracts from the same vol. ii.
work, containing an account of similar tribes, with some of which the Bôhrahs may, perhaps, have been sometimes confounded. Concerning the Ismâliyâhs, for whom they have been actually mistaken, it must be remembered, that these form a sect of Shiáhs, who take their distinctive appellation from Ismâîl, eldest son and nominated successor of Imâm Jáfer, surnamed Šâdîk. They consider Ismâîl as the true heir of the Imâm, and do not acknowledge the legal succession of his brother Músâ and of the five last Imâms. This sect flourished under the Egyptian dynasty of khâlijs founded by Muhammed Mahadí, who claimed descent from the Imâm Ismâîl himself. It was also conspicuous under a dynasty of princes of this sect, the first of whom, Hasan Sabah, founded a principality in Irâk.* The sect may still exist in Syria; but it does not seem to be at present known in the Indian portion of Asia.

The Alî-îldâhiyâhs on the contrary, are become numerous in India. This sect is mentioned by the author of the Dîbistân, as prevalent in his time, only at Uzbîl, or Azbâl, in the mountainous tract near Khaṭâ. It now prevails, according to information which I have received, in a part of the dominions of Nawâb Nizâm-ul-Muîc. The singular tenets of this heretical sect are thus stated by Moḥsen Fânî. "The Alî-îldâhiyâhs hold, that celestial spirits, which cannot otherwise be known to mankind, have frequently appeared in palpable shapes. God himself has been manifested in the human form, but especially in the person of Alî Murtezâ, whose image, being that of Alî-ULLAH, or Alî God, these sectaries deem it lawful to worship. They believe in the metempsychosis; and, like

* See the Dîbistân of Mullâ Moḥsen Fânî; and D'Herbelot's Bibliothèque Orientale. If the industrious Bôhrahs and the remorseless "assassins" had really arisen out of the same sect, it would be a new fact in the history of the human mind.
others who maintain that doctrine, abstain from fleshmeat. They imagine, that Alí Murtezá, when he quitted this earth, returned to the sun, which is the same with himself; and hence they call the sun Alí Ullah. This sect does not admit the authenticity of the Korán, as it is now extant: some pretending, that it is a forgery of Abúbecr's, Omar's, and Othman's; others condemning it, simply because it was edited by the last mentioned khalíf. The members of this sect appear to vary in regard to some points of doctrine; but the leading and universal tenet of this sect is, that, in every age of the world, God is manifested in the persons of prophets and of saints; for instance, he was Adam, and afterwards Ahmed and Alí: and in like manner these sectaries believe in the transmigration of God into the persons of the Imáms. Some of them affirm, that the manifestation of the divine being, in this age of the world, was Alí Ullah; and after him, his glorious posterity: and they consider Muhammad as a prophet sent by Alí Ullah. When God, say they, perceived Muhammad's insufficiency, he himself assumed the human form for the purpose of assisting the prophet.”

It does not appear from any satisfactory information, that the Bóhrahs agree with either of these sects, in deifying Alí, or in contesting the legal succession of the six last Imáms. On the contrary, the tribe is acknowledged to consist of orthodox Sunnis, and of true Shiáhs; but mostly of the last mentioned sect. These and other known circumstances corroborate the following account of that tribe as given by Núrullah of Shúster, in the work before mentioned.

“The Bóhrahs are a tribe of the faithful, which is settled chiefly at Ahmedábád and its environs. Their salvation in

* See the Díbistán, from which this account is abstracted.
the bosom of religion took place about three hundred years ago, at the call of a virtuous and learned man, whose name was Mulla Ali, and whose tomb is still seen at the city of Cambayat.

"The conversion of this people was thus conducted by him: As the inhabitants of Gujrat were pagans, and were guided by an aged priest, a recreant, in whom they had a great confidence, and whose disciples they were; the missionary judged it expedient, first to offer himself as a pupil to the priest; and after convincing him by irrefragable proofs, and making him participate in the declaration of faith, then to undertake the conversion of others. He accordingly passed some years in attendance on that priest, learnt his language, studied his sciences, and became conversant with his books. By degrees he opened the articles of the faith to the enlightened priest, and persuaded him to become Muslemán. Some of his people changed their religion in concert with their old instructor. The circumstance of the priest's conversion being made known to the principal minister of the king of that country, he visited the priest, adopted habits of obedience towards him, and became a Muslem. But for a long time, the minister, the priest, and the rest of the converts, dissembled their faith, and sought to keep it concealed, through dread of the king.

"At length the intelligence of the minister's conversion reached the monarch. One day he repaired to his house, and, finding him in the humble posture of prayer, was incensed against him. The minister knew the motive of the king's visit, and perceived that his anger arose from the suspicion that he was reciting prayers and performing adoration. With presence of mind, inspired by divine providence, he immediately pretended that his prostrations were occasioned by the sight of a serpent, which appeared in the corner of the room, and against which he was
employing incantations. The king cast his eyes towards the corner of the apartment, and it is so happened that there he saw a serpent; the minister’s excuse appeared credible, and the king’s suspicions were lulled.

"After a time, the king himself secretly became a convert to the Muslimán faith; but dissembled the state of his mind, for reasons of state. Yet, at the point of death, he ordered, by his will, that his corpse should not be burnt, according to the customs of the pagans.

"Subsequently to his decease, when Sultán Zefere, one of the trusty nobles of Sultán Fírúz Sháh, sovereign of Dehlí, conquered the province of Gujrá, some learned men, who accompanied him, used arguments to make the people embrace the faith, according to the doctrines of such as revere the traditions.* Hence it happened, that some of the tribe of Bóhrahs became members of the sect of the Sunnet.

"The party which retains the Imámiyah tenets, comprehends nearly two thousand families. They always have a pious learned man amongst them, who expounds cases of law according to the doctrines of the Imámiyah. Most of them subsist by commerce and mechanical trades; as is indicated by the name of Bóhrah, which signifies merchant, in the dialect of Gujrá. They transmit the fifth part of their gains to the Sayyads of Médineh; and pay their regular eleemosynary contributions to the chief of their learned, who distributes the alms among the poor of the sect. These people, great and small, are honest, pious, and temperate. They always suffer much persecution (for the crime of bearing affection towards the holy family) from the wicked murderers,† who are invested with public authority; and they are ever involved in the difficulties of concealment.

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* The Sunnis, or orthodox sect. † The orthodox.
The Šadikiyahs are a tribe of the faithful Hindustán; pious men, and disciples of Sayyad Cabíru’ddín, who derived his descent from Ismá’il, son of Imám Jáfer. This tribe is denominated Šadikiyahs, by reason of the sincere [šadik] call of that Sayyad. Although that appellation have, according to received notions, a seeming relation to Abúbecr, whose partisans gave him this title; yet it is probable that the sect assumed that appellation for the sake of concealment. However, no advantage ever accrues to them from it. On the contrary, the arrogant inhabitants of Hind, who are Hindus, being retainers of the son of the impious Hind,* have discovered their attachment to the sect of Shíáhs, and have revived against them the calumnies which five hundred years before they broached against the Ismáthiyas. They maliciously charge them with impiety; such, indeed, is their ancient practice. They violate justice, and labour to extirpate this harmless tribe. In short, they cast the stone of calumny on the roof of the name and reputation of this wretched people, and have no fear of God, nor awe of his Prophet.†

“In short, nearly thirty thousand persons of this sect are settled in provinces of Hindustán, such as Multán, Láhór, Dehlí, and Gujrat. Most of them subsist by commerce. They pay the fifth part of their gains to the descendants of Sayyad Cabír, who are their priests; and both preceptor and pupil, priests and laymen, all are zealous Shíáhs. God avert evil from them, and make the wiles of their foes recoil!

“The Hážarehs of Kábul are an innumerable tribe, who reside in Kábul, Ghaznín, and Kándahár. Many of them

* Meaning Hindá the mother of Moaviyyeh.  
† The author proceeds in a strain of invective against the Sunnis; especially against Mullá Abdulláh of Láhór, who bore the title of the Makhdímu’l-Mulc. This, being superfluous, is here omitted.
are Shi'ahs, and adherents of the holy family. At present, among the chiefs of the Shi'ahs, is Mirza Shádmán, with whom the faithful are well pleased, and of whose incursions the Kharejis* of Cabul and Ghaznín bitterly complain.

"The Balóch of Sind; many of these are devoted Shi'ahs. They call themselves, and are called by all the faithful. Ali's friends. Sayyad Rájú of Bokhárá exerted himself in the guidance of this tribe; his descendants remain among them, and are occupied with the concerns of the sect."

* The word is here used as a term of reproach; for its origin, as the appellation of a sect, see D'Herbelot's Bibliothéque Orientale.
IX.

TRANSLATION of one of the Inscriptions on the Pillar at Delhi called the Lát of Fírúz Sháh.

Calcutta 1801. 4to.

SANSKRĪT INSCRIPTION.*

संवत् १२२० वैशाख सुदी १५ शाक्षंभरी अपति
श्रीमदवेश्वदेवात्मज श्रीमदीशलदेवाख ||
आविष्कारहितमार्गसंरचितविजयसंतोषायाचार्यप्रसंगा -
दुज्जविवेशप्रसंगनृपतिपुरुषविनयनक्षत्रवर्युप्रसंग: ||
आयौरंगाथार्यपुनर्परिच्छेदवाण्वेक्षकेविवेकनाभि -
देव: शाक्षंभरीरोजगतिनिजयतीवीरश्व: बोधिपाळ: ||
बृत्तेंप्रतिवाहस्मानतिकक: शाक्षंभरीस्मृति:
श्रीनदिग्धराजधापबिजयीबंतानजानात्मन: ||
अमाभि: कर्तीवधारिधिमहबिद्धणारानंभुव:
श्रीवधीकरणामोक्तमुनयुगमुन्न्यमन: ||
१० अभीनामविप्रमियानयनयोऽप्रत्यर्द्विंदरात: प्रत्याचार्यपिनाविभवमल्लकाष्ठंयश्वावकं ||
माण्डीलोकविभुजङ्गविजय: श्रून्यमनोविज्ञानां
श्रीनदिग्धराजदेववर्त: प्रातिप्रवाहोऽवेभवे ||

* See Plate i.
ཚང་བུད་པའི་ཐོག་ཉིད་ཐེག་པ་

9. མི་ནུས་པ་ཡིན་པས་ནི་འགྱུར་བུ་བཤད་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་ཧོ་ནོ་

8. ཡི་ཕྱི་བཤད་པ་ཡིན་པས་ནི་འགྱུར་བུ་བཤད་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

7. ཡེ་ཐོག་ཨང་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

6. ཡོང་ཏྲེག་ཐུབ་དུ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

5. ཡོད་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

4. ཡོང་ཏྲེག་ཐུབ་དུ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

3. ཡོད་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

2. ཡོད་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

1. ཡོད་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་

0. ཡོད་ཐུབ་དེ་ཕོ་ཐུབ་པའི་མི་བོད་པའི་ཐེག་པ་ཡིན་པས་
Samvat 1220 vaiśāc’ha suđi 15 śācambhari bhūpati śrīmad vēlla dévātmajā śrīmad vīśala dévasya.

1. Ávindichyād áhima-drēr virachita-vijayas tir’ha-yātrā-prasangād udgrīvēshu prahartā nrēpatishu vinamat candha-rēshu prasannahi dryāvertam yathāhṛtam punar api crītavān mlēchchha-hichchhēdandbhīr dévah śācambhārindrō jagati vijayate vīśalu oṣhōhipālaḥ.

2. Brūtē samprati bāhujāta tilacah śācambhārē bhūpatiḥ śrīmad vigraha rājā ēśha vijayē santānajānān ātmanah āsābhēhi caradam vyadhāyī himavād-vindichyāntārdālam bhuvah sēsha-swicarāṇāya māstu bhaṅgatōm udyogasūnyam manah.

3. Ambhōnāmārīpu-priyād-nayanayōh pratyart’hi-dantāntarē pratyacshādhi trīnāvī yāvaha-milat āshtam yaśas tāvačam mārgō lōca-viruddha evā vijanah sūnyam manō viś-sān Epic ēśvrigraha rājadēvā bhaṅgatē praptē prayāhōtsava

4. Līlā-mandira-sōdarēshubhaṅgatēvāntēśhuvāmabhramaḥ
śatrūnda nanu vigrāha cṣhitipaṭe nyāyaś cha uḍas śava
śancā vā purushottamasya bhavatō nasty ēva vārdn
nidhēr nirmatāḥdhyāpahṛta-sriyāh cimu bhavān cṛdē na
nirdrāyitah.
Samvut śrī vieramāditya 1220 vaisāc'ha sudē 15 gurau
līchitxm idam . . . . . . . . . . . .
pratyacsham gaudānvaya-cāyast'ha-māhava-putra-srī-
patina atra samayē māh-maṇtrī rājaputra śrimal-
lacshaṇapalāh.

VERBAL TRANSLATION.

"In the year 1220, on the 15th day of the bright half
of the month Vaisāc'ha, [this monument] of the fortunate
VĪSALA DĒVA, son of the fortunate VĒLLA DĒVA,* king
of Śācambhārt.

"As far as Vindhyā,† as far as Himādri,‡ having achieved
conquest in the course of travelling to holy places; resent-
ful to haughty kings, and indulgent to those whose necks
are humbled; making Āryāvērta† once more what its name
signifies, by causing the barbarians to be exterminated; Vī-
sala Dēva, supreme ruler of Śācambhārt,¶ and sovereign
of the earth, is victorious in the world.

"This conqueror, the fortunate VIGRAHA RĀJA,§ king of

* Colonel Polier's transcript exhibited Amilla; the present copy
may be read either Avēlla or Vēlla.
† The Vindhyā hills form the range which passes through the
provinces of Bahár, Benares, &c. Himādri, the mountain of snow,
(called Himavat in the next verse,) is the Imaus and Emodus of an-
cient geographers. Āryāvērta signifies the land of virtue, or "inha-
bited by respectable men." See Menu, Ch. ii. v. 22.
¶ Śācambhārt is the modern Sāmbhār, famous for its salt lakes.
It is situated at the distance of about thirty miles west of Jeypūr.
§ Whether VIGRAHA RĀJA and VĪSALA DĒVA be names of the
same person, or of different princes, it it impossible to determine
from the tenor of the inscription, without other information.
Śācambhārī, most eminent of the tribe which sprang from the arms* [of Brahma], now addresses his own descendants: ‘By us the region of the earth between Himavat and Vindhya has been made tributary; let not your minds be void of exertion to subdue the remainder.’

“Tears are evident in the eyes of thy enemy’s consort; blades of grass are perceived between thy adversary’s teeth;† thy fame is predominant throughout space; the minds of thy foes are void [of hope]; their route is the desert where men are hindered from passing; O Vīgraha Rāja DeVā, in the jubilee occasioned by thy march.

“May thy abode, O Vīgraha, sovereign of the earth, be fixed, as in reason it ought, in the bosoms (akin to the mansion of dalliance) of the women with beautiful eyebrows, who were married to thy enemies. There is no doubt of thy being the highest of embodied souls.‡ Didst thou not sleep in the lap of Śrī, whom thou didst seize from the ocean, having churned it?§

“In the year from the fortunate Vīgrāmaditya 1220 on Thursday the 15th day of the bright half of the month

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* The transcript of the inscription exhibits udhamāna tilakāh, as it was also read in the former fac simile : Senvōru Trivēṇī advises me to read it udkujāta tilakāh, and I accede to his emendation. [See the note in the following page.]

† This alludes to the Indian custom of biting a blade of grass as a token of submission, and of asking quarter.

‡ Senvōru explains this very obscure passage otherwise: “there is (i.e. there should be) no doubt or hesitation in the mind of thee, who art the highest of embodied souls (Purushottama).”

§ Purushottama is a title of Vishnu. With reference to this term, the author of the inscription asks, “Art thou not Vishnu himself? Art thou not he who slept in the arms of Laksheṇī?” The legend of the churning of the ocean is well known.

|| In the present copy the date is very distinct; and proves to be 1220; not 123 as was suspected by Sir William Jones.
Vaisācaḥa, this was written in the presence of* . . .

. . . . . . by Śrīpati, the son of Māhava, a Cāyastha of a family in Gauḍa: at this time the fortunate Lācshāna Pāla, a Rājaputra, is prime minister.

“Śiva the terrible, and the universal monarch.”

There are on the same page, some short inscriptions, which I cannot decipher. One of them, however, is partly legible, and appears to be in the Hindustāni language. It contains the name of Sultān Ibrāhīm, and wishes him a long life.

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**Note to the preceding Translation.**

[From the Asiatic Researches, vol. ix. p. 453. Calcutta, 1807, 4to.]

A passage in the preface of the Śārngadhara padhāti, and another in the body of that work, which were first indicated by Capt. Wilford,† show, that a term, contained in the inscription on the column at Delhi, for which I proposed to substitute, with the advice of the Paṇḍit who assisted me, the word ‘bāhujāta’ as a conjectural emendation, must be read ‘chāhūmana’ or ‘chahavana;’ being the name of the tribe to which the prince, there mentioned, belonged, and which is well known at this day under the appellation of Chāuhaṇ. In the preface, Śārngadhara describes himself as second in descent from Rāghuḍeva, a priest attending on Hāmmīra king of Śacambhari, of the tribe of Chāuhaṇ, Chāhuvaṇ, or Bāhuvaṇa (for the name is variously spelt in different copies). The work itself is a compilation of miscellaneous poetry

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* This part of the inscription is not legible.
arranged under distinct heads; and one chapter (the 73d) is devoted to the admission of stanzas concerning individual princes. Among them two stanzas occur, which are there cited as an inscription on a royal column of stone, erected as a sacrificial pillar;* and which, on comparison, are found to be the same with the two first of the stanzas, on the pillar at Delhi. Several copies of the Sárngadhara paddhati have been collated, in all of which, the term in question is written Bāhuvaṇa. Comparing this with the preface of the same compilation, and with the inscription itself, we may be allowed to conjecture, that Chāhuvaṇa is the correct reading: the Nágari letters ब and च being very liable to be confounded.

* एते नृपतिपाधार्य जयूप्रशस्ते: ||
X.

On Ancient Monuments, containing Sanscrit Inscriptions.

Calcutta 1807. 4to.]

In the scarcity of authentic materials for the ancient, and even for the modern, history of the Hindu race, importance is justly attached to all genuine monuments, and especially inscriptions on stone and metal, which are occasionally discovered through various accidents. If these be carefully preserved and diligently examined, and the facts ascertained from them, be judiciously employed towards elucidating the scattered information, which can be yet collected from the remains of Indian literature, a satisfactory progress may be finally made in investigating the history of the Hindus. That the dynasties of princes who have reigned paramount in India, or the line of chieftains who have ruled over particular tracts, will be verified; or that the events of war, or the effects of policy, during a series of ages, will be developed; is an expectation which I neither entertain, nor wish to excite. But the state of manners, and the prevalence of particular doctrines, at different periods, may be deduced from a diligent perusal of the writings of authors, whose age is ascertained; and the contrast of different results, for various and distant periods, may furnish a distinct outline of the progress of opinions. A brief history of the nation itself, rather than of its government, will be thus sketched; but if unable to revive the memory of great political events, we may at least be content to know what has been the state of arts, of sciences, of manners, in remote ages, among this very ancient and early civilized people; and to learn what has been the suc-
cession of doctrines, religious and philosophical, which have prevailed in a nation ingenious yet prone to superstition.

Unfortunately, writers have seldom given the dates of their compositions; and the Hindu's love of fable, and distaste for sober narrative, have been as unfriendly to the biography of authors, as to the history of princes. The lives of few celebrated persons have been written; and those which have been composed, exhibit the same fondness for improbable fiction which pervades the mythological works of the Hindus. The age of an author must be, therefore, sought from circumstances mentioned in his writings: and none more frequently affords the desired information, than the author's notice of his patron; who generally is either the sovereign of the country, or some person standing in such relation to the court, as gives occasion to mention the name of the reigning prince. Thus every ancient monument which fixes the date of a reign, or determines the period of a particular dynasty, tends to the ascertainment of the age of writers who flourished in that reign or under that dynasty: and conversely, where dates can be, with confidence, deduced immediately from an author's works, these may furnish historical information, and assist the explanation of ancient monuments.

On this account the preservation and study of old inscriptions may be earnestly recommended. It is not on a first or cursory examination, that the utility of any particular monument for the illustration of the civil or literary history of the country can be certainly determined. Even those which at first sight appear uninteresting, may be afterwards found to bear strongly on an important point. Instances might be brought from the few inscriptions which have been already published. But it is not my present purpose to enter on an examination of published monuments, but to urge the communication of every inscription
which may be hereafter discovered; at the same time that I lay before the Society copies and translations of those which have been recently communicated from various parts of India.

It is a subject for regret, that the originals of which versions have before been made public, are not deposited where they might be accessible to persons engaged in researches into Indian literature and antiquities: but much more so, that ancient monuments, which there is reason to consider as important, have been removed to Europe before they had been sufficiently examined, or before they were accurately copied and translated. I may specify, with particular regret, the plate of copper found at Benarese, and noticed by Capt. Wilford in the ninth volume of Asiatic Researches (p. 108); and still more a plate which has been mentioned to me by a learned Pāṇḍit, (who assured me that he was employed in decyphering it),* and which appears, from a copy in his possession, to have contained a grant of land by the celebrated JayaChandra, when a young prince associated to the empire of his father; from this information it seems to have been particularly valuable, on account of the genealogy comprised in it.

Translations might indeed be made from the Pāṇḍit's copy of the last-mentioned plate, and from one taken by a learned native in Capt. Wilford's service, from the plate discovered at Benares. But my experience of the necessity of collating the copies made by the best Pāṇḍits, from inscriptions in ancient or unusual character, discourages me from placing implicit confidence in their transcripts; and the originals are at present beyond reach of

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* Servọru Trivādi; the same who assisted me in decyphering the copy of an inscription on Firōz Shāh's pillar at Delhi. As. Res. vol. vii. p. 180. [page 232 of the present volume.]
have a gentle curvature; and, at top, is an abrupt bend allowing room to a figure coarsely delineated, and apparently intended to represent a temple. The character agrees nearly with that now in use in Bengal: but some of the letters bear a closer resemblance to the writing of Tirhut.∗

The following is an exact copy of the inscription in Nāgārī letters, as decyphered by the aid of several Pañḍīts. A literal translation is subjoined; and a fac simile of the original is exhibited in the annexed plate.†

|| श्री ||

तस्मधुवैरमलिनकुलेविविष्यातकोति -
बिद्याधारःपरमसुक्तीमण्डनपंडितानां ।
ख्यातःश्रीमानजनिमधामहार्द्विद्विवाभिधानो
यस्माचेवर्द्धनिशंमानेषयमङ्कं ॥ १ ॥
तस्मद्महादेशकौतिकतन्त्रधावितानः
श्रीमानमाधविनिकोमनुजामचेतुः ।
बुध्धाश्रीतमित्यस्थुतिपद्धीशा क्षी -
ब्रजस्वलीवयाच्यमाननिवर्तनिविभाति ॥ २ ॥
अविरहातमहामनविनाशिकः
परमत्वमहचन्दिष्टः ॥

∗ There is reason to suppose the writing, as well as the language of Bengal, to be originally the same with the Tirhutīya: altered, in course of time, since the separation which has been the consequence of a colony of Cñyacubya Brāhmens settling in Bengal.
† See Plate ii.
নীল ময়ের চিত্রমণি নুস বসবাস অধিকার বিলম্ব থাকলেও শ্রেষ্ঠত্ব নাম নিম্ন দৈনিক বাক্যাকার যে প্রচলিত হয় বলে এক ধরনের মুখ্য মৃদু প্রতিক্রিয়া। যেহেতু এক মাত্র হাতের বন্ধন তাকে আওতা দিতে পারে। নিন্দা করা হয় একটি ধরনের মেশিন একটি ক্রিয়া যা সুরক্ষায় নেতৃত্ব নেয়। একটি পদ্ধতির ধারণা নেয়। একটি পদ্ধতির ধারণা নেয়। একটি পদ্ধতির ধারণা নেয়। একটি পদ্ধতির ধারণা নেয়।
3. "That venerable officer,* ever relying on holy virtues,† is eminently conversant with well guided morals, and conspicuous for the observance of practical duties.

4. "Himself an ocean of generosity and meditation, yet thirsting to taste, by practice of austerity, that which alone confines the fleeting thoughts;‡ sympathising with other living beings, an unrivalled theatre of virtue, practising good deeds, and, in private, only a contemplative saint, this auspicious Dhārī alone rose, as a luminary of joy above the earth.

5. "Superior to the world was the delight of this pre-eminent sovereign of the earth, the happy Raṅabanca Mallā, whose officer§ he was; for the deity who has a hundred eyes|| is obscured, even in his own abode, by the dazzling glories of that [monarch], which traverse the three worlds, in all directions.

6. "May the twenty drónas¶ of land, in the village of Ijác'haṇḍa, granted to him by that generous prince, continue as long as sun and moon endure, yielding the ample

* The term is Aśvamśbandhica, which the Paññikṣā are disposed to explain as signifying "a general commanding cavalry." Other interpretations may be suggested: the word is an unusual one.

† This, as indeed the whole of the verse, is obscure, and admits of various interpretations. In this place, more than one reading has been proposed.

‡ Here again the sense is obscure; and more than one reading may be proposed. The praise is evidently grounded on the union of practical virtues, with religious contemplation.

§ Aśvamśbandhica.

|| Indra.

¶ A measure of land, still used in the eastern parts of Bengal, originally as much as might be sown with one dróna of seed; for a dróna is a measure of capacity. (As. Res., vol. v. p. 96.) The dróna, vulgarly called dun, varies in different districts. It may, however, be reckoned nearly equivalent to eight bighas, or two acres and two-thirds.
harvest of unsullied praise; for it is land secure from invasion, delightful, like a pleasant painting, and appears like a crest in the assemblage of cities.

7. "This land, with definite boundaries, has been given by the liberal prince himself, the range of whose glory therefore extends, as is fit, in all directions.

8. "O future kings; understand this inscription on copper, by which that officer* humbly now solicits you: this land should be preserved; nor is the permanence of the realm consistent with the slightest injury: a shame on avarice! That land is, as it were, a widow, the sovereign of which is despised [for his covetousness].

9. "Although this excellence of the descendants [of that prince] which is guarded by their natural virtues, be sufficiently apparent, yet does Médiní, urged by the multitude of the good qualities of that unsullied race, thus make it known.†

"Years expired of the Śaca king 1141;‡ dated in the seventeenth year of Rāṇabanca Malla, Śrīmat Hari-cāla Dēva.§ or expressed in numerals, Samvat||, 17; on the 29th of the Sun's being in the balance."

* Aiwanibandhoca.

† This inscription appears not to be a grant by the sovereign; but a memorial of the grant recorded by the possessor, who must have been the heir of the grantee, and who seems to acknowledge in this place the liberality of the grantor's successors continuing the land to him.

‡ Corresponding to A. D. 1219.

§ This prince is probably a different person from the grantor named in the fifth verse.

|| Here Samvat is used for the year of the king's reign. See remarks, towards the close of this paper, on an inscription found at Amgächhi in Dinápur.
ছুড়ি এলাকায় প্রবেশ করুন। বৃত্তের মধ্যে ভিতরে পড়েছে। একটি স্থান নিয়ে আগে থেকে ছিল কিনা। তার পরে হুমকী হচ্ছিল। তার বেলার দিনকে ভিত্তিক হয়ে পড়ে। একটি ছোট স্থান ছিল কিনা। তার পরে হুমকী হচ্ছিল। তার বেলার দিনকে ভিত্তিক হয়ে পড়ে।

কিন্তু এখানে ছিল কিনা। একটি ছোট স্থান ছিল কিনা। তার পরে হুমকী হচ্ছিল। তার বেলার দিনকে ভিত্তিক হয়ে পড়ে।

ছোট স্থান ছিল কিনা। একটি ছোট স্থান ছিল কিনা। তার পরে হুমকী হচ্ছিল। তার বেলার দিনকে ভিত্তিক হয়ে পড়ে।
II. Inscription on a Plate of Copper found in the district of Gorakhpur.

A plate of copper, containing an inscription in the Sanskrit language, declaratory of a grant of land, but without date, was lately found in the district of Gorakhpur, near the river called the little Gandhāra. It was brought to Mr. John Ahmuty, magistrate of the district, and by him communicated to Captain Wilford, who has presented it to the Asiatic Society.

The plate, which is 16½ inches long, and 12½ broad, is engraved on one face only. The lines, of which there are 24, run in the length of the plate; and on the left side is a curvature, on which a semi-circular appendage is riveted, containing a flat button representing the impression of a seal. The figure is very imperfect, but seems to be intended for some animal.

With the plate itself, Captain Wilford, communicated a copy of its contents as decyphered by a Pāṇḍit in his service. On carefully comparing it with the original, I found all the essential passages, as well as the names, correctly given: a few alterations, which this comparison showed to be necessary, have been made with the concurrence of several Pāṇḍits from Tirhut, who assisted me in collating it. I preferred the aid of Pāṇḍits of that province, because the peculiarities of the characters where they differ widely, as they do in many instances, from common Dēvandgārī, make a nearer approach to the Tirhūtiya letters than to any other now in use. The whole inscription is indeed remarkable for the uncommon form of the consonants, and the very unusual manner in which the vowels are marked. On this account an exact copy of the original in fac simile will be subjoined;* as well as a correct

* See Plate iii.
transcript in modern Devanagari letters. The following version is as literal as the difference of idiom permits.

**Translation.**

1. "Salutation to the God, who is manifested in various forms, from earth to the performer of a sacrifice,* who is an universal soul, to be apprehended only by contemplation of saints; and who pervades all.

2. "Salutation to the unborn God,† who makes the world's production, its continuance, and ultimate destruction; and the recollection of whom serves as a vessel of transport across the ocean of mundane ills.

3. "Salutation be to the husband of Laksñmī; to him who reposes on Śēṣa as on a couch; to him who is Vishnū extracting the thorns of the three worlds; to him who appears in every shape.‡

4. "Salutation be to the blessed foot of Pārvatī,§ which destroyed the demon Mahīṣa by whom all had been overcome; and which gives felicity to the world.¶

5. "Surrounded by groves of lofty canes,|| inaccessible through the range of edifices on the hill's summit; encompassed by a deep ditch, in which fountains spring; secure by impassable defence from dread of foes, a

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* Śiva, manifested in eight material forms: viz. Earth, Water, Fire, Air, Ether, the Sun, the Moon, and the person who performs a sacrifice.

† Brahmā the creator, himself not created, and therefore termed unborn.

‡ Vishnū, who reposes on the serpent Ananta or Śēṣa; and who has been incarnate in various shapes, to relieve the world from oppressors.

§ Bhavāni or Durgā slew Mahīṣāsura. The legend is well known.

|| Bamboos (Bambusa arundinacea and other species).
6. royal abode there is named Viṣṇupura,* which is situated on the declivity of the northern mountain, where the pain of regret is unknown, and every gratification is found.

7. "There reigned the fortunate Dharmaśīya, like another Boddhisatva, a mighty and prosperous prince, whose glory spread over the four seas. His son was Jayaśīya,† adorable like the moon, the fortune of the world, like the tree which bears every desired fruit, and satisfying thirst like a deep lake;

8. humble, though a king; though young, prudent and averse from amorous passion; though liberally bestowing all, yet ever receiving the best result of all.

9. "His minister, learned, intelligent, and vanquisher of foes, the son of a mighty chieftain and counsellor Cṛita-carīti, was the fortunate Madāli,"

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* The place here described may be Viṣṇupura, on the northern declivity of the Vindhyā hills, a few miles from the temple of Vindhyā-devi near Mirzapur on the Ganges. It is the ancient residence of a family, which claims descent from the former sovereigns of Benares; and is still the abode of the head of that family. But the terms of the text, Uttaraśrī ca vācāḥ, rather seems to signify 'declivity of the northern mountain,' than 'northern declivity of the mountain,' and that interpretation points to the range of snowy mountains, instead of Vindhyā which is reckoned a tropical range.

† The name of Jayaśīya, is known as the patron of certain authors, who flourished at Caṇḍa; and who are considered as ancient writers. He is mentioned in the title of the Vāmana-cātice, and even termed the author of that grammatical work. I shall not undertake to determine whether this be the same person.

†† The names, being uncommon, are, in this instance, doubtful. Śrīmadāli is clearly given as the name of the minister; and either the whole of it may be his name; or it may be resolved into Śrīmad Aśi, or into Śrī Madāli. The latter is most agreeable to the prevailing practice of prefixing Śrī to a proper name. In this inscription, the auspicious syllable is prefixed to the names of the two kings first mentioned; but is not added to the names of the writers of it, who are noticed towards the close. (v. 20 & 22.)
11. whose pleasing counsels obtained a ready hearing, and
who was by nature eager for the reduction of enemies *

12. "The village of Dummadum,† obtained by
him from the royal favour, and rich in tillage, dwell-
ings, and cattle, has been assigned by him to Durga:‡

13. "The opulence of the good, who put their trust
in the great, is, indeed, beneficial to others: the clouds
gather water from the sea, and shower it down on the
growing crop. Rare indeed are those liberal persons,
who distinguish not between their own dependants and
strangers: how many are the all-productive trees even
in the celestial grove? §

15 "Do not imagine, father, that, in the sinful age,
a general equality prevails: the sovereign defends the
earth, but a weak individual guards not even his house.||

16. Birth and death, success and misfortune, are perpe-
tually passing: why not, therefore, protect another's
17. glory like one's own? He, who bestows fertile land

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* The text exhibits Pracriti parabaddhacêcshô. Though a very
unsatisfactory reading, it is here preserved, and has been translated in
the most probable sense which I am able to suggest for it

† A village of this name is situated in the district of Allahâbâd,
within twenty miles of Bycoupur on the Ganges. But the name is
not uncommon: and may belong to some place nearer to the northern
mountains.

‡ Jâyâditya's minister, Mandali, appears to have assigned this
village for general charitable uses, by consecrating it to the goddess
Durga. Such at least seem to be the most consistent reading and
interpretation of the text.

§ Indra's garden called Nandana: in which five celestial trees are
placed, termed Calpadrama, Pûrijâta, &c. The Calpadrama yields,
as its fruit, every thing which is desired.

|| The intention of this and the following lines is to deprecate the
resumption of the grant.
furnished with the means of agriculture, mounts a celestial vehicle, and ascends to heaven, gladdening his progenitors. But he, who foolishly, resumes land allotted to gods or priests, assuredly causes his ancestors to fall to hell, even though they had previously attained heaven.

19. "Sprung from a very pure race, respectful towards gods, priests, spiritual parents, and the king, a generous founder of temples, who has dug many ponds; by the tenderness of his disposition an image of Sugata,* a treasure of virtues, with subdued organs, wise, and averse from unpleasing discourse: such was the Cā-

21. yastha Nāgadatta. By him was composed with great devoutness, this praise of the minister; in apt measure and pleasing verse, elegant† and apposite.

22. "The last three verses were written by his younger brother Vidyadatta; for he himself was fearful of proclaiming his own virtues.

23. "Rich and fertile is the village, obtained through

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* From this comparison to Sugata or Buddha, as well as a previous comparison to a Boddhisatwa, it may be inferred that the author if not himself a follower of the sect of Buddha, was at least more amicably disposed towards that sect than modern orthodox Hindus appear to be.

It is hardly necessary to inform the reader, that the last Buddha was conspicuous for his tender, compassionate disposition. The mythology of the sect of Buddha peoples heaven with Boddhisatwas; and, from this class of beings, the Buddhas are selected. Gautama Buddha was a Boddhisatwa under the name of Svātadvīpu, before he was incarnate as Siddhārtha son of Siddhatana.

† The text exhibits Suvara cītadāhā; which must be amended by reading either Swarīka or Suvarīka. The last is preferable as giving the most correct mette: either way the meaning is rendered 'elegant, as gold;' or by 'well selected words' for suvarīka or swarīka signifies gold; and may be resolved into two words, su well, and varīka or arīka a letter or syllable.
the king’s favour as an endowment for subsistence, and still more productive is this other village for virtuous men.”

* श्रीगणेशायनमः *

चित्रादिर्यजमानानसूत्रयंविष्णुवाचः
मुनिनांधावर्कमस्तवचिरिणम्
अजायजगदुपतिस्वितिप्रलयकारिणे
संसारसागरोत्तरपतिसस्तत्वेनम्
नमोऽस्तुलघुतेश्वरयंकशाचिने
बृहोक्षयंकंतकीवारिणिविष्णुविश्रूपिणे
नमोऽस्तुविजितश्रेष्ठमहिपारशाचिने
Pार्वतीपादप्रभायजगदानन्ददाचिने
बेण्वनाथेविष्णुमार्गस्रावार्मालालंक्षा
निजेङ्गभीरपरिखादुस्तरमस्तासंघासा
धविदितव्योगुःखानलीपस्तमास्कवलविष
यसुखः

अस्तुयुत्तर्गिरिकंविजयपुरंनामानुपधानी
तचचंतुरस्त्रीधिब्रान्तयशाःशिरोद्धोभास्तवः
श्रीमानायिनिद्वीपतिसुधीधिष्कलद्वः
तत्त्वचारश्रीवेदोभागमोक्षकर्त्यशाखीव
इतिद्वारााःसुप्रवेज्यायादिति: ||

राजापियोविनीतोऽधवाविधिरोमनोभवद्विवी

सर्वप्रदीपश्रवस्थवर्ष्णहृदतपरमार्थः ||

तत्त्वसङ्ग:स्वतारथीमहानुभावोविनिर्जितार्थः:

सामसन्नवस्थुमदतःकशकीसोमेविनिर्मितः

यस्मचमुचाहसमंचेदूरूतःकणींपिलापाचवंशातः

प्रक्ष्तिपराविकोचीवभवस्यमोदालिनिति

वुमदुक्कानामायामोराजप्रतादस्मातः

कुशिवसतिगोधनायोदुर्गरैश्यासितकतन ||

भवतिठिसतांतविभृतःपरीपक्तचेमद्वानामाभिवधः

जलधेराधारजलांजलःशाखायवर्षिति

स्वपरजननविनिश्चेष्टा:सन्नविरलाहिसंतिफलद्राणे

कष्ठद्रुमा:कियतःवृज्ञन्वन्दनेनपिवने

माकलशक्लियुगेश्चित्रिुभनातांतातर्वस्थतवेन

रचतितवसुधान्तपिनितारात्मग्रहनीववच्चतुलः

जन्मसमरणचत्पद्धिपत्थुमांसुधायतीभवति

वदिचैवचंपरकोर्तिुसामदिवकश्मान्तपालचेत

कविकारणसंघुकांमुख्यायोद्रातिशस्वताः
III. *Inscription on three Plates of Brass found at Chitradurg.*

A grant of land, engraved on three plates of brass, which were found at Chitradurg in the year 1800, and a fac simile of a similar grant found at the same place, have been presented by Major C. MacKenzie to the Asiatic Society.
The plates, which appear to be very similar in both grants, may be described from that, of which the original has been received. They are nearly seven inches wide and as many high, but surmounted by an arch of two inches in height. The two exterior plates have been engraved on the inner side only: the middle one is so on both faces. At the edge is a rim, half a line thick, by which the inscription is secured from being effaced by the rubbing of the plates. They are held together by a brass ring, on which is a seal of the same metal representing a boar. The engraved surfaces have some appearance of having been once gilt.

The language is Sanscrit, excepting the description of the lands, which is in the Cânara dialect. The whole inscription is in Dévanágari characters, but some of the letters are formed in a very unusual manner. It contains a grant by the king of Vidyánagar (pronounced Bijá-nagar), formerly the capital of Carnátaka, and is dated little more than four hundred years ago. Grants, by kings of this dynasty, are not uncommon in the Dekhun; and may be of use in determining the dates of their several reigns. These princes were enlightened patrons of science: especially Harihara and Bucca Ráya sons of Sangama the founder of the dynasty.

Major MacKenzie forwarded a translation of this inscription made by his interpreter Cavelly Boria. The original is, in some instances, read differently by the Pándit whom I have consulted: not, however, making any change in the purport, nor in any material passage. The following translation is conformable to their interpretation: and the copy, which is subjoined, exhibits the text as read by them.
TRANSLATION

1. "Salutation to Gāñēśa. I bow to Šambhu graced with the beautiful moon crowning his lofty head, himself the pillar, which upholds the origin of the three worlds." May he, whose head is like an elephant's, the son of Hara, the cause of uninterrupted supremacy, the giver of boons, and the luminary which dispels darkness, preserve us. May the auspicious primeval boar, by whom closely embraced, the earth exults, grant us vast prosperity.

4. "The ambrosial moon, brother of the goddess Rama, is the offspring of the milky ocean having a common origin with the gem Caustubha, the all-productive tree and the ever beneficent cow. In the lunar race was born a king named Yadu by a descendant of whom [Crīṣhṇa] son of Vasudeva, the earth has been protected. In his line arose a king named San-

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* Śiva, or Mahādeva, is figured with the moon as a crest. According to mythology, he upholds the creator.

This, and the two following stanzas, seem to be the same which are found, but in a different order, at the beginning of the inscription on the plates preserved at the temple of Conjevaram. (As. Res., vol. iii. p 39.) with some difference, however, in the reading and interpretation.

† Gāñēśa, figured with an elephant’s head, reckoned son of Hara or Mahādeva and of his wife Parvati.

‡ The original is here inaccurate. It exhibits Taras tiṇa tumra gihird which means nothing, and in which a syllable is deficient for the metre. In the same simile of another grant, the same passage is correctly written Paradas tiṇa tumra mihird.

§ The incarnation of Vishnū, as a boar, who upheld the earth submerged by the ocean, is well known to all who are conversant with Indian mythology.

|| The story of the churning of the ocean is familiar to every one.

‖ Yadu, the celebrated ancestor of Crīṣhṇa, was of the lunar race.
GAMA,* who abounded in weighty virtues, and shunned the society of the wicked.

7. "This king had [five] sons, HARIHARA, CAMPA, BUCCARÁYA who was sovereign of the earth,† MÁRAPA and MUDGAPA.

8. "Among these five graceful princes, the most celebrated was BUCCA, sovereign of the earth, conspicuous for valour, as ARJUNA among the PÁNDAVAS.

9. Therefore, did BUCCARÁYA, fierce in battle, become a fortunate prince, applying his left shoulder to uphold the burden of the mighty elephants posted at the quarters of the world. When his army, in warlike array, performed evolutions on the frontier of his dominions, the TURASHCAS felt their mouths parched, the CONCAÑA, terrified, apprehended impending death, the ANDHRAS fled, in consternation, to the caverns; the GURJARAS trembled; the ODUMBÓJAS lost their firmness; and the CÂLINGAS were quickly discomfited.§

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* The pretensions of SANGAMA to be descended from the lunar line of ČIKARIYAS or CHANDRAVANÁIS are here asserted.

† The names of three of these princes, as well as of their father, occur in the writings of MÁDHAVA ĀCHÁRYA, and of his brother SAYAÑA ĀCHÁRYA, who were priests and counsellors of those monarchs.

HARIHARA RÁJA, and BUCCANA RÁJA or BUCCA RÁYA, are named in MÁDHAVA’s commentary on the VÉDAS, and CAMPA is mentioned in his grammatical works.

‡ The text appears to exhibit the negative of dACSHVÁ right.

At the eight principal points of the compass, elephants uphold the world.

§ This verse is extremely inaccurate in the original. It has been corrected with the aid of the fac simile of another grant beforementioned. It begins YASYÓDĐHAYA YUDHÉ YUDDHA RANGÉ, which is unmeaning and contains too many syllables for the metre. It should be, as in the other inscription, YASYÓDÁYAD YUDDHA RANGÉ. A syllable...
11. “He was a conspicuous monarch, splendid, and a supreme ruler of kings, but acting towards disobedient princes, as the king of birds towards serpents: embraced by the concubines of kings, destroying hostile chiefs, defending the heroes of Hindū rāya, endowed with knowledge and other qualities.”

12. “By that victorious king was Vidyā nagarī made a permanent metropolis; a fortunate city, which is adapted to promote universal conquest.”

13. “Gaurāmbicā became his queen, a princess respectable for her virtues, as Rāma the beloved wife of Kṛishṇa; as Gaurī, of Śiva; as Śachi, of Indra; as Saraswatī, of Brahmā, as Chīñāya, of Sūrya.† By the charms of her graceful gaiety is wanting in Tushārī, written Tushārī. Two were deficient in Bhava bhara bharītah, expressed Bhava bharītah. Both inscriptions write Cāmbhāyā for Cāmbhāyā. In one, Saipasi is erroneously put for Sapadi.

All the names of nations, which occur in this place, have been repeatedly explained.

* These stanzas are very obscure and I am not confident, that they are rightly translated. Hindū rāya seems to be similar to the Hindupati of Bundelkhand. For so the government of that country was denominated under the chiefs, who ruled it in the last and in the preceding century.

The stanzas appear to be similar to two in the giant preserved at Conjevaram viz 25th and 26th. (As. Res., vol. iii p. 47.) But there is some difference in reading as well as interpretation.

† Vidyā nagarī signifies the city of science. Ferishtha was mistaken, when he affirmed, that it was founded by Rājā Bellal Déo and named after his son Bīṣa rāya. (Scott’s History of Dekkan, Intr. p. xi.) It is believed to have been founded by the two brothers Harihara and Būcca rāya.

‡ The gods and goddesses, to whom the happy couple is here compared, are mentioned in the text by titles, some of which are uncommon; and have been therefore changed, in the translation, to others
she obscured Tilottamā,† by her happy fidelity to her husband, she excited the envy of Anasūya.†

17. "This liberal prince, pre-eminent among kings begot, on that divine princess,‡ a son named Hari-18. Harā. who is become a protector of the good and punisher of the wicked; who has obtained his wish with the wise, who is enviable, and is devoted to the god Harīharā.

19. "The tree of virtue thrives by water poured with his donation;§ while he shincs with the splendid glory of sixteen kinds of gifts;||

20. "In the year 1317,¶ and, of the cycle, Dhāta; in the month of Māgha, and light fortnight; on the day 21. of full moon; under the asterism sacred to the Pitrās (Magha); on Sunday, upon the bank of the river Tungabhadrā, which is adorned by the mountain He-22. macāta; in the presence of the auspicious deity, Vir-ṛūpacsha;** the valiant Harīharā,†† revered among

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more generally known. Rama is probably intended for Radha as a representative of Lakshmī.

In the original, Sarasvatī is called Vaśī; but the fact simile of the other inscription exhibits Savitri. Śachi is, in the original, erroneously written Śachi; and jāma occurs at the beginning of the verse for nāma.

* Tilottamā is the name of a nymph celebrated for her beauty.
† Anasūya is wife of Athi, and distinguished for conjugal affection. The name signifies unceasing.
‡ The princess is here termed Gaṇeśa, which is a title of Pārvatī; and which conveys an allusion to her own name Gaṇeśa.
§ Solemn donations are ratified by pouring water into the hand of the donee.
¶ Sixteen meritorious gifts are enumerated in treatises on donation.
|| Corresponding to A.D. 1395.
** A title of Śiva.
†† The difference of idiom makes it necessary to transpose, in the translation, some of the verses of the original.
mortals, liberal in his gifts of land, and especially atten-
tive to venerable priests, has graciously given, with gold
and with a libation of water, to the auspicious descen-
dant of Bhāradwāja and follower of the Rgveda, the wise VishnuDīcshita Paṭṭabardhī, son of
Vāchespāti surname Dhila, and to the learned
Anantadīcshita son of RāmaBhatṭa a descen-
dant of Vasisṭha and follower of Pāpastambha's
Yajurveda, inhabitant of Ruchungi (a place known to
have been visited by the Pándavas), the fertile and all-
productive village of Mālénahalli, also named Hari-
harapur, situated in the midst of Bhilichédra, east of
the village called Arisicér, south of Gandicéhalli, west
of Pallavacalé, and north of Bhudihalli, a place to
be honoured by all; marked on the four sides by
distinct boundaries, together with its treasures, and
hidden deposits, its stones, and every thing which it
does or may contain; abounding with objects pleasing
to the eye; fit to be enjoyed by two persons, graced
with elegant trees, furnished with wells, cisterns,
ponds and banks; to be successively possessed by the
sons, grandsons and other descendants [of the grantees],
as long as the sun and moon endure, subject to be
mortgaged, sold, or any way disposed of; a village
visited by assiduous and gentle priests and attendants,
and by various wise persons, who are conversant with
holy rites, and surpass in voice melodious birds"*

* Some parts of this long passage are obscure and doubtful. The
last stanza, with two preceding, omitting one, (that is the 29th, 30th,
and 32d) appears to be the same with three which occur in the
grant preserved at Conjeeveram, viz. 43d, 44th, and 45th. (As Res.,
vol. iii p. 51.) But there are some variations between the reading
of them in this inscription, and in the copy of the Conjeeveram
plates, from which Sir W. Jones made his version of that grant
and, in a few instances, the interpretation which I have adopted
differs from his.
A particular description of the bounds of the village, and its land-marks, is next inserted in the Cánara language. After which the patent proceeds thus:

"This patent is of the king Harihara, the sole unalterable tree of beneficence, magnanimous, and whose sweet strains compose this royal grant. By his command this patent has been framed, expressed in due form; in the sacred tongue."

"The boundaries of the village on all sides, have been stated in the provincial dialect.

"Of original gift or confirmation of it, confirmation is superior to gift, by generous grants a man obtains heaven; by confirmation of them, an unperishable abode; for the confirmation of another's donation is twice as meritorious as a gift made by himself, and his own munificence is rendered fruitless by resumption of another's grants. He who resumes land, whether bestowed by himself or by another, is born an insect in ordure for sixty thousand years. In this world is one only sister of all kings, namely land, which has been conferred on priests: she must not be enjoyed nor espoused. This general maxim of duty for kings, should be strictly observed by you in all times; so Rama Chandra earnestly conjures all future sovereigns."

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* This passage may indicate the artist's name, Vákirdáva.
† The terms may signify "fully granted away, or properly bestowed."
‡ In mythology, as well as in figurative language, the earth is wife of the sovereign. With an allusion to this idea, land, which has been granted away, is here called the king's sister. And his seizure of such land is pronounced incestuous.

The expression which has been translated espoused (caragrahyá, literally, 'to be taken by the hand'), will also signify 'subjected to taxation.' For cara signifies tax as well as hand.

§ This appears to be a quotation from some poem (a Purána or the Ráma-yána). The whole of the concluding part of the inscription
“Śrī Vīrūpācsa, or the auspicious deity with uneven eyes.”

|| शीघ्रपारविजयचन्द्रचाररचारवे ||

नमस्तुज्ञिशिरसुम्बिवचन्द्रचाररचारवे || १ ||

चैलोकानगराल्पमूलस्त्रायकः || २ ||

अयान्त्यान्तिवर्धयकारण्वारणानन्तः ।

परदेसीतिरिक्षिरीिरीहरनन्दनः || ३ ||

श्रीमानाद्विराच्छोधः चिरिदिशतिर्यथवसा ।

गाढमालिकितितायेवनेदिनीयवचमीदते || ४ ||

अस्तिकोष्ठराक्कम्यदुकामघेनुसहोदरः ।

रमानुजः मुर्राराचः चीरसागरसक्षवः || ५ ||

उदभद्यतानिश्चदुर्खपाल्याधिकायतः ।

पापितंत्यकुलीननवासुवेंद्रेनभुतलः || ६ ||

अभृदर्यकुलिश्चोमानरश्रमीरुगुरुषतयः ।

अपास्तदुर्वितासुभक्षुमोनामभ्रमितः || ७ ||

आमन्दिरिर्हरः कविकुलरायभ्रमीपतिः ।

मार्यमुइझपारिकम्यमारास्तिर्यभ्रमितः || ८ ||

पद्मानंद्यसमाचारस्मन्यातोबुकभ्रमितः ।

(compromised in five stanzas) seems to be the same with the close of the grant on plates of copper preserved at Conjeeveram. See As. Res., vol. iii. p. 53.

* This signature is in Cānara letters.
सामाजिक भाषाएँ अधिनियमाध्यमतयागाचरणराजः
कामवोजः खिन्धैर्यः सपदिनसम्भवः
नासमधः कविजः ॥ १० ॥
राजाधिराजेश्वरायोराजपरमेश्वरः ॥
भाषातिरिक्तश्रापमवसंपन्नमविचिंगरात् ॥ ११ ॥
राजवेश्वामुक्तः पररायतपङ्कः ॥
हिन्दुरायमुराचः मास्तेत्वादिविखिचितः ॥ १२ ॥
श्रीविजयानस्मिनोपविमोदवशालिनः
राज्यविजयचिन्तेनराजधानीविलासीयर ॥ १३ ॥
तस्मौरायानायमदिश्रीमोक्षायतः ॥
माननीयगुणायानवशद्यायरमः ॥ १४ ॥
कपिर्दः नौप्रायगङिरीशचीतनसम्बिद्धः ॥
पितामहविकाष्ठातिरस्कृततितिलोत्तमः ॥ १५ ॥
विलाशविष्णुकाशामतिरस्कृतस्योत्तमः
अनन्यायपिषासूयायत्यातिनिष्ण्टसम्भवदा

अहीनभीगस्यस्तिरवीराराजशिखामणि:

तस्मांचरितंकृत्यकृत्यक्षुमारसम्पावदयत्

शिष्टानुवंचितात्मवदत्त्वानामपिलामकः

कामार्गोविदासाकंसाध्योघिर्चित्रेपरः

चक्षुनीषोद्धदानान्यशस्वापरिशोभिते

द्रानामुद्धारयाचवद्वाॅतेठधम्पादपः

चित्मिभुवनक्रिचन्द्रेतुगणितिधातवबृंहे

माधमांगुरुक्षणप्रियवर्मामायमास्थातिथियो

नचचेपितरदैवयेभणुवारेणसंयुते

तुज्जभ्रारवतीरिह्रेहमकुटीपशीभिते

श्रीविकाशदेरवस्यश्रीधीघुमद्राचिनि

भारदाजस्रगुणीचारावचोप्रसराय

वाचस्यभिमित्ताक्षरसूक्ववसुतोत्त्रतेऽत्

पदवर्धिनिबिषुदरीचितिराधीमते

वशिष्णगोचचारावस्तंत्रशक्तायाचिनि

रामभुस्त्वतन्त्रस्तीरविपिकुते

प्रसिद्धापण्डवान्तेत्तचक्रियश्चलवाभिने

भिलिचन्द्राभिधार्मसामधेक्यातप्रमणोत्तरः

पूर्वभागिनितंहरामादरिकिरसंज्ञकात्
गडिकेच्यांभिधान्नात: भाराच्यांचिणांदिशमार्गितं ॥ २६ ॥
यामात्यवकटांख्यानंतीयाभिमुखालितं ।
यामात्यहियंत्याख्यानुसंधार्यांदिशिषीतं ॥ २७ ॥
प्रतिनाथायाख्यातंपुरंदिशिष्राभिधं ।
मादेनचह्लीतियामंखयासमन्वितं ॥ २८ ॥
सर्वमात्यांचतुःचीमासंयुतंसमन्त: ।
निधिनि:चेपपाणिणिहिमाध्यसमन्ति ॥ २८ ॥
असिस्यागिमित्युपानित्वमधोमृग्यविश्वेष्य ।
वारीकूपङ्गाढ्येक्षेनापिसमन्ति ॥ ३० ॥
पुत्रपोतःदिर्भिमृगंयमानाराहरुचतारकं ।
सर्वस्याधमनस्यापिक्रयास्यापिचितं ॥ ३१ ॥
परीतस्याद:स्वाम्यःपुरोहितस्यपुरोगमः: ।
विविधेनविविहःप्रोपतियकारपिकर्गिर: ॥ ३२ ॥
वीरोहिरिहर्वाभमानानानोमन्विना ।
भद्रापच्छम्भासंसुरारस्वितेष्ट: ॥ ३३ ॥
सहितक्षण्यधारार्पवृद्धचन्द्रवान्वुदा ।

________________________ ॥

d्रमलिखराजशासनमधुकराकनकारगीतम -
धातन: ॥ राजशिहरिहर्नृपते:शासनमचलेक -
पारिजातस्य ॥

8 2
IV. Another and similar Inscription found at the same place.

With a fac simile of the foregoing inscription, Major Mackenzie communicated the copy of another inscription found also at Chitradurg and in the same year. The whole of the introductory part, containing the name of the prince, and his genealogy, is word for word the same in both grants: excepting a few places, where the variations are
CONTAINING SANSCRİT INSCRIPTIONS.

evidently owing to mistakes of the artist, by whom the plates were engraved. I have consequently derived much assistance from this fact, while in deciphering the original inscription before described.

The grant, here noticed, is by the same prince, and dated in Sāca 1213, only four years anterior to the one before translated. I think it, therefore, unnecessary to complete the deciphering of it, or to insert a copy or translation merely for the name and description of the lands granted, or the designations of the persons on whom they were bestowed.

Concerning the similarity of the grants, it may be remarked, that this circumstance is not a sufficient ground of distrust, for it cannot be thought extraordinary, that a set form of introduction to patents should have been in use; or that grants, made within the space of four years, by the same person, should be alike. I must acknowledge, however, that the inaccuracies of the original have impressed me with some doubt of the genuineness of the preceding grant. I do not, however, suspect it to be a modern forgery, but I apprehend, that it may have been fabricated while the upper Cărhañaca continued under the sole domination of Hindu princes. Still it may not be without its use, as an historical monument: since it may be fairly presumed, that the introductory part is copied from a more ancient monument; perhaps from that, with which it has been now collated.

V. Inscription on a stone found at Cürügode in the district of Adoni *

Another ancient monument, for the communication of which the Asiatic Society is indebted to the same gentleman, whose zeal for literary research, and indefatigable

* Ādavani.
industry in the prosecution of inquiries, cannot be too much praised, was found by him in the upper Carnátaca in 1801, and has been presented to the Asiatic Society, with the following account of its discovery and of the inscription which it contains.

The accompanying stone was found at Curugóde, fourteen miles north of Ballári, not far from the Tungabhadrá, among the ruins of the ancient town at the foot of the Durg; and was removed thence, in March, 1801, with the consent of the principal inhabitants, under the impression, that this specimen of ancient characters, with which it is covered, would be a desirable acquisition to gentlemen who cultivate the study of Hindu literature.

The inscription is chiefly written in the ancient Cánara language much mixed with Sanscrit, of which some of the slócas or stanzas are exclusively composed. It commences with the invocation of Šámbhú (Śiva), and after introducing the grant, date, and description of the lands, concludes with several slócas usually added as a formula in confirmation of such donations.

A few of the stanzas, said to be written in the Prácrít language, could not be understood by the Šástris and Pándits at Triplicane, who explained the greatest part of the inscription to my Brahmens: by their united efforts and knowledge, the accompanying translation was given, in which I have every confidence after the experience I have had of the fidelity of other translations by the same hands (some of which are already communicated).

The inscription is useful as an historical record, if the Rdjá Rácsámálla, mentioned here, be the same with the sovereign of the same name, mentioned in a history of Mysore, who flourished about the eighth century; thus agreeing in date nearly with the monument.

The beauty of the character was also a strong motive
for removing it, as an appropriate offering to a Society, whose labours have been so successfully employed in illustrating the interesting remains of Hindu antiquity; and a permanent specimen of a character which appears hitherto to have escaped much notice.

The common Cánara language and character are used by the natives of all those countries extending from Coimbatore,* north to Bālkee,† near Béder, and within the parallels from the eastern Ghāts to the western, comprehending the modern provinces of Mysore,§ Sera, upper Bednore,|| Soonda,¶ Goa, Adoni, Rachore,** Canoul,†† the Drūb of the Kishná and Tungabhadrá, and a considerable part of the modern Subahs of Béder and Bījāpur, as far as the source of the Kishná at least. Its limits and point of junction with the Mahrattas may be yet ascertained with more precision; but in 1797, I had the opportunity of observing, that the junction of the three languages Telinga, Mahratta, and Cánara, took place somewhere about Béder.

Besides the common character and language, another appears to have been used, denominated at present the Halla or ancient Cánara, in which this inscription is written: it has gone so much into disuse, that it was with some difficulty I could get people to read it. An alphabet will be yet communicated, as several books and ancient inscriptions are written in this character, and the remaining literature of the Jains in Bālāghát, appearing to be preserved in it, affords additional motives for pointing it out to the attention of the learned, as probably affording means of extending the field of knowledge of Hindu literature.

Some of the inscriptions, at Cánara and Sulset, appear

* Cōyamutára. † Phulai. ‡ Mehsúra. § Sird.
|| Bednúra. ¶ Sundúra. ** Rádhúra. †† Cundanúra.
to be written in this character; and many monuments of
the kind, dispersed over the upper Carnatic, hold out the
prospect of further information.

'Among several manuscripts in Cánara, five, relating
to the Jain religion and customs, are in my possession.

'The name of CAVELLY BORIA, a Bráhmen, who was
highly instrumental in forwarding and facilitating the inves-
tigations carried on in Mysore and the Nizam's dominions
is inscribed on the edge of this stone, as a small tribute to
the zeal and fidelity of a native who evinced a genius supe-
rior to the common prejudices of the natives. He first
suggested the idea of removing the stone to some place
where it could be useful to European literature; and, by his
conciliatory manner, obtained the concurrence and assistance
of the natives for that purpose.'

The stone, sent by Major MACKENZIE, with the fore-
going account of the discovery of it, is nearly five feet high,
and three wide, and about ten inches thick. The front is
covered with writing in large characters, above which is a
representation of the linga in the form usual in temples: it
is surmounted by a sun and crescent; and near it stands a
bull, intended perhaps for the bull called Nándi, a con-
stant attendant of Síva this is followed by the figure of a
smaller animal, of similar form. The back of the stone is
half covered with writing.

The translation, mentioned by Major MACKENZIE, is
here subjoined. Not being acquainted with the character
in which the original is written, I have not collated the
version, and have therefore used no freedom with it, except
that of substituting, in many places, English words for
Sanskrit, which the translator had preserved.
TRANSLATION.

"ADORATION be to the auspicious Swayambhu Nātha, or SELF-EXISTENT PROTECTOR

1. "I prostrate myself before Śambhu: whose glorious head is adorned with the resplendent moon, and who is the chief prop of the foundation of the three worlds.*

2 "May Swayambhu be propitious": he, who won immortal renown, who grants the wishes of those that earnestly intreat him; who pervades the universe; the Sovereign Lord of Deities; who destroyed the state and arrogance of the demons, who enjoyed the delightful embraces of Pārvatī, to whom the learned prostrate themselves: the God above all gods.

3. "I prostrate myself before Śambhu, whose unquenchable blaze consumed the magnificent Tripura; whose food is the nectar dropping from the beams of the moon; who rejoiced in the sacrifice of heads by the Lord of Rācshasas;| whose face is adorned with smiles, when he enjoys the embraces of Gaurī.

(The foregoing stanzas are Sanscrit: the fourth, which is Prākrit, is unexplained. Those which follow, are in Cānara.)

5. "By the consort of Dēvi whose divinity is adored, the spouse of Pārvatī, resplendent with the glorious light of gems reflected from the crowns of the Lords of Gods and demons whose heads lay prostrate at his feet; with a face ever lighted up with smiles; he is the self-existent deity. may the wealth, and the stations of his saints, be ever granted to us.

* This is the same stanza, which begins the two inscriptions found at Chitrādurg, and which likewise occurs in a grant in the possession of a Brāhmen at Nandigul; and in that preserved at Conjeeveram.
† Rāvana.
6. "The beams of whose sight, like the frequent waving of the lotus flower, flash reflected from the numerous crowns of glorious kings, of the chief of Gods, of the King of Kings, and of the Lord of Demons; who exists in all things, in all elements, in water, air, earth, ether, and fire, in the sun and moon: the renowned deity manifested in eight forms; Śambaṇu; may he grant our ardent prayers.

7. "Cheerfully I bow to Śambaṇu in the lotus of the heart, to him who increases and gives life to all; who holds supreme command over all, who, through his three divine attributes, created and animated fourteen worlds; who ever resides in the minds of his saints."

(The two next stanzas have not been explained. The following is in Halla Cânara).

10. "For ever be propitious to Sóméśwara Dēvadi, son of the fortunate Bhuvana malla Víra, the protector of the world, the chief sovereign of kings, the pre-eminent monarch, a man of superior virtue, a distinguished personage of the noble race, the ornament of the Chaluca tribe, whose state be increased progressively in this world, so long as the sun and moon endure; who reigns in the city of Calyán, enjoying every happiness and good fortune, with the converse of good men and every other pleasure. In this country of Cuntaladéśa,* a land renowned for beauty and for manly strength over all the sea-girt earth, is situated Condavipattan, placed as the beauty spot on the human face; a city favoured by the goddess of prosperity; as a nosegay of elegant flowers adorning the tresses of the beauteous goddess of the earth.

11. "How is this favoured land? In its towns are nume-

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*Cuntala Déśa, the ancient name of the province in which Curugôde is situated, part of the Ballári or Adoni District. (Note by Major Mackenzie.)
rous groves of mango, plantations of luxuriant betel and fields of rice: in every town are channels of water, and wells, opulent men and beautiful women, in every town are temples of the Gods and of the saints in every town are men blessed with vigour and every virtue.

12. "In its centre, is the mighty hill of Curugóde durg, like the fastnesses of heaven, ever famed, rearing aloft its top crowned with fortresses, in height and compass surpassing all the strong hills on the right or left.

13 "This Curugóde was established as the capital of his dominions by the king of Cuntala, who was the foe of the king of Chóla;† who terrified the Gurjara, who is the instrument to destroy the plants of Madru; who put Pándya to flight. Is it possible for the king of snakes, though possessed of a thousand tongues, to praise sufficiently the beauty of this city?

14. "What is the description of the delightful gardens that encompass the city? They are gardens wherein are found the tilac, the lumál, the palm, the plantain, the Mimusops, the trumpet-flower, the tremulous fig-tree, the citron, the Oleander, Mesua, and Cassia, the cotton-tree, the Carambola and Póderia, the mango, Butea, and fragrant Nalicá, and various trees, that flourish and produce through all seasons as in the garden Nandana: these surrounded this city of Curugóde."

(The fifteenth stanza is unexplained.)

16. "In the city of Curugóde, the residence of the god-

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* The poet indulges his fancy in describing this favoured durg; but, in fact, it is only about 250 feet high, and no ways remarkable for strength. (Note by Major Mackenzie.)

† Chóla déśa, ........... The modern Tanjore country.
Gurjara, ....... Guzarat.
Madru, ......... Maduia and Tuchinopoly.
Pándya, .......... Maiawar and Tinnevelly. M.

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dess of prosperity, where are numerous temples of worship, fertile lands, happy spouses, friendly intercourse, a favourable government, every sacred decoration and zealous devotion in the service of Śiva.

17. "The Lord of that city, a warrior unrivalled, whose name was Rāchāmalla, whose breast is tinged with the saffron communicated from the bosom of beauty, whose renown is ever praised over the whole world."

(The eighteenth stanza is in Pradėti, and not explained.)

19. "This Rāja Rāchāmalla, prince of the earth, born of so renowned a race of sovereigns, was happily possessed of valor, of victory, and of wealth.

20. "For the king Rāchāmalla, who was lord of riches and a devout worshipper of Śiva, had for his consort Sōmal dévī, and begot a son named Nērun galā Rājā, husband to the goddess of renown, the bestower of wealth on the distressed, on the learned, and on the unfortunate, to the utmost extent of their wishes.

21. "To Nērun galā Rājā and to his wife Pacsha- la dévī (the source of all virtues), were happily born two sons, named Imādi Rāchāmalla and Sōmabhu pála, whose renown, like the sky, overspread the whole earth.

22. "What is the description of the eldest of these princes? Imādi (or the second) Rāchāmalla Rājā, the successor of the former, seated on the excellent throne, attended by many mighty elephants, in colour like the Chamarī,² ruled the whole kingdom under one umbrella, possessing the wonderful power, like Chinnagovinda, of feeding tigers and sheep in the same fold.

23. "The king Rāchāmalla acquired great power: his mighty splendour and good fortune were such as drew

² Bosgrunniens
the applause of the whole admiring world The globe was filled with the light of his reputation. The beauty of his person is worthy of the praise even of Cupid, the God famed for beauty. He was the destroyer of sin, eminent above foreign kings, and in battle he was as Viṣṇu.

24 "May Mrītu [Śiva] graciously bestow eternal wealth and prosperity of empire, on the king Racṣhāmallā, among all his chief saints.

"During the gradual increase of the empire of Racṣhāmallā extending from the north, all around, even to the north, his servant and worshipper, a descendant of Ca-ṣyapa’s race, manager of the affairs of Talgarā amarī, invested with full authority, equal in knowledge to Yu-gandhir, the sun to enlighten the caste of Vajīnasa, [as the sun enlightens the sky]; chief of ministers, born by the blessing of the god Swayambhu, the source of wealth was Bābarajū."

(Several lines follow giving an account of the ancestors of Bābarajū, which have not been translated.)

"Such is Bābarajū, who built a temple to the god Swayambhū dévi, while he was managing the affairs of his sovereign lord, the mighty king, the great Rac-ṣhāmallā, whose god was the self-existent deity.

"The praise of the priests of the temple.

"They were learned in the sacred ceremonies of holy devotion, in self-restraint, in austere fast, appropriate studies, alms, remembrance, silence, religious practice, and the worship of Śiva.

"They were devout in performing the ceremonies of the worship of the gods of the family. Among them was one named Bālasīva āchārya, unequalled for a good or happy genius. To this famous Bālasīva āchārya was granted this gift with water poured into his hands.
"The charitable donation of lands given to the good Swayambhū in the year of Śālivāhan 1095* in the Vi-jaya year of the cycle, and on the 30th of the month Mārgaśīra, on Monday, in the time of an eclipse of the sun."

(It appears unnecessary to insert the description of the lands)

"Also Chinna Góvinda Sítara Gundi, king of the city of Bhogavati, equal to the sovereign of Bhutála, who was acknowledged for ever by the excellent Víracálídéva, the mighty king of the earth named Imádi Rag-shámalla déva In the year of Śālivāhan 1103,† of the cycle Plava, and on the 15th of Cártica, on Monday, in the gracious time of the moon's eclipse, at the time when he made over in alms Tripura Agra-haram, granted under Dárápúrbac to Bálasi va déva, who repaired all the buildings of Swayambhú déva, who is distinguished for knowledge of the pure Védas, and of other religious institutions and customs of the worshippers of Siva, and for charity in feeding the poor."

(The sequel of the inscription is likewise omitted: it relates to a further grant made by the widow of Bábarajú, at the time of her burning herself with the corpse of her husband The concluding part of it was left untranslated, being stated to be illegible.)

The eclipses, mentioned in these grants, do not appear reconcilable with their dates According to the table of eclipses calculated by Pingré;‡ the solar eclipses, which occurred in 1172 and 1173, fell on 27th January and 23d June, 1172, and 12th June, 1173; and the lunar eclipses

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* Answering to A.D. 1173.
† Corresponding to A.D. 1181.
‡ Published in L'art de vérifier les dates, and inserted in Play-fair's System of Chronology.
in 1180 and 1181, were on the 13th February, and 7th August 1180, and 22d December, 1181. None of these approach to the dates of Mārgasīra or Agrahāyaṇa 1095 and Cártica 1103. Unless, then, the era of Śālīvāhana have been counted differently in the peninsula of India, from the mode in which it is now reckoned, and on which the comparison of it with the Christian era is grounded, it seems difficult to account for this disagreement of the dates and eclipses in any other way, than by impeaching the inscription, the authenticity of which there is not otherwise any reason to question.

VI. Inscription on a Stone found at Kurrah.

Having learnt from Captain C. Stewart (a Member of this Society) that an inscription had been remarked by him in the gateway of the fort of Kurrah (Khāra), I obtained, through the assistance of Major Lennon, then stationed in the vicinity of that place, the stone itself which contains the inscription. It now belongs to the Asiatic Society.

The inscription is very short, contains the date 1093 Samvat, the name of the prince, as also names of several places; and is written in a very legible character: yet all my endeavours to arrive at any explanation of it have been unsuccessful. Whether it be only a fragment of an inscription (for the stone is very narrow),* or the inscription have been inaccurately engraved (and thus also is countenanced by its appearance), I shall not take upon myself to determine. At present, I can only translate the first six, out of sixteen lines, which run thus: "Samvat 1093;†

* Its height is four feet nine inches, but it is only nine inches wide.
† Corresponding to A. D. 1087.
on the first day of the light fortnight of Āshḍāha. This
day, at this auspicious Cāṭa, the great and eminent prince
Yāsahpālā,† in the realm of Causamba, and village of
Payahāsa, commands, that———.

* It may be worth remarking, that the inscription discovered at
Sārand'ha near Benares, dated ten years antecedent to this, relates
to a family of princes whose names had a similar termination. As.
VII. *Inscription on a Plate of Copper found in the district of Dinajpur*

In the beginning of the present year (1806), a plate of copper was found at Ámgáč'hi in Sultánpur, by a peasant, digging earth for the repair of a road near his cottage. He delivered it to the nearest police officer, by whom it was conveyed to the magistrate, Mr. J. Pattle: and by him forwarded for communication to the Asiatic Society Ámgáč'hi, though now a small village, is described as exhibiting the appearance of having formerly been a considerable place. Remains of old masonry are found there, and numerous ponds are remarked in the vicinity of that and of the adjacent villages. It is situated at the distance of about fourteen miles from Budál, where an ancient pillar stands, of which a description (as well as the inscription, which is read on it), was published in the first volume of Asiatic Researches (p. 131).

The plate is very large, being fourteen inches high and thirteen broad. It is surmounted by a highly wrought ornament of brass, fixed on the upper part, and advanced some distance on the plate so as to occasion a considerable break in the upper lines. The superior surface is covered with writing in very close lines and crowded characters. The inscription is completed on the inferior surface, which contains sixteen lines (the upper surface having no less than thirty-three). The character is ancient Dévanágari; and the language Sanscrit: but so great a part of the inscription is obliterated (some portion of every line being illegible), that it is difficult to discover the purport of the inscription. After wasting much time in endeavouring to decipher the whole of it, I have been able only to ascertain the name of the grantor, and a part of his genealogy; with the date
of the grant, which unfortunately is reckoned only by the reign, without any reference to a known era.

The ornament affixed to the plate, and representing a seal, contains a single line of writing, which is distinctly read, Śrī VIGRAHAPĀLA DÉVA. This name as of the grantor, is found at the close of the inscription; and it occurs more than once in the body of the patent. Among his ancestors and predecessors, the following names are distinctly legible.

The first prince mentioned is LŌCAPĀLA, and after him DHARMAPĀLA. The next name has not been decyphered: but the following one is JAYAPĀLA, succeeded by DÉVAPĀLA. Two or three subsequent names are yet undecyphered.* They are followed by RĀJAPĀLA,—PĀLADĒVA and subsequently MAHĪPĀLA DÉVA, NAYAPĀLA and again VIGRAHAPĀLA DÉVA.

So far as a glimpse has been yet obtained of the purport of the inscription, it seems to be a grant by VIGRAHAPĀLA DÉVA, in the making of which NAYAPĀLA likewise appears to have had some share. It is dated Samvat† 12, on the 9th day of Chaîtra.

The use of the word Samvat (which properly signifies a year) to denote the year of the king’s reign, and not that of VICRAMĀDITYA’s era, merits particular notice. In the inscription on the plates found at Mongir,‡ containing a grant of land by a prince who appears to be of the same family, the date was read by Mr. Wilkins, Samvat 33; which was supposed both by him and by Sir W. Jones to intend the era of VICRAMĀDITYA.§ I have always

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* One seems to be NĀRĀYAṆA, perhaps NĀRĀYAṆAPĀLA.

† The original seems to exhibit Samat but this must be intended for Sambat or Samvat.


§ I bid. p. 130.
entertained doubts of that interpretation: and, among other reasons for hesitating, one has been the improbability, which to my apprehension exists, that the era should have been in use, and denoted by the same abbreviated term, so early after the time at which it commences. Eras by which nations have continued to reckon for a series of ages, have not usually been introduced until a considerable time after the event from which they are counted: and, when first introduced, have been designated by some more definite term than one merely signifying a year. But the word Samvat (abbreviated from Samvatsara a year,) being in that inscription prefixed to a low numeral, and not expressly restricted, as is usual where Vicramaditya's era is meant, was more likely to intend the year of the reigning king (though Sir W. Jones thought otherwise,* ) than that of a period reckoned from the birth, or the accession, or the demise of another monarch. It appeared to me likewise, as to Captain Wilford, on examining the fac simile of the inscription in question,† that the character, which stands in the place of the t of Samvat, resembled more nearly the numeral 1. The date might therefore be 133 instead of 33. I inclined, however, to believe the lower number to have been rightly read by Mr. Wilkins on the original plate: and consequently supposed it to be the date of the reign of Devapala, the prince who made the grant. The date of the Ámgdch'hi plate, which must be referred to the reign of the grantor Vigrhapála, seems strongly to corroborate this opinion.

The present inscription, though yet imperfectly decyphered, appears to be useful towards ascertaining the age

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† Plates i. and ii. in the 1st. vol. of As. Res.
of the Mongir grant. The names of Dhermapāla and Dēvapāla occur in both inscriptions; as that of Raja-
pāla does, on the pillar at Budāl, as well as on the Ḡṛigadhi plate. Some of these names are also found in
the list of princes enumerated in the Ayinacbert* as having
reigned in Bengal before Ballalasena. The authority of
Abū’l Fazl, on Hindu history, is indeed not great: but
the inscription on the statue of buddha, which was found
at Sārandhī, near Benares,† proves, that a family of
princes, whose names terminated in pāla, did reign over
Gauḍa in Bengal, near eight hundred years ago: and this
is consistent with the period to which that dynasty is
brought down by Abū’l Fazl; namely, the middle of the
eleventh century of the Christian era. It appears also, from
the same inscription found at Sārandhī, that these princes
were worshippers of Buddha, a circumstance which agrees
with the indications of that faith in the Mongir grant, as
translated by Mr. Wilkins. The name of Mahipāla,
mentioned as king of Gauḍa in the Sārandhī inscription,
occurs likewise in the Ḡṛigadhi plate; and if it be rea-
sonable to believe, that the same person is intended in both
instances, it will be right to infer, that the grant contained
on the plate found at Ḡṛigadhi is nearly eight hundred
years old; and that the plate found at Mongir is more
ancient by two or three centuries. This reduces the age of
the Mongir grant to the eighth or ninth century of the
Christian era; which I cannot but think more probable,
than the opinion of its being anterior to the birth of
Christ.

VIII. Inscriptions on plates of Copper at Nidigal and Goujda.

To the foregoing description of several monuments, which have been presented to the Asiatic Society, I shall add a brief notice of two other inscriptions, of which copies have been received.

Mention has been already made of a grant of land, inscribed on five plates of copper, seen at Nidigal, in the year 1801. It was in the possession of a Brāhmaṇa residing at that place: and a copy of it was taken by Major Mackenzie, which has been communicated by him to the Society. The grant appears to be from the second Bucca Rāja, who was third in succession from the first prince of that name, and grandson of the king by whom the grants beforementioned were made. If the date have been correctly decyphered from the copy of this inscription, it is of the year 1331 Śāca, corresponding to A. D. 1409.

Another inscription, communicated by Major Mackenzie, purports to be a grant by Jānāmejaya, the celebrated monarch who reigned in India at the commencement of the present age or Caliṣyuga. It is in the hands of the Brāhmens or priests of Goujda Agraharam in Bédmār; and was, with some reluctance, entrusted by them to Major Mackenzie, who himself took from it a copy in fac simile, the exactness of which is demonstrated by the facility with which the inscription may be decyphered from that copy. The original is described as contained in three plates of copper, fastened together by a ring, on which is the representation of a seal, bearing the figure of a boar with a sun and crescent. The purport of the inscription, for I think it needless to make a complete version of it, is that 'Jānāmejaya, son of Parīshhit, a monarch reigning at Hastināpura, made a progress to the south, and to other
quarters, for the purpose of reducing all countries under his domination; and performed a sacrifice for the destruction of serpents, in presence of the god (or idol) HARI-
DRA, at the confluence of the rivers Tungabhadrā and Haridra, at the time of a partial eclipse of the sun, which fell on a Sunday, in the month of CHAITRA, when the sun was entering the northern hemisphere; the moon being in the NACSHATRA ĀŚWINĪ.∗

Having completed the sacrifice, the king bestowed gold and lands on certain Brāhmaṇas of GAUTAMAGRÁMA: whose names and designations are stated at full length, with the description and limits of the lands granted. The inscription concludes with two verses; the same with two of those which occur in the plates found at CHITRADURG,† and in those preserved at CONJEVERAM.‡

If reliance might be placed on this as an ancient and authentic monument, its importance, in the confirmation of a leading point of Indian history, would be obvious and great. Major MACKENZIE, in communicating the copy of it, expresses a doubt of its authenticity; but remarks that it can be no modern forgery, for the people them-

∗ Such is the deduction from the text, which states a half eclipse of the sun in CHAITRA, on the sun’s entrance into the Uttarāgyaṇa, or northerm path, at the moment of Vyatipāta (which imports new moon on a Sunday in any one of the undesignated NACSHATRAS, viz, ĀŚWINĪ, ŚRĀVANĀ, DHANUSHĀḍHĀ, ĀRDRA, ĀŚĪSHA, and MṚGAIŚVARA: the first of which is the only one compatible with the month) The words of the text are CHAITRĀŚEŚ CRISHNA [should be CRISHNA] PACSHÉ SO ......
...... CARANA UTTARĀGYAŅA SAN ............... VYATIPĀTA NIMĀTTÉ SURYA PARVANŚ ARDHA GRASA GRIHITA [should be GRIHITA] SAMĀDÉ [should be SAMAYÉ]

† See pages 261 and 266 of this volume.
‡ As Res., vol. III. p 52. The verses are those numbered 50 and 54.
selves cannot read the inscription. I concur with Major Mackenzie both in distrusting the genuineness of this monument; and in thinking that it is no recent fabrication.

Numerous and gross errors of grammar and orthography, which can neither be explained by a gradual change of language, nor be referred to the mistakes of a transcriber or engraver, but are the evident fruit of ignorance in the person who first penned the inscription in Nagari characters, would furnish reason for discrediting this monument, were it otherwise liable to no suspicion. But, when to this circumstance are added the improbability of the copper-plates having been preserved during several thousand years, and the distrust with which any ancient monument must be received, where its present possessor, or his ancestor, may have had claims under the grant recorded in it, there can be little hesitation in considering this grant of Janamējaya as unauthentic, independently of any argument deduced from the character, which is not perhaps sufficiently antique; or from the astronomical data in this inscription, which, however consistent with Indian notions of astronomy and chronology, will hardly bear the test of a critical examination.

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* For example sumad for samayē (समय for समय) a palpable error obviously arising from the blunder of an ignorant amanuensis writing from dictation. The mistake occurs more than once; and can be accounted for in no other manner: the syllables ē and ĝē being alike in sound, though dissimilar in form; and the blunder being such as no person acquainted with the rudiments of the Sanscrit language could have committed. Other instances have been remarked, almost equally strong, as Purushāti for Parishit chaçravartti for chacravarti. Short vowels for long, and vice versa, in repeated instances; the dental for the palatal s; and numerous other errors for spelling, besides faults of grammar and style.
IX. A grant of Land by Jayachandra, Rájd of Canój.

It may be proper to notice further, in this place, the inscription of which mention was made at the beginning of this essay, as having been decyphered by a Pañdit (Servóru Trivédí) who communicated to me a copy of it, with the information, that the original has been conveyed to England by the gentleman in whose possession it was seen by him. According to that copy, the genealogy of the prince, who made the grant recorded in the inscriptions, is as follows:

1. Śrípála, a prince of the solar race
2. His son Mahíchandra
3. Śríchandra Déva, son of the last mentioned, acquired, by his own strength, the realm of Gádhipura or Cánýácubya (Canój); visited Cási and other holy places; and repeatedly gave away in alms, his own weight in gold. He appears to have been the first king of Canój, in this family.
4. Madanapála Déva, son and successor of Śríchandra.
5. Góvinda Chandra, son of Madanapála.
6. Vijaya Chandra Déva, (the same with Jayachandra,) son of Góvinda Chandra; is stated in the inscription as issuing his commands to all public officers, and to the inhabitants of Náguli assembled at Dévapalá-bpatlana, enjoining them to observe and obey his patent; which is recited as a grant of land to two Bráhmañas, conferred by him on the day of full moon in Mágha 1220,* subsequently to his inauguration as Yuvarája or designated successor and associate in the empire. The inscription concludes by quoting, from a Puráña, four stanzas to

* Corresponding to A. D. 1164.
deprecate the resumption of the grant: and by a signature importing "this copper was engraved by Jayapála."

Without having seen the original, no opinion can be offered on the probable genuineness of this monument. But it will be observed, that the inscription is consistent with chronology; for Jay Chand, who is described in the Ayin Acbért,* as supreme monarch of India, having the seat of his empire at Canój, is there mentioned as the ally of Shëñabuddïn in the war with Prīt' Havírája or Pit'hóra, about the year of the Hejra 558, or A. D. 1192; twenty-eight years after the date of this grant.

Remarks

A few observations on the general subject under consideration will terminate this essay.

Most of the ancient monuments, which have been yet discovered, contain royal grants of land; framed, commonly, in exact conformity to the rules delivered by Hindu writers who have treated of this subject.† That durable memorials have been usually framed to record other events or circumstances, there is no reason to suppose; and this consideration is sufficient to explain the comparative frequency of monuments which recite royal grants. It was the interest, too, of persons holding possession under such grants, to be careful in the preservation of the evidence of their right. But this circumstance, while it accounts for the greater frequency of monuments of this description, suggests a reason for particular caution in admitting their genuineness. Grants may have been forged in support of an occupant's right, or of a claimant's pretensions. It will

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XI.

INSCRIPTIONS UPON ROCKS IN SOUTH BIHAR *

[From the Transactions of the Royal Asiatic Society. vol 1 p 201—206]

DR. BUCHANAN HAMILTON, while engaged in statistical researches in the provinces subject to the government of Bengal, gave attention to the antiquities of the country, as to other scientific objects, which he had the opportunity of investigating. His reports, comprising the result of his inquiries, are deposited in the Library and Museum of the East-India Company, and, at his instance, the Court of Directors have sanctioned a liberal communication of the information contained in them, to this Society. Among the antiquities collected by him, there are many fac-similes of inscriptions. I purpose submitting to the Society explanations of such among them as are interesting, and I now present the translation of one, which appears curious.

It is an inscription upon a rock, denominated, from an idol delineated on it, Táráchándá, in the vicinity of Sahasram in South Bihár; and contains the protest of a chieftain, named Pratápa DhaVala Déva, bearing the title of Náyaca, and that of Rájá of Jápila, against an usurpation of two villages by certain Bráhmañás in his neighbourhood under colour of a grant, surreptitiously obtained through corruption of his officers, from the Rájá of Gádhinagara or Cánjacuhja (Cunój), who was the celebrated ViJAYA CHANDRA. Its date is 1229 Samvat, corresponding to A. D. 1173.

* Read at a public meeting of the Royal Asiatic Society, December 4, 1824.
In Dr. Buchanan Hamilton's collection, there are copies of two other inscriptions upon rocks, in the neighbourhood, exhibiting the name of the same chieftain, in conjunction with many of his kindred in the one; and followed by a long series of his successors in the other. I observe little else interesting in them, besides the names and the dates.

The site of the principal inscription is thus described by Dr. Buchanan Hamilton. 'In a narrow passage, which separates the northern end of the hills from the great mass, and through which the road leads from Sahasram to Rautásghar, is a place where Táráchándá is worshipped. The image is carved on a ledge of rock, and is so small, and so besmeared with oil and red lead, that I am not sure of its form. It seems, however, to represent a woman sitting on a man's knee, but not in the form usual in Bihár, which is called Hara-gaurí. Adjacent to the image, a cavity in the rock has been enlarged by one or two pillars in front, supporting a roof, so as to form a shed, to which the priest, and a man who sells offerings and refreshments for votaries and passengers, daily repair. A few persons assemble in the month of Śrávan. But the chief profit arises from passengers; who are very numerous: and all who can afford, give something. The priest is a Sannyásī. Above the shed, the Moslemans have erected a small mosque, in order to show the triumph of the faith: but it is quite neglected. The image is usually attributed to the Chérós: and many small heaps between the place and Sahasram, are said to be ruins of buildings erected by the same people. But a long inscription, carved on the rock within the shed, refers to Viṣaya Chandra, sovereign of Canój.'

That inscription was strangely misinterpreted by the Paññātīta attached to the survey on which Dr. Buchanan
In South Bihar.

Hamilton was engaged. The Paññita supposed the chieftain, Pratapa Dhavala, to premise an intention of commemorating his descendants, and to proceed to the mention of Vijaya Chandra, proprietor of Canój; and Satrughna, son of the Mahārāja, whence Dr Hamilton inferred, that Vijaya Chandra was son of Pratāpa Dhavala. Dr. Hamilton observes, indeed, that others gave a totally different interpretation considering it as 'an advertisement from Pratāpa Dhavala, that he will not obey an order for giving up two villages, which, he alleges, had been procured by corruption from the officers of Vijaya Chandra, king of Canój.'

The oriental scholar, upon inspection of the fac-simile, will have no difficulty in perceiving that the latter was the right interpretation; and it is, therefore, needless to pursue remarks which were built upon the Paññita's grossly erroneous translation.

The style of the protest is singular, and, on that account alone, I should have thought it very deserving of notice. It serves, however, at the same time to show, that the paramount dominion of Cānyauculya extended to the mountains of South Bihār: and it presents an instance of the characteristic turbulence of Indian feudatories.

The second inscription, bearing the name of the same chieftain, Nāyaca Pratāpa Dhavala Déva, with the date 1219, (A. D. 1163) Saturday, 4th Jyaish'ha bādi, and underneath the name of his brother, the prince Tribhuvana Dhavala, the prince's wife Sulhi, and another female Sōmalī, and two sons Lacṣmmāditya and Padmāditya, exhibits a rude figure of a goddess Tōtalā Dévi, attributed to the family priest Viśvarūpa. On the other side of the figure are the names of five daughters, and, at the foot of it, six 'sons of the Nāyaca. These are Varcu, Satrughna, Biradala, Sahasa Dhavala,
Yāmi-cārticēya and Śantāyatnā déva Beneath are names of Cāyasthas, Yajnyādhara, and Vidyādhara, sons of Cusumahārā; the treasurer Dévarāja, and the door-keeper (pratihāra) Tishala

The site of this inscription is described by Dr Buchanan Hamilton. ‘Where the Tūtrahī, a branch of the Kudura river, falls down the hills of Tulot‘hu, is a holy place, sacred to the goddess Tōtalā. The recess, into which this stream falls, is about half a mile deep, and terminates in a magnificent, abrupt rock, somewhat in the shape of a horseshoe, and from 180 to 250 feet high. In the centre is a deep pool, at all times filled with water, and which receives the stream, that falls from a gap in this immense precipice. This gap may be thirty feet wide; and the perpendicular height there, 180 feet.’

‘The image is said to have been placed by the Cherós, about eighteen centuries ago, and, in fact, resembles one of the images very common in the works attributed to that people in Bihār.’ But this antiquity is by no means confirmed by the inscription, the date of which is evidently in Samvat 1389, or A.D. 1332.

‘In another inscription it is said, that the family priest of a neighbouring prince, Pratāpa Dhañala, had, in A.D. 1158, made the image of the goddess alluding evidently to a rude figure, carved on rock, and now totally neglected.

‘The image now worshipped is, as usual, a slab carved in relief, and represents a female with many arms, killing a man springing from the neck of a buffalo.* It is placed on the highest ledge of the sloping part of the rock, immediately under the waterfall. From two to three hundred votaries, at different times in the month of Śrāvan, go to the place, to pray.’

* It signifies Mahishásura, vulg. Bhimásur, slain by Bhavānī.
The third inscription is upon a rock at Bandughata, on the Sone river, opposite to Japila, which was the chieftain's principality. The date assigned to Mahâ nrîpati (i.e. Mahârâja) Pratâpa Dhavala, besides the number of twenty-one years (apparently the duration of his reign, as chief of Japila), is, in the fac-simile, written 2219 Samvat; but the first digit being clearly wrong, it must be corrected to 1219, or 1229, most likely the latter. No date is assigned to his predecessor Udaya Dhavala; nor to the line of his successors, beginning with Vicrama, who is perhaps the same with Varcu (the first among his sons, named in the second inscription,) and who appears from the epithet of vijayin, 'victorious,' to have been the reigning prince, when his name was here set down. The rest must have been subsequently, from time to time, added, and the first among them is Sahasa Dhavala, perhaps the fourth son of Pratâpa Dhavala, mentioned in the second inscription.

Above all this, there have been inscribed, at a much later period, other names, viz. 'Mahârâja Nûnata Rai or Nûunta Râya, who went to heaven (surapura, i.e. the city of the gods) in the year 1643 Samvat,' and 'Mahârâja Pratâpa Râya, or Pratâpa Rudra, who went to heaven in the year 1653 Samvat.'

In another part of the inscription, there occurs the name of Mahârâja Manasinha, with the dates of 1652 and 1653 Samvat, and lower down, a string of three names, Mahârâja Cansarâja, Pratâpa Dhavala déva, and Madana Sinha. Between the two last, there is interposed the date of 1624 Samvat.

The name of Pratâpa appears then to have been of frequent recurrence. The family, which yet possesses the principality of Bilonga, the representative of which, when visited by Dr. Hamilton, was Râja Bhûpanât'ha
Sā, claims descent from Pratāpa Dhavala, chief of Japīla.

Japīla is a large estate south of Rautā (Rōhitāswa), in the district of Rāmaghur. But the territories of the ancient chieftain seem to have extended beyond its present limits, and to have reached the vicinity of Sahasram.

These inscriptions have no other chronological value, but as they corroborate the date of one possessing more historical interest, noticed in the Researches of the Asiatic Society of Bengal! (vol ix p. 441).* It records a grant of land, by the same Rājā of Cānyacubja, Viṭaya Chandra; and, as usual, recites the names of his ancestors, tracing his genealogy through no less than six generations. The original was said to have been transmitted to Great Britain by the late Sir John Murray McGregor; but I am unable to say where it has been deposited.† It would be an acceptable communication, as serving to authenticate the history of a prince among the most conspicuous in the annals of his country; on which he inflicted the same calamity which Count Julian did on Spain, by assisting a Muslim conqueror of it, in revenge for the

* [See page 286 of the present volume]
† It appears from an inscription (a grant on plates of copper) published, with a translation, in the fifteenth volume of Asiatic Researches (p 447), that Jayachandra was son of Viṭaya Chandra; and that there has been a mistake in considering Viṭaya Chandra and Jayachand to be equivalent Sanskrit and Hindi appellations of the same individual. The error originated with the pahāṭ Servorū Trivērti, who communicated a copy of the inscription noticed in the ninth volume of the Asiatic Researches [see pages 240 and 286 of the present volume], as relative to Jayachand, whom he identified (erroneously, as now appears) with Viṭaya Chandra.

The series of princes who reigned at Gādhipura or Cānyacubja, ancestors of Jayachandra, is now completely and accurately determined, and the reading of the inscription in question ceases to be a matter of any interest.
abduction of his daughter.* The analogy indeed is not quite complete; for it was seduction of a daughter which Count Julian sought to revenge.

Concerning the inscription at Tarachandit, of which a translation is here presented, it is to be remarked, that the denunciation or protest, which it records, is first expressed in verse,† and is then repeated in prose. This repetition has much assisted the decyphering of it, and the correction of some errors, either of the original, or of the copy. A few explanatory notes will be found annexed.

Translation of the Inscription at Tarachandit.

"Pratapa Dhamala, wholly divine (deva), possessor of happily risen and celebrated glory, addresses his own race. In these villages, contiguous to Calahanditi,‡ that contemptible ill copper§ [grant], which has been obtained by fraud and bribery, from the thievish slaves of the sovereign of Gadhinagara,|| by priests sprung from Suwalluhala,¶ there is no ground of faith to be put therein by the people around. Not a bit of land, so much as a needle’s point might pierce, is theirs.


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* Transactions of the Royal Asiatic Society vol. i. p. 147.
† In two stanzas of Vasanta tilaca metre.
‡ Calahanditi; written Calahanditi, with a long vowel, in the prose paraphrase.
§ The text exhibits, in two places, cutambra: which, I conjecture should be cu-tamra from cu, ill, and tamra, copper; alluding to a grant inscribed, as usual, upon copper. There may be an allusion to Cutamba, the name of a district in that vicinity.
|| Gadhinagara, the same with Gadhipura, is identified with Conya-cubja.—See As. Res., vol. ix. p. 441, [p. 286 of the present volume.]
¶ Suwalluhala; written Suwalluhaniya in the prose paraphrase; it appears to be the designation of the Brâhmañas, who had obtained the grant of land in question.
"The feet of the sovereign of Japila, the great chief-tain, the fortunate Pratápa Dhavala Déva, declare the truth to his sons, grandsons, and other descendants sprung of his race this ill copper [grant] of the villages of Caluhańdá and Badayitá, obtained by fraud and bribery, from the thievish slaves of the fortunate Vijaya Chandra, the king, sovereign of Cánycuculja, by Swalluhaniya folks: no faith is to be put therein. Those priests are every way libertines. Not so much land, as might be pierced by a needle’s point, is theirs. Knowing this, you will take the share of produce and other dues, or destroy.

"[Signature] of the great Rújaputra (king’s son) the fortunate Śatrughna."
XII.

On Three Grants of Land, inscribed on Copper, found at Ujjayani, and presented by Major James Tod to the Royal Asiatic Society.*

[From the Transactions of the Royal Asiatic Society, vol. 1. p. 230—239, and 462—466.]

The translations, which accompanied the Sanscrit inscriptions on copper, presented to the Society by Major Tod having been made through the medium of an interpreter, I have thought it right to re-examine the originals, at the same time that I undertook the decyphering of a third inscription, likewise presented by Major Tod, but unaccompanied by a translation.

Neither of the three inscriptions in question is complete. They had originally consisted of a pair of plates in each instance: as is evident, both from the contents, and from the very appearance; for they exhibit holes, through which rings were no doubt passed to hold the plates together. In one instance, it is the last of the pair, which has been preserved. In the two others, the first of each remains, and the last has been lost. Enough, however, subsists, in these fragments of inscriptions, to render them useful historical documents; as is amply shown in the very interesting comments on them which Major Tod has communicated.

I now lay before the Society a transcript of the contents of each plate, as read by me; and copies, fac-simile, of the originals. My own translations follow; and notes will be found annexed.

* Read at a public meeting of the Royal Asiatic Society, December 4, 1824.
On collating the fac-simile with the transcript, the learned reader will observe that errors (for engravers are not less apt, than ordinary copyists, to commit blunders) have been in several places corrected. Where the mistake and requisite correction seem quite obvious, I have in general thought it needless to add a remark. But, wherever it has appeared necessary to give a reason for an emendation, an explanatory note is subjoined.

All these inscriptions are grants of land, recorded upon copper, conformably with the usage of the Hindus, and the direction of the law, which enjoins, that such grants should either be written upon silk, or inscribed upon copper.*

One of these grants or patents, records a donation of land made by the reigning sovereign of Dhárd, on the anniversary of the death of his father and predecessor, in 1191 of the Samvat era, confirmed by the prince his son, at the time of an eclipse of the moon, in Śrávana 1200 Samvat. It appears from calculation that a lunar eclipse did occur at the time; viz. on the 16th of July A. D. 1144 about 9½ P. M. apparent time, at Ujjayani.

This date, so authenticated, becomes a fixed point, whence the period, in which the dynasty of sovereigns of Dhárd flourished, may be satisfactorily computed. The series of four princes, whose names are found in these patents, two of them anterior to A. D. 1134 (1190 Samvat), and two of them subsequent to that date, (for the anniversary of Nara Varma's funeral rites in 1191, determines his demise in 1190 Samvat;) may be taken to extend from the latter part of the eleventh century of the Christian era to near the close of the twelfth. It is carried retrospectively, through a line of three more princes, to Sindhu, grandfather of Rája Buója, by the marble at Madhucara ghar, and other evidence; as shown by Major Tod.

हरिजनी होती हैं दिल्ली से। उन्होंने सत्य जीवन उत्तर के लिए विश्वविद्यालय में दूरस्थ स्नातक कर लिया। उनके जीवन के विवेक और समर्पण का प्रदर्शन उनके सङ्गीत, स्नातक और हिन्दी विषयों में दिखाया गया है। उनके जीवन में स्नातक और हिन्दी विषयों में दिखाया गया है।

उनके जीवन में स्नातक और हिन्दी विषयों में दिखाया गया है। उनके जीवन में स्नातक और हिन्दी विषयों में दिखाया गया है।
The earliest of the three patents inscribed upon copper which were procured by Major Tod at Ujjayani, bears the date of 3d Māgha śudi 1192 Samvat, answering to January A. D. 1137. It has the signature of Yaśōvarma Déva, who, in the preceding year, 1191 Samvat, had made a donation of land on the anniversary of the demise of his father Nāravarma Déva, which was confirmed (apparently in Yaśōvarma's life-time), by his son Lacṣumí varma Déva, in 1200 Samvat: as above noticed. The latest of the three grants is by his successor Jaya varma Déva, and being incomplete, exhibits no date. Both these patents agree in deducing the line of succession from Udayaditya Déva, predecessor of Nāravarma. There is consequently this series perfectly authenticated:

Udayaditya Déva

| Nāravarma Déva

| Yaśōvarma Déva

\(\wedge\)

Jaya varma Déva. Lacṣumí varma Déva.

No. 1.

A Grant of Land inscribed on Copper, found at Ujjayani.∗

∗ See Plate iv.
महाराजाधिराज परमेश्वर श्री उदयारित्य देव पादानुभाव परम भद्रारक महाराजाधिराज पर- मेश्वर श्रीं नववर्ष देव पादानुभाव परम भद्रारक महाराजाधिराज परमेश्वर श्री यशोवर्माण्डेव पादानुभाव समस्तप्रभावस्तोपत समधिगतपंचमहाशब्दालंकार विराजमान महाकुमार श्री लक्ष्मी वर्षभेदः। श्री महा द्वादशकमण्डले श्री राजशासनभोगे मुरारस्वीं सम्बंध वडपुर्यां तेशासुज्जवर्षः प्रासादिका सम्बंध उत्थवरक्ष - यामयोः समशृतिष्चिह पद्धकिश जनपदांद्रीन्त्रावाणिरो - न्तरान्वीशयक्ष्ठतु वः संविधितं। चया श्रीमहाराजां महाराजाधिराज परमेश्वर श्री यशोवर्मैं देवेन श्री विक्रम कारानीति सम्बंधे कनवलधिकशलैकादशेष्यु कार्तिक प्रसूति चष्ट्यां सज्जत महाराज श्रीं नववर्ष्य देव सामवकरिक्ष तीर्थाभोभिः स्थात्वा देव ऋषि मृत्यु पिद्धस्तर्पण्यितवा भगवतं भगवानि पति सम्भवचं समी - कुश्यात्माचाचापत्तिमिहिरिखरं छत्वा भानबे ऋषिः विधाय कपिलां चि: प्रद्विषिणि वेद भरार्काष्टृतां
द्रुतः निलोद्धरलगतजललवतरलखरं जीवितं धनं चा -
वेल्लं। उज्जांचं। वाताभिषिक्षममिदं वमुधाधिपत्यमपां -
तमाचमघुरो विष्रोपभोगं। श्राणाध्यत्तयांजलबिन्दु -
स्मा नराणां धर्मः सखा परम्भो परलीक्याने।
एवमाकल्य अन्धलङ्धावरि स्थान विनिमितं भर्गं -
गोचारं भर्गं आझिःस वाह्य्यस्य विष्रवराय आश्व -
लावलशाखिने दातिःशायात कर्णां ट्राह्य दिविर ठकुर
श्री महिरखामाप्वेच श्री विश्वाहृमुत आवस्थिक श्री
धनपालाय उपरि लिखित वदउद याम उथवशक ग्राम
सष्टचमालाकुलो निधिनिचेय सहिती वापों कूप तडागा -
नितो चतुष्कंकविगुस्तो चंद्राभिविद्वेदुदक पूर्वकतया
शासनेन प्रदत्तो। सम्भवर शतदाशसकेशु श्रावण ग्रहिः
पंचदशां सीम ग्रहण पवित्त्रश्रीमतितश्रीरों पुन -
रवासामभि: ऐत ग्रामी उदकपूर्वकतया शासनेन
प्रदत्तो। तदनयोयामयोंनिवासी समस्त पद्धकिला -
दिलोकाश्च कर्मकालं यथोत्तमान कर्महिः भाग -
भोगादरिकामाजाश्चवविधवेंश्वातः सर्वसम् समुपातें -
वम्। शासनं वै ततुपुपलं दुःखा चन्द्रदंशोऽजेरविते -
"OM! Well be it! Auspicious victory and elevation."

"Victorious is he, whose hair is the ethereal expanse; who, for creation, supports with his head that lunar line which is a type of the germ in the seed of the universe.

"May the matted locks of love's foe, reddened by the lightning's ring that flashes at the period of the world's end, spread for you nightless prosperity.

"The great prince, resplendent with the decoration of
five great titles, with which he is thoroughly and excellently embued and possessed, the fortunate Lacśumít Varma Déva, son of his Majesty, the great king, sovereign, and supreme lord, the fortunate Yaśó Varma Déva, son of Nara Varma Déva, son of Udáyádiya Déva, acquaints the Páttacila and people, Bráhma and others, inhabiting Bálinda grám, dependant on Surásáni, and Uthuvañaca grám appertaining to Téptá-svarña-prá-sálicá, both situated in the twelve great districts held by royal patent; be it known unto you: Whereas, at the fortunate Dhará, the great king, sovereign, supreme lord, the fortunate Yaśó Varma Déva, upon the anniversary of the great king, the fortunate Nara Varma Déva, which

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7 I am not entirely confident of the meaning of this passage.

8 Páthamabhíta, an ordinary periphrasis for son and successor: literally, “whose feet are meditated, i.e. revered, by.....”

9 The additions are those usually borne by sovereign princes among the Hindus. Bhulároa answers to the title of majesty. Adhírjá is a sovereign or superior prince. Śri, signifying fortunate or auspicious, is prefixed to every name.

Varman is the customary designation of a Rílaputra; as Śarman is of a Bráhma. The term enters into composition in the names of many of this family.

10 Páttacila is probably the Páttail of the moderns. The term occurs again lower down; and also in the next grant (No. 2).

11 Pronounce Bálinda-grám. Surásáni appears to be the district or province, in which it is situated.

12 Perhaps Ughavan rather than Uthuvañaca.

13 This seems to be the name of a district.

11 An apunage, comprising twelve great districts. Mahá-divídusaca-mándala seems to have been held by this prince, under a royal grant from his father. He did not become his successor; for Jaya Varma is, in another inscription, named immediately after Yaśó Varma; and was reigning sovereign.

15 Dhará was the capital of this dynasty.

16 Anniversary of the death. It appears, therefore, that Nara Varma died in 1190 Sumvat.
took place on the 8th of Cárтика śudī, years eleven hundred and ninety-one elapsed since Vicrama, having bathed with waters of holy places, having satisfied gods, saints, men and ancestors with oblations, having worshipped the holy Bhawānipati, having sacrificed to fire offerings of śamī, sacrificial grass, sesamum and boiled rice, having presented an arghya to the sun, having thrice perambulated Capila, seeing the vanity of the world, deeming life a tremulous drop of water on the leaf of a lotus, and reckoning wealth despicable:—As it is said:

“This sovereignty of the earth totters with the stormy blast; the enjoyment of a realm is sweet but for an instant; the breath of man is like a drop on the tip of a blade of grass: virtue is the greatest friend in the journey of the other world.—

“Considering this, did grant by patent, preceeded by gift of water, for as long as the sun and moon shall endure,

17 The allusion is to the five great sacraments, which a Hindu is bound to perform—See Menu, iii. 67.

18 Bhawānipati is a title of Śiva, husband of Bhawānī. In the following inscription, the name again occurs in a similar manner, with the further designation of Varāvara guru.

19 The ḍhuti, or burnt offering; consisting of boiled rice, with tila (Sesamum orientale), cuṭa (Poa cynosuroides), and śamī (Adenanthera or Prosopis aculeata).

20 An arghya is a libation or oblation, in a conch, or vessel of a particular form, approaching to that of a boat.—As. Res., vol. vii. p. 291.

21 Capila probably is fire, personified as a female goddess.

22 Abhra is a cloud; and vāta, wind: whence vātābhra, a windy cloud. Or abhra may signify the ethereal fluid (ācāśa). The stanza is repeated in the next inscription.

unto the Āvasat'hica\textsuperscript{24} the fortunate Vāṇa Pāla,\textsuperscript{24} son of the fortunate Viśvarūpa, grandson of the fortunate Ma-hira\textsuperscript{25} Swāmi, a venerable Brāhmaṇa of Carṇāṭa in the south, who studies two vēdas\textsuperscript{26} and appertains to the Āśvalāyana\textsuperscript{27} sāc'hā, sprung from the race of Bhāradwaja, Ángi-rasa, and Vārhaspatya,\textsuperscript{29} settled at Adreśavādāvāvair-śāhāna,\textsuperscript{30} the aforesaid Badavida grāma and Ut'havaṇaca-grāma, with their trees, fields and habitations,\textsuperscript{31} together

\textsuperscript{24} Erroneously written Āvasat'hica in the text. Its derivation is from āvasat'hā, a house: and it bears reference to the householder's consecrated fire (gṛhāpatya). Helāyudha, author of the Brāhmaṇa sarvasva, has, in the epigraph of his work, the title of Āvasat'hica mahā dharmaśyaśa.

\textsuperscript{25} On a reperusal of the grant No. 1, it appears probable that the grantee's name was Dhanapāla instead of Vanapāla. Throughout the inscription, the letter ९ has for the most part the appearance of ७ the detached stroke ५ being defaced: and Dhanapāla is doubtless the more ordinary name.

\textsuperscript{26} This probably should be Miśra, which is a name of the sun.

\textsuperscript{28} Dwivid is one who studies two vēdas: as Trivid, one who studies three.

\textsuperscript{27} The text exhibits Āśvalāyana; doubtless for Āśvalāyana, by which name one of the śastra of the vēda is distinguished. Āśvalāyana is author of a collection of aphorisms on religious rites (Calpa śutra).

\textsuperscript{29} Gōtra, descent from an ancient sage (Rishi), whence the family name is derived. There are four such great families of Brāhmaṇas; comprehending numerous divisions.

\textsuperscript{29} Pravara, lineage traced to more of the ancient sages. The distinction between gōtra and pravara is not very clear. Mādhava on the Mimāṃsā, 2, 1, 9, names these very three families as constituting a gōtra: and gives it as an example of pravara.

\textsuperscript{30} This, which seems to be the name of a country, is differently written in the next inscription. Perhaps it may be a branch of the gōtra, or family, from which the donatory derived his descent.

\textsuperscript{31} Māla, signifies field; and culā, abode. The passage may admit a different interpretation.

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with hidden treasure, and deposits, and adorned with ponds, wells and lakes.

"On the 15th of Śrāvaṇa sudī in the year 1200, at the time of an eclipse of the moon, for our father's welfare, we have again granted those two villages by patent with the previous gift of water; therefore all inhabitants of both villages, as well the Pattacila and other people, as husbandmen, being strictly observant of his commands, must pay unto him all dues as they arise, tax, money-rent share of produce, and the rest.

"Considering the fruit of this meritorious act as common, future princes, sprung of our race, and others, should respect and maintain this virtuous donation accordingly.

"By many kings, Sāgara as well as others, the earth has been possessed. Whose-soever has been the land, his has then been the fruit."

"He, who resumes land, whether given by himself, or granted by others, is regenerated a worm in ordure, for 60,000 years."

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Mālā implies, (as I learn from Major Tod), according to the acceptance of the country, land not artificially irrigated, but watered only by rain and dew.

32 An eclipse of the moon appears, from calculation, to have taken place at the time here assigned to it: viz. 16th July 1144; as in the preceding year, 28th July 1143.—Art de vérifier les Dates, vol. i. p. 73.

33 Hirānyā, gold : rent in money.

Bhāgā bhāga; in another place, bhāgābhāga; share of produce, rent in kind.

34 This stanza, a little varied, recurs in the third grant (No. 3).

35 This also recurs in the same (No. 3); and is likewise found in a grant translated by Sir William Jones.—As. Res., vol. i. p. 365 st. 1.

"Rāmabhadra again and again exhorts all these future rulers of the earth: this universal bridge of virtue.......") (The remainder, upon another plate, is wanting.)

No. 2.

* A Grant of Land, inscribed on Copper, found at Ujjayani.*

अं सती श्री जयो त्र्युद्यम् ॥ जयति योम-केशोऽस्रो यः। यर्मास्य खं बिर्मति तं। एद्विं शिरसा लेखां जगद्दीकांकुराक्षितम् ॥ तवं वः स्मराराते: कः ऐतिहासिनिः जटा: । कल्याणसमये दाममतविद्विविस्ययिं - गदा: ॥ श्री विनाभापुर वर्णावासात् परम भद्राक महाराजाधिराज परमेश्वर श्री उदयादिक्षादेवादा-नुशात परम भद्राक महाराजाधिराज परमेश्वर श्री

37 The remainder of the stanza (which may be easily supplied from the other inscriptions: see the next grant; and As. Res., vol. i. p. 365 st. 3, and vol. iii. p. 53 and vol. viii. p. 419) was probably followed in the second plate, by further quotations, deprecating the resumption of the gift by future sovereigns: and to which was subjoined the sign manual, with the names of attesting officers; as in the accompanying grant by Yaśō varma (No. 3).

The bridge of virtue, which signifies "the maxim of duty," bears an allusion to Rāma's bridge, to cross the sea to Lankā.

* See Plate v.
“Om! Well be it! Auspicious victory and elevation!
Virtuous is he, whose hair is the ethereal expanse; who, for creation, supports with his head that lunar line
which is a type of the germ contained in the seed of the universe.

"May the matted locks of love's foe, reddened by the lightning's ring, that flashes at the period of the worlds' end, spread for you nightless prosperity."

"From his abode at the auspicious Bardhamánapura, his Majesty, the great king, sovereign, and supreme lord, the fortunate Jaya Varma Déva, whom victory attends, son of Yaśó Varma Déva, son of Nara Varma Déva, son of Udayaditya Déva, acquaints all king's officers, Bráhmañás and others, and the Pattacíla and people, &c. inhabiting the village of Mâyamodaca which appertains to the thirty-six villages of Vata. Be it known unto you: Whereas we, sojourning at Chandrapúrá, having bathed, having worshipped the holy, beneficent and adorable Bhawánípati:—

Considering the world's vanity:

for

This sovereignty of the earth totters with the stormy blast; the enjoyment of a realm is sweet but for an instant; the breath of man is like a drop of water on the tip of a blade of grass: virtue is the greatest friend in the journey of the other world.—

"Having gained prosperity, which is the receptacle of the skips and bounds of a revolving world, whoever give not donations, repentance is their chief reward.—

"Reflecting on the perishable nature of the world, prefer-

1 These two stanzas occur also in the preceding inscription.

2 Vála-c'hédaca-sah-triṇiśi; thirty-six villages of Vála: for it should probably be read c'hédaca (which signifies a village) instead of c'hédaca.

3 Válgagra-dhárá-dhárá: an allusion is probably intended to Dhárá the seat of government of this dynasty. Válg signifies a leap; and dhára, a horse's pace.
ring unseen (spiritual) fruit, [do grant] to be fully possessed, so long as moon and sun, sea and earth, endure [unto.........sprung from the race] of BHARADWAJA 4
.............settled at Adriya lambi dàvari st'hana, situated within the southern region, at Râja brahma purî.........”
(The remainder, inscribed on a separate plate, is wanting.)

No. 3.

A grant of Land inscribed on Copper, found at Ujjayant.*

श्री सोमल देवी सांवत्कालिक कल्यानतावःज्ञमान
देवल पाटकाझदन हय परिवर्तन व्राह्मणामय कोष्ठक-
द्रकाब्रद्र सम्ब्रें वैकरिकायाम विभाग उभयजन दाश्यां
भूनिवर्तन चात्रशकपत्स्रहलैकाद्रुक सम्ब्रें समस्त
उपरि लिचित लघु बैजुण्ड्रायामस्त्या विकारीकायामा-
ईत्व अच्छीमा हणाचति गेचर पर्यन्त: सषोभमालाकुलः
षोभर्षष्ट्वभागबोध: सपरिकर: सर्वाताघसमेतश्च माता-
पिचोरात्मन्युक पुष्यशोभिलबुघे शासनेनादकपूर्वकत्या
प्रद्रस्तक्रवत्ता यथा दीयमान भागभोग कर हिर्षाखा-
दिकामाधुर्यवृंविधेचिमूलत्वा सर्वमेताभ्यां समुपनेत्तवं ॥

4 The grantee was either the same person, or one of the same family, as in the preceding grant; for the designations are identical, so far as this reaches.
* See plate vi.
ANCIENT HINDI SANSKRIT SCRIPT ON COPPER, FOUND IN VADODARA.
यामान्ये वे तत्पुष्पफलं बुद्धाश्मदं जैसे न्यायसिद्ध भाविः-भातीतुर्भास्मदं धर्मान्यायाथै यथमनमनवः पालनीयसि।
उज्जङ्च || बजमिर्भर्मुधा मुखा राजभिः सगरादिभिः।
यह यह यह यह भविस्तुक्त तक्त तदा फलस् || यानीन्द्र
दत्तानि पुरा नरेन्द्रेन्द्रानानि धर्मायार्ययास्सकरार्षि निष्कर्षा-
ञ्ज्ञनि प्रतिमानि तानि को नाम साधुः पुनरादश्रीत।
ज्ञातकुलकमुद्तारमुद्तारहर्षर्विन्यैः द्रान्मिदमध्यनु-रोदनीयं।
लक्ष्यास्तिबिद्धवय बुद्धदुस्लिलाय दानमहानः परं परं परमः परिपालनं च।
साहीनितान्विनः पार्थिः-वेदवान्नृयो भूरी याचि राषभद्र।
यामान्योऽयं धर्मं-वेदवृत्ताणं काले काले पालनीयो भविः।
रति कमलदारीकछुनि कृत्यमनुचितं चनुमुक्त्वेति च
सकलमिदमुद्दारं बश्च नहि पुष्कैः परकृतिं चौ विषयो दृति।

यवमत् १९६२ माघविष्ठू रोमहित ठकुर श्री
वामन खामि ठकुर श्री पुष्कोट्तममहाप्रधान राजपुत्र
श्री देवधर प्रस्थतः।

मंगलं महा श्रीः।
The beginning, inscribed upon another plate, is wanting).

"In respect of two portions\(^1\) of Brāhmaṇa's allowance, by exchange for two portions allotted to the attendant of the temple and the reader, to be held as assigned for the anniversary of the auspicious Mōmaḷa Dēvī;\(^2\) and in respect of seventeen nivartanas\(^3\) of land, with eleven, ploughs of land, assigned to both persons in a partition of Vicaricā grāma;\(^4\) the whole of the aforesaid little Vain-gaṇapadra grāma, also a moiety of Vicaricā grāma within the proper bounds, extending to the grass and pasture, with trees, fields and habitations, with money-rent, and share of produce, with superior taxes, and including all dues; for increase of merit and fame of my mother, of my father, and of myself, are granted by patent, with the

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\(^1\) For want of the first plate of this patent, the beginning of the second is very obscure; and, perhaps, not rightly intelligible, without divining what has gone before. I have endeavoured to make sense of it, but am far from confident of having succeeded.

\(^2\) Mōmaḷa Dēvī was not improbably the name of Yaśō Varma's mother; and the anniversary is that of her obsequies: as in the preceding patent for a grant on the anniversary of the obsequies of Yaśō Varma's father. Else it may be the annual festival of an idol of that name.

\(^3\) Nivartana is a land-measure containing 400 square poles of ten cubits each, according to the Līlāvati. See Algebra of the Hindus.

\(^4\) The name is written Vicaricā grāma in one place; and Vicaricādz grāma in another.

Major Tod observes that the ancient name of Burhānpura is Carigrāma.
previous gift of water. Aware of this, and obedient to his commands, they must pay all due share of produce, taxes, money-rent, &c. to them both.

"Considering the fruit of this meritorious act as common, future princes, sprung of our race, and others, should respect and maintain this virtuous donation, as by us given.

"And it is said,—By many Kings, Sagara as well as others, the earth has been possessed. Whose-soever has been the land, his has then been the fruit.

"The gifts, which have been here granted by former princes, producing virtue, wealth, and fame, are unsullied reflections. What honest man would resume them?

"This donation ought to be approved by those who exemplify the hereditary liberality of our race, and by others. The flash of lightning from LacsHmi swoln with the rain-drop, is gift; and the fruit is preservation of another's fame.

"Rambhadra again and again exhorts all those future rulers of the earth: this universal bridge of virtue for princes is to be preserved by you from time to time.

"Considering therefore prosperity to be a quivering drop of water on the leaf of a lotus; and the life of man is such; and all this is many ways exemplified; men therefore should not abridge the fame of others.

"Samvat 1192, 3d of Magha badd (dark half); witness

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5 I have here hazarded a conjectural emendation; being unable to make sense of the text, as it stands. Perhaps the transcriber had erroneously written Tundal for tundil; and the engraver, by mistake, transformed it into the unmeaning vandal, which the text exhibits. LacsHmi is here characterized as a thunder-cloud pregnant with fertilizing rain.

6 Chand, in the text, is an evident mistake; it should undoubtedly be bahudha. Several other gross errors in this inscription have been corrected; too obviously necessary to require special notice: as a short vowel for a long one, and vice versa.
the venerable puróhita VAMANA; the venerable swámi, Purushottama; the prime minister and king’s son, Dāvadhara; and others.

"Auspiciousness and great prosperity.

R.

"This is the sign manual of the fortunate Yāsóvarma Déva."

Adhi.          Šrī.
XIII.

On Inscriptions at Temples of the Jaina Sect in South Bihár.*

[From the Transactions of the Royal Asiatic Society, vol. i. p. 520—523.]

As connected with the subject of an essay on the Śrāvaca or Jaina,† read at a former meeting, I lay before the Society copies of inscriptions found by Dr. Buchanan Hamilton in South Bihár. Though not ancient, they may be considered to be of some importance, as confirming the prevalence of a Jaina tradition relative to the site of the spot where the last of the Jīnas terminated his earthly existence, and as identifying the first of his disciples with Gautama whose death and apotheosis took place, according to current belief, in the same neighbourhood.

In the Āḷpasaṭra and in other books of the Jainas, the first of Mahāvira’s disciples is mentioned under the name of Indra Bhūti: but, in the inscription, under that of Gautama swāmi. The names of the other ten precisely agree: whence it is to be concluded, the Gautama, first of one list, is the same with Indra Bhūti, first of the other.

It is certainly probable, as remarked by Dr. Hamilton and Major Delamaine, that the Gautama of the Jainas and of the Baudhās is the same personage: and this

* Read at a Public Meeting of the Royal Asiatic Society, November 18th, 1826.
leads to the further surmise, that both these sects are branches of one stock. According to the Jainas, only one of Mahávíra's eleven disciples left spiritual successors: that is, the entire succession of Jaina priests is derived from one individual, Súdhármá Swá mí. Two only out of eleven survived Mahávíra, viz. Índrabhúti and Súdhármá:* the first, identified with Gautama Swá mí, has no spiritual successors in the Jaina sect. The proper inference seems to be, that the followers of this surviving disciple are not of the sect of Jína, rather than that there have been none. Gautama's followers constitute the sect of Baudhá, with tenets in many respects analogous to those of the Jainas, or followers of Súdhármá, but with a mythology or fabulous history of deified saints quite different. Both have adopted the Hindu Pantheon, or assemblage of subordinate deities; both disclaim the authority of the védás; and both elevate their pre-eminent saints to divine supremacy.

In a short essay on their philosophical opinions, which will be likewise submitted to the Society, it will be shown that a considerable difference of doctrine subsists on various points; but hardly more between the two sects, than between the divers branches of the single sect of Baudhá.

It deserves remark, that the Buddhas and the Jainas agree in placing within the limits of the same province, South Bihár, and its immediate vicinity, the locality of the death and apotheosis of the last Buddha, as of the last Jaina, and of his predecessor and his eldest and favourite disciple. Both religions have preserved for their sacred language the same dialect, the Páli or Prácrit, closely resembling the Mágadhi or vernacular tongue of Magadha (South Bihár). Between those dialects (Páli

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* Page 216 of the present volume.
and Prácrīti) there is but a shade of difference,* and they are often confounded under a single name.

The traditional chronology of the two sects assigns nearly the same period to their Gautama respectively: for, according to the Baudhas, the apotheosis of Gautama Buddha took place 543 years before the beginning of the Christian era; and according to the Jainas, the apotheosis of Mahávíra, Gautama Swámi's teacher, was somewhat earlier, viz. about 600 years before the Christian era. The lapse of little more than half a century is scarcely too great for the interval between the death of a preceptor and of his pupil; or not so much too great as to amount to anachronism.

Without relying much upon a similarity of name, it may yet not be foreign to remark, that the Buddha, who preceded Gautama Buddha, was Cáṣyapa: and that Mahávíra, the preceptor of Gautama Swámi, was of the race of Cáṣyapa.

I take Párśwanāthha to have been the founder of the sect of Jaina, which was confirmed and thoroughly established by Mahávíra and his disciple Sūdharma; by whom, and by his followers, both Mahávíra and his predecessor Párśwanathha have been venerated as deified saints (Jīnas), and are so worshipped by the sect to this day.

A schism, however, seems to have taken place, after Mahávíra, whose elder disciple, Indra Bhútí, also named Gautama Swámi, was by some of his followers raised to the rank of a deified saint, under the synonymous designation of Buddha; (for Jīna and Buddha bear the same meaning, according to both Buddhists and Jainas). The preceding Buddha, according to this branch of the sect, was Cáṣyapa, who is not improbably the same with

* Burnouf et Lassen, Essai sur le Pálī, p. 154.
Śramaṇa Vardhamāna Mahāvīra, son (born of the wife) of Siddhārtha, a Sūryavansī prince of the Cāsyapa race.

It is to be observed, without, however, attaching much weight to this coincidence, that the name of Siddhārtha is common to Mahāvīra's father and to Gautama Buddha, whom I suppose to be the same with the Jina's disciple, Gautama Swāmī.

The appellative Gautama is unquestionably a patronymic (derived from Gótama), however Śācyasinhā may have come by it, whether as descendant of that lineage, nearer or remoter, or for whatever other cause. His predecessor among Buddhas is, in like manner, designated by a patronymic as above noticed, viz. Cāsyapa.

The name of Gautama occurs also as an appellative in other instances besides that of the sixth Buddha, or of the twenty-fourth Jina's eldest disciple. One of the legislators of the Hindus is Gautama, whose aphorisms of law are extant.*

The gentile name of the last Buddha has prevailed in China and Japan, where he is best known under the designation of Śācyas. His appellation of Gautama remains current in countries bordering upon India.

Inscription at Nakhaur.†

संवत् १९५५ वर्ष वैशाखे मुदिर कितु मंची
दस वंश चोपरा गोचे ठौ विमल द्रास तत्पुच्छ ठौ
तुलसी द्रास तत्पुच्छ ठौ संग्राम गोकुलेन द्रास तवाता
ठौ नीहलाई तक्ष भाषाई ठौ - - देखि गो.

* Preface to two treatises on the Hindu Law of Inheritance, p. x.
† See Plate vii.
Inscription at Nakhlur.

"In the year 1686 Samvat, on the 15th day of Vaisáčcha sudí, the lotus of Gautama Swámi's feet was here placed by Niháló mother of Thá. (Thaccur), Sangráma Góvardhana Dása, son of Thá. Tulasí Dása, son of Thá. Vimala Dása, of the race of Chópará and lineage of [Bharata Chacravarti's] prime councillor; the fortunate Jína-Rája Súri, the venerable guide of the great Cháratára tribe, being present."

The same pious family, which is here recorded for erecting, or more probably restoring, the representation of Gautama Swámi's feet at Nakhaur, is in like manner commemorated by three inscriptions, bearing date six years later (viz. 1692 Samvat,* for the like pious office of erecting images of the feet of Mahávíra and of his eleven disciples, at Pawápurí, which, or its vicinity, is in those inscriptions stated to be the site of that saint's extinction (nirváña) or translation to bliss.

The same names recur, with those of many other persons, inhabitants (as this family was) of the town of Bihár, where a numerous congregation of Jainás seems to have then dwelt; and with the same additions and designations more fully set forth: whence it appears, that the designation of "descendant of a prime councillor" bears reference to a supposed descent from the prime minister of the universal or paramount sovereign, Bharata, son of the first Jína Ráshábhá.

* The largest of those inscriptions names likewise the reigning Emperor, Sháh Jehán.
Sāngrāma and Góvardhana, here joined as an appellation of one person, are in those inscriptions separated as names of two brothers, sons of Tulasī Dāsa and his wife Nīhālō. In other respects, the inscriptions confirm and explain each other.*

* Copies of those at Pāwāpurī were not taken in fac-simile, but are merely transcripts.
The researches, of which the result is here laid before the Asiatic Society, were undertaken for the purpose of ascertaining correctly the particular stars, which give names to the Indian divisions of the zodiac. The inquiry has, at intervals, been relinquished and resumed: it was indeed attended with considerable difficulties. None of the native astronomers, whom I consulted, were able to point out, in the heavens, all the asterisms for which they had names: it became, therefore, necessary to recur to their books, in which the positions of the principal stars are given. Here a fresh difficulty arose from the real or the seeming disagreement of the place of a star, with the division of the zodiac, to which it was referred; and I was led from the consideration of this and of other apparent contradictions, to compare carefully the places assigned by the Hindus to their nacshatras, with the positions of the lunar mansions, as determined by the Arabian astronomers. After repeated examination of this subject, with the aid afforded by the labours of those who have preceded me in the same inquiry, I now venture to offer to the perusal of the Asiatic Society the following remarks, with the hope that they will be found to contain a correct ascertainment of the stars.
by which the Hindus have been long accustomed to trace the moon's path.

The question, which I proposed to myself for investigation, appeared to me important, and deserving of the labour bestowed upon it, as obviously essential towards a knowledge of Indian astronomy, and as tending to determine another question; namely, whether the Indian and Arabian divisions of the zodiac had a common origin. Sir William Jones thought that they had not; I incline to the contrary opinion. The coincidence appears to me too exact, in most instances, to be the effect of chance: in others, the differences are only such as to authorize the remark, that the nation, which borrowed from the other, has not copied with servility. I apprehend that it must have been the Arabs who adopted (with slight variations) a division of the zodiac familiar to the Hindus. This, at least, seems to be more probable than the supposition, that the Indians received their systems from the Arabians: we know, that the Hindus have preserved the memory of a former situation of the Colures, compared to constellations, which mark divisions of the zodiac in their astronomy; but no similar trace remains of the use of the lunar mansions, as divisions of the zodiac, among the Arabs, in so very remote times.

It will be found, that I differ much from Sir William Jones in regard to the stars constituting the asterisms of Indian astronomy. On this, it may be sufficient to remind the reader, that Sir William Jones stated only a conjecture founded on a consideration of the figure of the nacshatra and the number of its stars, compared with those actually situated near the division of the ecliptic, to which the nacshatra gives name. He was not apprized that the Hindus themselves place some of these constellations far out of the limits of the zodiac.
I shall examine the several *nacṣhatras* and lunar mansions in their order; previously quoting from the Hindu astronomers, the positions assigned to the principal star, termed the *yogaṭārā*. This, according to Brahma Gupta, (as cited by Lacshmidasa in his commentary on the Śirōmani,) or according to the Brahme *siddhānta* (cited by Bhūdhara, is the brightest star of each cluster. But the *Sūrya siddhānta* specifies the relative situation of the *Yogaṭārā* in respect of the other stars; and that does not always agree with the position of the most conspicuous star.

The number of stars in each asterism, and the figure under which the asterism is represented, are specified by Hindu astronomers: particularly by Śripati in the *Ratnamālā*. These, with the positions of the stars relatively to the ecliptic, are exhibited in the annexed table. It contains the whole purport of many obscure and almost enigmatical verses, of which a verbal translation would be nearly as unintelligible to the English reader as the original text.

The authorities, on which I have chiefly relied, because they are universally received by Indian astronomers, are the *Sūrya siddhānta*, Śirōmani, and Graha *lāghava*. They have been carefully examined, comparing at the same time several commentaries. The *Ratnamālā* of Śripati is cited for the figures of the asterisms; and the same passage had been noticed by Sir William Jones.* It agrees nearly with the text of Vasisṭha cited by Munīswara, and is confirmed in most instances by the *Muhūrta chintāmani*. The same authority, confirmed with rare exceptions by Vasisṭha Sācalya, and the Abharaṇa, is quoted for the number of stars in each asterism. The works of

Brahmegupta have not been accessible to me: but the Marichi, an excellent commentary on the Siddhanta siramani, by Muniswara, adduces from that author a statement of the positions of the stars; and remarks, that it is founded on the Brahme siddhanta, contained in the Vishnuudhermottara.* Accordingly, I have found the same passage in the Brahme siddhanta, and verified it by the gloss entitled Vasanâ; and I, therefore, use the quotation without distrust. Later authorities, whose statements coincide exactly with some of the preceding (as Camalacara in the Tatwawivéca) would be needlessly inserted: but one (Muniswara in the Siddhanta sarvabhauma), exhibiting the position of the stars differently, is quoted in the annexed table.

The manner of observing the places of the stars is not explained in the original works first cited. The Surya siddhanta only hints briefly, 'that the astronomer should frame a sphere, and examine the apparent longitude and latitude.' Commentators,† remarking on this passage, describe the manner of making the observation: and the same description occurs, with little variation, in commentaries on the Sirômañi.‡ They direct a spherical instrument (Gólayantra) to be constructed, according to instructions contained in a subsequent part of the text. This, as will be hereafter shewn, is precisely an armillary sphere. An additional circle graduated for degrees and minutes, is directed to be suspended on the pins of the axis as pivots.

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* Another Brahme siddhanta is entitled the Sicalya sanhitâ. The author of the Marichi, therefore, distinguishes the one to which he refers.

† Sp'hitavichépa and Sp'hitadhruvacâ; which will be explained further on.

‡ Ranganâtha and Bhûdhara.

§ In the Vasanâ bhashya and in the Marichi.
It is named *Védhavalaya* or intersecting circle, and appears to be a circle of declination. After noticing this addition to the instrument, the instructions proceed to the rectifying of the *Gólayantra*, or armillary sphere, which is to be placed, so that the axis shall point to the pole, and the horizon be true by a water-level.

The instrument being thus placed, the observer is instructed to look at the star *Révati* through a sight fitted to an orifice at the centre of the sphere; and having found the star, to adjust by it the end of the sign Pisces on the ecliptic. The observer is then to look, through the sight, at the *yóga* star of *Aświnit*, or at some other proposed object; and to bring the moveable circle of declination over it. The distance in degrees, from the intersection of this circle and ecliptic, to the end of *Mīna* or Pisces, is its longitude (*āhuvaca*) in degrees; and the number of degrees on the moveable circle of declination, from the same intersection to the place of the star, is its latitude (*vishepa*) north or south.\(^*\)

The commentators† further remark, that ‘the latitude, so found, is (*sp’huta*) apparent, being the place intercepted between the star and the ecliptic, on a circle passing through the poles; but the true latitude (*asp’huta*) is found on a circle hung upon the poles of the celestial sphere, as directed in another place.’ The longitude, found as above directed, is, in like manner, the space intercepted between the origin of the ecliptic and a circle of declination passing

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\(^*\) Father Pétau, and, after him, Bailly, for reasons stated by them (Uranol. Dissert. 2. 2. Ast. Anc. p. 428.), are of opinion, that the ancient astronomers referred stars to the equator; and that Euphrosus and Hipparchus must be so understood, when speaking of the longitudes of stars. Perhaps the Greek astronomers, like the Hindus, reckoned longitudes upon the ecliptic intersected by circles of declination, in the manner which has been here explained.

† Bhūdhara is the most explicit on this point.
through the star: differing, consequently, from the true longitude. The same commentators add, that the longitudes and latitudes, exhibited in the text, are of the description thus explained: and those, which are stated in the Sūrya siddhānta, are expressly affirmed to be adapted to the time when the equinox did not differ from the origin of the ecliptic in the beginning of Mēṣha.

It is obvious, that, if the commentators have rightly understood the text of their authors, the latitudes and longitudes there given, require correction. It will indeed appear, in the progress of this inquiry, that the positions of stars distant from the ecliptic, as there given, do not exactly correspond with the true latitudes and longitudes of the stars supposed to be intended: and the disagreement may be accounted for, by the circumstance of the observations having been made in the manner above described.

Another mode of observation is taught in the Siddhānta sundara, cited and expounded by the author of the Siddhānta śrīvabhāuma. 'A tube, adapted to the summit of a gnomon, is directed towards the star on the meridian: and the line of the tube, pointed to the star, is prolonged by a thread to the ground. The line from the summit of the gnomon to the base is the hypotenuse; the height of the gnomon is the perpendicular; and its distance from the extremity of the thread is the base of the triangle. Therefore, as the hypotenuse is to its base, so is the radius to a base, from which the sine of the angle, and consequently the angle itself, are known. If it exceed the latitude, the declination is south; or, if the contrary, it is north. The right ascension of the star is ascertained by calculation from the hour of the night, and from the right ascension of the sun for that time. The declination of the corresponding point of the ecliptic being found, the sum or difference
of the declinations, according as they are of the same or of different denominations, is the distance of the star from the ecliptic. The longitude of the same point is computed; and from these elements, with the actual precession of the equinox, may be calculated the true longitude of the star; as also its latitude on a circle passing through the poles of the ecliptic.'

Such, if I have rightly comprehended the meaning in a single and not very accurate copy of the text, is the purport of the directions given in the *Siddhánta sundara* and *sárava-bhauma*: the only works in which the true latitudes and longitudes of the stars are attempted to be given. All the rest exhibit the longitude of the star's circle of declination, and its distance from the ecliptic measured on that circle.

I suppose the original observations, of which the result is copied from *Brahmegupta* and the *Súrya siddhánta*, with little variation, by successive authors, to have been made about the time, when the vernal equinox was near the first degree of *Mésha.* The pole then was nearly seventeen degrees and a quarter from its present position and stood a little beyond the star near the ear of the Cameleopard. On this supposition it will be accordingly found, that the assigned places of the *nacshatras* are easily reconcilable to the positions of stars likely to be meant.

I shall here remark, that the notion of a polar star, common to the Indian and Grecian celestial spheres, implies considerable antiquity. It cannot have been taken from our present pole-star (α Ursæ minoris), which, as Mons. Bailly has observed,† was remote from the pole, when

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* Brahmegupta wrote soon after that period; and the *Súrya siddhánta* is probably a work of nearly the same age. Mr. Bentley considers it as more modern (As. Res., vol. vi.): it certainly cannot be more ancient; for the equinox must have past the beginning of *Mésha*, or have been near it, when that work was composed.

† Astronomie Ancienne, p. 511.
Eudoxus described the sphere; at which time, according to the quotation of Hipparchus, there was a star situated at the pole of the world.* Bailly conjectures, as the intermediate stars of the sixth magnitude are too small to have designated the pole, that α Draconis was the star meant by Eudoxus, which had been at its greatest approximation to the pole, little more than four degrees from it, about 1326 years before Christ. It must have been distant, between seven and eight degrees of a great circle, when Eudoxus wrote. Possibly the great star in the Dragon (α Draconis), which is situated very near to the circle described by the north pole round the pole of the ecliptic, had been previously designated as the polar star. It was within one degree of the north pole about 2336 years before Christ. As we know, that the idea could not be taken from the star in the tail of Ursa minor, we are forced to choose between Bailly's conjecture or the supposition of a still greater antiquity. I should, therefore, be inclined to extend to the Indian sphere, his conjecture respecting that of Eudoxus.

I shall now proceed to compare the nacshatras, with the manzils of the moon, or lunar mansions.

I. Aswint, now the first nacshatra, but anciently the last but one, probably obtained its present situation at the head of the Indian asterisms, when the beginning of the zodiac, was referred to the first degree of Mesha, or the Ram, on the Hindu sphere. As measuring a portion of the zodiac it occupies the first 12° 20' of Mesha: and its beginning follows immediately after the principal star in the last nacshatra (Révati), reckoned, by some exactly, by others nearly, opposite to the very conspicuous one, which forms the fourteenth asterism. Considered as a constellation

* Hipparchus, Comment, on Aratus, lib. i. p. 179.
Aświni comprises three stars figured as a horse’s head; and the principal, which is also the northern one, is stated by all ancient authorities, in 10° N. and 8° E. from the beginning of Mēsha.

The first manzil, or lunar mansion, according to the Arabs, is entitled Sheratān, (by the Persians corruptly called, as in the oblique case, Sheratān), and comprises two stars of the third magnitude on the head of Aries, in lat. 6° 36’ and 7° 51’ N., and long. 26° 13’ and 27° 7’.* With the addition of a third, also in the head of the Ram, the asterism is denominated Ašhrāt. The bright star of the second or third magnitude which is out of the figure of the Ram, according to Ulugh Beg, but on the nose according to Hipparchus cited by this author from Ptolemy, is determined Nāṭih: it is placed in lat. 9° 30’ N. and long. 1° 0° 43’, and is apparently the same with the principal star in the Indian asterism; for Muhammad of Tizīn, in his table of declination and right ascension, expressly terms it the first star of the Sheratān.†

Many paṇḍits, consulted by me, have concurred in pointing to the three bright stars in the head of Aries (α β and γ) for the Indian constellation Aświni. The first star of Aries (α) was also shown to Dr. Hunter, at Ujjayinī, for the principal one in this asterism; and Mr. Davis‡ states the other two, as those which were pointed out to him by a skilful native astronomer, for the stars that distinguish Aświni. The same three stars, but with the addition of three others, were indicated to Le Gentil, for this constellation.§ I entertain, therefore, no doubt, that Sir

* Hyde’s Ulugh Beg, p. 58.
† Hyde’s Com. on Ulugh Beg’s tables, p. 97.
William Jones* was right in placing the three stars of, Aswini in, and near, the head of the Ram; and it is evident that the first nacshatra of the Hindus is here rightly determined, in exact conformity with the first lunar mansion of the Arabs; although the longitude of α Arietis exceed, by half a degree, that which is deduced, for the end of Aswini, from the supposed situation of the Virgin’s spike opposite to the beginning of this nacshatra; and although its circle of declination be 13° instead of 8° from the principal star in Revati.

II. Bharani, the second Indian asterism, comprises three stars figured by the Yoni or pudendum muliebre: and all ancient authorities concur in placing the principal and southern star of this nacshatra in 12° N. The second manzil, entitled Butain, is placed by Ulugh Beg† in lat. 1° 12′ and 3° 12′; and this cannot possibly be reconciled with the Hindu constellation. But Muhammed of Tizin‡ assigns to the bright star of Butain a declination of 23° N. exceeding by nearly 2° the declination allotted by him to Nātih, or his first star in Sherātāin. This agrees with the difference between the principal stars of Aswini and Bharani; and it may be inferred, that some among the Muhammedan astronomers have concurred with the Hindus, in referring the second constellation to stars that form Musca. There were no good grounds for supposing Bharani to correspond with three stars on the tail of the Ram;§ and I have no doubt, that the stars, which compose this nacshatra, have been rightly indicated to me, as three in Musca, forming a triangle almost equilateral: their brightness, and their equal distance from the first and third asterisms, corroborate this opinion, which will be confirmed by showing, as will be done in the progress of

† Hyde, p. 61.
‡ See Hyde’s Commentary, p. 97.
this comparison, that the *nacshatras* are not restricted to the limits of the zodiac.

III. *Crītticā* now the third, but formerly the first, *nacshatra*, consists of six stars figured as a knife or razor, and the principal and southern star is placed in 4½° or 5° N. and in 65 sixths of degrees (or 10° 50') from its own commencement, according to the *Sūrya siddhānta*, or 37° 28' to 38° from the beginning of *Mēsha*, according to the *Sid-dhānta sīrōmaṇī*, and *Graha lāghava* respectively. This longitude of the circle of declination corresponds nearly with that of the bright star in the Pleiades, which is 40° of longitude distant from the principal star of *Rēvatī*.

The stars indicated by *Ulugh Beg* for *Thurayya*, also correspond exactly with the Pleiades; and these were pointed out to the Jesuit missionaries,* as they have since been to every other inquirer, for the third *nacshatra*. If any doubt existed, Mythology might assist in determining the question; for the *Crītticas* are six nymphs, who nursed *Scanda*, the god of war, named from these, his foster mothers, *Cārticēya* or *Shaṅmātura*.

IV. We retain on our celestial globes the Arabic name of the fourth lunar mansion *Debārdn* (or with the article, *Aldebarān*): applied by us, however, exclusively to the bright star called the Bull's eye; and which is unquestionably the same with the principal and eastern star of *Rōhiṇḍ* placed in 4½° or 5° S. and 49½° E. by the Hindu writers on Astronomy. This *nacshatra*, figured as a wheeled carriage, comprises five stars, out of the seven which the Greeks named the Hyades. The Arabs, however, like the Hindus, reckon five stars only in the asterism; and Sir *William Jones* rightly supposed them to be in the head and neck of the Bull; they probably are α ρ γ δ ε Tauri, agreeably to Mons. *Bailly's* conjecture.†

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† Astr. Ind., p. 129.
Hindu astronomers define a point in this constellation, of some importance in their fanciful astrology. According to the Sûrya sidhânta, when a planet is in the 7th degree of Vrîsha (Taurus) and has more than two degrees of south latitude, or, as commentators expound the passage, 2° 40'; the planet is said to cut the cart of Rôhini. This is denominated sacatabhêda, or the section of the wain. Lalla and the Graha lâghava give nearly the same definition; and it is added in the work last mentioned, that, when Mars, Saturn, and the Moon, are in that position (which occurs, in regard to the moon, when the node is eight nacshatras distant from Punarvasu, and might happen in regard to the rest during another yuga), the world is involved in great calamity. Accordingly, the purânas contain a legendary story of Daśaratha's dissuading Saturn from so traversing the constellation Rôhini.

V. Mîgasstra, the fifth nacshatra, represented by an antelope's head, contains three stars; the same which constitute the fifth lunar mansion Hakâh; for the distance of 10° S. assigned to the northern star of this nacshatra, will agree with no other but one of the three in the head of Orion. The difference of longitude (24° to 25½°) from Crëticâ corresponds with sufficient exactness; and so does the longitude of its circle of declination (62° to 63°) from the end of Révatî; since the true longitude of λ Orionis, from the principal star in Révatî (ζ Piscium) is 63½°. It was a mistake to suppose this asterism to comprise stars in the feet of Gemini, or in the Galaxy.*

VI. Árdra, the sixth nacshatra, consists of a single bright star, described as a gem, and placed in 9° S. by one authority, but in 11° by others, and at the distance of 4½° to 4° in longitude from the last asterism. This indicates the star in the shoulder of Orion (α Orionis); not, as

was conjectured by Sir William Jones, the star in the knee of Pollux.*

The sixth lunar mansion is named by the Arabs, Ḥāndāḥ; and comprises two stars in the feet of the second Twin, according to Ulugh Beg, though others make it to be his shoulder.† Muḥammed of Tūzīn allots five stars to this constellation; and the Kāmūs, among various meanings of Ḥāndāḥ, says, that it is a name for five stars in the left arm of Orion; remarking, also, that the lunar mansion is named Tahāyī, comprising three stars called Tahyāt. Either way, however, the Indian and Arabian asterisms appear in this instance irreconcilable.

VII. The seventh nacṣatra, entitled Punarvasu, and represented by a house, or, according to a Sanskrit work cited by Sir William Jones,‡ a bow, is stated by astronomers as including four stars, among which the principal and eastern one is 30° or 32° from the fifth asterism; but placed by all authorities in 6° N. This agrees with (β Geminorum) one of the two stars in the heads of the Twins, which together constitute the seventh lunar mansion Zīrād, according to Muḥammed of Tūs and Muḥammed of Tūzīn and other Arabian authorities.§

It appears from a rule of Sanskrit grammar,|| that Punarvasu, as a name for a constellation, is properly dual, implying, as it may be supposed, two stars. On this ground, a conjecture may be raised, that Punarvasu originally comprised two stars, though four are now assigned to it. Accordingly, that number is retained in the Sācalya sanhita.

It may be further observed, that the seventh lunar

mansion of the Arabs is named *Ziraţ ul aṣed* according to Ja'farī and others cited by Hyde,* and that the *Kâmûs* makes this term to be the name of eight stars in the form of a bow.

Upon the whole, the agreement of the Indian and Arabian constellations is here apparent, notwithstanding a variation in the number of the stars; and I conclude, that *Punarvasu* comprises, conformably with Sir William Jones's supposition,† stars in the heads of the twins; viz. α, β, Geminorum; and which were indicated to Dr. Hunter by a Hindu astronomer at *Ujjayini*; to which, perhaps, θ and τ may be added to complete the number of four.

VIII. *Pushya*, the eighth asterism, is described as an arrow; and consists of three stars, the chief of which, being also the middlemost, has no latitude, and is 12° or 13° distant from the seventh asterism, being placed by Hindu astronomers in 106° of longitude. This is evidently δ Cancri; and does not differ widely from the eighth lunar mansion *Nethrak*, which, according to Ulugh Beg and others,‡ consists of two stars, including the nebula of Cancer. The Indian constellation comprises two other stars, besides δ Cancri, which are perhaps γ and β of the same constellation; and Sir William Jones's conjecture, that it consists of stars in the body and claws of Cancer was not far from the truth.

IX. The ninth asterism, *Aslêshd*, contains five stars figured as a potter's wheel, and of which the principal or eastern one is placed in 7° S., and according to different tables, 107°, 108°, or 109°, E. This appears to be intended for the bright star in the southern claw of Cancer (α Cancri),

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* Com. on Ulugh Beg, p. 44.  
‡ Hyde's Com., p. 45.
and cannot be reconciled with the lunar mansion Tarf or Tarfah, which comprises two stars* near the lion's eye; the northernmost being placed by Muhammed of Tizin in $24^\circ$ of N. declination.† The Jesuit missionaries, if rightly quoted by Costard,‡ made Aslēshā correspond with the bright stars in the heads of Castor and Pollux, together with Procyon. This is evidently erroneous. Sir William Jones's supposition that Aslēshā might answer to the face and name of Leo, nearly concurs with the Arabian determination of this lunar mansion, but disagrees with the place assigned to the stars by Hindu astronomers. Bailly committed the same mistake, when he affirmed, that Aslēshā is the lion's head.§

X. The tenth asterism, Maghā, contains, like the last, five stars; but which are figured as a house. The principal or southern one has no latitude; and, according to all authorities, has $129^\circ$ longitude. This is evidently Regulus ($\alpha$ Leonis): which is exactly $129\frac{3}{2}^\circ$ distant from the last star in Révatī.

According to the Jesuits cited by Costard, Maghā answers to the Lion's mane and heart; and the tenth lunar mansion of the Arabians, Jebhah, comprises three (some say four) stars, nearly in the longitude of the lion's heart.|| In this instance, therefore, the Indian and Arabian divisions of the zodiac coincide: and it is owing to an oversight, that Sir William Jones states the nacshatra as composed of stars in the lion's leg and haunch. It appears to consist of $\alpha \gamma \zeta \eta$ and $\nu$ Leonis.

XI. Two stars, constituting the eleventh nacshatra, or preceding Phālguṇī which is represented by a couch or

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bedstead, are determined by the place of the chief star (the northernmost according to the Sūrya siddhánta) in 12° N. and 144° E. or, according to Brahmegupta, the Śīromāni and the Graha lāghava 147° or 148° E. They are probably 6 and θ Leonis: the same which form the lunar mansion Zubrah or Khertán.*

It may be conjectured, that Brahmegupta and Bhāscara selected the southern for the principal star: while the Sūrya siddhánta took the northern: hence the latitude, stated by those several Hindu authorities, is the mean between both stars; and the difference of longitude, compared to the preceding and subsequent asterisms, may be exactly reconciled upon this supposition.

XII. Two other stars, constituting the twelfth nacshatra, or following Phalguni which is likewise figured as a bed, are ascertained by the place of one of them (the northernmost) 13° N. and 155° E. This indicates β Leonis; the same which singly constitutes the Arabian lunar mansion Serfūh,† though Muhammad of Tizin seems to hint that it consists of more than one star.‡ By an error regarding the origin of the ecliptic on the Indian sphere, Sir William Jones refers to the preceding nacshatra, the principal star of this asterism.

XIII. Hasta, the thirteenth nacshatra, has the name and figure of a hand; and is suitably made to contain five stars. The principal one, towards the west, next to the north-western star, is placed according to all authorities in 11° and 170° E. This can only belong to the constellation Corvus: and accordingly five stars in that constellation (α β γ δ ε Corvi), have been pointed out to me by Hindu astronomers for this nacshatra.

* Hyde’s Ulugh Beg, p. 76, and Com., p. 47.
† Hyde’s Ulugh Beg, p. 78, and Com., p. 47.
‡ Hyde, p. 102.
Avvá, the thirteenth lunar mansion of the Arabs, is described as containing the same number of stars, situated under Virgo, and so disposed as to resemble the letter Alif. They are placed by Ulugh Beg in the wing.*

In this instance the Indian and Arabian divisions of the zodiac have nothing in common but the number of stars and their agreement of longitude. It appears, however, from a passage cited from Súfí by Hyde,† that the Arabs have also considered the constellation of Corvus as a mansion of the moon.

XIV. The fourteenth nacshatra, figured as a pearl, is a single star named Chitrá. It is placed by the Súrya siddhánta in 2° S. and 180° E., and by Brahmegupta, the Śirómañi and Graha lághava, in 1¾ or 2° S. and 183° E. This agrees with the Virgin’s spike (α Virginis;) and Hindu astronomers have always pointed out that star for Chitrá. The same star constitutes the fourteenth lunar mansion of the Arabs, named from it Simác ul adži. Le Gentil’s conjecture‡, that the fourteenth nacshatra comprises the two stars δ and ε Virginis, was entirely erroneous. And Mons. Bailly was equally incorrect in placing σ Virginis in the middle of this asterism.§

XV. Another single star constitutes the fifteenth nacshatra, Swáti, represented by a coral bead. The Súrya siddhánta, Brahmegupta, the Śirómañi and Graha lághava, concur in placing it in 37° N. They differ one degree in the longitude of its circle of declination; three of these authorities making it 199°, and the other 198°.

The only conspicuous star, nearly in the situation thus assigned to Swáti, (and the Indian astronomers would hardly travel so far from the zodiac to seek an obscure
star;) is Arcturus, 33° N. of the ecliptic in the circle of
declination, and 198° E. from the principal star of Révati.
I am therefore disposed to believe, that Swáti has been
rightly indicated to me by a native astronomer who pointed
out Arcturus for this nacshatra. The longitude, stated by
Muniśwara (viz. 1 ½° less than Chitra) indicates the same
star: but, if greater reliance be placed on his latitudes, the
star intended may be ε Bootis. At all events, Mons.
Bailly mistook, when he asserted, on the authority of Le
Gentil, that the fifteenth nacshatra is marked by α Vir-
ginis; and that this star is situated at the beginning of the
nacshatra.*

The Indian asterism totally disagrees with the lunar
mansion Ghafir, consisting of three stars in the Virgin’s
foot, according to Ulugh Beg,† but in, or near, the
balance, according to others.

XVI. Visāchā, the sixteenth nacshatra, consists of
four stars described as a festoon. Authorities differ little
as to the situation of the principal and northernmost star:
placing it in 1°, 1° 20’, or 1° 30’ S., and in 212°, 212° 5’ or
213° E. The latitude seems to indicate the bright star in
the southern Scale (α Libræ), though the longitude dis-
agree: for this suggests a remote star (possibly α Libræ). I
apprehend the first to be nearest the truth; and hence
conclude the four stars to be α ν Libræ and γ Scorpii.

The sixteenth lunar mansion, named Zubanah or Zubá-
niyah, is according to Muhammad of Tizin,‡ the bright
star in the northern Scale (β Libræ), which Sir William
Jones supposed to be the fifteenth nacshatra.

Father Souciët, by whom Corona Borealis is stated

* Astr. Ind., p. 139 and 227.
† Hyde, p. 82, and Com., p. 50.
‡ Hyde, Com., p. 104.
for the asterism Visāc'hā, is censured by Sir William Jones, under an impression, that all the nacshatras must be sought within the zodiac. The information, received by Father Soucié, does appear to have been erroneous; but the same mistake was committed by a native astronomer, who showed to me the same constellation for Visāc'hā; and the nacshatras are certainly not restricted to the neighbourhood of the ecliptic.

XVII. Four stars, (or, according to a different reading, three,) described as a row of oblations, that is, in a right line, constitute the seventeenth nacshatra named Anurādhā. Here also, authorities differ little as to the situation of the chief and middlemost star; which is placed in 3°, or 2°, or 1° 45′ S., and in 224° or 224° 5′ E. This must intend the star near the head of the Scorpion (δ Scorpionis); and the asterism probably comprises β δ ν and ρ Scorpionis.

The seventeenth lunar mansion of the Arabs called Iclil or Iclilul'jebbah, contains four (some say three, and others six,*) stars lying in a straight line. Those assigned by Ulugh Beg† for this mansion, are β δ ν Scorpionis.

Here the Indian and Arabian divisions appear to concur exactly; and Sir William Jones,+ as well as the missionaries cited by Costard,§ have apparently understood the same stars; though the latter extend the nacshatra to the constellation Serpensarius.

XVIII. Jyēsṭ'ha, the eighteenth nacshatra, comprises three stars figured as a ring. In regard to this, also authorities are nearly agreed in the position of the principal and middlemost star, placed in 4°, 3½°, or 3° S., and in 229°, 229° 5′, or 230° E. This position clearly indicates Antares or the Scorpion's heart (α Scorpionis); which is

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* Hyde, Com., p. 51.  
† Hyde, p. 87.  
§ Hist. Astr., p. 51.
also the eighteenth lunar mansion, named \textit{Kalb} or \textit{Kalbu-lākrab}. The three stars of the Indian asterism may be \(\alpha\) and \(\tau\) Scorpionis.

XIX. The nineteenth asterism, \textit{Mūla}, represented by a lion’s tail, contains eleven stars, of which the characteristic one, the easternmost, is placed in \(9^\circ, 8\frac{1}{2}^\circ,\) or \(8^\circ\) S., and in \(241^\circ\) or \(242^\circ\) E. Although the latitude of \(\nu\) Scorpionis be five degrees too great, there seems little doubt that either that or the star east of it, marked \(\nu\), must be intended; and this determination agrees with the eighteenth lunar mansion of the Arabs called \textit{Shavulah}, consisting of two stars near the Scorpion’s sting. The Hindu asterism probably includes all the stars placed by us in the Scorpion’s tail, \textit{viz.} \(\epsilon\mu\zeta\eta\theta\iota\kappa\lambda\nu\) and \(\nu\) Scorpionis.

XX. The twentieth \textit{nacshatra}, entitled preceding \textit{Āshādha}, figured as an elephant’s tooth, or as a couch, consists of two stars, of which the most northern one is placed in \(5\frac{1}{2}^\circ, 5\frac{3}{4}^\circ,\) or \(5^\circ\) S., and \(254^\circ\) or \(255^\circ\) E. This suits with \(\delta\) Sagittarii, which is also one of the stars of the twentieth lunar mansion called \textit{Nāaim}. It consists of four, or, according to some authorities, of eight stars. The Indian asterism seemingly comprises \(\delta\) and \(\epsilon\) Sagittarii.

XXI. Two stars constitute the twenty-first asterism, named the subsequent \textit{Āshādha}, which is represented by a couch or by an elephant’s tooth. The principal star, which also is the most northerly one, is placed in \(5^\circ\) S., and \(260^\circ\) or \(261^\circ\) E. This agrees with a star in the body of Sagittarius (\(\tau\) Sagittarii), and the other star is perhaps the one marked \(\zeta\).

The twenty-first lunar mansion of the Arabians, named \textit{Balzah}, comprises six stars, two of which are placed by \textit{Muhammad} of \textit{Tizin} in declination \(21^\circ\) and \(16^\circ\). One of these must be a star in the head of Sagittarius. Some authors, on the contrary, describe the lunar mansion as
destitute of stars.* At all events, the Hindu and Arabian divisions appear, in this instance, to be but imperfectly re-
concileable.

XXII. Three* stars, figured as a triangle, or as the nut of the floating Trapa, from the twenty-second asterism, named Abhijit; which, in the modern Indian astronomy, does not occupy an equal portion of the ecliptic with the other nacshatras, but is carved out of the contiguous divi-
sions. Its place (meaning that of its brightest star) is very remote from the zodiac; being in 60° or 62° N. The lon-
gitude of its circle of declination, according to different authorities, is 265°, 266° 40', or 268°. Probably the bright star in the Lyre is meant. It was shewn to Dr. Hunter, at Ujjayini for the chief star in Abhijit; and the same was pointed out to me for the asterism, by a Hindu astronomer at this place.

The Arabian lunar mansion Zabih, consists of two stars (some reckon four†) in the horns of Capricorn, totally dis-
agreeing with the Indian nacshatra.

XXIII. Śravāṅa, the twenty-third nacshatra, represented by three footsteps, contains three stars, of which one, the middlemost, is by all authorities placed in 30° N., but they differ as to its longitude; the Sūrya siddhānta placing it in 280°; Brahmegupta and the Śrīromānī, in 278°; and the Graha lāghava in 275°. The assigned latitude indicates the bright star in the Eagle, whence the three may be inferred to be α β and γ Aquilæ.

The twenty-third mansion of the moon, called by the Arabs Balā, consists of two stars in the left hand of Aqua-
rius. Consequently the Arabian and Hindu divisions are here at variance.

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* Hyde, Com. on Ulugh Beg, p. 9.
† Ulugh Beg, p. 94, and Hyde's Com., p. 54.
XXIV. Dhanisht'há, the twenty-fourth asterism, is represented by a drum or tabor. It comprises four stars, one of which (the westernmost) is placed in 36° N., and according to the Súrya siddhánta, Brahme Gupta and the Śirómañi, in 290° E., though the Graha lághava state 286° only. This longitude of the circle of declination, and the distance of the star on it from the ecliptic, indicate the Dolphin; and the four stars probably are α β γ and δ Delphini. The same constellation is mentioned by the Jesuit missionaries as corresponding to Dhanisht'há;* and there can be little doubt that the ascertainment is correct. The longitude stated by Muniśwara, (viz. 294° 12') supports the conclusion, though his latitude (26° 25') be too small. To determine accurately the position of this nacshatra is important, as the solstitial colure, according to the ancient astronomers, passed through the extremity of it, and through the middle of Asléshá.

The twenty-fourth mansion, called by the Arabs Súud, comprises two stars in Aquarius (β and ξ Aquarii); totally disagreeing with the Hindu division.

XXV. Satabhishtá, the twenty-fifth nacshatra, is a cluster of a hundred stars figured by a circle. The principal one, or brightest, has no latitude; or only a third, or at the utmost half, a degree of south latitude; and all the tables concur in placing it in long. 320°. This will suit best with λ Aquarii. These hundred stars may be sought in the stream from the Jar, where Sir William Jones places the nacshatra; and in the right leg of Aquarius.

Akhbiyah, the twenty-fifth lunar mansion, is stated to consist of three stars only, which seem to be the three in the wrist of the right hand of Aquarius.† However, it appears from Ulugh Beg's tables, as well as from Mü-
HAMMED of Tizin's, that four stars are assigned to this mansion.*

The Hindu and Arabian asterisms differ here less widely than in the instances lately noticed: and a passage, cited by HYDE from Fírúzábádí, even intimates the circular figure of the constellation.†

XXVI. The twenty-sixth of the Indian asterisms, called the preceding Bhádrapada, consists of two stars represented by a couch or bed, or else by a double-headed figure; one of which is placed by Hindu astronomers in 24° N., and 325° or 326° E. The only conspicuous star, nearly in that situation, is the bright star in Pegasus (α Pegasi); and the other may be the nearest considerable star in the same constellation (γ Pegasi). I should have considered β Pegasi to be the second star of this nacshatra, were not its yóga or chief star expressly said to be the most northerly. Mukaddim, the twenty-sixth lunar mansion, consists of the two brightest stars in Pegasus (α and β†); and thus the two divisions of the zodiac nearly concur.

XXVII. Two other stars constitute the twenty-seventh lunar mansion named the subsequent Bhádrapada. They are figured as a twin, or person with a double face, or else as a couch. The position of one of them (the most northerly) is stated in 26° or 27° N., and 337° E. I suppose the bright star in the head of Andromeda to be meant; and the other star to be the one in the extremity of the wing of Pegasus (γ Pegasi). This agrees exactly with the twenty-seventh lunar mansion of the Arabians, called Muakkher. For Ulugh Beg assigns those stars to it.§

XXVIII. The last of the twenty-eight asterisms is named Révati, and comprises thirty-two stars figured as

* HYDE, p. 99, and Com., p. 95. † Com., p. 10.
‡ HYDE's Ulugh Beg, p. 53, and Com., p. 34.
§ HYDE, p. 53, and Com., p. 34 and 35.
a tabor. All authorities agree that the principal star, which should be the southernmost, has no latitude, and two of them assert no longitude; but some make it ten minutes short of the origin of the ecliptic, viz. 35° 50'. This clearly marks the star on the ecliptic in the string of the Fishes (.VALUEolarium); and the ascertainment of it is important in regard to the adjustment of the Hindu sphere.

The Arabic name of the 28th mansion, Rishá, signifying a cord, seems to indicate a star nearly in the same position. But the constellation, as described by JAUHARÍ cited by GOLIUS, consists of a multitude of stars in the shape of a fish, and termed Betnu'ilhút; in the navel of which is the lunar mansion: and MUHAMMED of Tizín, with some others, also makes this lunar mansion to be the same with Betnu'ilhút, which appears, however, to be the bright star in the girdle of Andromeda (Β Andromedæ); though others describe it as the northern Fish, extending, however, to the horns of the Ram.* The lunar mansion and Indian asterism are, therefore, not reconcilable in this last instance.

The result of the comparison shows, I hope satisfactorily, that the Indian asterisms, which mark the divisions of the ecliptic, generally consist of nearly the same stars, which constitute the lunar mansions of the Arabians: but, in a few instances, they essentially differ. The Hindus have likewise adopted the division of the ecliptic and zodiac into twelve signs or constellations, agreeing in figure and designation with those of the Greeks; and differing merely in the place of the constellations, which are carried on the Indian sphere a few degrees further west than on the Grecian. That the Hindus took the hint of this mode of dividing the ecliptic from the Greeks, is not perhaps altogether improbable; but, if such be the origin of it they

* HYDE's Com., p. 10, 35, and 96.
have not implicitly received the arrangement suggested to
them, but have reconciled and adapted it to their own an-
cient distribution of the ecliptic into twenty-seven parts.*

In like manner, they may have either received or given
the hint of an armillary sphere as an instrument for astro-
nomical observation: but certainly they have not copied
the instrument which was described by PTOLEMY, for the
construction differs considerably.

In the Arabic epitome of the Almagest entitled Tahrīru'l-
mejestī,† the armillary sphere (Zāt ul halī) is thus de-
scribed. "Two equal circles are placed at right angles;
the one representing the ecliptic, the other the solstitial
colure. Two pins pass through the poles of the ecliptic;
and two other pins are placed on the poles of the equator.
On the first two pins are suspended a couple of circles,
moving the one within, the other without, the first men-
tioned circles, and representing two secondaries of the
ecliptic. On the two other pins a circle is placed, which
encompasses the whole instrument, and within which the
different circles turn; it represents the meridian. Within
the inner secondary of the ecliptic a circle is fitted to it, in
the same plane, and turning in it. This is adapted to
measure latitudes. To this internal circle, two apertures,
or sights, opposite to each other, and without its plane
are adapted, like the sights of an instrument for altitudes.
The armillary sphere is complete when consisting of these
six circles. The ecliptic and secondaries are to be gra-

* According to the longitude of the three brightest stars of Aries,
as stated by PTOLEMY, viz. 10° 40', 7° 40', and 6° 40', (I quote from
an Arabic epitome of the Almagest); the origin of the ecliptic, in the
Greek book which is most likely to have become known in India, is
6° 20' from the star which the Hindus have selected to mark the
commencement of the ecliptic.
† By the celebrated Nasfruddin Tusi; from the Arabic version
of Is‘haq ben Honain, which was revised by Thabit.
uated as minutely as may be practicable. It is best to place both secondaries, as by some directed, within the ecliptic (instead of placing one of them without it), that the complete revolution of the outer secondary may not be obstructed by the pins at the poles of the equator. The Meridian, likewise, should be doubled, or made to consist of two circles; the external one graduated, and the internal one moving within it. Thus the pole may be adjusted at its proper elevation above the horizon of any place. The instrument so constructed consists of seven circles.

"It is remarked, that when the circle representing the meridian, is placed in the plane of the true meridian, so that it cuts the plane of the horizon at right angles, and one of the poles of the equator is elevated above the horizon conformably with the latitude of the place; then the motions of all the circles round the poles represent the motions of the universe.

"After rectifying the meridian, if it be wished to observe the sun and moon together, the outer secondary of the ecliptic must be made to intersect the ecliptic at the sun’s place for that time: and the solstitial colure must be moved until the place of intersection be opposite to the sun. Both circles are thus adjusted to their true places; or if any other object but the sun, be observed, the colure is turned, until the object be seen in its proper place, on that secondary referred to the ecliptic: the circle representing the ecliptic being at the same time in the plane of the true ecliptic and in its proper situation. Afterwards, the inner secondary is turned towards the moon (or to any star intended to be observed), and the smaller circle within it, bearing the two sights, is turned, until the moon, (or to any star intended to be observed), and the smaller circle within it, bearing the two sights, is turned, until the moon be seen in the line of the apertures. The intersection of the
secondary circle and ecliptic is the place of the moon in longitude; and the arc of the secondary, between the aperture and the ecliptic, is the latitude of the moon on either side (north or south)."

The same instrument, as described by Montucla from the text of Ptolemy (1. 3. c. 2.*), consists of six circles: first, a large circle representing the meridian; next, four circles united together, representing the equator, ecliptic and two colures, and turning within the first circle on the poles of the equator; lastly, a circle turning on the poles of the ecliptic, furnished with sights and nearly touching, on its concave side, the circumference of the ecliptic.

The armillary sphere, described by the Arabian epitomiser, differs, therefore, from Ptolemy's, in omitting the equator and equinoctial colure, and adding an inner secondary of the ecliptic, which, as well as the meridian, is doubled.

According to Lalande, the astrolabe of Ptolemy, from which Tycho Brahe derived his equatorial armillary, consisted only of four circles: two placed at right angles to represent the ecliptic and solstitial colure; a third turning on the poles of the ecliptic and serving to mark longitudes; and a fourth, within the other three, furnished with sights to observe celestial objects and measure their latitudes and longitudes.†

Whether the ancient Greeks had any more complicated instrument formed on similar principles, and applicable to astronomical observations, is perhaps uncertain. We have no detailed description of the instrument which Archimedes is said to have devised to represent the phenomena and motions of the heavenly bodies; nor any sufficient

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* Hist. des Mathém., i. p. 301.
† Lalande Astron., i. 13. (§ 2279.)
hint of its construction;* nor does Cicero's account of
the sphere exhibited by Posidonius† suggest a distinct
notion of its structure.

Among the Arabs, no addition is at present known to
have been made to the armillary sphere, between the period
when the Almagest was translated,‡ and the time of Al-
Hazen, who wrote a treatise of optics, in which a more
complicated instrument than that of Ptolemy, is de-
scribed. AlHazen's armillary sphere is stated to have
been the prototype of Tycho Brahe's;§ but neither the

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* If Claudian's epigram on the subject of it was founded upon any
authority, the instrument must have been a sort of orrery, enclosed in
glass.


† In the Hejira year 212, or A. D. 827, by AlHazen ben Yusef
with the aid of Sergius (Montucla, ii. p. 304); or rather by
Is'hak ben Honain, whose death is placed about the Hejira year 260
(D'Herbelot, p. 456). According to the Cashf ul zumân, Is'hak's
version was epitomised by Hajaj ben Yusef, by Thabit ben Kor-
rah, and by Nasiruddin Tusî. Other versions, however, are
mentioned: particularly, one by Hajaj, said to have been cor-
rected first by Honain ben Is'hak, and afterwards by Thabit;
another by Thabit himself; and a third by Muhi ben Yahya. A
different account is likewise given of the earliest translation of the
Almagest, which is ascribed to Abu Hisan and Salaman, who are
said to have completed it, after the failure of other learned men,
who had previously attempted the translation. Mention is also made
of a version by Ibrahim ben Salat, revised by Honain. But
none of these translations are anterior to the ninth century of the
Christian era.

§ Adhibuit (Tycho) armillare quoddam instrumentum, quod tamen
comperi ego positum et adhibitum olim fuisse ante Tychonem ab
Alhazeno, lib. 7. opt. C. 1. prop. 15. et a Vitell. lib. 10. propos. 49.
cujus instrumenti astronomice collocafi ope atque usu, (vide instru-
mentum multiplex armillare apud Tycho, in Mechanicis Astronomiis),
candem elevationem falsam 9 scrupulorum invenit, quam per alia duo
original treatise, nor the Latin translation of it, are here procurable; and I am therefore unable to ascertain whether the sphere, mentioned by the Arabian author, resembled that described by Indian astronomers. At all events, he is more modern* than the oldest of the Hindu writers whom I shall proceed to quote.†

The construction of the armillary sphere is briefly and rather obscurely taught in the Sūrya siddhānta. The following is a literal translation.

"Let the astronomer frame the surprising structure of the terrestrial and celestial spheres.

"Having caused a wooden globe to be made [of such size] as he pleases, to represent the earth: with a staff for the axis passing through the centre, and exceeding the globe at both ends; let him place the supporting hoops," as also the equinoctial circle.

"Three circles must be prepared, (divided for signs and degrees,) the radius of which must agree with the respective diurnal circles, in proportion to the equinoctial: the three circles should be placed for the Ram and following, signs, respectively, at the proper declination in degrees, N. or S.; the same answer contrariwise for the Crab and other signs. In like manner, three circles are placed in the southern hemisphere, for the Balance and the rest, and contrariwise for Capricorn and the remaining signs. Circles are similarly placed on both hoops for the asterisms in both hemispheres, as also for Abhijit; and for the seven Rīshis, Agastya, Brahme, and other stars.

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* He wrote his treatise on optics and other works about the year 1100.—Biogr. Dict.
† Bhāscara flourished in the middle of the twelfth century; being born, as he himself informs us, in the Sāca year 1036, answering to A. D. 1114. But the Sūrya siddhānta is more ancient.
‡ They are the colures.
“In the middle of all these circles is placed the equinoctial. At the intersection of that and the supporting hoops, and distant from each other half the signs, the two equinoxes should be determined; and the two solstices, at the degrees of obliquity from the equinoctial; and the places of the Ram and the rest, in the order of the signs, should be adjusted by the strings of the curve. Another circle, thus passing from equinox to equinox, is named the ecliptic; and by this path, the sun, illuminating worlds, for ever travels. The moon and the other planets are seen deviating from their nodes in the ecliptic, to the extent of their respective greatest latitudes [within the zodiac].”

The author proceeds to notice the relation of the great circles before mentioned to the horizon; and observes, that, whatever place be assumed for the apex of the sphere, the middle of the heavens for that place is its horizon. He concludes by showing, that the instrument may be made to revolve with regularity, by means of a current of water; and hints, that the appearance of spontaneous motion may be given, by a concealed mechanism, for which quicksilver is to be employed. The manner of using this instrument for astronomical observations has been already explained (p. 324, &c.)

More ample instructions for framing an armillary sphere are delivered in the Siddhānta Śirōmaṇī. The passage is too long for insertion in this place; and I reserve it for a separate article, on account of the explanations which it requires, and because it leads to the consideration of other topics,* which cannot be sufficiently discussed in the pre-

* Among others, that of the precession of the equinoxes; respecting which different opinions are stated by Bhāscara. It appears, from what is said by him, that the notion of a libration of the equinoxes has not universally prevailed among Hindu astronomers. The correcter opinion of a revolution of the equinoctial points was ad-
DI Oddons OF THE ZOBIAC.

sent essay. A brief abstract of BháscaRa's description may here suffice. In the centre he places a small globe to represent the earth encompassed with circles for the orbits of the planets arranged like the curved lines in a spider's web. On an axis passing through the poles of the earth, and prolonged on both sides, a sphere, or assemblage of circles, is suspended, by means of rings or tubes adapted to the axis, so that the sphere may move freely on it. This assemblage of circles comprises a horizon and equator adjusted for the place, with a prime vertical and meridian, and two intermediate verticals (intersecting the horizon at the N. E. and S. W. and N. W. and S. E. points); as also the equinoctial colure. Another circle is suspended within this sphere on the poles of the horizon, apparently intended to measure the altitude and amplitude of an object.

Another sphere or assemblage of circles is in like manner suspended on the pole of the equator. It consists of both colures, and the equinoctial with the ecliptic adjusted to it; and six circles for the planetary orbits duly adjusted to the ecliptic; as also six diurnal circles parallel to the equinoctial, and passing through the extremities of the several signs.

This, though not a complete description of BháscaRa's armillary sphere, will convey a sufficient notion of the instrument for the purpose of the present comparison; and will justify the remark, that its construction differs greatly from that of the instrument specified by Ptolemy.

In the description of the armillary sphere cited from the Súrya siddhánta, mention is made of several stars not included in the asterisms which mark the divisions of the ecliptic. The following table exhibits the positions of

vanced by some authors, but has not obtained the general suffrage of Hindu writers on astronomy.
those, and of the few other stars which have been particularly noticed by Hindu astronomers.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agastya</strong></td>
<td>Lat. 77° S.</td>
<td>Long. 87°</td>
<td>Lat. 76° S.</td>
<td>Long. 80°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lat. 77°16’ S.</td>
<td>Long. 83°5’</td>
</tr>
<tr>
<td><strong>Lubdhaca, or the hunter.</strong></td>
<td>Lat. 40° S.</td>
<td>Long. 86°</td>
<td>Lat. 40° S.</td>
<td>Long. 81°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lat. 40°4’ S.</td>
<td>Long. 84°36’</td>
</tr>
<tr>
<td><strong>Agni</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>57°4’ S.</td>
</tr>
<tr>
<td><strong>Brahmehridaya</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>58°36’ N.</td>
</tr>
<tr>
<td><strong>Prājapāti, or Brahmā</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>50° N.52°</td>
</tr>
<tr>
<td><strong>Apānvatasa</strong></td>
<td>—</td>
<td>—</td>
<td>39° N.</td>
<td>61°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>38°38’ N.</td>
<td>56°53’</td>
</tr>
<tr>
<td><strong>Āpas</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3° N.183°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3° N.183°</td>
<td>3° N.180°</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3° N.</td>
<td>9° N.180°</td>
</tr>
</tbody>
</table>

According to the

The seven Rāṣhīs...

Sācalya sanhitā.

<table>
<thead>
<tr>
<th></th>
<th>Lat.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cratu.</strong></td>
<td>55° N.</td>
</tr>
<tr>
<td><strong>Pulaha</strong></td>
<td>50° N.</td>
</tr>
<tr>
<td><strong>Pulastya</strong></td>
<td>50° N.</td>
</tr>
<tr>
<td><strong>Atri.</strong></td>
<td>56° N.</td>
</tr>
<tr>
<td><strong>Angiras</strong></td>
<td>57° N.</td>
</tr>
<tr>
<td><strong>Vasisṭha</strong></td>
<td>60° N.</td>
</tr>
<tr>
<td><strong>Marīchi</strong></td>
<td>60° N.</td>
</tr>
</tbody>
</table>

Here Agastya is evidently Canopus; as Lubdhaca is Sirius. Brahmeheridaya seems to be Capella, which was shown, under that Indian name, to Dr. Hunter at Ujjā-

† The Sācalya sanhitā and Tatwa vivēca agree with the Sūrya siddhánta as to the positions of the first four stars. They omit the other three.
yinī. Agni may be the bright star in the northern horn of
the Bull (β Tauri): Prajāpati is perhaps the star on the
head of the Waggoner (δ Aurigae). The distances of the
three last mentioned stars from the ecliptic do not exactly
agree with the places stated: but no conspicuous stars are
found nearer to the assigned positions: and it may be
remarked, that they are all nearly in the longitude of
the nācshatramrigasiras, corresponding to the head of
Orion; and that the latitude, assigned to them by Hindu
astronomers, is as much too small, as that of Mrigasiras is
too great.

The star, mentioned in the Sūrya siddhānta under the
name of Āpas or water, is doubtless δ Virginis; and Āpam-
vatsa comprises the nebulous stars in the same constella-
tion, marked b. 1. 2. 3.

Astronomers give rules for computing the heliacal rising
and setting of the star Agastya, on account of certain
religious ceremonies to be performed when that star appears.
VARĀHA MIHIRA says, 'Agastya is visible at Ujjayinī,
when the sun is 7° short of the sign Virgo.' But he after-
wards adds, that 'the star becomes visible, when the sun
reaches Hasta, and disappears when the sun arrives at
Rohini.' His commentator remarks, that the author has
here followed earlier writers; and quotes PARĀSARA, say-
ing, 'When the sun is in Hasta, the star rises; and it
sets when the sun is in Rohini.' BHATTO TIPA LAL cites
from the five Siddhāntas† a rule of computation, analogous
to that which will be forthcoming quoted from the Bhāswatī;
and remarks, that three periods of Agastya's heliacal rising

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* दृश्यं त्रिं किं च स्थिती ५ के रोहिणिषोमुपगते
स्तम्भपैति ।

† Pancha siddhānta, a treatise by Varāha Mihira.

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are observed, viz. 8th and 15th of Áswina and 8th of Cárтика.

The Bhāswatī directs the day of Agastya's rising for any particular latitude to be found by the following rule. 'The length of the shadow of a gnomon* at a particular latitude, on the day of the equinox, is multiplied by 25; and to the product 900 are added; the sum, divided by 225, gives in signs and degrees the place of the sun, on the day when Agastya rises or appears in the south, at the close of night.' The commentator adds, that 'the day of the star's setting may be computed by deducting the sum found as above, from 1350; the difference reduced to signs and degrees, is the place of the sun, on the day when Agastya sets in the southwest.' According to these rules, Agastya in latitude 26° 34', rises when the sun is in 4° 20' and sets when the sun is in 1° 10'.

The Graha lághava teaches another method of calculation. The length of the shadow of the gnomon is multiplied by 8, and the product is added to 98 for the sun's place in degrees, on the day when Agastya rises; or is deducted from 78, to find the sun's place when that star sets. By this rule, the star should rise, in latitude 26° 34', when the sun is at the 26th degree of the Lion, and should set when the sun quits the Ram. Accordingly, the Bhavishya and the Brahmevaivarta puráñas ordain oblations for Agastya three days before the sun reaches the zodiacal sign Virgo; though the inhabitants of the province of Gaura, as observed in the last-mentioned puráña, perform this ceremony three days earlier.

In regard to the passages above quoted, it may be remarked, that the rule, stated in the Bhāswatī, implies the distance of three signs, from the beginning of Aries, to

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* In duodecimal parts.
Agastya, and supposes the star to become visible when distant one sign from the sun. But the rule delivered in the Garha lághava places the star at the distance of 88° from the beginning of Mésha, and supposes it visible in the right sphere, when 10° distant from the sun. According to the quotation from Parásara, the right ascension of the star must have been, in his time, not less than 100° reckoned from the beginning of Mésha; and the star, rising cosmically, became visible in the oblique sphere, at the distance of 60° from the sun; and disappeared, setting acronychally, when within that distance: Making allowance, therefore, for the star’s proper motion, and change of declination and right ascension, it remains probable, that Parásara’s rule was framed for the north of India, at a period when the solstitial points were, as stated by that author, in the middle of Aśléshá and beginning of Dha-nisht’ha.*

I have purposely reserved for separate consideration the seven Rishis, who give name to seven stars in Ursa major; not only because their positions are not stated by Brahme Gupta, Bháscara, and the Súrya siddhánta, but also because the authors, who give their positions, ascribe to them a particular motion, or variation of longitude, different from other stars, and apparently unconnected with the precession of the equinoxes.

Váráha Mihira has a chapter in the Váráhi sanhitá expressly on the subject of this supposed motion of the Rishis. He begins by announcing the intention of stating their revolution conformably with the doctrine of Vrídha Garga, and proceeds as follows: ‘When king Yuddhishth’ira ruled the earth, the Munis were in Maghá, and the period of the era of that king is 2526 years. They

* As, Res., vol. ii, p. 393.
remain for a hundred years in each asterism, being connected with that particular nacshatra, to which, when it rises in the east, the line of their rising is directed.*

The commentator, Bhattotpala, supports the text of his author by quotations from Vṛddha Garga and Cāṣyapa. 'At the junction of the Cali and Dwāpara ages,' says Garga, 'the virtuous sages, who delight in protecting the people, stood at the asterism, over which the Pitrīs preside.' That is at Maghā. 'The mighty sages,' says Cāṣyapa, 'abide during a hundred years in each asterism, attended by the virtuous Arundhatī.'

The author next states the relative situation of the seven Rishis, with Arundhatī near her husband Vasishta; and the remainder of the chapter is devoted to astrology.

The revolution of the seven Rishis, and its periods, are noticed in purāṇas. The following passage is from the Śrī Bhāgavata.†

'From your birth (Parīcshita is addressed by Śuca) to the inauguration of Nanda, 1115 years will elapse.

* आष्ट्रचाँसु मुनयःशायतिःस्योयुधिश्चित्रे
   नृपति ।
   धर्मिकपुरवित्ते:शक्कालस्तथाराजस्य ।
   एकाकेस्मिन्न्हरे:शंघ्न्तंततेऽचरन्तिवर्षाणं ।
   प्रागुद्यंतोऽस्तविबराह्रूद्यंतचक्षुः: ||

According to a different reading noticed by the commentator, the concluding hemistic signifies "they constantly rise in the north-east; together with Arundhatī."

† Book xii. c. 2.
'Of the seven Rishis, two are first perceived, rising in the sky; and the asterism, which is observed to be at night even with the middle of those two stars, is that, with which the Rishis are united, and they remain so during a hundred years of men. In your time, and at this moment, they are situated in Maghā.

'When the splendour of Vishnu, named Crışhṇa, departed for heaven, then did the Cali age, during which men delight in sin, invade the world. So long as he continued to touch the earth with his holy feet, so long the Cali age was unable to subdue the world.

'When the seven Rishis were in Maghā, the Cali age comprising 1200 [divine] years* began; and when, from Maghā, they shall reach Purvādhāha, then will this Cali age attain its growth under Nanda and his successors.'

The commentator Śrīdhara Swāmī remarks, that the constellation, consisting of seven stars, is in the form of a wheeled carriage. Marichi, he observes, is at the extremity; and next to him, Vasishṭha in the arched part of the yoke; and beyond him Angiras: next to whom are four stars in a quadrangle: Atri at the north-east corner; south of him Pulastya; next to whom is Pulaha; and Cratu is north of the last. Such being their relative position, the two stars, which rise first, are Pulaha and Cratu; and whichever asterism is in a line south from the middle of those stars, is that with which the seven Rishis are united; and they so remain for 100 years.

A similar passage is found in the Vishnū purāṇa,† and a similar exposition of it is given by the commentator Ratnakarṣa: but the period, there stated to elapse between the birth of Parīchāṭi and the inauguration of Nanda, 1015 years only.

* 432,000 common years.
† Part 4. ch. xxiii. v. 32, &c.
The *Matsya purāṇa* contains a passage to the like effect; but allows 1050 years from the birth of *Parīciśīh* to the inauguration of *Mahāpadma*; and the seven *Rīshis* are stated as being in a line with the constellation sacred to fire (that is *Crītīcā*), 836 years later, in the time of the *Andhra* kings.

In the *Brahme siddhānta* of *Śacalya*, denominated from its reputed author *Śacalya sanhitā*, the supposed motion of the seven *Rīshis* is thus noticed:* 'At the commencement of the *yuga*, *Cratu* was near the star sacred to *Vishnū* (*Śravānī*), at the beginning of the asterism. Three degrees east of him, was *Pulaha*; and *Pulastya*, at ten degrees from this; *Atri* followed at three degrees from the last; and *Angiras*, at eight degrees from him; next came *Vasishtā*, at the distance of seven degrees; and lastly, *Marīchi* at ten. Their motion is eight *liptas* (minutes) in a year. Their distances from the ecliptic, north, were respectively 55°, 50°, 50°, 56°, 57°, 60°, and 60°. For, moving in the north into different positions, the sages employ 2700 years in revolving through the assemblage of asterisms; and hence their positions may be easily known at any particular time.'

*Lalla* cited by *Muniśwara* in his gloss on the *Śirōmaṇi*, says, 'If the number of years of the *Calī* age, less fourteen, be divided by 100, the quotient, as the wise declare, shows the asterisms traversed by *Marīchi* and other celestial sages, beginning from the asterism of *Vi-ranchi* (*Brahmā*).'

Here *Lalla* is generally understood to mean *Rōhiṇī*, which is sacred to *Prajaśati* (or *Brahmā*). But *Muniśwara* has remarked, in another place, that *Lalla* may intend *Abhijit*, which is sacred to *Vidhi* or *Brahmā*;

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* Prajaśa 2. ch. ii.
and consequently may mean Śravaṇā, of which Abhijit forms a part: and thus Lalla and Sācalya may be reconciled.

Most of the commentators of the Sūrya siddhānta and Sirómaṇi are silent on the subject of the seven Rīshis. But Nṛśinha, in his vārtīcā to the Vāsanā bhāshya, or gloss on the Śirōmaṇi, quotes and expounds the Sācalya sanhitā, and rejects Varāha's rule of computation, as disagreeing with purāṇas. Muniśvara, in his commentary on the Śirōmaṇi, cites some of the passages above noticed, and remarks, that Bhaṣcara has omitted this topic on account of contradictory opinions concerning it, and because it is of no great use.

The same author, in his own compilation entitled Siddhānta sārvabhauma has entered more fully into this subject. He observes, that the seven Rīshis are not, like other stars, attached by spikes to the solid ring of the ecliptic, but revolve in small circles round the northern pole of the ecliptic, moving by their own power in the ethereal sphere above Saturn, but below the sphere of the stars. He places the Rīshis in the same relative positions, which Sācalya had assigned to them; states in other terms the same distances from the ecliptic, and the same annual motion; and directs their place to be computed by deducting 600 from the years of the Cali age, doubling the remainder and dividing by fifteen: the quotient, in degrees, is divided by 30, to reduce it into signs. Muniśvara supports this mode of calculation on the authority of Sācalya, against Varāha Mihira and Lalla; and affirms, that it agrees with the phenomena, as observable at the period of his compilation. It appears, however, to be a correction of Sācalya's rule.

Camalācara, in the Tatwavidēca, notices the opinion delivered in the Siddhānta sārvabhauma; but observes,
that no such motion of the stars is perceptible. Remark-
ing, however, that the authority of the purāṇas and san-
hitās, which affirm their revolution, is incontrovertible, he
reconciles faith and experience by saying, that the stars
themselves are fixed; but the seven Rishiś are invisible
deities, who perform the stated revolution in the period
specified.

If Camalácara’s notion be adopted, no difficulty
remains: yet it can hardly be supposed, that Varāha
Mihira and Lalla intended to describe revolutions of
invisible beings. If then it be allowed, that they have
attributed to the stars themselves an imaginary revolution
grounded on an erroneous theory, a probable inference
may be thence drawn as to the period when those authors
lived, provided one position be conceded; namely, that
the rules, stated by them, gave a result not grossly wrong
at the respective periods when they wrote. Indeed it can
scarcely be supposed, that authors, who, like the cele-
brated astronomers in question, were not mere compilers
and transcribers, should have exhibited rules of compu-
tation, which did not approach to the truth, at the very
period when they were proposed.

If this reasoning be admitted, it would follow, that
Varāha Mihira composed the Vārāhi sanhitā about
2800 years after the period assigned by him to the com-
cencement of the reign of Yudhisht’hira, or near the
close of the third century after the expiration of Yudhisht’
hira’s era as defined by him. For the circle of declina-
tion passing between Cratu and Pulaha (the two first of
the seven Rishiś), and cutting the ecliptic only 2° short of
the beginning of Maghā, was the solstitial colure, when
the equinox was near the beginning of Crittica; and such
probably was the reason of that line being noticed by
ancient Hindu astronomers. It agrees with the solstitial
colure on the sphere of Eu\textit{do}x\textit{us}, as described by Hip\textit{par}\textit{chus}.* A similar circle of declination, passing between the same stars, intersected the ecliptic at the beginning of Magh\textit{a} when the solstitial colure was at the middle of Asl\textit{esh\textit{a}}; and a like circle passed through the next asterism, when the equinox corresponded with the first point of M\textit{es\textit{ha}}. An astronomer of that period, if he were apprised of the position assigned to the same stars by Gar\textit{ga}, reputed to have been the priest of Cr\textit{ish\textit{na}} and the P\textit{a\textit{nd\textit{a}}}s, might conclude with Var\textit{ha} Mihira, that one revolution had been completed, and that the stars had passed through one nacshatra of the second revolution. In corroboration of this inference respecting the age of Var\textit{ha} Mihira's astrological treatise, it may be added, that he is cited by name in the Pancha tantra, the original of the fables of Pilpay, which were translated for N\textit{ush\textit{ir\textit{v\textit{an}}} more than 1200 years ago.†

The theory being wholly unfounded, Var\textit{ha} Mihira's rule of computation soon ceased to agree with the phenomena, and other rules have been successively introduced by different authors, as La\textit{lla}, S\textit{ac\textit{alya}}, and lastly,

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* "Hipparchus tells us, that Eu\textit{do}x\textit{us} drew the colure of the solstices, through the middle of the Great Bear; and the middle of Cancer; and the neck of Hydrus; and the star between the poop and mast of Argo; and the tail of the South Fish; and through the middle of Capricorn, and of Sagitta; and through the neck and right wing of the Swan; and the left hand of Cepheus; and that he drew the equinoctial colure through the left-hand of Arctophylax; and along the middle of his body; and cross the middle of Ch\textit{el\textit{e}}; and through the right-hand and fore-knee of the Centaur; and through the flexure of Eridanus and head of Cetus; and the back of Aries across, and through the head and right-hand of Per\textit{seus.}" Sir. I. Newton's Chronology, § 29. Hi\textit{par}\textit{arch. ad Ph\textit{e}nom. in P\textit{et}av\textit{ii} Uranologia, p. 207, 208. Bailly, A\textit{str. Anc.} p. 506. Costard, p. 136.

† Preface to the Sanscrit edition of the Hit\textit{opad\textit{eya}}, p. xi. [page 173 of the present volume.]
Mūnīśwara; whose rule, devised less than two hundred years ago, does not yet grossly betray its insufficiency.

This pretended revolution of the stars of Ursa Major is connected with two remarkable epochs in Indian chronology; the commencement of the Cālī yuga, or sinful age, in the reign of Yudhishṭhīra; and its prevalence, on the failure of the succession of Cshatriya princes, and establishment of a different dynasty, 1015 years after the birth of Parīchit, according to the Vishnu purāṇa; or 1115 years, according to the Bhāgavata; but 1498 years, if a correction, which has been proposed by Śrīdēvara Śvāmī and some other commentators, be admitted. This subject has been already noticed by Capt. Wilford in his Essay on Vicramādītya,* and it is, therefore, unnecessary to enlarge upon it in this place.

It has been noticed, towards the beginning of the present essay, that the principal star of each nācshatra, is denominated Yogatārā. Perhaps it may not be superfluous to caution the reader against confounding these yōga stars with the yōgas, of which a list is inserted in Sir William Jones's Treatise on the Indian Zodiac.† They are mentioned by him as divisions of the ecliptic: but it will presently appear, that they cannot in strictness be so denominated. Their principal purpose regards astrology; but they are also employed in regulating certain moveable feasts; and they are of such frequent use, that every Indian almanac contains a column specifying the yōga for each day, with the hour of its termination.

The yōga is nothing else than a mode of indicating the sum of the longitudes of the sun and moon. The rule for its computation, as given in the Sūrya siddhānta, Bhāsvati and Graha lāghava, directs, that the longitude of the

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sun be added to the longitude of the moon; and the sum, reduced to minutes, is to be divided by 800 (the number of minutes in 13° 20'): the quotient exhibits the elapsed yógas, counted from Vishcumbha.* It is obvious, therefore, that the yógas are twenty-seven divisions of 360° of a great circle, measured upon the ecliptic. But, if they be represented on a circle, it must be a moveable one in the plane of the ecliptic.

Astrologers also reckon twenty-eight yógas, which correspond to the twenty-eight nacshatras or divisions of the moon's path; varying, however, according to the day of the week. As the Indian almanacs sometimes appropriate a column to the moon's yóga for each day, I shall insert in a note a list of these yógas, with the rule by which they are determined.†


The foregoing list is extracted from the Ratnamála of Śripáty. He adds the rule by which the yógas are regulated. On a Sunday, the nacshatras answer to the yógas, in their natural order; viz. Áswini to Ánanda, Bharáti to Cálandanda, &c. But, on a Monday, the first yóga, (Ánanda) corresponds to Mrígasíras, the second to Árdra, and so forth. On a Tuesday, the nacshatras, which answers to the first yóga, is Aitishá; on Wednesday, Hasta; on Thursday, Anuráda; on Friday, Uttarásádha; and on Saturday, Satabishá.

Almanacs usually contain another set of astrological divisions of the lunar month, which it may be proper to explain. They are de-
Another topic, relative to the zodiac, and connected with astrology, remains to be noticed. I allude to the *Dréshcánas* answering to the Decani of European astrologers. The Hindus, like the Egyptians and Babylonians, from whom that vain science passed to the Greeks and Romans, divide each sign into three parts, and allot to every such part a regent exercising planetary influence under the particular planet whom he there represents.

The description of the thirty-six *Dréshcánas* is given towards the close of Varáha Mihrá’s treatise on the casting of nativities, entitled *Vrihat játaca*. It is here translated conformably with the gloss of Bháttótpala: omitting, however, some variations in the reading of the text, which are noticed by him; but which can be of no use, unless occasion should arise for reference to them in comparing the description of the *dréshcánas* with some amulet or ancient monument in which the Decani may be supposed to be figured. Even for that purpose, the following description will probably suffice.

1. [Mars] A man with red eyes, girt round the waist

nominated *Caráña*; and consist of seven variable and four invariable, as in the subjoined list:

<table>
<thead>
<tr>
<th>Variable Caráñas</th>
<th>Invariable Caráñas</th>
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<tbody>
<tr>
<td>1. Bava.</td>
<td>1. Śacuni.</td>
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<tr>
<td>2. Báláva.</td>
<td>2. Chatushpád.</td>
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<td>5. Gara.</td>
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<td>6. Van’ij.</td>
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<td>7. Visht’i.</td>
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They answer successively to half a *tit’hi* or lunar day; *Cintughna* being always assigned to the first half of the first *tit’hi*; and the variable *caráñas* afterwards succeeding each other regularly, through eight repetitions: they are followed by the three remaining invariable *caráñas*, which conclude the month; *Chatushpád* and *Nágá* pertaining to Amávásyá or the new moon, and *Śacuni* being appropriated to the latter half of the preceding *tit’hi*. 
with a white cloth, of a black complexion, as formidable as able to protect, holds a raised battle-axe.

2. [The Sun] A female, clad in red apparel, with her mind fixed on wearing ornaments, having a mare's head, and a belly like a jar, thirsty and resting on one foot, is exhibited by Yavana as the figure of the dréshaña in the middle of Mésha.*

3. [Jupiter] A fierce and wrathful man, conversant with arts, of a tawny complexion, solicitous of action, but unsteady in his resolves; holds in his hands a raised stick, and wears red clothes. He is the third in the tripartite division of Mésha.

4. [Venus] A woman with hair clipped and curled, a body shaped like a jar, her clothes burnt, herself thirsty, disposed to eat, and fond of ornaments: such is the figure of the first in Vrśabha.

5. [Mercury] A man with the head of a goat, and a shoulder like a bull, clothed in dirty apparel, skilful in regard to the plough and the cart, acquainted with field, grain, house, and kine, conversant with arts; and in disposition, voracious.

6. [Saturn] A man with a body vast as an elephant's, and feet great as a Sarabha's,† with white teeth and a tawny body, his mind busied upon the wool of wild sheep, occupies the extremity of the sign Taurus.

7. [Mercury] Such as are conversant with the subject, declare the first in the tripartite partition of the third sign, to be a woman (fond of working with the needle, beautiful, delighting in ornaments, childless, amorous, and with her arms elevated.

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* "Méshamadhyé dréshañarúpam yavanapadishlam." Bhattotpala expounds this "declared by Yavanacharya," "Yavanacharyaih caḥhitam."

† A monster with eight legs, who destroys elephants.
8. [Venus] In the middle of the sign Gemini is a man, with the face of a *garuda,* standing in a grove: he is an archer clad in armour, and holds a bow; he meditates on sport, his children, ornaments, and wealth.

9. [Saturn] At the end of the sign Gemini is a man decorated with ornaments, having as many gems as the ocean contains; clad in armour and furnished with bow and quiver; skilled in dance, music, and song, and practising poetry.

10. [The Moon] The wise declare the first in Cancer to be an animal with the body of an elephant, the feet of a *Sarabha,* a boar's head and horse's neck, standing in a grove under a sandal-wood tree, and upholding leaves, root, and fruit.

11. [Mars] In the middle of the sign Cancer, a woman, in prime of youth, with blossoms of lotus on her head, attended by a serpent, cries while standing in a forest, resting against the branch of a *paláśa* tree.

12. [Jupiter] Last in Cancer is a man with his head inclined; he is decorated with golden ornaments, and, embarking on a vessel and encompassed by serpents [twined round him,] he traverses the ocean to seek ornaments for his wife.

13. [The Sun] A vulture and shakal stand on a cotton tree: a dog is near: and a man, in a squalid dress, laments for his father and mother. This representation is pronounced to be the first of the Lion.

14. [Jupiter] A man formed like a horse, bearing on his head a garland of yellowish white flowers, wears a leather dress: unconquered like a lion; armed with a bow, and

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* An eagle: or else a gigantic crane. Perhaps a vulture.
† *Santalum album sive Sirium myrtifolium.*
‡ *Butea frondosa.*
§ *Bombax heptaphyllum.*
distinguished by a hooked nose; he is placed in the middle of Leo:

15. [MARS] The third in the tripartite division of Leo, is a man having the head of a bear, with a long beard and curled hair; in disposition similar to an ape; and holding a staff, fruits, and flesh.

16. [MERCURY] A dams, bearing a jar filled with blossoms, (her person clothed in apparel soiled with dirt,) solicitous for the union of dress with opulence, is going towards the family of her spiritual parent: such is the first of Virgo.

17. [SATURN] A man of a dark complexion, with a cloth on his head, holds a pen, and is casting up accounts of receipts and disbursements: he bears a large bow, and his body is covered with hair: he is placed in the middle of the sign.

18. [VENUS] A woman of a fair complexion, dressed in bleached silk, tall, holding in her hand a jar and ladle; is devoutly going towards a temple of the gods. The wise pronounce this to be the last of Virgo.

19. [VENUS] A man is proceeding along the middle of a highway; holding a balance, and having weights in his hand; he is skilled in measuring and meting, and meditates on commodities and their prices. The Yavanas declare this form to be first of Libra.*

20. [SATURN] A man with the head of a vulture, carrying a water-pot, is anxious to proceed, being hungry and thirsty; in thought, he visits his wife and son. He is middlemost of the balance-bearer (Libra.)

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* "Tadrāpam vadanti Yavanāḥ prāt'hamam tulāyāḥ." This might signify "Yavana declares;" for the plural is used in Sanscrit respectfully: and Bhāṭṭotpāla has before expounded Yavana as intending Yavanāchāryā; but a different explanation occurs a little lower.
21. [Mercury] A man, in figure like an ape, adorned with gems, bearing a golden quiver and armour, and carrying fruits and flesh, is scaring deer, in a forest: such is the figure exhibited by the Yavanas.*

22. [Mars] A woman, without clothes or ornaments, comes from the great ocean, to the shore; she has fallen from her place; round her feet are serpents entwined; but she is pleasing: such is the first of the sign Scorpio.

23. [Jupiter] A woman, with a body like a tortoise and a jar, and with serpents entwined round her person; is solicitous to prepare local comforts for her husband. This figure the wise pronounce to be the middle one of Scorpio.

24. [The Moon] The last of the Scorpion is a lion with a large and stooping head resembling that of a tortoise; he guards the place where sandal-wood grows, terrifying dogs, deer, boars, and shakals.

25. [Jupiter] An animal with the body of a horse and head of a man, holding a large bow, stands near a hermitage and devoutly guards the implements of sacrifice; such is the first of the three divisions of the bow (Sagittarius.)

26. [Mars] A pleasing female, of golden complexion like the champaca,† moderately handsome, sits on a throne, distributing marine gems. This is described as the middle division of the bow.

27. [The Sun] A man with a long beard, of a complexion yellow like the champaca, is sitting on a throne with a staff in his hand: he wears silk raiment and a deer's skin: such is the third figure of the ninth sign.

28. [Saturn] A man, of a terrible aspect, with the

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* "Yavanair udáhirat", which Bhattotpala expounds "declared by the ancient Yavanas," "puráñayavanaih."

† Michelia Champaca.
body of a hog, hairy, having tusks like a *Macara,* holds a yoke, a net, and fetters. He is first of Capricorn.

29. [Venus] In the middle of *Macara* is a woman skilled in music, with eyes large like the petals of the lotos, and with a dark complexion. She seeks various things; she is decorated with jewels; and wears metallic ornaments in her ears.

30. [Mercury], A man shaped like a *Cinnara,*† clothed in a woollen cloth, and furnished with quiver, bow, and armour, bears on his shoulder a jar adorned with gems: he is last of the sign *Macara.*

31. [The Sun] The first of the jar (Aquarius) is a man with the head of a vulture, clothed in silk and wearing an antelope’s hide with a woollen cloth: his mind is busied in obtaining oil, ardent spirits, water, and food.

32. [Mercury] In a burnt carriage, a woman clad in soiled apparel, bearing vessels on her head, is collecting metals in a forest containing cotton trees.

33. [Venus] A man of a dark complexion, with hairy ears, adorned with a diadem, carries and transports vases with articles of metal, and with bark, leaves, gum, and fruit. He is last of *Cumbha.*

34. [Jupiter] The first of the fish (Pisces) navigates the sea in search of ornaments for his wife: he has jewels, and his hands are full of vessels used in sacrifice, together with pearls, gems, and shells.

35. [The Moon] A woman, surpassing in complexion the blossom of the *champáca,* ascends a ship with lofty masts and flags; and approaches the shore of the sea, accompanied by her retinue. This is declared by sages to be the second in the tripartite division of *Mína.*

* A sea monster. Perhaps the Narwhal may be intended.
† A human figure with the head of a horse.
36. [Mars] Near a cavern, in a forest, a naked man, with serpents entwined round his body, and tormented by robbers and fire, laments. He is the last of the fish.

Arabian astronomers in like manner divide each sign of the Zodiac into three parts, denominated Wajeh (وَجِه) or in the plural Wujah (وُجَر), which severally belong to the different planets* thence called Rab ul wajeh. The proper import of the term (وَجِه) is face or countenance; agreeing with the Greek πρόσωπον, which is similarly employed in this acceptation.†

The near correspondence of the ḍrēškānas with the Decani of Roman authors and ἄσκανοι of Grecian writers will be evident from the following passage of MANILUS, supported by quotations from other authors, which I shall insert on the faith of SAUMAISE;‡ the original works, from which they are taken, not being here procurable.

MANILUS says§

Quam partem deciman dixere Decania gentes;
A numero nomen positum est, quod partibus astra
Condita tricenis propria sub sorte feruntur,
Et tribuunt denas in se coeuntibus astra,
Inque vicem terris habitantur sidera Signis.

HEFHESTION expressly declares,|| that "each sign of the zodiac is divided into three Decani comprising ten

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* In the following order, beginning from Aries: viz. Mars, the Sun, Venus, Mercury, the Moon, Saturn, Jupiter, Mars, the Sun, &c.  
† FIRMICI Mathesis seu Astron., vide infra.  
‡ SALMANNI Pliniianæ Exercitationes, p. 460, &c.  
§ Lib. iv. 298—302.  
|| Καὶ ἐστίν ὁ μὲν πρῶτος χονταγε, ὁ δὲ δεύτερος χονταχρη, ὁ τρίτος σικέτ.
degrees each: the first division of Aries is named Chontare; the second Chonchachre, and the third Sicet."

Firmicus differs in the names, and does not allow ten complete degrees to each Decanus. Thus, in the sign Aries, the three first degrees are, according to him, unappropriated; the five next belong to the first Decanus Asitan; the next nine are vacant; and the four following appertain to the second Decanus Senacher; five degrees are again unoccupied; and the four last belong to the third Decanus Sentacher.*

We learn from Psellus† that the several Decani were figured with different attributes and dresses; and, from Demophilus and Firmicus† that they represent the planets. The first appertained to Mars: the second to the Sun; and the third to Venus (the Hindu author says, Jupiter).

This astrological notion was confessedly received from foreign nations. The doctrine seems to be ascribed by Firmicus to Nakepsos, king of Egypt.§ and Psellus cites a Babylonian author, whom he calls Tēuçeker; and who is also noticed by Porphyrius: besides, the names of

† Ἐἰσὶ γὰρ ἐν ἕκαστῳ τῶν ζῳδίων τρεῖς κατειλεγμένοι Δεκανοὶ ποικιλόμορφοι, ῥ μὲν κατέχων πέλεκυν, ῥ ὁ δ' εἰς ἄλλο τι ἐσχηματισμένος εἰκασμα. ὃν εἰ τὰ εἴδη καὶ τὰ σχήματα διακυλιῶν ἔγγυς εἰς σφενδόνας, ἀποτρόπαια δεινῶν φανήσατο. ταύτα μὲν οὖν ὁ Τεύκρος καὶ οἱ κατ' ἐκείνον περιττοὶ τὰ μετέωρα.
‡ "Primum πρόσωπον est is planeta cujus signum est: secundum πρόσωπον planeta sequens, et sic deinceps. Aries est Martis primum πρόσωπον, secundum Solis, tertium Veneris, juxta seriem errantium."
This agrees precisely with the Arabian وَجَ.
§ Sic et Nakepsos, Αἰγυπτι justissimus imperator, et astrologus valde bonus, per ipso Decanos omnia vitia valetudinesque collegit, ostendens quam valetudinem quis Decanus efficeret, &c.
the Decani, stated by HEPHAESTION and FIRMICUS, are
decidedly barbarous. It was not, therefore, without reason,
that SAUMAISE and KIRCHER sought a derivation of the
word Decanus itself from a foreign language. It cannot
be deduced, as SCALIGER proposes, from the similar term
for an inferior officer commanding ten men;* since this
office and its designation were first introduced later than
the time of MANILIUS, by whom the astrological term is
employed; and PORPHYRIUS expressly affirms that the
word was used by those whom he denominates 'ancients.'†
Huet, not concurring in either of the opinions
above-mentioned, supposes the term to have been cor-
ruptly formed by the astrologers of Alexandria from the
Greek numeral with a Latin termination.‡ If this be ad-
mitted, it still remains not improbable that some affinity of
sound, in the Egyptian or in the Chaldaic name, may have
suggested the formation of this corrupt word.

The Sanscrit name apparently comes from the same
source. I do not suppose it to be originally Sanscrit; since, in that language, it bears, no etymological signifi-
cation. For the same reason, it is likely, that the astro-
logical doctrine itself may be exotic in India. One branch
of divination, entitled Tājaca, has been confessedly bor-
rrowed from the Arabians: and the technical terms used in
it, are, as I am informed by Hindu astrologers, Arabic.
The casting of nativities, though its practice is of more
ancient date in India, may also have been received from
Western astrologers: Egyptians, Chaldeans, or even Greeks.
If so, it is likely that the Hindus may have received astro-
nomical hints at the same time.

* Erant Decani denis militiae propositi. Veget. 2. 8.
† Οὗς τινας ἐκάλεσαν δεκανόντες οἱ παλαιοὶ.
‡ Huetii animadversiones ad Manilium. Lib. iv. v. 298.
By their own acknowledgment,* they have cultivated astronomy for the sake of astrology; and they may have done so with the aid of hints received from the same quarter, from which their astrology is derived. In the present instance Varāha Mihiṇa himself, as interpreted by his commentator, quotes the Yāvanas (meaning perhaps Grecian authors), in a manner which indicates, that the description of the drēṣṭacāṇas is borrowed from them.

The name of Yavanāchārya, who is cited by Bhāṭīṭotpala, would not be alone decisive. He is frequently quoted by Hindu astronomers: and it is possible, though by no means certain, that, under this name, a Grecian or an Arabian author may be intended. To determine that point, it will be requisite (unless the work attributed to him be recovered) to collect all the passages, in which Yavanāchārya is cited by Sanscrit authors; and to compare the doctrines ascribed to him with those of the Grecian and Arabian writers on astronomy. Not being prepared for such a disquisition, I shall dismiss this subject for the present, without offering any positive opinion on the question, which has been here proposed.

* Bhāscara expressly says, "By ancient astronomers, the purpose of the science is declared to be judicial astrology; and that, indeed, depends on the influence of configurations; and these, on the apparent places of the planets." — Gōḍādhya, 1. v. 6.
On the Notion of the Hindu Astronomers concerning the Precession of the Equinoxes and Motions of the Planets.

[From the Asiatic Researches, vol. xii. p. 209—250. Calcutta, 1816. 4to.]

In an essay on the Indian and Arabian divisions of the zodiac, inserted in the ninth volume of the Asiatic Researches, I adverted to a passage of Bhāscara, on the precession of the equinoxes, and intimated an intention of further noticing this subject in a separate essay.* The passage which I had then in view, occurs in Bhāscara's description of the armillary sphere.† It appears to me deserving of distinct examination for the information which it contains, the difficulties which it presents, and the variety of topics which it suggests. I shall here quote the original, and add a verbal translation.

विषुचक्ष्कालित्वचयोस्म्यातः क्रान्तिपातः श्रातः ।
तद्गणः बौरोकं वस्ता चैदुतचन्चं कल्पे ||१७||
चैदुतचन्चं यदुत्तं मुखालाचैः स एवायं ।
तत्पचे तद्गणणं कल्पे गोक्रपत्तुन्द्रगोचन्द्रः ||१८||

'The intersection of the ecliptic and equinoctial circles in the Crāntipāta, or intersecting point of the sun's path.'

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† Gōḍādhya, c. 6. v. 17 and 18.
Its revolutions, as declared on the authority of Sūrya (Sau-róctáh), are retrograde three myriads in a calpa. This is the same with the motion of the solstice, as affirmed by Mūnjála, and others. But, according to their doctrine, its revolutions are 199, 669 in a calpa.

This is the very passage to which the commentator on the Sūrya siddhánta, cited by Mr. Davis,* alludes, where he says, 'the meaning of Bháscara āchárya was not that Sūrya [in the Sūrya siddhánta,] gave 30,000 as the revolutions of the places of the colures, in a calpa; the name he used being Saura not Sūrya, and applied to some other book.'

It is certainly true, as here observed by this commentator, that Bháscara’s quotation does not agree with the text of the Sūrya siddhánta, which expresses, 'The circle of the asterisms moves eastward thirty scores in a yuga. Multiplying the number of elapsed days by that, and dividing by the terrestrial days, [which compose the cycle,] the quantity obtained is an arc, which, multiplied by three, and divided by ten,† gives degrees (ansa) termed ayana, [or the place of the colure.]

चिंग्रलालयो युगे भानां चक्क प्राक्यंस्यम्बते ।
तंहुण्णादद्रियनेर्भक्ताल्लुगणाद्वात्ताते ।
तहोस्तिप्रात्र दुर्वासापश्व विद्वेषा चर्यनाभिमागा ॥

Here the number of revolutions is 600 in a yuga, answering to 600,000 in a calpa; and not, as stated by Bháscara, 30,000. But the commentator’s mode of reconciling the contradiction, by supposing a different book from the Sūrya siddhánta to have been intended, is incom-

† Ratio of 27° to 90°.
patible with Bhāscara's own explanation of his text in
the Vāsanā bhashya, containing annotations by himself on
his own treatise. He there says in express words, 'the
revolutions of the intersecting point of the sun's path are
stated in the Sūrya siddhānta, as amounting to 30,000 in
a calpa.'

His commentator, Muniśvara, has therefore recourse
to other expedients for reconciling the contradiction between
Bhāscara's quotation and the text of the Sūrya sidd-
hdhānta. Some, he observes, have proposed to read niyuta
'a hundred thousand,' for ayuta 'a myriad.'† Others
have supposed the calpa to be a twentieth part only of the
period usually so denominated. The commentator further
'suggests the resolution of the term vyastāh, translated
'retrograde,' into vi for vinsati 'twenty,' and astāh,
which he makes to signify 'multiplied,' and expounds the
phrase, 'thirty thousand multiplied by twenty.' But, dis-
satisfied with this and with another exposition, by which
trayam 'three' is construed into 'sixty,' he gives the

* Bhāscara's Vāsanā bhashya on the astronomy and spheric of his
Siddhānta śrēomāni. This volume of annotations is commented, with
the Śrēomāni, by Nṛśinha in the Vāsanā vārtica, as proceeding from
the same writer; and is expressly acknowledged to be a work of the
author of the text (as it actually purports) by the scholiast Muniś-
vara, in this very place, where he is endeavouring to support his
own interpretation of the text, against the apparent and natural sense
of a passage in the author's notes.

† He alludes either to the Vāsanā vārtica, in which that emenda-
tion of the text is actually suggested by the annotator Nṛśinha, or
to some earlier commentary in which the same conjectural emendation
may have been originally proposed.
preference to an equally strained interpretation, which
divides the sentence into two members: ‘its revolutions
are declared by Sūrya, and [according to a different au-
thority] are retrograde three myriads in a calpa.’

However unsatisfactory these explanations of the text
may be, they prove the concurrence of the commentators
of both works, in the received interpretation of the obscure
passage of the Sūrya siddhānta, which is the subject of
their discussion. That interpretation is supported by cor-
responding passages of the Sōma siddhānta, Laghu va-
sishṭa, and Sācalya sanhitā, in which the number of six
hundred revolutions is explicitly stated:* as well as by
other quotations, which clearly demonstrate, that a libra-
tion of the equinoxes, at the rate of six hundred in a yuga,
was there meant. For, in all the passages quoted, the
revolution, as it is termed, of the equinoctial points, consists
in a libration of them within the limits of twenty-seven
degrees east, and as many west, of the beginnings of Aries
and Libra: and that such is the meaning conveyed in the
text of the Sūrya siddhānta, is distinctly shown by the

* युगे षट्ष्यत्तवाचि भचक माथविलबति ।
तद्विषो भद्रिनामंकी थुगुणो लयनफेचरः ॥

Sōma siddhānta.

तत्प्राचारखिं चक्रम् द्वितेदेकं माथविलबतनं थुगे
तानि च षट्ष्यतं ॥

Sācalya sanhitā, i. 286—291.

श्रव्यं; खक्कुमिर्भावात्त्द्विद्विष्ठवा दशाच्छता ॥

Laghu vasishṭha siddhānta,
cited by Dādābhāy and Nṛsinha, on the Sūrya siddhānta.
commentator cited by Mr. Davis,* as well as by the other commentators on that work.

The same doctrine is taught in the Pársara siddhánta, as quoted by Muniśwara; and, if we may rely on the authority of a quotation by this author from the works of Áryabhaṭṭa, it was also maintained by that ancient astronomer: but, according to the first-mentioned treatise, the number of librations amounts to 581,709, and, according to the latter, 578,159 in a calpa, instead of 600,000; and Áryabhaṭṭa has stated the limits of the libration at 24° instead of 27°.†

Bháscara himself, adopting the doctrine for which he quotes the authority of Muni Jála, in the passage above cited, mentions a complete revolution of the places of the colures through the twelve signs of the zodiac, at the rate of \(\frac{H}{II} \frac{III}{IV} \frac{V}{VI} \frac{VII}{VIII}\) per annum, or 199,669 complete revolutions in a calpa. Having computed upon the same principle, the quantity of the precession in his own time at 91,189 0 10 54 35 23 55 40 48, he thence, for the sake of facility in calculation, assumes in his practical treatise, named Caraṇa cutúhala, the actual precession in whole numbers at eleven degrees, and allows the annual motion to be taken at one minute.‡ The time for which this

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† चतुर्विंशतिश्रीचाक्रमणयोग्यं चैत्यकवि

Áryabhaṭṭa, in the Áryādhātiata; quoted by Muniśwara. It is especially necessary to distinguish the particular work of this author, to which reference is made: for Brahmegupta reproaches him for his inconsistency in affirming revolutions of the nodes in the Áryādhātiata, which he denied in the Daśa gītaca. It is therefore probable, that the libration of the equinoxes (considered as nodes) for which the first-mentioned work is quoted, may not be stated in the other.

‡ Muniśwara, in his commentary on the Śirōmaṇi.
computation was made, is the same with the epocha of the 
Carāṇa cutūhala;* which is the year 1105 Śāca,† thirty-
three years after the Śirōmaṇi was completed.‡

Bhāsara’s authority, supporting that of Munjāla,
and countenanced by Vishṇu Chandra’s,§ has not
availed with Indian astronomers. Even his commentator
Munīswara rejects the notion of a complete revolution;
and, in his own treatise entitled Siddhānta sārvabhaua,
asserts the doctrine of libration, and attempts to refute the
other opinion, not indeed by argument, but in deference to
the Sūrya siddhānta and other authorities to which it is
opposed. Upon the same ground, Camalācara in the
Siddhānta tatwāviveca says, ‘The degrees of the colures,
as stated by Munjāla, and taught in the Śirōmaṇi, con-
trary to what is declared by Arca (Sūrya) and others,
from not rightly understanding what was by them declared,

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* The Graha udghava, written in 1442 Śāca, deducts 444 from the
expired years of the Śāca, and divides by sixty, reckoning the pre-
cession at a minute a year. This agrees nearly with the Carāṇa cutū-
halā; for, if the same number (444) be deducted from the years expired
(1105 Śāca), the remainder gives but one minute above 11°, the quan-
tity there assumed by Bhāscara.

Ramachandra, who in the Cāla nirāyā states the quantity of precession as amounting to 12°, and reckons the precession at a
minute of a degree, a year, seems also to have followed the same
authority. He may therefore have written about sixty years subse-
quent to the date of the Carāṇa cutūhala; or Śāca, 1165. This ascer-
tainment of the age of Ramachandra Āchārya is a step towards
investigating the age of writers in other branches of science who
have quoted this author, or who are cited by him. They are nu-
merous.

† Faizī, in his translation of Bhāscara’s Līlāvatī.

‡ For it was finished when the author was thirty-six years of age;
and he was born in 1036 Śāca: as he informs us.

§ Author of the Vaisishṭha siddhānta, a distinct work from the
Laghū vasisht’ha cited by Dādabhāi and (under the title of Vai-
sisht’ha siddhānta) by Nrīsinha.
must be rejected by the wise.' He certainly here expresses the prevalent opinion of the Hindu astronomers, which is decidedly in favour of a libration of the places of the colures.

Besides Mūnjaḷa mentioned by Bhāscara, the only other ancient author, whose name I find quoted for a complete revolution of the equinoctial and solstitial points, is Viṣṇu Chandra, from whose works a passage is cited by Prīthūdacāsamī, declaratory of a solstitial yuga, or period of the ayana. The text is corrupt in respect of the lowest digits of the number; and, having found no other quotation of it, I shall not attempt to state the period from a conjectural emendation of this passage.

It is necessary to observe, that some of the ancient writers on astronomy have not admitted a periodical motion of the equinoxes. This is adverted to by Bhāscara himself,* who instances Brahmegupta. The reason of that omission or denial is supposed by Bhāscara† to have been the inconsiderable quantity of the deviation or precession, not then remarkable, and consequently unheeded by Brahmegupta; since whose time it is become sensible, and therefore it is now taken into account;‡ Bhāscara next inquires 'why Brahmegupta and the rest did not

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* In the Vāsand bhāshya.  † Ibid.  ‡ तत्कां भाष्रो गुरुदिष्ठिदिविनिपुणैरपिनिवातः यतीति।

तद्दात्कृतः प्राचीनाः पराशरः द्राक्षग्रह ब्रह्मगुप्तः पारमपरांतः

तैरंश्च श्रेष्ठ पवार्थ गतिरस्तीतिवागं।

'Why has it not been stated by Brahmegupta and other skilful astronomers? It was not perceived by them, because it was then inconsiderable. But it is perceived by the moderns, because it is now considerable. Accordingly it is concluded, that there is motion, [of the solstice.'] Bhāscara in the Vāsand bhāshya.
nevertheless state it on the strength of authority, since it had been declared in the Saura siddhānta; in like manner as the numbers of revolutions, the periphery of epicycles, &c.?*

He replies: 'In mathematical science holy tradition is authority, so far only as it agrees with demonstration.' He goes on to say, 'Such motion, as results from the assigned revolutions, by which, places being calculated agree with those which are observed, must be admitted, whether taught by a holy sage or by a temporal teacher. If then the same places are deducible from other revolutions, which of the assigned motions is the true one? The answer is, whichever agrees with present observation must be admitted. But, if in process of time, the difference become great, then men of genius, like Brahmegupta, will arise, who will acknowledge such motions as agree with present observation, and compose books (śastras) conformable thereto. Accordingly this mathematical science has no end in eternal time.'

But Brahmegupta's commentator, expounding a passage of this author,† which he considers to be levelled against those who affirmed a periodical revolution of the solstitial points, and which does deny such a revolution, and declares the solstice to be invariable, because the longest day and shortest night occur constantly at the end of Mithuna or Gemini, adverts, in the course of his exposition of the text, to passages which place the southern and northern solstice respectively in the middle of Aśleṣhā, and beginning of Dhanisht'hā, and proceeds to remark 'this

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* शब्दव्यवस्थलभोधि चौरसिद्धान्तकल्वाहा -
गम्प्रामाण्यभगवपरिण्यादिविक्षथतैतीनंक: ॥

† Ch. ii.
only proves a shifting of the solstice, not numerous revolutions of it through the ecliptic. His notion appears then to have been, that his author was aware of the fact of a change in the positions of the solstitial and equinoctial points, but did not admit the inference that the motion must be periodical.

From all that has been said, it appears, that some of the most celebrated astronomers, as Brahmagupta, have been silent on the subject of a change in the places of the colures, or have denied their regular periodical motion. That others, as Munjala and Bhascara (we may add Vishnu Chandra) have asserted a periodical revolution of the places of the colures. But that the greater number of celebrated writers, and all the modern Hindu astronomers, have affirmed a liberation of the equinoctial points.

The earliest known author who is cited for the support of this doctrine, as far as present research has gone, is Aryabhata, who is undoubtedly more ancient than Brahmagupta; for he is repeatedly quoted in the Brahme sp’huta siddhânta which is ascribed to Brahmagupta, and which there is every reason to consider genuine, since the text of the book accords with the quotations from that celebrated astronomer to be found in treatises of various dates.

I purposely omit in this place the Sûrya siddhânta, Sûma, Sácalya, Vasisht’ha and Pârásara, because their authenticity and age are subjects of question or of controversy.

Relying then upon the quotation from the work of Áryabhata, and on the tendency of Bhâscara’s observations both in his text and notes, it may be inferred, that the notion of a liberation of the equinoxes is of some antiquity in India: since Brahmagupta, by whom Áryabhata is repeatedly mentioned, is either author or
republisher of an astronomical system which was copied by Bhāscara in ñ1150 A.D., but which is adapted to a much earlier age.

The doctrine in question found advocates formerly among the astronomers of Europe and of Arabia. Arzael, a Spaniard, and a mathematician of the eleventh century,* author of a treatise, entitled observations on the obliquity of the zodiac, affirmed a libration or trepidation in longitude within the limits of 10° E. and W. at the rate of a degree in seventy-five years.† Two centuries after him, Thabit ben Korrah, an astrologer,‡ assigned to this supposed trepidation the limits of 22 E. and W.§ To the same astrologer, by some supposed to have lived as much earlier, as he is here stated to have been later, a different doctrine is ascribed, affirming a motion of the intersected points of the ecliptic and equinoctial in a small circle described with the radius 4° 18' 43".||

They were led to that hypothesis (according to a remark quoted by the authors who have refuted the notion¶) by considering that 'Hermes had found some of the fixed stars more distant from the beginning of Aries, than Ptolemy subsequently did: for instance the bright star of Hydra in 7° of Leo, placed by Ptolemy in 30° of Cancer; and the star named Vultur Cadens, in 24° of Sagittarius, but by Ptolemy in 17°.'

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* He observed the quantity of the obliquity of the ecliptic about the year 1070; and is named by Abraham ben Ezra, who wrote in the twelfth century (A.D.1144 or 1150), as anterior to him by seventy-one years. Riccioli, Almag. nov.
† Riccioli, Almagestum novum, 3, 28, 6.
‡ Morey, Dict.
§ Erasmus Reinhold on Purbach; Ricc. Almag. nov. 3, 28, 6.
The notion of a trepidation in longitude, but at a rate not equable, had been entertained by the astronomers, who compiled the Alphonsine Tables, though ALPHONSUS himself was subsequently led to the adoption of a correcter opinion, and to the consequent alteration of the tables first published by him.∗

The earliest mention of a libration in longitude, which has been found in any Arabic writer, is in the work of MUHAMMED BEN JABER, surnamed ALBÁTÁNÍ, and by us called ALBATEGNIUS. This celebrated astronomer, an Arabian by birth and Sabian by religion, flourished at the end of the ninth century;† or, to speak with precision, about the year of Christ 879;‡ and from him we learn, that certain astronomers whom he does not appear to have any where named, had before him affirmed a libration of the fixed stars within the limits of 8° E. and W. at the rate of a degree in eighty or eighty-four years.§ He himself maintained the doctrine of a uniform motion at the rate of a degree in sixty-six years.||

I have dwelt the longer upon the history of this opinion, because it appears to me deserving of attention on more than one account. ALBÁTÁNÍ is the earliest of the Arabian astronomers who improved upon PTOLEMY; (for ALFARGÁNI, who was a century earlier, is not cited as correcting the Greek astronomer on this point.) It was he then, who first, among the astronomers of the west of Asia, computed the motion of the stars at a degree in sixty-six years; which is almost the same with the rate of the motion of trepi-

∗ ABRAHAM Zacuthus, cited, like the preceding authorities, in Riccioli’s Almagest. 3, 28, 6.
† D’Herbelot, Bibl. Orient.
‡ He himself furnishes the date, being the year 1627 of the era of Nabonasar. Albategn. c. 51, cited in Riccioli’s Almagest. 6, 16, 2.
§ Albategnius, c. 52. as cited by Riccioli. || Ibid, c. 51.
ation according to the *Sūrya siddhānta*, and the herd of Hindu astronomers, who reckon a degree and a-half in a century.* He is the first also, as far as can be discovered, in whose works mention is made of a motion of trepidation; and we may be permitted to conjecture, that the earlier astronomers alluded to by him were Indian; since we find Āryabhātā, an author seemingly of an earlier age, quoted for a libration of the equinoctial points within the limits of twenty-four degrees, at the rate of one in seventy-eight years; and since we know that an Arabian astronomer, anterior by nearly a century to Al-Bātānī, had compiled tables in conformity to rules of astronomy apparently Indian.†

We may then safely conclude, that, on the subject of the precession of the equinoxes, the Hindus had a theory, which, though erroneous, was their own; and which, at a subsequent time, found advocates among the astronomers of the west. That they had a knowledge of the true doctrine of an uniform motion in antecedentia, at least seven hundred years ago,‡ when the astronomers of Europe also were divided on the question. That they had approximated

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* This is the rate resulting from the quantity of the motion in trepidation stated in the *Sūrya siddhānta*; and the same results from the rules of calculation given in the *Bhāṣativi caraṇā* of Satānanda and in the *Jātacārāṇava* improperly ascribed to Varāha Mihrā. They both direct the number 421 to be deducted from the expired years of Śaça; and the one deducts a tenth and reduces the remainder into degrees; the other adds half and divides by a hundred. Another rule, producing the same result, is mentioned in Bailly’s *Astr. Ind.* p. 76.


‡ Bhāṣcara, who quotes Mūnīṭa, completed the Śivōmaṇi in 1072 Śaça, or A. D. 1150.
to the true rate of that motion much nearer than Ptolemy, before the Arabian astronomers, and as near the truth as these have ever done since. From this we may perhaps be led to a further conclusion, that the astronomy of the Hindus merits a more particular examination than it has yet obtained, not indeed with any expectation of advancing the science of astronomy, which needs not such aid, and can derive none from the labours of astronomers who have recorded no observations; but for the history of the science, and ascertainment of the progress which was here made: and that, with this view, the works of Hindu astronomers, whose age is precisely known, and in particular, those of Bhāscara, which contain a complete course of astronomy and of sciences connected with it, should be carefully perused; as well as those of Brahmegupta, which are full of quotations from earlier astronomers, as Āryabhatṭa,* Varāhamihira,† Śrīśeṇa,‡ Vishnuchandra.§ and some others, who are cited by him for the purpose of exposing and correcting their errors.

In regard to Varāhamihira and the Sūrya ‘siddhānta, both separately quoted in the Brahme sp’huta siddhānta of Brahmegupta, I may here remark that a book entitled Sūrya siddhānta is mentioned by Varāhamihira himself, in his most undoubted work, the treatise on Astrology, entitled Vārdhi sanhīta, where, describing the qualifications requisite to form an accomplished astrologer, he says, ‘the astrologer should be conversant with divisions of time and geometrical figures, as taught in the five Siddhāntas, or

* Author of the Daśagitci and Āryaśāla jata.
† Named with censure by Brahmegupta.
‡ Author of the Rāmaca siddhānta.
§ Mentioned as the author of the Vādisīl’ha siddhānta.
systems of astronomy, called Paulisa, Rómaca, Vásishṭha, Saura and Paitámana.*

VARÁHAMÍHIRA, as appears from the quotations of his own commentator BHAṬṭÓPALA and many other astronomical writers, is likewise author of a treatise entitled Pancha siddhántica, in which the five systems above mentioned are compared; and, as far as can be gathered from quotations, their agreements and disagreements noticed. A passage of this treatise as cited by BHAṬṭÓPALA, is sufficiently remarkable to be here inserted, since it bears relation to the subject of this paper. It corresponds in import to a passage quoted by Mr. DAVIES, and Sir WILLIAM JONES,+ from the third chapter of the Váráhá sanhitá; but refers the actual position of the colures to the asterisms instead of the signs of the zodiac.

अश्लेषप्रांतांदासीचयः निद्रित्ति: किलोष्करिणिःख

युक्तमयनं तदासीब्बांगतसूयनं पुनर्वसुतः ||

‘When the return of the sun took place from the middle of Aśléshá, the tropic was then right. It now takes place from Punarvasu.’

The same five systems of astronomy from which VARÁHAMÍHIRA is understood to have compiled the astronomical treatise just now quoted, and which are named by him in

* तच यस्मिन्निः पःलिबरोनकवादिष्ठोपर्यः -

तामदत् पश्चात्तेत् विद्वानेत् गुरुवर्षयन्तरमा -

सप्तचारोरच्यामभुज्यज्ञार्दिविनाश्राणज्ञनिः -

घाण्यवस्थं काश्यं चेष्ठं च वेष्टाः ॥

the passage of his astrology before cited, are mentioned by Brahmegupta also as standard authorities, and enumerated by him in the same order: and his names, which are precisely the same with those in Varahamihira’s enumeration,* are explained by Bhattacharya, as intending the Pulisa siddhanta, Romaca siddhanta, Vasishtha siddhanta, Surya siddhanta, and Brahme siddhanta.

All these books are frequently cited in astronomical compilations, and are occasionally referred to their real or supposed authors. The first is everywhere assigned to Pulisa, whose name it bears. The Romaca siddhanta is ascribed by the scholiast of Brahmegupta, and by a commentator of the Surya siddhanta, to Srisena or Sirishena (for the name is variously written). The Vasishtha siddhanta is by the same authority given to Vishnuchandra. Both these authors are repeatedly mentioned with censure by Brahmegupta; and it is acknowledged that they are entitled to no particular deference.

* पौलिष्करामकाशिष्ट्यरैपैतकमेषु यन्त्रोक्तं तन्म-
चतुरायुम्ब नार्यभेदीक्रं तदुपकितः ||

This passage, in which the Pailisha, Romaca, Vasishtha, Saura, and Paitamaha are specified, is introductory to a division of the lunar asterisms (for astrological purposes, it should seem), in unequal portions, by allotting to fifteen of them a quantity equivalent to the mean diurnal motion of the moon in minutes of a degree (790'35''), and half as much more to six of those asterisms (1185'52''), and so much less to the like number of nacshatras (395'17'') and assigning the complement of the circle (254'18'') to the supplementary nacshatra called Abhijit.

(The numbers here set down are copied from the scholiast Bhattacharya, and from Bhaskara’s commentators; being stated by them at the nearest second: for the moon’s mean daily motion according to Brahmegupta and Bhaskara is a little less than 790'35''.)
The Brāhma siddhānta, which is the basis of Brahmegupta’s work, is not any where attributed to a known author; but referred in all quotations of it which have fallen under observation, either to the Vishnu dharmottara purāna, of which it is considered as forming a part, or to Brahmé (also called Pitāmaha), who is introduced into it as the speaker in a dialogue with Bharīgu; or it is acknowledged to be the work of some unknown person.* The true author it may be now impracticable to discover, and would be vain to conjecture.

The Sūrya siddhānta (if the same which we now possess) is in like manner ascribed to no certain author, unless in the passage cited by our colleague Mr. Bentley,† who says, that ‘in the commentary on the Bhāswati, it is declared, that Varāha was the author of the Sūrya-siddhānta;’ and who adds, that ‘Satānanda, the author of the Bhāswati, was a pupil of Varāha under whose directions he himself acknowledges he wrote that work.’

The concluding remark alludes to the following verse of the Bhāswati caraṇa.

चय प्रवचने मिहिरोपदेशात्
तबूर्धिसिद्धान्तमं समासात् ॥
‘Next I will propound succinctly, from Mihira’s instruction, [the system] equal to the Sūrya siddhānta.’

* Dādāshāi, in his commentary on the Sūrya siddhānta says so.

पैतामहमपि केनचिन्तिबइ तत्कोपरं ब्रह्मगुणेन पैतामहीमायं निबिद्धं तद्रूपं पौर्णं ॥

It is preceded by an introductory couplet which will be found quoted at the foot of the page,* or is omitted in some copies: but the correct reading, as appears from collation of text and scholia, retains both.

Admitting then its authenticity, and supposing, with most of the commentators, that Varahamihira is here intended by the single word Mihira, which, however, is a name of the sun, and may here allude to the fabled dialogue of Sûrya with Maya, as is observed by the scholiast Balabhadra;† still the passage is not unambiguous. It does not necessarily imply oral tuition, and may refer to instruction derived from the works of Varaha; especially from the Pancha siddhânti of that author, in which the Sûrya siddhânta was explained concurrently with four other treatises termed Siddhânta.

To return from this digression. It appears from what had been before said, that a work bearing the title of Sûrya siddhânta is named as authority by Varahamihira, in whose time, according to his assertion, the place of the

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* नत्वा मुरारिपर्यायविन्दं
श्रीमान् मतानम् दति प्रविष्टं ।
तां भास्वति शिविष्टार्यमाह ।
शाके विद्यो विशिष्पविषेके ॥

'Having bowed to the foot of the foe of Murâ, the fortunate Satananda propounds, for the benefit of students, the Bhdswati, in the Sàca year 1021.'

The author Satananda, as he himself informs us in the close of the book, was an inhabitant of Purushottama (the site of the temple of Jagannâtha); and date his work there in 4200 of the Cali yuga. In the body of the work he directs the difference of longitude to be reckoned from the meridian of Purushottama cshêtra.

† His commentary is dated in 1465 of Vicramâditya; more than 400 years ago.
summer solstice was at the beginning of the sign Carcata, and in the asterism Panavasu. A treatise under the same title is similarly mentioned by Brahmegupta, who has likewise noticed Varahamihira himself, and who is supposed by Bhascara to have lived when the colures had not sensibly deviated from that position.

It may be questioned whether this testimony be not overthrown by proofs of a more modern date (between seven and eight hundred years ago), drawn from internal evidence, as set forth by Mr. Bentley, in his ingenious essays inserted in the sixth and eighth volumes of our Researches.*

Without entering at present into any disquisition on this subject, or discussing the accuracy of the premises; but acceding generally to the position, that the date of a set of astronomical tables, or of a system for the computation of the places of planets, is deducible from the ascertained of a time when that system or set of tables gave results nearest to the truth; and granting that the date above-mentioned approximates within certain limits to such an ascertainment; I shall merely observe, that supposing the dates otherwise irreconcileable, still the book which we now have under the name of Surya, or Saura, siddhanta, may have been, and probably was, modernized from a more ancient treatise of the same name, the later work borrowing its title from an earlier performance of a different author. We have an instance of this practice in the kindred case of the Brahma siddhanta; for we are acquainted with no less than three astronomical treatises bearing this title; one extracted from the Vishvva dharmottara; another termed the Sacalya; and the third the Sphuta siddhanta of Brahmegupta: and an equal number of tracts entitled Vasishta siddhanta may be

traced in the quotations of authors; one by Vīṣṇu-
chandra; another termed Lāguṇa vāsishṭha, which from
its name should be an abridgment; and the third, appar-
ently an ample treatise, distinguished as the Vṛddha
vāsishṭha. This solution of the objection also is entirely
compatible with the tenor of the references to the Saura,
which have been yet remarked in the works of Brahma-
gupta and Varahamihira; none of them being relative
to points that furnish arguments for concluding the age of
the book from internal evidence.

At all events, whatever may be thought of the Śūrya
siddhānta, we have the authority of a quotation from,
Āryabhaṭṭa, to show, that the Hindus had ascertained
the quantity of the precession more correctly than Pto-
lemys; and had accounted for it by a motion in libration
or trepidation, before this notion was adopted by any other
astronomer whose labours are known to us.

It appears also from a passage of Brahmeguptas
refutation of the supposed errors of that author, and from
his commentator's quotation of Āryabhaṭṭa's text, that
this ancient astronomer maintained the doctrine of the
earth's diurnal revolution round its axis. 'The sphere
of the stars,' he affirms 'is stationary; and the earth, making
a revolution, produces the daily rising and setting of stars
and planets.'* Brahmegupta answers, 'If the earth
move a minute in a prāṇa, then whence and what route
does it proceed? If it revolve, why do not lofty objects
fall?† But his commentator, Prāṭhūdaca Swāmī, re-

* भप्पक्कः: शिवरः भुरेवाहत्तत्वत् प्रातिदैविकिः
उदयास्तमवी संपदायति नवचन्द्रवाणाः।
Āryabhaṭṭa cited by Prāṭhūdaca.

† प्राणेनिति कचा भयच्छि तकलो वजेल्कमध्यां।
plies, 'Āryabhaṭṭa’s opinion appears nevertheless satisfactory; since planets cannot have two motions at once: and the objection, that lofty things would fall, is contradicted; for, every way, the under part of the earth is also the upper; since, wherever the spectator stands on the earth’s surface, even that spot is the uppermost point.'

We here find both an ancient astronomer and later commentator* maintaining, against the sense of their countrymen, the rational doctrine which Heraclides of Pontus, the Pythagorean Euphantus, and a few others among the Greeks, had affirmed of old, but which was abandoned by the astronomers both of the east and of the west, until revived and demonstrated in comparatively modern times.†

Brahmegupta is more fortunate in his reasoning where he refutes another theory of the alternation of day and night imagined by the Jainas, who account for the diurnal change by the passage of two suns, and as many moons, and a double set of stars and minor planets, round a pyramidal mountain, at the foot of which is this habitable earth. His confutation of that absurdity is copied by Bhāscarā, who has added to it from Prāthūdaca’s gloss on a different passage of Brahmeugupta, a refutation of another notion ascribed by him to the same sect, respecting the translation of the earth in space.

This idea has no other origin than the notion, that the earth, being heavy and without support, must perpetually descend: and has, therefore, no relation whatever to the modern opinion of a proper motion of the sun and stars.

आवर्तनमवाचेन पतजल सनुक्षायाः कस्मात् ॥

Brāhma sp’hula sidhāṇta.

* The commentator wrote at least seven centuries ago; for he is quoted by Bhāscarā in the text and notes of the Śirōmani.

† For an outline of Āryabhaṭṭa’s system of astronomy, see a note at the close of this Essay. (p. 414.)
Part of the passage of Bhāscara has been quoted in a former essay.* What regards the further subject now noticed, is here subjoined.

‘The earth stands firm, by its own power, without other support in space.

‘If there be a material support to the earth, and another upholder of that, and again another of this, and so on, there is no limit. If finally self-support must be assumed, why not assume it in the first instance? why not recognise it in this multiform earth?

‘As heat is in the sun and fire, coldness in the moon, fluidity in water, hardness in iron; so mobility is in air; and immobility in the earth, by nature. How wonderful are the implanted faculties!

‘The earth possessing an attractive force,† draws towards itself any heavy substance situated in the surrounding atmosphere, and that substance appears as if it fell. But whither can the earth fall in ethereal space which is equal and alike on every side?

‘Observing the revolution of the stars, the Bauddhās‡ acknowledge, that the earth has no support; but as nothing heavy is seen to remain in the atmosphere, they thence conclude that it falls in ethereal space.

‘Whence dost thou deduce, O Baudhā, this idle notion, that, because any heavy substance thrown into the air, falls to the earth, therefore the earth itself descends?’§

He adds this further explanation in his notes: ‘For if the earth were falling, an arrow shot into the air would not return to it when the projectile force was expended, since

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† Like the attraction of the lodestone for iron. Māricāṇa on Bhāscara.
‡ Meaning the Jainas; as appears from the author's own annotation on this passage.
§ Sīrsmāṇī, Ghoḍḍhavāya, c. i. v, 2, 4, 7 and 9.
both would descend. Nor can it be said that it moves slower, and is overtaken by the arrow; for heaviest bodies fall quickest, and the earth is heaviest.'

It has been observed in a former part of this essay, that Brahmegupta's treatise of astronomy is founded on an anterior one entitled Brähme siddhánta; and the authenticity of the book extant under Brahmegupta's name has been relied upon, and passages have been freely cited from it, as the genuine performance of that ancient astronomer. These matters appear to be of sufficient importance to deserve a more particular explanation of their grounds.

The source from which Brahmegupta drew, is indicated by the author himself, in his introductory couplet, cited by Lacs̥hmīdāsa in the commentary on Bhas̥carā;—

\[ \text{ब्र्ह्मोकपकंगि} \text{तं महतं कालेन यत्तितविभुतं।} \]

\[ \text{अभिधीयते स्फुटं तत्र जिषुधुत्रब्र्ह्मगुप्तेन॥} \]

which, in a literal version, will stand thus:—'The computation of planets, as declared by Brahmā, and become imperfect by great length of time, is perspicuously (spaḥuta) explained by Brahmegupta, son of Jishnu.'

The ambiguity imputable to this passage is obviated by the more explicit terms of the initial stanza of his eleventh chapter, where Brahmegupta announces a refutation of opinions opposed to the Brähme siddhánta:

\[ \text{ये सङ्क्यान्तरक्षेत्रोऽवस्थे सन्यद्याच्छातिर्दर्थिः विष्णु-} \]

\[ \text{न्नात्। तेषां युगादिभेदाये द्रोषास्तायुवच्यामि॥} \]

* The Gaṇita tatwa chintāmahi, dated in 1423 Śāca, or 1501 A. D.
'I will refute the errors (respecting the yugas and other matters) of those who, misled by ignorance, maintain things contrary to the Brāhmaṇa siddhānta.'

What the work is, to which BRAHMEGUPTA refers under the title specified by him, and corresponding to a subsequent mention by him of the Paitāmaṇa siddhānta (both titles being of the same import), is explained by the scholiasts of BHĀSCARA and of the Sūrya siddhānta. NRĪŚINHA, a commentator on both texts,* affirms that BRAHMEGUPTA's rules are formed from the Vishṇu dharmottara purāṇa, in which the Brāhmaṇa siddhānta is contained;† BHĀSCARA's commentator, MUNĪŚWARA‡, remarks, that BRAHMEGUPTA, having verified by observation the revolutions stated in the Brāhmaṇa siddhānta of the Vishṇu dharmottara, and having found them suitable to his own time, adopted these numbers, rejecting the revolutions taught by SŪRYA and the rest. In other places the commentator cites parallel passages from BRAHMEGUPTA and the Brāhma (also termed by him Paitāmaṇa) siddhānta of the Vishṇu dharmottara;§ and these with numerous

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* He is the author of a commentary on the Sūrya siddhānta, and of the Vdsand vārtica on Bhāscara's text and notes. It is dated in 1543 Śa. or 1621 A. D.


‡ Author of the Mārichi on Bhāscara's Śirōmaṇi, and of a distinct treatise of astronomy, the Siddhānta śīrabhauṣa. The earliest copy of the Mārichi is dated 1560 Śa. (A. D. 1638), which is not much later than the date of the work itself; for the Emperor Nūrūddīn JEHANGIR is mentioned at the close of the book, as he also is in the preface of a commentary on the Sūrya siddhānta by the author's father RANGANĀTHA.

§ Take the following as examples:

1st. The number of sidereal days in a calpa, (viz. 1582,236,450,000)
quotations from Brahmegupta in the Chintamani and in other commentaries on Bhāscara, as well as in the author's notes on his own text, are exactly conformable with the Brāhme sp'huba siddhānta now in my possession, and which is accompanied by the gloss of Brahmegupta's celebrated commentator Chaturvēda Prīthūdaca Svāmī.

It appears then, from a collation of the passages so cited, that Brahmegupta's work is, at least in part, a paraphrase of the Brāhme or Paitāmaha; containing, how-

which the Paitāmaha siddhānta of the Vishāhu dhrmottara (cited in Mārichi, ch. i.) expresses by these words:

चलारि ग्रन्थ्यानि पञ्चवेदराज्यमपचाष्ट्र -
रेन्द्रबः कल्पेन प्रति नचचोदया: ||

and Brahmegupta renders by the equivalent terms,

परिवर्त्तं खचलुष्यम् सिद्धराज्यमुपचाष्ट्र गुणम्यर्दिवजु -
तिघाय: ||

2d. The commencement of the calpa, on Sunday, 1st. Chaitra, at the moment of sunrise on the meridian of Lancō, which the Brāhme siddhānta of the Vishāhu dhrmottara purīna (Mārichi, ch. ii.) thus expresses:

लक्षायामकीद्वे चैत्रश्यामप्रतिपदार्श्ये ॐकीर्दिना -
द्रावश्विन्यादिव किंतुश्रादिवः रोक्रादिवः काले प्रति -
तितः ||

and Brahmegupta by the following couplet,

चैत्रसितादिवद्याझ्यानोदितिन्मस्वयमस्व्यास्थुक्तायः ||
सृष्टारी लक्षायां समं प्रत्यत्तादिने ॐकङ्ख ||
ever, additional matter: and it is accordingly termed by one of the scholiasts of the Sūrya siddhānta,* a commentary on the Paitāmaha; and Čaturvēda's gloss is denominated, by the same scholiast, an interpretation of the Paitāmaha bhāshya.

In support of what has been here said, I shall adduce a few instances of quotation on subjects possessing some degree of interest.

The first is one in which Bhāscara vindicates a passage of Brahmegupta from the objections of his commentator, quoting the passage itself in his notes, and there naming the scholiast, Čaturvēda: from which be it remarked, the commentary is ascertained to be anterior to Bhāscara's work: I have a further reason, however, for citing the passage, as it furnishes occasion for some observations on the Indian theory of astronomy.

The Hindus, as is well known, place the earth in the centre of the world, and make the Sun and Moon and minor planets revolve round it, apparently in concentric orbits, with unequal or irregular motion. For a physical explanation of the phenomena, they imagine the planets driven by currents of air along their respective orbits (besides one great vortex carrying stars and planets with prodigious velocity, round the earth, in the compass of a day). The winds or currents, impelling the several planets, communicate to them velocities, by which their motion should be equable and in the plane of the ecliptic; but the planets are drawn from this course by certain controlling powers, situated at the apogees, conjunctions, and nodes.

These powers are clothed by Hindu imaginations with celestial bodies invisible to human sight, and furnished with hands and reins, by which they draw the planets from their

* Dādabhāī.
direct path and uniform progress. The being at the apogee, for instance, constantly attracts the planet towards itself, alternately, however, with the right and left hands. The deity of the node diverts the planet, first to one side then to the other, from the ecliptic. And lastly, the deity at the conjunction causes the planet to be one while stationary, another while retrograde, and to move at different times with velocity accelerated or retarded. These fancied beings are considered as invisible planets; the nodes and apogees having a motion of their own in the ecliptic.

This whimsical system, more worthy of the mythologist than of the astronomer, is gravely set forth in the Sūrya siddhānta: and even Bhāscara gives into it, though not without indications of reluctant acquiescence; for he has not noticed it in his text, and only briefly in his notes.

To explain on mathematical principles the irregularity of the planetary motions, the Hindu astronomers remove the earth from the centre of the planet's orbit, and assume the motion in that eccentric to be really equable, though it appear irregular as viewed from the earth. Another hypothesis is also taught by them; according to which the planet revolves with an equal but contrary motion in an epicycle, of which the centre is carried with like but direct motion on a concentric orbit.

Bhāscara remarks, that both theories are equivalent, giving the same results in computation: but he maintains, that the planet's motion in an eccentric orbit (pratimaṇḍala) is consonant to the truth; and the other hypothesis of an epicycle (nīckochcha vṛttā) is merely a device for the facility of computation.

Both theories, with certain modifications, which will be subsequently noticed, suffice for the anomaly of the Sun and Moon. To account for the still greater apparent irre-
gularities of the five minor planets, the Hindu astronomers make them revolve with direct motion on an epicycle borne on an excentric deferent. (In the case of the two inferior planets, the revolution in the excentric is performed in the same time with the Sun: consequently the planet's motion in its epicycle is in fact its proper revolution in its orbit. In the instance of the superior planets, on the contrary, the epicycle corresponds in time to a revolution of the Sun, and the excentric deferent answers to the true revolution of the planet in its orbit.)

So far the Indian system, as already remarked by Mr. Davis in his treatise on the astronomical computations of the Hindus,* agrees with the Ptolemaic. At the first glance it will remind the reader of the hypothesis of an excentric orbit devised by Hipparchus; and of that of an epicycle on a deferent, said to have been invented by Apollonius, but applied by Hipparchus. At the same time the omission of an equant (having double the excentricity of the deferent) imagined by Ptolemy for the five minor planets, as well as the epicycle with a deferent of the centre of the excentric, contrived by him to account for the evection of the Moon; and the circle of anomaly of excentricity, adapted to the inequality of Mercury's motions, cannot fail to attract notice.

The Hindus, who have not any of Ptolemy's additions to the theory of Hipparchus, have introduced a different modification of the hypothesis, for they give an oval form to the excentric or equivalent epicycle, as well as to the planet's proper epicycle. That is, they assume the axis of the epicycle greater at the end of the (sama) even quadrants of anomaly (or, in the line of the apsides and conjunctions), and least at the end of the (vishama) odd

quadrants (1st and 3d), and intermediately in proportion.* This contrivance of an oval epicycle is applied by certain astronomers to all the planets; and by others, is restricted to few; and by some, is altogether rejected. Āryabhātā, for example, and the Sūrya siddhānta, make both epicycles of all the planets oval, placing however the short axis of the proper epicycles of Jupiter and Saturn in the line of mean conjunction, termed by Hindu astronomers their quick apogee (ṣigrhoccha). Brahmegupta and Bhāscara, on the contrary, acknowledge only the epicycles of Mars and Venus to be oval, and insist that the rest are circular. The author of the Siddhānta sārvabhauma goes a step further, maintaining that all are circular, and taking the mean between the numbers given in the Sūrya siddhānta.

* Rad: Sine of anomaly :: Diff. between circles described on greatest and least axis : Diff. between circles described on greatest axis and on the diameter of the epicycle for the proposed anomaly. Whence the circle described on that diameter is determined; and is used for the epicycle in computations for that anomaly. Since circles are to each other as their radii, the proportion above stated answers to the following; semitransverse axis : diff. between transverse and conjugate semiaxis :: ordinate of the circle : a fourth proportional; which is precisely the difference between that ordinate and an ordinate of the ellipse for the same absciss. Hindu astronomers take it for the difference between the radius of the circumscribed circle and the semidiameter of the ellipse at an angle with the axis equal to the proposed anomaly; and, in an ellipsis very little eccentric, the error is small.
### Dimensions of the Epicycles in Degrees of the Deferent.

<table>
<thead>
<tr>
<th>Epicycle of anomaly</th>
<th>Brahmagupta</th>
<th>(\bigcirc)</th>
<th>31° 36'</th>
<th>70° ± 6° 40°*</th>
<th>38° 0'</th>
<th>33° 0'</th>
<th>11° 9°†</th>
<th>30° 0'</th>
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<tbody>
<tr>
<td>Bhâscara</td>
<td>14 0 32 0</td>
<td>75 0</td>
<td>30</td>
<td>33 0</td>
<td>12</td>
<td>49 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sûrya siddhânta</td>
<td>13 40 31 40</td>
<td>72 0</td>
<td>28 0</td>
<td>32 0</td>
<td>11</td>
<td>48 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proper epicycle</td>
<td>Brahmagupta</td>
<td>243 40 ± 6 40°*</td>
<td>132 0 68 0 258 263†</td>
<td>40 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sûrya siddhânta</td>
<td>235 0</td>
<td>133 0 72 0 262 0</td>
<td>40 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circle on the less axis</td>
<td>Brahmagupta</td>
<td>232 0</td>
<td>132 0 70 0 260 39 0</td>
<td>40 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The epicycles of Mars, according to Brahmagupta and Bhâscara, are increased in six signs and diminished in six other signs of anomaly, by a quantity found by this proportion: sine of 45°: sine or cosine of anomaly (whichever is the least) :: 6° 40': correction additive in six first signs, and subtractive in six last.

† The epicycles of Venus are oval, and the circles described on the transverse and conjugate axis (circles circumscribed and inscribed) are here stated.
ON THE EQUINOXES.

A further difference of theory, though not of practice, occurs among the Hindu astronomers, in regard to curvature of the excentric deferents, and the consequent method of computing on the equivalent hypothesis of epicycles.

A reference to Mr. Davis’s Essay, and to the diagrams which accompany it, will render intelligible what has been already said, and what now remains to be explained. It is there observed, that it is only in computing the retrogradations, and other particulars respecting the minor planets, that the Hindus find the length, of the cacrna θ+ (or line drawn from the centre of the earth to the planet’s place in the epicycle). In other cases, as for the anomalistic equation of the Sun and Moon, they are satisfied to take he as equal to the sine bmr, (that is, the sine of mean anomaly, reduced to its dimensions in the epicycle in parts of the radius of the concentric, equal to the sine of the anomalistic equation). The reason is subjoined: ‘The difference,’ as the commentator on the Sūrya siddhānta observes, being inconsiderable.’

Most of the commentators on the Sūrya siddhānta do assign that reason; but some of them adopt Brahme-gupta’s explanation. This astronomer maintains, that the operation of finding the cacrna is rightly omitted in respect of the excentrics or equivalent epicycles of all the planets, and retained in regard to the proper epicycles of the minor planets carried by the excentric deferents. His hypothesis, as briefly intimated by himself, and as explained by Bhāscara, supposes the epicycle, which represents the excentric, to be augmented in the proportion

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‡ Ibid.
which *carṇā* (or the distance of the planet’s place from the earth’s centre) bears to the radius of the concentric; and it is on this account, and not as a mere approximation, that the finding of the *carṇā*, with the subsequent operation to which it is applicable, is dispensed with. *

The scholiast of *Brahmegupta* objects to his author’s doctrine on this point, that, upon the same principle, the process of finding the *carṇā*, with the subsequent employment of it to find the sine of the anomalistic equation, should in like manner be omitted in the proper epicycle of the five minor planets; and he concludes therefore, that the omission of that process has no other ground, but the very inconsiderable difference of the result in the instance of a small epicycle. For, as remarked by another author, † treating on the same subject, the equation itself and its sine are very small near the line of the apsides; and at a distance from that line, the *carṇā* and radius approach to equality.

*Bhāscara*, in the *Śīrōmaini*, quotes succinctly *Brahmegupta*’s doctrine, and the scholiast’s objection to it; and replies to the latter: and in his notes in the *Vāsanā bhāshya* cites the text of *Brahmegupta* and *Chaturvēda*’s reasoning, which he tries to confute. His quotation agrees perfectly with the present text of the *Brahme*

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Whence periphery \( \times \frac{\text{Carna}}{\text{Radius}} \times \frac{\text{Radius}}{\text{Carna}} \times \frac{\text{Sine of Anomaly}}{\text{Circle}} = \text{sine of anomalistic equation.} \)

And, abridging, periphery \( \times \frac{\text{Sine of Anomaly}}{\text{Circle}} = \text{sine of anomalistic equation.} \)

† In the *Mārīchi*. 

The passage which has required so much preparatory explanation, is itself short:

चिन्ज्याम् कर्ष: परिधिगुणोवाजकोटिगुणकारः।
अक्षाक्षेणे तत्कलमाध्यसं नाच कर्षो अस्मात्॥

'The carṇa, or longest side of the triangle, multiplied by the periphery of the epicycle and divided by radius, becomes the multiplier of the sine and cosine of anomaly. The same result, as before, is obtained by a single operation in the instance of the anomalistic epicycle: and therefore carṇa is not here employed.'

Bhāscara's words in the Śrīromaṇi are these: 'Some say that in this system, in the operation of finding the equation of anomaly, the carṇa or long side of the triangle, is not employed, because the difference in the two modes of computation is very inconsiderable. But others maintain that, if the carṇa be used, the periphery of the epicycle must in this operation be corrected, by multiplying it by carṇa and dividing by radius. Wherefore the result is the same as by the former method; and on that account, they say, the carṇa is not employed. It is not to be objected, why is not the same method used in the sīghra epicycle? For the principles of the two differ.'

In his notes on this part of his text, he cites, as before observed, the precise passage of Brahmegupta which has been inserted above, and a portion of Chaturvēda's comment on it, and names the author.

In another instance Bhāscara quoted in his Śrīromaṇi Brahmegupta by name, and the commentator by implication, (and fuller quotations of both occur in the notes and commentaries), for a disagreement in regard to the latitude
of stars and planets measured from the ecliptic both on a circle drawn through its poles, and on one passing through the poles of the equator; the latter termed \textit{sp'huta} or apparent, and the other \textit{asp'huta} or unapparent.\footnote{\textit{Asp'huta sara} is the true latitude of a star or planet; \textit{sp'huta sara} is its declination \pm declination of the point of intersection in the ecliptic.} \textsc{BaH\textsc{h}Sc\textsc{a}r\textsc{a}} remarks that \textsc{BrahmeG\textsc{u}p\textsc{t}a} has directed the latitudes of planets to be computed by one mode, and has given those of the stars in the other, but has stated no rule for reducing the latitude of one denomination to the other, or for rectifying the true latitude from the measure given on the circle of declination. The reason he considers to be the little difference between them (which is true in respect of the planets, though not so in the case of most of the stars), and the frequent occasion in astronomical computations, for the declination of stars, while their proper latitude is not an element in any calculation; whereas, in the case of the planets, both are employed on different occasions: he adverted to a strained interpretation proposed by the commentator to construe \textsc{BrahmeG\textsc{u}p\textsc{t}a}'s rule as adapted to the same denomination of latitude which is employed by him for the stars. \textsc{BaH\textsc{h}Sc\textsc{a}r\textsc{a}} refutes that interpretation, and justifies \textsc{BrahmeG\textsc{u}p\textsc{t}a}'s text taken in its obvious and natural sense.

This passage of the \textsc{Si\textsc{r}\textsc{o}ma\textsc{n\textsc{i}}\textsuperscript{\dag}} confirms what was said

\footnote{\textit{Brahm\textsc{s}u\textsc{d\textsc{a}d\textsc{y\textsc{a}}} c. viii. v. ii, \&c.}
by me, from other authority, in a former essay,* concerning the Hindu method of determining a star’s place with reference to the ecliptic, by the intersection of a circle of declination, and by taking the latitude and longitude of the star to that point of intersection, instead of employing a perpendicular to the ecliptic.

The only other passage to which I shall draw the reader’s attention, is one of considerable length, in which Brahme-gupta, although he has rightly given the theory of solar and lunar eclipses, with the astronomical principles on which they are to be computed, affirms in compliance with the prejudices of Hindu bigots, the existence of Rāhu as an eighth planet and as the immediate cause of eclipses, and reprehends Vārahāmīhīra, Āryabhaṭṭa, Śrībhaṇa and Viṣṇuḥchandra for rejecting this orthodox explanation of the phenomenon. The passage is quoted by Bhāscara’s commentator in the Chintāmani on the occasion of a more concise text of the Śrīomāni affirming the agency of Rāhu in eclipses.†

This quotation from the Brāhma siddhānta comprising seven couplets in the Chintāmani, has been verified in the text of the Brāhma sāhuta siddhānta of Brahmegupta.‡

All these, with numerous other instances in the annotations and commentaries of the Śrīomāni, which I refrain from adducing, lest the reader’s patience should be tired, have established to my entire conviction the genuineness of the Sāhuta siddhānta founded on a prior treatise entitled Brāhma siddhānta.

I am not unapprised, that, under a feeling of great distrust or unwillingness to admit the conclusions which follow from this position, a variety of hypotheses might be formed

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† Part 2, ch. vii. v. 10.
‡ Głođhyđya
to a different effect. Brahmegupta, supposing him to be entirely an original writer, may have referred to an imaginary work to give that kind of authority to his performance which the Hindus most fancy; or he may have fathered on a purana a synopsis of his own doctrine for the same purpose; or some other writer, from whatever motive, may have fabricated a pretended extract of a purana containing the heads of Brahmegupta’s system, and have given currency to it on the strength of the reference in that astronomer’s treatise to an anterior work. These and other suppositions grounded on surmise of fraud and forgery may be formed. I shall not discuss them: for I have no concern but with the facts themselves. Bhaskara, writing 650 years ago, declares, and so do all his commentators, that he has followed Brahmegupta as his guide. They quote numerous passages from his work; and Bhaskara affirms that Brahmegupta took the number of revolutions assigned to the planets in the great period termed calpa from an earlier authority. The commentators, who wrote from two to four centuries ago, assert, that those numbers were taken from a treatise in form of dialogue between Bhagavat (or Brahma) and Bhrigu, inserted in the Vishnu dharmottara purana and distinguished by the title of Brähma or Paitāmaha siddhānta. They cite parallel passages, which do in fact exactly accord in sense and import. They occasionally quote observations on Brahmegupta by his scholiast Chaturveda Prithuhudaca Swami. A book is extant (a copy, partly deficient however, having come into my possession with other astronomical collections) and which consists of a text under the title of Brähme sphutā siddhānta accompanied by a continual commentary by Chaturveda Prithuhudaca Swami. The text contains the same astronomical doctrine which Bhaskara teaches, and which he professes to have derived
from BRAHMEGUPTA; and passages quoted by him in his text, or at more length in his notes, or by his commentators, or by other astronomical writers, as the words of BRAHMEGUPTA, are found verbatim in it. I consider it therefore as the genuine text of the treatise used by BHÁSCARA, as BRAHMEGUPTA's; and seeing no reason for suspicion and distrust, I quote it as the authentic work of that celebrated astronomer.

As the evidence which has been here collected with reference to particular points, bears also upon other questions, I shall now state further conclusions, regarding the history of Indian astronomy, which appear to me to be justly deducible from the premises. Those conclusions will be supported, when necessary, by additional references to authorities.

BRAHMEGUPTA and VÁRAHAMIHIRA, though named at the head of astronomers by BHÁSCARA and SATÁNANDA and by the herd of later writers, are not to be considered as the authors of the Indian system of astronomy. They abound in quotations from more ancient astronomers, upon whose works their own are confessedly grounded. In addition to the names before-mentioned,* those of PRA-DYUMNA, LÁLA SINHA, and LÁDHÁCHÁRYA, may be here specified. But the Brahma siddhánta and the works of ÁRYABHATTA are what principally engages BRAHMEGUPTA'S attention: and the five Siddhántas have been the particular subject of VÁRAHAMIHIRA'S labours. He appears to have been anterior to BRAHMEGUPTA, being actually cited by him among other writers, whose errors are exposed and corrected.

VÁRAHAMIHIRA, constantly quoted as the author of the Várdhí sanhitá and Pancha siddhántica, must be

* Page 386.
2 3 2
judged from those works, which are undoubtedly his by the unanimous consent of the learned, and by the testimony of the ancient scholiast Bhattotpala. The minor works, ascribed to the same author, may have been composed in later times, and the name of a celebrated author have been affixed to them, according to a practice, which is but too common in India as in many other countries. The Jāta-cārṇava, for example, which has been attributed to him, may not improbably be the work of a different author. At least, I am not apprized of any collateral evidence (such as quotations from it in books of some antiquity) to support its genuineness, as a work of Varāhamihira's.

In the Vārāhi sanhitā, this author has not followed the system which is taught in the Sūrya Siddhānta. For instance, his rule for finding the year of the cycle of sixty years, founded on the mean motions of Jupiter, shews that he employed a different number from that which the Sūrya siddhānta furnishes, viz. 364,224 revolutions in a yuga, instead of 364,200; and it appears from a quotation of the scholiast that Āryabhaṭṭa is the authority for that number of revolutions of Jupiter.

Before the age of Varāhamihira and Brahmegupta, and subsequently to that of Garga, a number of illustrious astronomers flourished, by whom the science was cultivated and promoted, but whose works unhappily are lost, or at least have not been yet recovered, and are at present known to us only by quotation. No less than ten intermediate writers are cited by Brahmegupta; of whom five at the least are noticed by Varāhamihira.*

The proficiency of the Yavanas in astronomy was known to Varāhamihira. He has mentioned it with applause,†

* See before, p. 386, 388, and 409.

† चेच्छा चि यवनास्येऽव सम्यक्षास्तविदं स्थितं ।
and has more than once referred to the authority of their writers. The name of Yavanāchārya, which occurs frequently in the compilations of Hindu astronomers,* has apparently reference to an author of that nation; which is characterized by Varahamihira as a people of Melch-has, or barbarians. The title of Rómaca siddhánta, given by Śrīshēṇā, to his astronomical treatise, which is quoted under this title by Varahamihira and Brahmegupta, may be presumed also to carry some allusion to the system of the astronomers of the West.

If these circumstances, joined to a resemblance hardly to be supposed casual, which the Hindu astronomy, with its apparatus of excentrics and epicycles, bears in many respects to that of the Greeks, be thought to authorize a belief, that the Hindus received from the Greeks that knowledge which enabled them to correct and improve their own imperfect astronomy, I shall not be inclined to dissent from the opinion. There does, indeed, appear ground for more than a conjecture, that the Hindus had obtained a knowledge of Grecian astronomy before the Arabs began to cultivate the science; and that the whole cluster of astronomers mentioned by Brahmegupta must be placed in the interval between the age of Hipparchus, and possibly that of Ptolemy, and the date of Brahmegupta's revision of the Brahma siddhánta.

In reforming the Indian astronomy, Brahmegupta, and the astronomers who preceded him, did not take implicitly the mean motions of the planets given by the Cre-

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च्छिवैत्थिकि पूज्यन् किं पुनर्द्विविद्धः ॥

"For the Yavanas are barbarians; but this science is well established among them; and they are revered like holy sages: much more shall a priest who is learned in it be venerated."

cian astronomer. In general they are wider from the truth than Ptolemy.* But, in the instance which is the subject of this paper, they made a nearer approach to accuracy than he had done, and must therefore have used other observations besides those which he has recorded.

The Arabs adopted in its totality Ptolemy’s theory of the motions of the planets; which the Hindus have only

* Mean Diurnal Motions of the Planets.

<table>
<thead>
<tr>
<th>Brahmagupta</th>
<th>Sūrya siddhānta</th>
<th>Ptolemy</th>
<th>Lalande</th>
</tr>
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<td>0 I II III</td>
<td>0 I II III</td>
<td>0 I II III</td>
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<td>13 10 34 52 47</td>
<td>13 10 34 52 3</td>
<td>13 10 34 58 80</td>
<td>13 10 35 1 40</td>
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<td>4 5 32 20 42</td>
<td>4 5 32 24 12</td>
<td>4 5 32 34 13</td>
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<tr>
<td>0 4 59 9 9</td>
<td>0 4 59 8 48</td>
<td>0 4 59 14 26</td>
<td>0 4 59 15 53</td>
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<td>1 36 7 44 35</td>
<td>1 36 7 43 39</td>
<td>1 36 7 43 6</td>
<td>1 36 7 48 24</td>
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<tr>
<td>0 2 0 22 52</td>
<td>0 2 0 22 53</td>
<td>0 2 0 33 31</td>
<td>0 2 0 35 38</td>
</tr>
</tbody>
</table>

In this comparative table computed to fourth minutes, it will be remarked, that the Hindu astronomers mostly agree to third minutes, and differ in the fourths. They disagree with Ptolemy at the thirds, and give, in almost every instance, slower motions than he does, to the planets, and still slower than the truth. In the moon’s synodical motion, however, they are very nearly correct. On the other hand, the equation of the centre deducible from the epicycles (page 404) is a nearer approximation to the truth than results from the eccentricity assigned by Ptolemy to the orbits of the planets. For instance,

Excentricity of the Sun’s Orbit.

Sūrya siddhānta and Brahmagupta (Rad. of the epicycle) 2 10 30
Hipparchus and Ptolemy (Alm., 1. 3. c. 4.) in parts, of which radius contains 60 2 29 30
Albati (c. 28) 2 4 45

Greatest Equation of the Sun’s Centre:

Sūrya siddhānta, &c. (computed by the commentators) 2 10 32
Ptolemy (Ricc. Alm. nov.) 2 23 0
Albati 1 59 0
Alphonsine Tables 2 10 0
Kepler, &c. 2 3 46
Lalande (3d edit.) 1 55 36 1/2
in part. But the Arabs improved on his astronomy by careful observations: a praise to which the Hindus are not equally entitled. Albâtanî discovered the motion of the Sun's apogee, and suspected from analogy a motion of the apsides of the minor planets.* The Hindus surmised the motion of the apogee of the Sun, and nodes and apsides of the planets, from analogy to the Moon's;† but were unable to verify the conjecture by observation; and have, in fact, merely assigned arbitrary numbers to the supposed revolutions, to bring out the places right, (or as nearly so as they had determined them,) relatively to the origin of the ecliptic at a vastly remote period. Bhâscara, when treating of the manner of verifying or of finding the number of revolutions of the planets, &c. in a given period, teaches the mode of observing the planetary motions, but considers the life of man too short for observing the motion of the apsides and nodes (the Moon's excepted); and certainly the revolutions assigned to them by him and other Hindu astronomers are too few, and the motions too slow, (the quickest not exceeding seven degrees in 100,000 years) to have been assumed on any other ground but the arbitrary one just now stated. The astronomical instruments employed by the Hindus, of which Bhâscara describes nine, including one of his own invention, and comprehending the quadrant, semicircle and entire circle, besides the armillary sphere, horary ring, gnomon and clepsydra,‡ were too rudely executed, whatever may be thought of their design, to enable the astronomers to make very delicate observations; and they were not assisted, as in the precession of the equinoxes, by the memory of a former position recorded in their ancient writings.

* Montucla, p. 349. † Bhâscara in Vâsanâ bhâskya. ‡ Gôlâdhyâya, ch. 9.
NOTE REFERRED TO FROM PAGE 397.

According to Áryabhaṭṭa as quoted by Brahmegupta and his scholiast Príthúdaca swámi,

One yuga contains Years 1,080,000
One mahá yuga = 4 yugas 4,320,000
One Menu yuga = 72 mahá yugas 311,040,000
One calpa = 14 Menus = 1008 mahá yugas, 4,354,560,000

The calpa began on Thursday 1st Chaitra śucia, at the moment of sun-rise at Lánca.

Years expired from the commencement of the calpa to the war of the Bhárata, or beginning of the Cati age 1,986,120,000

Add expired years of the Cati to the Śáca era.............. 3,179

| Years from the beginning of the calpa to the commencement of the Śáca era | 1,986,123,179 |

Years expired from the commencement of the present Mahá yuga, to the beginning of the Cati age, when there was a conjunction.......................... 3,240,000

Revolutions of the earth round its own axis, in a quadruple yuga or mahá yuga............. 1,582,237,500

Hence, deducting revolutions of the sun,.............. 4,320,000

Remain, nycthemera, or sávana days, in a mahá yuga.... 1,577,917,500

Length of the sidereal year is d. g. I H d. h. I H therefore, according to Áryabhaṭṭa, 365 15 31 15 or 365 6 12 30

N. B. Áryabhaṭṭa taught the earth’s diurnal revolution round its axis; a doctrine which Brahmegupta controverts; but to which his scholiast Príthúdaca swámi inclines.

According to the Pañiśa siddhánta cited by Bháfótpala on Varáhamihira’s Sáhíśa, and by Príthúdaca swámi on Brahmequata’s Sídhdhánta,

| Cútapá yuga, 4,300 divine years | 1,728,000 |
| Trétiá, 3,600 | 1,296,000 |
| Dwépara, 2,400 | 864,000 |
| | 3,888,000 |
| Cali, 1,200 | 432,000 |
| Mahá yuga | 4,320,000 |

This author’s computation of the calpa has not been found in any quotation; but he is cited as reckoning its commencement from midnight.
ON THE EQUINOXES.

Years expired from the commencement of the present \textit{mahā yuga} to the first conjunction of the planets, in the \textit{Crita yuga} .................................................. 648,000

Interval between that and the last conjunction, at the beginning of the \textit{Cali yuga} .................................................. 3,240,000

Years expired to the commencement of the \textit{Cali yuga} .................................................. 3,888,000

Mean solar (\textit{saura}) days, termed by other astronomers \textit{sāvana} days, in one \textit{mahā yuga} ......................... 1,577,917,800

\begin{center}
\begin{tabular}{lllll}
\hline
\text{\textit{d.}} & \text{\textit{g.}} & \text{\textit{I}} & \text{\textit{II}} & \text{\textit{d.}} \\
\hline
365 & 15 & 31 & 30 & 365 & 6 & 12 & 36 \\
\hline
\end{tabular}
\end{center}

\text{N. B. The difference of 300 days in the computations of \textit{Ārya-brāhīma} and \textit{Puliśa}, gives one day in 14,400 years, as is remarked by \textit{Brahmegupta}.}

Length of the year according to the \textit{Puliśa siddhānta} ............ 365 15 31 30 or 365 6 12 36

According to \textit{Brahmegupta} ...................... 365 15 30 22 30—365 6 12 9

The computation of the \textit{yuga} and \textit{calpa}, according to these authorities, is well known, and need not be exhibited in this place. They make it begin on Sunday; the one at midnight, the other at sun-rise, on the meridian of \textit{Lancd}; and the elapsed years to the beginning of the \textit{Cali} age are, 1,972,944,000. To which \textit{Brahmegupta} adds 3,179 years to the \textit{Śaca} era. The \textit{Śūrya siddhānta} deducts 17,064,000 years; making the epoch of a supposed conjunction of planets by so many years later than the beginning of the \textit{calpa}.

\begin{center}
\begin{tabular}{lccc}
\textbf{Revolutions of the Planets.} & \textbf{According to} & \textbf{According to} & \textbf{According to} \\
& \textit{Puliśa} & \textit{Śūryasiddhānta} & \textit{Brahmegupta} \\
& quoted by & In a \textit{mahā yuga} & In a \textit{mahā yuga} & In a \textit{calpa} \\
\hline
\text{Sun} & 4,320,000 & 4,320,000 & 4,320,000,000 \\
\text{Moon (periodical)} & 57,753,336 & 57,753,336 & 57,753,300,000 \\
\text{Mars} & 2,296,824 & 2,296,832 & 2,296,828,522 \\
\text{Mercury} & 17,937,000 & 17,937,060 & 17,936,998,984 \\
\text{Jupiter} & 364,220 & 364,220 & 364,226,455 \\
\text{Venus} & 7,022,388 & 7,022,376 & 7,022,389,492 \\
\text{Saturn} & 146,564 & 146,566 & 146,567,298 \\
\hline
\text{Days} & 1,577,917,800 & 1,577,917,828 & 1,577,916,450,000 \\
\hline
\end{tabular}
\end{center}
Aryabhata states the revolutions of Jupiter at 364,224; and Varahamihira's rule for the cycle of sixty years of Jupiter is founded on that number. The periods assigned by these two authors to other planets have not been ascertained; except Saturn's aphelion, reckoned by Aryabhata at fifty-four revolutions in a calpa. Aryabhata's numbers are said to have been derived from the Pârâsara siddhanta. (As. Res., vol. ii. p. 242.)
XVI.

DISSERTATION on the ALGEBRA of the HINDUS.

[Prefixed to the Author's 'Algebra, with Arithmetic and Mensuration, from the Sanscrit of Brahmegupta and Brâscara.' London, 1817. 4to.]

The history of sciences, if it want the prepossessing attractions of political history and narration of events, is nevertheless not wholly devoid of interest and instruction. A laudable curiosity prompts to inquire the sources of knowledge; and a review of its progress furnishes suggestions tending to promote the same or some kindred study. We would know the people and the names at least of the individuals, to whom we owe particular discoveries and successive steps in the advancement of knowledge. If no more be obtained by the research, still the inquiry has not been wasted, which points aright the gratitude of mankind.

In the history of mathematical science, it has long been a question to whom the invention of Algebraic analysis is due? among what people, in what region, was it devised? by whom was it cultivated and promoted? or by whose labours was it reduced to form and system? and finally, from what quarter did the diffusion of its knowledge proceed? No doubt, indeed, is entertained of the source from which it was received immediately by modern Europe; though the channel have been a matter of question. We are well assured, that the Arabs were mediately or immediately our instructors in this study. But the Arabs them-
selves scarcely pretend to the discovery of Algebra. They were not in general inventors but scholars, during the short period of their successful culture of the sciences: and the germ at least of the Algebraic analysis is to be found among the Greeks in an age not precisely determined, but more than probably anterior to the earliest dawn of civilization among the Arabs; and this science in a more advanced state subsisted among the Hindus prior to the earliest disclosure of it by the Arabians to modern Europe.

The object of the present publication is to exhibit the science in the state in which the Hindus possessed it, by an exact version of the most approved treatise on it in the ancient language of India, with one of the earlier treatises (the only extant one) from which it was compiled. The design of this preliminary dissertation is to deduce from these and from the evidence which will be here offered, the degree of advancement to which the science had arrived in a remote age. Observations will be added, tending to a comparison of the Indian with the Arabian, the Grecian, and the modern Algebra: and the subject will be left to the consideration of the learned, for a conclusion to be drawn by them from the internal, no less than the external proof, on the question who can best vindicate a claim to the merit of having originally invented or first improved the methods of computation and analysis, which are the groundwork of both the simple and abstruser parts of Mathematics; that is, Arithmetic and Algebra: so far, at least, as the ancient inventions are affected; and also in particular points, where recent discoveries are concerned.

In the actual advanced condition of the analytic art, it is not hoped, that this version of ancient Sanscrit treatises on Algebra, Arithmetic, and Mensuration, will add to the resources of the art, and throw new light on Mathematical science, in any other respect, than as concerns its history.
Yet the remark may not seem inapposite, that had an earlier version of these treatises been completed, had they been translated and given to the public when the notice of mathematicians was first drawn to the attainments of the Hindus in astronomy and in sciences connected with it, some addition would have then been made to the means and resources of Algebra for the general solution of problems by methods which have been re-invented, or have been perfected, in the last age.

The treatises in question, which occupy the present volume, are the *Vīja gañita* and *Lilāvatī* of Bhāscara Achārya, and the *Gañitadhyāya* and *Cut candhyāya* of Brahmegupta. The two first mentioned constitute the preliminary portion of Bhāscara’s Course of Astronomy, entitled *Siddhānta śirōmaṇī*. The two last are the twelfth and eighteenth chapters of a similar course of astronomy, by Brahmegupta, entitled *Brāhma siddhānta*.

The questions to be first examined in relation to these works are their authenticity and their age. To the consideration of those points we now proceed.

The period when Bhāscara, the latest of the authors now named, flourished, and the time when he wrote, are ascertained with unusual precision. He completed his great work, the *Siddhānta śirōmaṇī*, as he himself informs us as in a passage of it,* in the year 1072 Śāca*. This information receives corroboration, if any be wanted, from the date of another of his works, the *Carana cutūhala*, a practical astronomical treatise, the epoch of which is 1105 Śāca;† thirty-three years subsequent to the completion of the systematic treatise. The date of the *Siddhānta śirōmaṇī*, of which the *Vīja gañita* and *Lilāvatī* are parts,

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† As. Res., ibid.
is fixed, then, with the utmost exactness, on the most satisfactory grounds, at the middle of the twelfth century of the Christian era, A.D. 1150.*

The genuineness of the text is established with no less certainty by numerous commentators in Sanscrit, besides a Persian version of it. Those commentaries comprise a perpetual gloss, in which every passage of the original is noticed and interpreted: and every word of it is repeated and explained. A comparison of them authenticates the text where they agree; and would serve, where they did not, to detect any alterations of it that might have taken place, or variations, if any had crept in, subsequent to the composition of the earliest of them. A careful collation of several commentaries,† and of three copies of the original work, has been made; and it will be seen in the notes to the translation how unimportant are the discrepancies.

From comparison and collation, it appears then that the work of Bhāscara, exhibiting the same uniform text which the modern transcripts of it do, was in the hands of both Muhammedans and Hindus, between two and three centuries ago: and, numerous copies of it having been diffused throughout India, at an earlier period, as of a performance held in high estimation, it was the subject of study and habitual reference in countries and places so remote from each other as the north and west of India and the southern peninsula; or, to speak with the utmost precision, Jambusara, in the west, Agra in North Hindustan, and Pārthapura, Gólagrama, Amaravati, and Nandi-gra, in the south.

* Though the matter be introductory, the preliminary treatises on arithmetic and algebra may have been added subsequently, as is hinted by one of the commentators of the astronomical part (Pārta). The order there intimated places them after the computation of planets, but before the treatise on spherics; which contains the date.

† Note A.
This, though not marking any extraordinary antiquity, nor approaching to that of the author himself, was a material point to be determined: as there will be in the sequel occasion to show, that modes of analysis, and, in particular, general methods for the solution of intermediate problems both of the first and second degrees, are taught in the Vījā gañita, and those for the first degree repeated in the Lilāvatī, which were unknown to the mathematicians of the west, until invented anew in the last two centuries by algebraists of France and England. It will be also shown, that Bhāscara, who himself flourished more than six hundred and fifty years ago, was in this respect a compiler, and took those methods from Indian authors as much more ancient than himself.

That Bhāscara’s text (meaning the metrical rules and examples, apart from the interspersed gloss) had continued unaltered from the period of the compilation of his work until the age of the commentaries now current, is apparent from the care with which they have noticed its various readings, and the little actual importance of these variations; joined to the consideration, that earlier commentaries, including the author’s own explanatory annotations of his text, were extant, and lay before them for consultation and reference. Those earlier commentaries are occasionally cited by name: particularly the Gañita cau-mudī, which is repeatedly quoted by more than one of the scholiasts.*

No doubt then can be reasonably entertained, that we now possess the arithmetic and algebra of Bhāscara, as composed and published by him in the middle of the twelfth century of the Christian era. The age of his precursors cannot be determined with equal precision. Let

* For example, by Sūryadāsa, under Lilāvatī, § 74; and still more frequently by Ranganāt’ha.
us proceed, however, to examine the evidence, such as we can at present collect, of their antiquity.

Towards the close of his treatise on Algebra,* Bhāscara informs us, that it is compiled and abridged from the more diffuse works on the same subject, bearing the names of Brahme (meaning no doubt Brahmegupta,) Śrīdhara and Padmanābha; and in the body of his treatise, he has cited a passage of Śrīdhara’s algebra,+ and another of Padmanābha’s.† He repeatedly adverts to preceding writers, and refers to them in general terms, where his commentators understand him to allude to Āryabhatṭa, to Brahmegupta, to the latter’s scholiast Chaturvēda Prithūḍaca Swāmī,§ and to the other writers above mentioned.

Most, if not all, of the treatises, to which he thus alludes, must have been extant, and in the hands of his commentators, when they wrote, as appears from their quotations of them; more especially those of Brahmegupta and Āryabhatṭa, who are cited, and particularly the first mentioned, in several instances.|| A long and diligent research in various parts of India, has, however, failed of recovering any part of the Padmanābha vijā (or Algebra of Padmanābha), and of the algebraic and other works of Āryabhatṭa.† But the translator has been more fortunate in regard to the works of Śrīdhara and Brahmegupta, having in his collection Śrīdhara’s compendium of arithmetic, and a copy, incomplete however, of the text and scholia of Brahmegupta’s Brāhma siddhānta, comprising among other no less interesting matter, a chapter treating of arithmetic and mensuration; and another,

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* Vīja gaṇita, § 218.  † Ibid. § 131.  †† Ibid. § 142.  § Vīja gaṇ., ch. 5, note of Sūryadāsa. Also Vīja gaṇ., § 174; and Līl., § 246, ad finem.  || For example, under Līl. ch. 11.  †† Note G.
the subject of which is algebra: both of them fortunately complete.*

The commentary is a perpetual one; successively quoting at length each verse of the text; proceeding to the interpretation of it, word by word; and subjoining elucidations and remarks: and its colophon, at the close of each chapter, gives the title of the work and the name of the author.† Now the name, which is there given, CHATURVÉDA PRIT'HÚDACA SWÁMÍ, is that of a celebrated scholiast of BRAHMEGUPTA, frequently cited as such by the commentaries of BHÁSCARA and by other astronomical writers: and the title of the work, Brāhma siddhánta, or sometimes Brāhma sp'huṭa siddhánta, corresponds, in the shorter form, to the known title of BRAHMEGUPTA'S treatise in the usual references to it by BHÁSCARA'S commentators;‡ and answers, in the longer form, to the designation of it, as indicated in an introductory couplet which is quoted from BRAHMEGUPTA by LASCHMÍDÁSA, a scholiast of BHÁSCARA.§

Remark ing this coincidence, the translator proceeded to collate, with the text and commentary, numerous quotations from both, which he found in BHÁSCARA'S writings, or in those of his expositors. The result confirmed the indication, and established the identity of both text and scholia as BRAHMEGUPTA'S treatise, and the gloss of PRIT'HÚDACA. The authenticity of the Brāhma siddhánta is further confirmed by numerous quotations in the commentary of BHAT'TÓTPALA on the sanhitá of VARÁHA-

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* Note B.
† Vásaná bháshya by CHATURVÉDA PRIT'HÚDACA SWÁMÍ, son of MADHUSÚDANA, on the Brāhma siddhánta; (or sometimes Brāhma-sphuṭa-siddhánta.)
‡ They often quote from the Brāhma siddhánta after premising a reference to BRAHMEGUPTA.
§ Note C.
MIHIRA: as the quotations from the *Brahme siddhanta*, in that commentary, (which is the work of an author who flourished eight hundred and fifty years ago,) are verified in the copy under consideration. A few instances of both will suffice, and cannot fail to produce conviction. *

It is confidently concluded, that the chapters on arithmetic and algebra, fortunately entire in a copy, in many parts imperfect, of BRAHMEGUPTA'S celebrated work, as here described, are genuine and authentic. It remains to investigate the age of the author.

Mr. DAVIS, who first opened to the public a correct view of the astronomical computations of the Hindus,† is of opinion, that BRAHMEGUPTA lived in the seventh century of the Christian era. ‡ Dr. WILLIAM HUNTER, who resided for sometime with a British Embassy at Ujjayanî, and made diligent researches into the remains of Indian science at that ancient seat of Hindu astronomical knowledge, was there furnished, by the learned astronomers whom he consulted, with the ages of the principal ancient authorities. They assigned to BRAHMEGUPTA the date of 550 Śāca; which answers to A. D. 628. The grounds of which they proceeded are unfortunately not specified: but, as they gave BHĀSCARA'S age correctly, as well as several other dates right, which admit of being verified; it is presumed that they had grounds, though unexplained, for the information which they communicated.§

Mr. BENTLEY, who is little disposed to favour the antiquity of an Indian astronomer, has given his reasons for considering the astronomical system which BRAHMEGUPTA teaches, to be between twelve and thirteen hundred years old (1263⅔ years in A. D. 1799).|| Now, as the system taught by this author is professedly one corrected

and adapted by him to conform with the observed positions of the celestial objects when he wrote,* the age, when their positions would be conformable with the results of computations made as by him directed, is precisely the age of the author himself: and so far as Mr. Bentley’s calculations may be considered to approximate to the truth, the date of Brahmagupta’s performance is determined with like approach to exactness, within a certain latitude however of uncertainty for allowance to be made on account of the inaccuracy of Hindu observations.

The translator has assigned on former occasions† the grounds upon which he sees reason to place the author’s age, soon after the period when the vernal equinox coincided with the beginning of the lunar mansion and zodiacal asterism Aświnī, where the Hindu ecliptic now commences. He is supported in it by the sentiments of Bhāscara and other Indian astronomers, who infer from Brahmagupta’s doctrine concerning the solstitial points, of which he does not admit a periodical motion, that he lived when the equinoxes did not, sensibly to him, deviate from the beginning of Aświnī and middle of Chitra on the Hindu sphere.‡ On these grounds it is maintained, that Brahmagupta is rightly placed in the sixth or beginning of the seventh century of the Christian era; as the subjoined calculations will more particularly show.§ The age when Brahmagupta flourished, seems then, from the concurrence of all these arguments, to be satisfactorily settled as antecedent to the earliest dawn of the culture of sciences among the Arabs; and consequently establishes the fact, that the Hindus were in possession of algebra before it was known to the Arabians.

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‡ As. Res., vol. xii. p. 215. [p. 380, of the present vol.] § Note F.
Brahmegupta's treatise, however, is not the earliest work known to have been written on the same subject by an Indian author. The most eminent scholiast of Bhāscarā* quotes a passage of Āryabhātīya specifying algebra under the designation of Vija, and making separate mention of Cuttaca, which more particularly intends a problem subservient to the general method of resolution of indeterminate problems of the first degree; he is understood by another of Bhāscarā's commentators† to be at the head of the elder writers, to whom the text then under consideration adverts, as having designated by the name of Madhyamāharaṇa the resolution of affected quadratic equations by means of the completion of the square. It is to be presumed, therefore, that the treatise of Āryabhātīya then extant, did extend to quadratic equations in the determinate analysis, and to indeterminate problems of the first degree; if not to those of the second likewise, as most probably it did.

This ancient astronomer and algebraist was anterior to both Varāhamihira and Brahmegupta, being repeatedly named by the latter; and the determination of the age when he flourished is particularly interesting, as his astronomical system, though on some points agreeing, essentially disagreed on others, with that which those authors have followed, and which the Hindu astronomers still maintain.‡

He is considered by the commentators of the Sūrya siddhānta and Śirāmahi,§ as the earliest of uninspired and mere human writers on the science of astronomy; as having introduced requisite corrections into the system of

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* Gaṇeśa, a distinguished mathematician and astronomer.  
† Sūr. on Viṣṇu gac. § 128.  
‡ Note G.  
§ Neśiṃha on Sūr. Gaṇeśa pref. to Graha līlā.
PARÁŚARA, from whom he took the numbers for the planetary mean motions; as having been followed in the tract of emendation, after a sufficient interval to make further correction requisite, by DURGASINHA and MÍHIRA; who were again succeeded after a further interval by BRAHMÉGUPTA son of JISHŇU.*

In short, ÁRYABHAṬṬA was founder of one of the sects of Indian astronomers, as Pulíśa, an author likewise anterior to both VARÁHAMIHIRA and BRAHMÉGUPTA, was of another: which were distinguished by names derived from the discriminative tenets respecting the commencement of planetary motions at sun-rise according to the first, but at midnight according to the latter;† on the meridian of Lancá, at the beginning of the great astronomical cycle. A third sect began the astronomical day, as well as the great period, at noon.

His name accompanied the intimation which the Arab astronomers (under the Abbasside Khalifs, as it would appear,) received, that three distinct astronomical systems were current among the Hindus of those days; and it is but slightly corrupted, certainly not at all disguised, in the Arabic representation of it Arjabahar, or rather Arjabhar.‡ The two other systems were, first, BRAHMÉGUPTA’S

* As. Res., vol. ii. p. 235, 242, and 244; and Note H.

† BRAHMÉGUPTA, ch. 11. The names are Audayaca from Udaya rising; and Árdhátríca from Árdhátrí, midnight. The third school is noticed by Bhaffótpala the scholiast of VARÁHAMIHIRA, under the denomination of Mádhyandínis, as alleging the commencement of the astronomical period at noon: (from Madhyandaína, midday.)

‡ The Sanscrit, f, it is to be remembered, is the character of a peculiar sound often mistaken for r, and which the Arabs were likely so to write, rather than with a t or with a tau. The Hindi f is generally written by the English in India with an r. Example: Ber (vařa), the Indian fig, vulg. Banian tree.
have treated of Algebra among the Hindus, and being likely to be, if not the inventor, the improver of that analysis, by whom too it was pushed nearly to the whole degree of excellence which it is found to have attained among them; it becomes in an especial manner interesting to investigate any discoverable trace in the absence of better and more direct evidence, which may tend to fix the date of his labours, or to indicate the time which elapsed between him and BRAHMEGUPTA, whose age is more accurately determined.*

Taking ÁRYABHĀṬTA, for reasons given in the notes, to have preceded BRAHMEGUPTA and VARĀHAMIHIRA by several centuries; and BRAHMEGUPTA to have flourished about twelve hundred years ago;† and VARĀHAMIHIRA, concerning whose works and age some further notices will be found in a subjoined note,‡ to have lived at the beginning of the sixth century after Christ.§ it appears probable that this earliest of known Hindu algebraists wrote as far back as the fifth century of the Christian era; and, perhaps, in an earlier age. Hence it is concluded that he is nearly as ancient as the Grecian algebraist DIOPHANTUS, supposed, on the authority of ABULFARAJ,|| to have flourished in the time of the Emperor JULIAN, or about A. D. 360.

Admitting the Hindu and Alexandrian authors to be nearly equally ancient, it must be conceded in favour of the Indian algebraist, that he was more advanced in the science; since he appears to have been in possession of the resolution of equations involving several unknown, which it is not clear, nor fairly presumable, that DIOPHANTUS,

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* Note I.  † See before and note F.  ‡ Note K.  § See before and note E.  || Pococke's edition and translation, p. 89
knew; and a general method for indeterminate problems of at least the first degree, to a knowledge of which the Grecian algebraist had certainly not attained; though he displays infinite sagacity and ingenuity in particular solutions; and though a certain routine is discernible in them.

A comparison of the Grecian, Hindu, and Arabian algebras, will more distinctly show, which of them had made the greatest progress at the earliest age of each, that can be now traced.

The notation or algorithm of Algebra is so essential to this art, as to deserve the first notice in a review of the Indian method of analysis, and a comparison of it with the Grecian and Arabian algebras. The Hindu algebraists use abbreviations and initials for symbols: they distinguish negative quantities by a dot,* but have not any mark, besides the absence of the negative sign, to discriminate a positive quantity. No marks or symbols indicating operations of addition, or multiplication, &c. are employed by them: nor any announcing equality† or relative magnitude (greater or less).‡ But a factum is denoted by the initial syllable of a word of that import,§ subjoined to the terms which compose it, between which a dot is sometimes interposed. A fraction is indicated by placing the divisor under the dividend,|| but without a line of separation. The two sides of an equation are ordered in the same manner, one under the other:¶ and this method of placing

* Viṣa gañ. § 4.
† The sign of equality was first used by Robert Recorde, because, as he says, no two things can be more equal than a pair of parallels, or gemowe lines of one length. Hutton.
‡ The signs of relative magnitude were first introduced into European algebra by Harriot.
§ Viṣa gañ. § 21. || Lil. § 33.
¶ Viṣa gañ. and Brah. 18, passim.
terms under each other being likewise practised upon other occasions,* the intent is in the instance to be collected from the recital of the steps of the process in words at length, which always accompanies the algebraic process. That recital is also requisite to ascertain the precise intent of vertical lines interposed between the terms of a geometric progression, but used also upon other occasions, to separate and discriminate quantities. The symbols of unknown quantity are not confined to a single one: but extend to ever so great a variety of denominations: and the characters used are initial syllables of the names of colours;† excepting the first, which is the initial of yāvat-tāvat, ‘as much as’; words of the same import with Bombelli’s tanto, used by him for the same purpose. Colour therefore means unknown quantity, or the symbol of it: and the same Sanscrit word, varṇa, also signifying a literal character, letters are accordingly employed likewise as symbols; either taken from the alphabet;‡ or else initial syllables of words signifying the subjects of the problem; whether of a general nature,§ or specially the names of geometric lines in algebraic demonstrations of geometric propositions or solution of geometric problems.|| Symbols too are employed, not only for unknown quantities, of which the value is sought; but for variable quantities of which the value may be arbitrarily put (Vij. Ch. 6, note on commencement of § 153—156), and especially in demonstrations, for both given and sought quantities. Initials of the terms for square and solid respectively denote those powers; and combined they indicate the higher. These are reckoned not by the sums of the powers, but by their products. An initial syllable is in like manner

* Vija gañ. § 55.  † Vija gañ. § 17.  BRAHM. c. 18. § 2.
‡ Vija gañ. ch. 6.  § Vija gañ. § 111.  || Vija gañ. § 146.
§ Lit. § 26.
used to mark a surd root.* The terms of a compound quantity are ordered according to the powers; and the absolute number invariably comes last. It also is distinguished by an initial syllable, as a discriminative token of known quantity.† Numeral coefficients are employed, inclusive of unity which is always noted, and comprehending fractions;‡ for the numeral divisor is generally so placed, rather than under the symbol of the unknown: and in like manner the negative dot is set over the numeral coefficient: and not over the literal character. The coefficients are placed after the symbol of the unknown quantity.§ Equations are not ordered so as to put all the quantities positive; nor to give precedence to a positive term in a compound quantity: for the negative terms are retained, and even preferably put in the first place. In stating the two sides of an equation, the general, though not invariable, practice is, at least in the first instance, to repeat every term, which occurs in the one side, on the other: annexing nought for the coefficient, if a term of that particular denomination be there wanting.

If reference be made to the writings of Diophantus, and of the Arabian algebraists, and their early disciples in Europe, it will be found, that the notation, which has been here described, is essentially different from all theirs, much as they vary. Diophantus employs the inverted medial of ἀλειψις, defect or want (opposed to ἐπάρξις, substance or abundance||) to indicate a negative quantity. He prefixes that mark † to the quantity in question. He calls the unknown, ἀριθμός; representing it by the final s, which

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* Vija gāṇ. § 29. † Vija gāṇ. § 17.
‡ Stevinus in like manner included fractions in coefficients.
§ Vīṣṭa did so likewise.
|| A word of nearly the same import with the Sanscrit dhanā, used by Hindu algebraists for the same signification.
he doubles for the plural; while the Arabian algebraists apply the equivalent word for number to the constant or known term; and the Hindus, on the other hand, refer the word for numerical character to the coefficient. He denotes the monad, or unit absolute, by μ0; and the linear quantity is called by him arithmos; and designated, like the unknown, by the final sigma. He marks the further powers by initials of words signifying them: δ', η', θθ', δδ', δη', ηη' &c. for dynamis, power (meaning the square); cubos, cube; dynamo-dynamis, biquadrate, &c. But he reckons the higher by the sums, not the products, of the lower. Thus the sixth power is with him the cubo-cubos, which the Hindus designate as the quadrate-cube, (cube of the square, or square of the cube).

The Arabian algebraists are still more sparing of symbols, or rather entirely destitute of them.† They have none, whether arbitrary or abbreviated, either for quantities known or unknown, positive or negative, or for the steps and operations of an algebraic process; but express everything by words, and phrases, at full length. Their European scholars introduced a few, and very few abbreviations of names: cο, cε, cυ, for the three first powers; cο, qς, for the first and second unknown quantities; p, m, for plus and minus; and R for the note of radicality; occur in the first printed work, which is that of Paciolo.‡ Leonardo Bonacci of Pisa the earliest scholar of the Arabians,§ is said by Targioni Tozzetti to have used the small letters of the alphabet to denote quantities.|| ButLeo-

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* Def. 9.
‡ Or Pacioli, Paciolo,—li, &c. For the name is variously written by Italian authors.
§ See note L.

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**NARDO** only does so because he represents quantities by straight lines, and designates those lines by letters, in elucidation of his algebraic solutions of problems.*

The Arabians termed the unknown (and they wrought but on one) *shai* thing. It is translated by **Leonardo** of Pisa and his disciples, by the correspondent Latin word *res* and Italian *cosa*; whence *Regola de la Cosa*, and Rule of *Coss*, with *Cossike* practice and *Cossike* number of our old authors,† for Algebra or Speculative practice, as *Paciolo*‡ denominates the analytic art; and *Cossic* number, in writers of a somewhat later date, for the root of an equation.

The Arabs termed the square of the unknown *māl*, possession or wealth; translated by the Latin *census* and Italian *censo*; as terms of the same import: for it is in the acceptation of amount of property or estate§ that *census* was here used by **Leonardo**.

The cube was by the Arabs termed *cāb*, a die or cube; and they combined these terms *māl* and *cāb* for compound names of the more elevated *powers*, in the manner of *Diophantus* by the sums of the powers; and not like the Hindus by their products. Such, indeed, is their method in the modern elementary works: but it is not clear that the same mode was observed by their earlier writers; for their Italian scholars denominated the biquadrate and higher powers *Relato primo, secundo, tertio, &c.*

Positive they call *zdīd* additional; and negative *ndīkis* deficient: and, as before observed, they have no discriminative marks for either of them.

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**Cossali, Origine dell’Algebra, i.**

† **Robert Recorde**’s Whetstone of Witte.

‡ Secondo noi detta Practica Speculativa. *Summa 8.* 1.

§ *Census, quicquid fortunarium quis habet.* **Steph. Thes.**
The operation of restoring negative quantities, if any there be, to the positive form, which is an essential step with them, is termed jebr, or with the article Aljebr, the mending or restoration. That of comparing the terms and taking like from like, which is the next material step in the process of resolution, is called by them mukâbalah, comparison. Hence the name of Tarîk aljebr wa almukâbalah, 'the method of restoration and comparison,' which obtained among the Arabs for this branch of the analytic art; and hence our name of Algebra, from LEONARDO of Pisa's exact version of the Arabic title. Fi istikhrajuš majhûlat be tarîk aljebr wa almukâbalah, * De solutione quarundam quaestionum secundum modum Algebrae et Almuchabalae.†

The two steps or operations which have thus given name to the method of analysis, are precisely what is enjoined without distinctive appellations of them, in the introduction of the arithmetics of DIOPHANTUS, where he directs, that, if the quantities be positive on both sides, like are to be taken from like, until one species be equal to one species; but if on either side or on both any species be negative, the negative species must be added to both sides, so that they become positive on both sides of the equation: after which like are again to be taken from like, until one species remain on each side.‡

The Hindu algebra not requiring the terms of the equation to be all exhibited in the form of positive quantity, does not direct the preliminary step of restoring negative quantity to the affirmative state, but proceeds at once to the operation of equal subtraction (samasôdhana) for the difference of like terms, which is the process denominated

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* Khûlûsatûl histîb. c. 8. Calcutta, 1812. (8vo.)
† Liber abb 9. 15. 3. M.S. in Magliab. Libr.
‡ ef. 11.
by the Arabian algebraists comparison (mubabalah). On that point, therefore, the Arabian algebra has more affinity to the Grecian than to the Indian analysis.

As to the progress which the Hindus had made in the analytic art, it will be seen, that they possessed well the arithmetic of surd roots;* that they were aware of the infinite quotient resulting from the division of finite quantity by cipher;† that they knew the general resolution of equations of the second degree, and had touched upon those of higher denomination, resolving them in the simplest cases, and in those in which the solution happens to be practicable by the method which serves for quadratics;‡ that they had attained a general solution of indeterminate problems of the first degree;§ that they had arrived at a method for deriving a multitude of solutions of answers to problems of the second degree from a single answer found tentatively,|| which is as near an approach to a general solution of such problems as was made until the days of Lagrange, who first demonstrated, that the problem, on which the solutions of all questions of this nature depend, is, always resolvable in whole numbers.¶ The Hindus had likewise attempted problems of this higher order by the application of the method which suffices for those of the first degree;** with indeed very scanty success, as might be expected.

They not only applied algebra both to astronomy†† and

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* Brahm. 18. § 27—29. Vīj.-gaṅ. § 23—52.
† Lil. § 45. Vīj.-gaṅ. § 15—16 and § 135.
‡ Vīj.-gaṅ. § 129. and § 137—138.
¶ Mem. of Acad. of Turin: and of Berlin.
** Vīj.-gaṅ. § 206—207. †† Brahm. 18. passim. Vīj.-gaṅ.
to geometry,* but conversely applied geometry likewise to the demonstration of algebraic rules.† In short, they cultivated algebra much more, and with greater success, than geometry; as is evident from the comparatively low state of their knowledge in the one,‡ and the high pitch of their attainments in the other: and they cultivated it for the sake of astronomy, as they did this chiefly for astrological purposes. The examples in the earliest algebraic treatise extant (Brahmegupta's) are mostly astronomical: and here the solution of indeterminate problems is sometimes of real and practical use. The instances in the later treatise of algebra by Bhāscara are more various: many of them geometric; but one astronomical; the rest numerical: among which a great number of indeterminate; and of these some, though not the greatest part, resembling the questions which chiefly engage the attention of Diophantus. But the general character of the Diophantine problems, and of the Hindu unlimited ones, is by no means alike: and several in the style of Diophantine are noticed by Bhāscara in his arithmetical, instead of his algebraic, treatise.§

To pursue this summary comparison further, Diophantus appears to have been acquainted with the direct resolution of affected quadratic equations; but less familiar with the management of them, he seldom touches on it. Chiefly busied with indeterminate problems of the first degree, he yet seems to have possessed no general rule for their solution. His elementary instructions for the preparation of equations are succinct;|| his notation, as before

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* Vij.-gah. § 117—127, § 146—152. † Vij.-gah. § 212—214. ‡ Brahmr. 12. § 21; corrected however in Lit. § 169—170. § Lit. § 59—61, where it appears, however, that preceding writers had treated the question algebraically. See likewise § 139—146. || Def. 11.
observed, scanty and inconvenient. In the whole science he is very far behind the Hindu writers, notwithstanding the infinite ingenuity by which he makes up for the want of rule, and although presented to us under the disadvantage of mutilation; if it be, indeed, certain that the text of only six, or at most seven, of thirteen books, which his introduction announces, has been preserved.* It is sufficiently clear from what does remain, that the lost part could not have exhibited a much higher degree of attainment in the art. It is presumable, that so much as we possess of his work is a fair specimen of the progress which he and the Greeks before him (for he is hardly to be considered as the inventor, since he seems to treat the art as already known) had made in his time.

The points in which the Hindu algebra appears particularly distinguished from the Greek, are, besides a better and more comprehensive algorithm,—1st, The management of equations involving more than one unknown term. (This adds to the two classes noticed by the Arabs, namely, simple and compound, two, or rather three, other classes of equation.) 2d, The resolution of equations of a higher order, in which, if they achieved little, they had, at least, the merit of the attempt, and anticipated a modern discovery in the solution of biquadratics. 3d. General methods for the solutions of indeterminate problems of first and second degrees, in which they went far, indeed, beyond Diophantus and anticipated discoveries of modern algebraists. 4th, Application of algebra to astronomical investigation and geometrical demonstration, in which also they hit upon some matters which have been reinvented in later times.

This brings us to the examination of some of their anti-

* Note M.
cipations of modern discoveries. The reader's notice will be here drawn to three instances in particular.

The first is in the demonstration of the noted proposition of Pythagoras, concerning the square of the base of a rectangular triangle, equal to the squares of the two legs containing a right angle. The demonstration is given two ways in BhÁASCARA'S algebra (Víj.-gaÁ.n, § 146). The first of them is the same which is delivered by WALLIS in his treatise on angular sections (ch. vi.), and, as far as appears, then given for the first time.*

On the subject of demonstrations, it is to be remarked that the Hindu mathematicians proved propositions both algebraically and geometrically: as is particularly noticed by BhÁASCARA himself, towards the close of his algebra, where he gives both modes of proof of a remarkable method for the solution of indeterminate problems, which involve a factum of two unknown quantities. The rule which he demonstrates is of great antiquity in Hindu algebra, being found in the works of his predecessor BRAHMESWAPTA, and being there a quotation from a more ancient treatise; for it is injudiciously censured, and a less satisfactory method by unrestricted arbitrary assumption given in its place. BhÁASCARA has retained both.

The next instance, which will be here noticed, is the general solution of indeterminate problems of the first degree.

* He designates the sides C, D. Base B. Segments κ, δ. Then

\[
\begin{align*}
B : C : : C : κ \\
B : D : : D : δ
\end{align*}
\]

and therefore \( C^2 = B \times κ \) \( D^2 = B \times δ \)

Therefore \( C^2 + D^2 = (B \times κ + B \times δ = B \times (κ + δ)) = B^2 \).

The Indian demonstration, with the same symbols, is

\[
\begin{align*}
B : C : : C : κ \\
B : D : : D : δ
\end{align*}
\]

Therefore \( κ = \frac{C^2}{B} \) \( δ = \frac{D^2}{B} \)

Therefore \( B = κ + δ = C^2 + D^2 \) and \( B^2 = C^2 + D^2 \).
It was first given among moderns by BACHET DE MEZIÈRES in 1624.* Having shown how the solution of equations of the form \( ax - by = c \) is reduced to \( ax - by + 1 \), he proceeds to resolve this equation; and prescribes the same operation on \( a \) and \( b \) as to find the greatest common divisor. He names the residues, \( c, d, e, f, \&c. \) and the last remainder is necessary unity: \( a \) and \( b \) being prime to each other. By retracing the steps from \( e + 1 \) or \( f + 1 \) (according as the number of remainders is even or odd) \( e + 1 = \varepsilon, \frac{c}{e} = \delta, \frac{d}{c} + 1 = \gamma, \frac{b}{c} + 1 = \beta, \frac{\delta a + 1}{b} = \alpha \)

or \( f + 1 = \zeta, \frac{e c + 1}{f} = \varepsilon, \frac{\delta e + \varepsilon}{f} = \delta, \&c. \)

The last numbers \( \beta \) and \( \alpha \) will be the smallest values of \( x \) and \( y \). It is observed, that if \( a \) and \( b \) be not prime to each other, the equation cannot subsist in whole numbers, unless \( c \) be divisible by the greatest common measure of \( a \) and \( b \).

Here we have precisely the method of the Hindu algebraists, who have not failed, likewise, to make the last cited observation. See BRAHM. Algebra, section 1. and BHĀSC. Līl. ch. xii. Vāy. ch. ii. It is so prominent in the Indian algebra as to give name to the oldest treatise on it extant, and to constitute a distinct head in the enumeration of the different branches of mathematical knowledge in a passage cited from a still more ancient author. See Līl. § 248.

Confining the comparison of Hindu and modern algebras to conspicuous instances, the next for notice is that of the solution of indeterminate problems of the second degree; for which a general method is given by BRAHMEGUPTA,
besides rules for subordinate cases, and two general methods (one of them the same with Brahmegupta's) besides special cases, subservient, however, to the universal solution of problems of this nature; and, to obtain whole numbers in all circumstances, a combination of the method for problems of the first degree with that for those of the second, employing them alternately, or, as the Hindu algebraist terms it, proceeding in a circle.

Bhāscara's second method (Vij. § 80—81) for a solution of the problem on which all indeterminate ones of this degree depend, is exactly the same which Lord Brouncker devised to answer a question proposed by way of challenge by Fermat in 1657. The thing required was a general rule for finding the innumerable square numbers, which multiplied by a proposed (non-quadrate) number, and then assuming an unit, will make a square. Lord Brouncker's rule, putting \( n \) for any given number, \( r^2 \) for any square taken at pleasure, and \( d \) for difference between \( n \) and \( r^2 \) (\( r^2 \not\equiv n \)) was \( \frac{4r^2}{d^2} \left( \frac{2r \times 2r}{d} \right) \) the square required. In the Hindu rule, using the same symbols, \( \frac{2r}{d} \) is the square root required.* But neither Brouncker, nor Wallis, who himself contrived another method, nor Fermat, by whom the question was proposed, but whose mode of solution was never made known by him, (probably because he had not found any thing better than Wallis and Brouncker discovered†), nor Frenicle, who treated the subject without, however, adding to what had been done by Wallis and Brouncker,‡ appear to have been aware of the importance of the problem and its universal use; a discovery which, among the moderns, was reserved for Euler in the middle of the last century. To him,

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* Vij.-pad. § 80—81.  † Wallis, Alg. c. 98.  ‡ Ibid.
among the moderns, we owe the remark which the Hindus had made more than a thousand years before,∗ that the problem was requisite to find all the possible solutions of equations of this sort. LAGRANGE takes credit for having further advanced the progress of this branch of the indeterminate analysis, so lately as 1767;† and his complete solution of equations of the second degree appeared no earlier than 1769.‡

It has been pretended, that traces of the art are to be discovered in the writings of the Grecian geometers, and particularly in the five first propositions of EUCLID’s thirteenth book; whether, as WALLIS conjectures, what we there have be the work of THEON or some other ancient scholiast, rather than of EUCLID himself.§ also examples of analytic investigation in PAPPUS;∥ and indications of a method somewhat of a like nature with algebra, or at least the effects of it, in the works of ARCHIMEDES and APOLLONIUS, though they are supposed to have very studiously concealed this their art of invention.¶

This proceeds on the ground of considering analysis and algebra as interchangeable terms; and applying to algebra EUCLID’s or THEON’s definition of analysis, ‘a taking of that as granted, which is sought, and thence by consequences arriving at what is confessedly true.’**

Undoubtedly they possessed a geometrical analysis; hints or traces of which exist in the writings of more than

* BhÁASCara, Viij. § 173, and § 207. See likewise BrahM. Alg. § 7.
† Mém. de l’Acad. de Berlin, vol. xxiv.
‡ See French translation of Euler’s Algebra, Additions, p. 286. And Legendre Théorie des Nombres, 1. § 6. No. 36.
§ Wallis, Algebra, c. 2. ¶ Ibid. and Preface.
∥ Ibid. and Nunez Algebra 114.
** Wallis, following VirTai’s Version, Alg. c. 1.
one Greek mathematician, and especially in those of Archimedes. But this is very different from the algebraic calculus. The resemblance extends, at most, to the method of inversion; which both Hindus and Arabians consider to be entirely distinct from their respective algebras; and which the former, therefore, join with their arithmetic and mensuration.*

In a very general sense, the analytic art, as Hindu writers observe, is merely sagacity exercised, and is independent of symbols, which do not constitute the art. In a more restricted sense, according to them, it is calculation attended with the manifestation of its principles; and, as they further intimate, a method aided by devices, among which symbols and literal signs are conspicuous.† Defined, as analysis is by an illustrious modern mathematician,‡ 'a method of resolving mathematical problems by reducing them to equations;' it assuredly is not to be found in the works of any Grecian writer extant, besides Diophantus.

In his treatise the rudiments of algebra are clearly contained. He delivers in a succinct manner the algorithm of affirmative and negative quantities; teaches to form an equation; to transpose the negative terms; and to bring out a final simple equation comprising a single term of each species known and unknown.

Admitting, on the ground of the mention of a mathematician of his name, whose works were commented by Hypatia about the beginning of the fifth century,§ and on the authority of the Arabic annals of an Armenian Christian,|| which make him contemporary with Julian, that

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* Lil. 3. 1. § 47. Khulásatu’l Hisáb. c. 5.
† Fīj.-gañ. § 110, 174, 215, 224.
‡ D’Alembert.
§ Suidas, in voce Hypatia.
|| Gregory Abulfaraj. Ex iis etiam [nempe philosophis qui prope tempora Juliani floruerunt] Diophantus, cujus liber, quem
he lived towards the middle of the fourth century of the Christian era; or, to speak with precision, about the year 360;* the Greeks will appear to have possessed in the fourth century so much of algebra, as is to be effected by dexterous application of the resolution of equations of the first degree, and even the second, to limited problems; and to indeterminate also, without, however, having attained a general solution of problems of this latter class.

The Arabs acquired algebra, extending to simple and compound (meaning quadratic) equations; but it was confined, so far as appears, to limited problems of those degrees; and they possessed it so early as the close of the eighth century, or commencement of the ninth. Treatises were at that period written in the Arabic language on the algebraic analysis, by two distinguished mathematicians who flourished under the Abasside ALMAMŪN; and the more ancient of the two, MUHAMMED BEN MŪSA AL KHUWĀRIZMĪ, is recognized among the Arabians as the first who made algebra known to them. He is the same who abridged, for the gratification of ALMAMŪN, an astronomical work taken from the Indian system in the preceding age, under ALMANSŪR. He framed tables, likewise, grounded on those of the Hindus, which he professed to correct. And he studied and communicated to his countrymen the Indian compendious method of computation; that is, their arithmetic, and, as is to be inferred, their analytic calculus also.†

The Hindus in the fifth century, perhaps earlier,‡ were in possession of Algebra extending to the general solution

Algebram vocant, celebris est, in quem si immiserit se lector, oceanum hoc in genere reperiet.—Pococke.

* Julian was emperor from 360 to 363. See note M.
† Note N.
‡ See note I.
of both determinate and indeterminate problems of the 1st and 2d degrees: and subsequently advanced to the special solution of biquadratics wanting the second term; and of cubics in very restricted and easy cases.

Priority seems then decisive in favour of both Greeks and Hindus against any pretensions on the part of the Arabians, who in fact, however, prefer none, as inventors of algebra. They were avowed borrowers in science; and, by their own unvaried acknowledgment, from the Hindus they learnt the science of numbers. That they also received the Hindu algebra, is much more probable, than that the same mathematician who studied the Indian arithmetic and taught it to his Arabian brethren, should have hit upon algebra unaided by any hint or suggestion of the Indian analysis.

The Arabs became acquainted with the Indian astronomy and numerical science before they had any knowledge of the writings of the Grecian astronomers and mathematicians; and it was not until after more than one century, and nearly two, that they had the benefit of an interpretation of Diophantus, whether version or paraphrase, executed by Muhammed Abulwafá al Buzjání; who added, in a separate form, demonstrations of the propositions contained in Diophantus; and who was likewise author of commentaries on the algebraic treatises of the Khuwarezmite Muhammed Ben Musa, and of another algebraist of less note and later date, Abu Yahya, whose lectures she had personally, attended.* Any inference to be drawn from their knowledge and study of the Arithmetics of Diophantus, and their seeming adoption of his preparation of equations in their own algebra, or at least the close resemblance of both on this point, is of no avail against the direct evidence,

* See note N.
with which we are furnished by them, of previous instruction in algebra and the publication of a treatise on the art, by an author conversant with the Indian science of computation in all its branches.

But the age of the earliest known Hindu writer on algebra not being with certainty carried to a period anterior, or even quite equal to that in which Diophantus is on probable grounds placed, the argument of priority, so far as investigation has yet proceeded, is in favour of Grecian invention. The Hindus, however, had certainly made distinguished progress in the science, so early as the century immediately following that in which the Grecian taught the rudiments of it. The Hindus had the benefit of a good arithmetical notation: the Greeks, the disadvantage of a bad one. Nearly allied as algebra is to arithmetic, the invention of the algebraic calculus was more easy and natural where arithmetic was best handled. No such marked identity of the Hindu and Diophantine systems is observed, as to demonstrate communication. They are sufficiently distinct to justify the presumption, that both might be invented independently of each other.

If, however, it be insisted, that a hint or suggestion, the seed of their knowledge, may have reached the Hindu mathematicians immediately from the Greeks of Alexandria, or mediately through those of Bactria, it must at the same time be confessed, that a slender germ grew and fructified rapidly, and soon attained an approved state of maturity in Indian soil.

More will not be here contended for: since it is not impossible, that the hint of the one analysis may have been actually received by the mathematicians of the other nation; nor unlikely, considering the arguments which may be brought for a probable communication on the subject of astrology; and adverting to the intimate connexion between
this and the pure mathematics, through the medium of astronomy.

The Hindus had undoubtedly made some progress at an early period in the astronomy cultivated by them for the regulation of time. Their calendar, both civil and religious, was governed chiefly, not exclusively, by the moon and sun: and the motions of these luminaries were carefully observed by them, and with such success, that their determination of the moon's synodical revolution, which was what they were principally concerned with, is a much more correct one than the Greeks ever achieved.* They had a division of the ecliptic into twenty-seven and twenty-eight parts, suggested evidently by the moon's period in days, and seemingly their own: it was certainly borrowed by the Arabians;† Being led to the observation of the fixed stars, they obtained a knowledge of the positions of the most remarkable; and noticed, for religious purposes, and from superstitious notions, the heliacal rising, with other phenomena of a few. The adoration of the sun, of the planets, and of the stars, in common with the worship of the elements, held a principal place in their religious observances enjoined by the Vedas;‡ and they were led consequently by piety to watch the heavenly bodies. They were particularly conversant with the most splendid of the primary planets; the period of Jupiter being introduced by them, in conjunction with those of the sun and moon, into the regulation of their calendar, sacred and civil, in the form of the celebrated cycle of sixty years, common to them and to the Chaldeans, and still retained by them. From that cycle they advanced by progressive stages, as the Chaldeans likewise did, to larger periods; at first by combining

† See p. 321, &c. of the present volume. ‡ See vol. i. p. 106.
that with a number specifically suggested by other, or more correctly determined, revolutions of the heavenly bodies; and afterwards, by merely augmenting the places of figures for greater scope, (preferring this to the more exact method of combining periods of the planets by an algebraic process, which they likewise investigated*), until they arrived finally at the unwieldy cycles named Mahāyugas and Calpas. But it was for the sake of astrology that they pushed their cultivation of astronomy, especially that of the minor planets, to the length alluded to. Now divination, by the relative position of the planets, seems to have been, in part at least, of a foreign growth, and comparatively recent introduction, among the Hindus. The belief in the influence of the planets and stars upon human affairs is with them, indeed, remotely ancient; and was a natural consequence of their creed, which made the sun a divine being, and the planets gods. But the notion, that the tendency of that supposed influence, or the manner in which it will be exerted, may be foreseen by man, and the effect to be produced by it foretold, through a knowledge of the position of the planets at a particular moment, is no necessary result of that creed; for it takes from beings believed divine, free-agency in other respects, as in their visible movements.

Whatever may have been the period when the notion first obtained, that foreknowledge of events on earth might be gained by observations of planets and stars, and by astronomical computation, or wherever that fancy took its rise, certain it is, that the Hindus have received and welcomed communications from other nations on topics of astrology: and although they had astrological divinations of their own as early as the days of Parāśara and

Brahmegupta, Algebra.
Garga, centuries before the Christian era, there are yet grounds to presume that communications subsequently passed to them on the like subject, either from the Greeks, or from the same common source (perhaps that of the Chaldeans) whence the Greeks derived the grosser superstitions engrafted on their own genuine and ancient astrology, which was meteorological.

This opinion is not now suggested for the first time. Former occasions have been taken of intimating the same sentiment on this point:* and it has been strengthened by further consideration of the subject. As the question is closely connected with the topics of this dissertation, reasons for this opinion will be stated in the subjoined note.†

Joining this indication to that of the division of the zodiac into twelve signs, represented by the same figures of animals, and named by words of the same import with the zodiacal signs of the Greeks; and taking into consideration the analogy, though not identity, of the Ptolemaic system, or rather that of Hipparchus, and the Indian one of excentric deferents and epicycles, which in both serve to account for the irregularities of the planets, or at least to compute them, no doubt can be entertained that the Hindus received hints from the astronomical schools of the Greeks.

It must then be admitted to be at least possible, if not probable, in the absence of direct evidence and positive proof, that the imperfect algebra of the Greeks, which had advanced in their hands no further than the solution of equations, involving one unknown term, as it is taught by Diophantus, was made known to the Hindus by their Grecian instructors in improved astronomy. But, by the

* See page 410, &c. of the present volume.
† Note O.
ingenuity of the Hindu scholars, the hint was rendered fruitful, and the algebraic method was soon ripened from that slender beginning to the advanced state of a well arranged science, as it was taught by Áryabhaṭṭa, and as it is found in treatises compiled by Brahmegupta and Bháscara, of both which versions are here presented to the public.

NOTES AND ILLUSTRATIONS.

A

SCHOLIASTS OF BHÁSCARA.

The oldest commentary of ascertained date which has come into the translator’s hands, and has been accordingly employed by him for the purpose of collation; as well as in the progress of translation, is one composed by Gángadhara, son of Góbardhana, and grandson of Divácará, inhabitant of Jambusara.* It appears from an example of an astronomical computation which it exhibits,† to have been written about the year 1342 Śaca (A.D. 1420). Though confined to the Lílāvatī, it expounds and consequently authenticates a most material chapter of the Víjá gañita, which recurs nearly verbatim in both treatises; but is so essential a part of the one, as to have given name to the algebraic analysis in the works of the early writers.‡ His elder brother Viśňú Páň-

* A town situated in Gujrat (Gurjara), twenty-eight miles north of the town of Broach.
† Líl. § 264.
‡ Cullavādhyāya, the title of Brahmegupta’s chapter on algebra, and of a chapter in Áryabhaṭṭa’s work.
Dita was author of a treatise of arithmetic, &c. named Gañita sāra, a title borrowed from the compendium of Śrīdhara. It is frequently quoted by him.

The next commentary in age, and consequent importance for the objects now under consideration, is that of Sūrya Suri, also named Sūryadāsa, native of Pārtha-pura, near the confluence of the Gódá and Vidarbha rivers.* He was author of a complete commentary on the Siddhánta Śirómañi; and of a distinct work on calculation, under the title of Gañita mālātī; and of a compilation of astronomical and astrological doctrines, Hindu and Muhammedan, under the name of Siddhánta sanhitā sāra samuchchaya, in which he makes mention of his commentary on the Śirómañi. The gloss on the Līlāvatī entitled Gañitāmrīta, and that on the Vīja gañita, named Sūrya pracaśa, both excellent works, containing a clear interpretation of the text, with a concise explanation of the principles of the rules, are dated the one in 1460, the other in 1463 Śaka; or A. D. 1538 and 1541. His father Jñyānarāja, son of Nāgānāt’ha, a Brāhmaṇ and astronomer, was author, among other works, of an astronomical course, under the title of Siddhánta- Sundara, still extant,† which, like the Siddhánta sīrōmañi, comprises a treatise on algebra. It is repeatedly cited by his son.

Gaṅeśa, son of Cāśava, a distinguished astronomer, native of Nandi grāma near Dēvagiri, (better known by the Muhammedan name of Dauletābād),‡ was author of a commentary on the Siddhánta sīrōmañi, which is mentioned by his nephew and scholiast Nṛṣinha, in an

* Gódāvari and Werād.
† The astronomical part is in the library of the East India Company.
‡ Nandigrām retains its ancient name, and is situated west of Dauletābād, about sixty-five miles.
 enumeration of his works, contained in a passage quoted by Viśwaṇāt'ha on the Grahalāghava. His commentary on the Līlāvatī bears the title of Buddhivilāsini, and date of 1467 Śaca, or A. D. 1545. It comprises a copious exposition of the text, with demonstrations of the rules; and has been used throughout the translation as the best interpreter of it. He, and his father Čēṇava, and nephew Nṛśinha, as well as his cousin Lačshmīdāsa, were authors of numerous works both on astronomy and divination. The most celebrated of his own performances, the Grahalāghava, bears date 1442, Śaca, answering to A. D. 1520.

The want of a commentary by Gaṇeśa on the Vīja ganita, is supplied by that of Čṛishṇa, son of Ballāla, and pupil of Viṣṇu, the disciple of Gaṇeśa's nephew Nṛśinha. It contains a clear and copious exposition of the sense, with ample demonstrations of the rules, much in the manner of Gaṇeśa, on the Līlāvatī; whom also he imitated in composing a commentary on that treatise, and occasionally refers to it. His work is entitled Calpadatāvatāra. Its date is determined at the close of the sixteenth century of the Christian era, by the notice of it and of the author in a work of his brother Rāganāṭha, dated 1524 Śaca (A. D. 1602), as well as in one by his nephew Munīśvara. He appears to have been astrologer in the service of the emperor Jēhāṅgīr, who reigned at the beginning of the seventeenth century.

The gloss of Rāganāṭha on the Vāsand, or demonstratory annotations of Bhāscara, which is entitled Mitabhāṣāni, contains no specification of date; but is determined, with sufficient certainty, towards the middle of the sixteenth century of the Śaca era, by the writer's relation of son to Nṛśinha, the author of a commentary on the Sūrya siddhānta, dated 1542 Śaca, and of the Vāsand
vārtica (or gloss on Bhāscara's annotations of the Śrīmāṇḍ), which bears date in 1543 Śaca, or A. D. 1621; and his relation of brother, as well as pupil, to Camalācara, author of the Siddhānta tatva vivēca, also composed towards the middle of the same century of the Śaca era. Neśinha, and his uncle Viśwanātha, author of astrological commentaries, describe their common ancestor Divācara, and his grandfather Rāma, as Mahārāṣṭra Brāhmens, living at Gōlagrāma,* on the northern bank of the Gōdāvarī, and do not hint a migration of the family. Neśinha's own father, Cṛiṣhṇa, was author of a treatise on algebra in compendious rules (sūtra), as his son affirms.

The Viśa prabodha, a commentary on the Viśa ganita, by Rāma Cṛiṣhṇa, son of Lacshmaṇa, and grandson of Neśinha, inhabitant of Amardvati,† is without date or express indication of its period; unless his grandfather Neśinha be the same with the nephew of Viśwanātha just now mentioned; or else identified with the nephew of Gaṅeśa and preceptor of Viśnū, the instructor of Cṛiṣhṇa, author of the Calpalatāvatāra. The presumption is on either part consistent with proximity of country: Amardvati not being more than 150 miles distant from Nandigrāma, nor more than 200 from Gōlagrāma. It is on one side made probable by the author's frequent reference to a commentary of his preceptor Cṛiṣhṇa, which in substance corresponds to the Calpalatāvatāra; but the title differs, for he cites the Naväncura. On the other side it is to be remarked, that Cṛiṣhṇa, father of the Neśinha, who wrote the Vāsanā vārtica, was author of a treatise on algebra, which is mentioned by his son, as before observed.

The Manorunjana, another commentary on the Līlāvatī,

* Gōlagrāma of the maps, in lat. 18° N. long. 78° E.
† A great commercial town in Berdr.
which has been used in the progress of the translation, bears no date, nor any indication whatsoever of the period when the author Ráma Crishná Déva, son of Sadadéva, surnamed Apadéva, wrote.

The Gañita caumudi, on the Lilavati, is frequently cited by the modern commentators, and in particular by Súrya Suri and Ranganátha; but has not been recovered, and is only known from their quotations.

Of the numerous commentaries on the astronomical portion of Bháscara's Siddhánta śirómañi, little use having been here made, either for settling the text of the algebraic and arithmetical treatises of the author, or for interpreting particular passages of them, a reference to two commentaries of this class, besides those of Súrya Suri and Gañéśa (which have not been recovered), and the author's own annotations, and the interpretation of them by Nrisinha above noticed, may suffice: viz. the Gañita tatwa chintamani, by Lacshmídasa, grandson of Cēsava, (probably the same with the father of Gañéśa before mentioned), and son of Váchespati, dated 1423 Śaca, A. D. 1501; and the Mártchā, by Muníśvara, surnamed Viśwarūpa, grandson of Ballāla, and son of Ranganátha, who was compiler of a work dated 1524 Śaca A. D. 1620), as before mentioned. Muníśvara himself is the author of a distinct treatise of astronomy entitled Siddhánta sārvabhauma.

Persian versions of both the Lilavati and Viśa gañita have been already noticed, as also contributing to the authentication of the text. The first by Faiz, undertaken by the command of the Emperor Acber, was executed in the 32d year of his reign; A. H. 995, A. D. 1587. The translation of the Viśa gañita is later by half a century, having been completed by Ata Ullah Rashidi, in the 8th year of the reign of Sháh Jehán; A. H. 1044. A. D. 1634.
B.

_Astronomy of Brahmegupta._

Brahmegupta's entire work comprises twenty-one lectures or chapters; of which the ten first contain an astronomical system, consisting (1st and 2d) in the computation of mean motions and true places of the planets; 3d, solutions of problems concerning time, the points of the horizon, and the position of places; 4th and 5th, calculation of lunar and solar eclipses; 6th, rising and setting of the planets; 7th, position of the moon's cusps; 8th, observation of altitudes by the gnomon; 9th conjunctions of the planets; and, 10th, their conjunction with stars. The next ten are supplementary, including five chapters of problems with their solutions; and the twenty-first explains the principles of the astronomical system in a compendious treatise on spherics, treating of the astronomical sphere and its circles, the construction of sines, the rectification of the apparent planet from mean motions, the cause of lunar and solar eclipses, and the construction of the armillary sphere.

The copy of the scholia and text, in the translator's possession, wants the whole of the 6th, 7th, and 8th chapters, and exhibits gaps of more or less extent in the preceding five; and appears to have been transcribed from an exemplar equally defective. From the middle of the 9th, to near the close of the 15th chapters, is an uninterrupted and regular series, comprehending a very curious chapter, the 11th, which contains a revision and censure of earlier writers: and next to it the chapter on arithmetic and mensuration, which is the 12th of the work. It is followed in the 13th, and four succeeding chapters, by solutions of problems concerning mean and true motions of planets, finding of
time, place, and points in the horizon; and relative to other matters, which the defect of the two last of five chapters renders it impracticable to specify. Next comes, (but in a separate form, being transcribed from a different exemplar,) the 18th chapter on Algebra. The two which should succeed, (and one of which, as appears from a reference to a chapter on this subject, treats of the various measures of time under the several denominations of solar, sidereal, lunar, &c.; and the other, from like references to it, is known to treat of the delineation of celestial phenomena by diagram,) are entirely wanting, the remainder of the copy being defective. The twenty-first chapter, however, which is last in the author’s arrangement, (as the corresponding book on spherics of Bhāscara’s Siddhānta śirōmaṇi is in his,) has been transposed and first expounded by the scholiast: and very properly so, since its subject is naturally preliminary, being explanatory of the principles of astronomy. It stands first in the copy under consideration; and is complete, except one or two initial couplets.

C.

Brahma siddhānta, title of Brahmegupta’s Astronomy.

The passage is this: “Brahmocatagraha-ganitam mahatcdalēnayatc’hilli-bhūtam, abhidhiyate sp’hut’antat Jishnusuta Brahmeguptēṇa.”

‘The computation of planets, taught by Brahma, which had become imperfect by great length of time, is propounded correct by Brahmegupta, son of Jishnū.’

‘The beginning of Prīthūdaca’s commentary on the Brahma siddhānta where the three initial couplets of the text are expounded, being deficient, the quotation cannot at present be brought to the test of collation. But the title is still more expressly given near the close of the
eleventh chapter, (§ 59) "Brāhma sp’huta-siddhānte ravindu-bhú-yógam, &c."

And again, (§ 61) "Chandra-ravi-grahahéndu-ch’hāyd-dishu sarvadda yató Brāhma, ārtg-gaṇitaiceyam bhavati, sp’hut’a-siddhántas tató Brāhmah." ‘As observation and computation always agree in respect of lunar and solar eclipses, moon’s shadow (i.e. altitude) and other particulars, according to the Brāhma, therefore is the Brāhma a correct system (sp’huta siddhānta).’

It appears from the purport of these several passages compared, that BRAHMEGUPTA’S treatise is an emendation of an earlier system, (bearing the same name of Brāhma siddhānta, or an equivalent title, as Pitámaha siddhānta, or adjectively Paitámaha,) which had ceased to agree with the phenomena, and into which requisite corrections were therefore introduced by him to reconcile computation and observation; and he entitled his amended treatise ‘Correct Brāhma siddhānta.’ That earlier treatise is considered to be the identical one which is introduced into the Vishnu dharmótara puráña, and from which parallel passages are accordingly cited by the scholiasts of BHÁSCARA. (See following note.) It is no doubt the same which is noticed by VARÁHAMIHIRA under the title of Paitámaha and Brāhma siddhānta. Couplets, which are cited by this commentator BHÁTTÓTPALA from the Brāhma siddhānta, are found in BRAHMEGUPTA’S work. But whether the original or the amended treatise be the one to which the scholiast referred, is nevertheless a disputable point, as the couplets in question may be among passages which BRAHMEGUPTA retained unaltered.
D.

Verification of the Text of Brahmagupta's Treatise of Astronomy.

A passage, referring the commencement of astronomical periods and of planetary revolutions to the supposed instant of the creation, is quoted from Brahmagupta, with a parallel passage of another Brahma siddhānta (comprehended in the Viṣṇu dharmottara purāṇa) in a compilation by Muniśvara, one of Bhāscara's glossators.* It is verified as the 4th couplet of Brahmagupta's first chapter (upon mean motions) in the translator's copy.

Seven couplets, specifying the mean motions of the planets' nodes and apogees, are quoted after the parallel passage of the other Brahma Siddhānta, by the same scholiast of Bhāscara, as the text of Brahmagupta: and they are found in the same order from the 15th to the 21st in the first chapter of his work in the copy above-mentioned.

This commentator, among many other corresponding passages noticed by him on various occasions, has quoted one from the same Brahma siddhānta of the Viṣṇu dharmottara concerning the orbits of the planets deduced from the magnitude of the sky computed there, as it also is by Brahmagupta (ch. 21, § 9), but in other words, at a circumference of 18712069200000000 yājanas. He goes on to quote the subsequent couplet of Brahmagupta, declaring that planets travel an equal measured distance in their orbits in equal times; and then cites his scholiast (tīcācāra) Chaturvēdāchārya.

The text of Brahmagupta (ch. 1, § 21), specifying the diurnal revolutions of the sidereal sphere, or number of

siderial days in a calpa, with the correspondent one of the Pañcdmaha siddhánta in the Vishnú dharmottara, is another of the quotations of the same writer in his commentary on Bháscará.

A passage relating to oval epicycles,* cited by the same author in another place, is also verified in the 2d chapter (in the rectification of a planet's place.)

A number of couplets on the subject of eclipses† is cited by LácsMídása, a commentator of Bháscará. They are found in the fifth chapter (on eclipses) § 10 and 24; and in a section of the 21st (on the cause of eclipses) § 37 to 46, in the copy in question.

Several couplets, relating to the positions of the constellations and to the longitudes and latitudes of principal fixed stars, are cited from Brahmegupta in numerous compilations, and specifically in the commentaries on the Súrya siddhánta and Siddhánta sírománi.‡ They are all found correct in the 10th chapter, on the conjunctions of planets with fixed stars.

A quotation by Gáñéśa on the Lídavatí (A. D. 1545) describing the attainments of a true mathematician,§ occurs with exactness as the first couplet of the 12th chapter, on arithmetic; and one adduced by Bháscará himself, in his arithmetical treatise (§ 190), giving a rule for finding the diagonal of a trapezium,|| is precisely the 28th of the same chapter.

A very important passage, noticed by Bháscará in his notes on his Siddhánta sírománi, and alluded to in his text, and fully quoted by his commentator in the Márîcha, relative to the rectification of a planet's true place from the

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* Page 401, &c. of the present volume.
† Page 497 of the present volume.
‡ Page 323, &c. of the present volume.
§ Líd. ch. 11.
|| Líd. § 190.
mean motions,* is found in the 21st chapter, § 27. Bhas-
cara has, on that occasion, alluded to the scholiast, who
is accordingly quoted by name in the commentary of 
Lacshmídása (A. D. 1501): and here again the corre-
respondence is exact.

The identity of the text as Brahmagupta's, and of the
gloss as his scholiast's, being (by these and many other
instances, which have been collated) satisfactorily esta-
blished; as the genuineness of the text is by numerous
quotations from the Brahma siddhánta (without the author's
name) in the more ancient commentary of Bhattotpala
(A. D. 968) on the works of Varahamihira, which also
have been verified in the mutilated copy of the Brahma
siddhánta under consideration; the next step was the
examination of the detached copy of a commentary on the
18th chapter, upon algebra, which is terminated by a
colophon so describing it, and specifying the title of the
entire book Brahma siddhánta, and the name of its author
Brahmagupta.

For this purpose materials are happily presented in the
scholiast's enumeration, at the close of the chapter on
arithmetic, of the topics treated by his author in the chapter
on algebra, entitled Cutdca:† in a general reference to
the author's algorithm of unknown quantities, affirmative
and negative terms, cipher and surd roots, in the same
chapter;‡ and the same scholiast's quotations of the initial
words of four rules; one of them relative to surd roots;§
the other three regarding the resolution of quadratic equa-
tions:|| as also in the references of the scholiast of the

* Page 404, &c. of the present volume.
† Arithm. of Brahm. § 66.
‡ Arithm. of Brahm. § 13.
§ Arithm. of Brahm, § 39.
|| Arithm. of Brahm. § 15 and 18.
algebraic treatise to passages in the astronomical part of his author's work. *

The quotations have been verified: and they exactly agree with the rule concerning surds (§ 26) and the three rules which compose the section relating to quadratic equations (§§ 32—34); and with the rule in the chapter on the solution of astronomical problems concerning mean motions (ch. 13, § 22): and this verification and the agreement of the more general references demonstrate the identity of this treatise of algebra, consonantly to its colophon, as BRAHMAGUPTA's algebra entitled Cattaca and a part of his Brahma siddhanta.

E.

Chronology of Astronomical Authorities according to Astronomers of Ujjayani.

The names of astronomical writers with their dates, as furnished by the astronomers of Ujjayani, who were consulted by Dr. William Hunter sojourning there with a British embassy, are the following.

VARAHAMIHIRA ............. 122 Śaka [A.D. 200-1]
Another VARAHAMIHIRA ........ 427 [A.D. 505-6]
   BRAHMAGUPTA ............. 550 [A.D. 628-9]
   MUNJALA ............. 854 [A.D. 932-8]
   BHATTOTA PALLA ......... 890 [A.D. 1068-9]
   ŚWETOTTALA ............. 939 [A.D. 1017-8]
   VARUNA BHATTĀ ......... 962 [A.D. 1040-1]
   BHOSA RAJA ............. 964 [A.D. 1042-8]
   BHAGA ......... 1072 [A.D. 1150-1]
   CALYANA CHANDRA ........ 1101 [A.D. 1179-80]

The grounds on which this chronology proceeds are unexplained in the note which Dr. Hunter preserved of the communication; but means exist for verifying two of the dates specified and corroborating others.

* Alg. of Brah. § 96. (Rule 55).
The date assigned to Bhāscara, is precisely that of his Siddhānta śirōmani, plainly concluded from a passage of it, in which he declares, that it was completed by him, being thirty-six years of age; and that his birth was in 1036 Śaca.

Rāja Brója Déva, or Bhója Raja, is placed in this list of Hindu astronomers apparently on account of his name being affixed, as that of the author, to an astrological treatise on the calendar, which bears the title of Rāja mārtanda, and which was composed probably at his court and by astrologers in his service. It contains no date; or at least none is found in the copy which has been inspected. But the age assigned to the prince is not inconsistent with Indian History: and is supported by the colophon of a poem entitled Subhāshita ratna sandōha, composed by a Jain sectary named Amitagati, who has given the date of his poem in 1050 of Vicramāditya, in the reign of Munja. Now Munja was uncle and predecessor of Bhója Raja, being regent, with the title of sovereign, during his nephew's minority: and this date, which answers to A.D. 993-4, is entirely consistent with that given by the astronomers of Ujjayāni, viz. 964 Śaca corresponding to A.D. 1042-3: for the reign of Bhója Déva was long; extending, at the lowest computation, to half a century, and reaching, according to an extravagant reckoning, to the round number of an hundred years.

The historical notice of this King of Dhārā* are examined by Major Wilford and Mr. Bentley in the ninth and eighth volumes of Asiatic Researches: and they refer him to the tenth century of the Christian era, the one making him ascend the throne in A.D. 982; the other in A.D. 913. The former, which takes his reign

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at an entire century, including of course his minority, or the period of the administration, reign, or regency, of his uncle Munja, is compatible with the date of Amitagati’s poem (A.D. 993) and with that of the Raja martanda or other astrological and astronomical works ascribed to him (A.D. 1042) according to the chronology of the astronomers of Ujjayanti.

The age assigned to Brahmegupta is corroborated by the arguments adduced in the text. That given to Munjala is consistent with the quotation of him as at the head of a tribe of authors, by Bhaskara, at the distance of two centuries. The period allotted to Varahamihira, that is, to the second and most celebrated of the name, also admits corroboration. This point, however, being specially important to the history of Indian astronomy, and collaterally to that of the Hindu algebra, deserves and will receive a full and distinct consideration.

F.

Age of Brahmegupta inferred from Astronomical data.

The star Chitrad, which unquestionably is Spica Virginis,* was referred by Brahmegupta to the 103d degree counted from its origin to the intersection of the star’s circle of declination;† whence the star’s right ascension is deduced 182° 45’. Its actual right ascension in A. D. 1800 was 198° 40’ 2”.‡ The difference, 15° 55’ 2”, is the quantity by which the beginning of the first zodiacal asterism and lunar mansion, Aświnī, as inferrible from the position of the star Chitrad, has receded from the equinox: and it indicates

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* Page 337 of the present volume.
† Pages 343, &c. and 406 of the present volume.
‡ Zach’s Tables for 1800 deduced from Maskelyne’s Catalogue.
the lapse of 1216 years (to A. D. 1800) since that point coincided with the equinox; the annual precession of the star being reckoned at 47", 14.*

The star Révati, which appears to be ζ Piscium,† had no longitude, according to the same author, being situated precisely at the close of the asterism and commencement of the following one, Aświni, without latitude or declination, exactly in the equinoctial point. Its actual right ascension in 1800 was 15° 49' 15".‡ This, which is the quantity by which the origin of the Indian ecliptic, as inferrible from the position of the star Révati, has receded from the equinox, indicates a period of 1221 years elapsed to the end of the eighteenth century; the annual precession for that star being 46", 63.§

The mean of the two is 1218½ years; which, taken from 1800, leave 581 or 582 of the Christian era. Brahmegupta then appears to have observed and written towards the close of the sixth, or the beginning of the following century; for, as the Hindu astronomers seem not to have been very accurate observers, the belief of his having lived and published in the seventh century, about A. D. 628, which answers to 550 Śaca, the date assigned to him by the astronomers of Ujjayani, is not inconsistent with the position, that the vernal equinox did not sensibly to his view deviate from the beginning of Aries or Mésha, as determined by him from the star Révati (ζ Piscium) which he places at that point.

The same author assigns to Agastya or Canopus a distance of 87°, and to Lubdhaca or Sirius 86°, from the

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* Maskelyne's Catalogue: the mean precession of the equinoctial points being reckoned 50", 3.
† Page 343 of the present volume.
‡ Zach's Tables.
§ Zach's Tables.
beginning of Mesha. From these positions a mean of 1280 years is deducible.

The passage in which this author denies the precession of the colures, as well as the comment of his scholiast on it, being material to the present argument, they are here subjoined in a literal version.

'The very fewest hours of night occur at the end of Mithuna, and the seasons are governed by the sun's motion; therefore the pair of solstices appears to be stationary, by the evidence of a pair of eyes.'

Scholia: 'What is said by Vishnu Chandra at the beginning of the chapter on the yuga of the solstice ('Its revolutions through the asterisms are here [in the calpa] a hundred and eighty-nine thousand four hundred and eleven. This is termed a yuga of the solstice, as of old admitted by Brahma, Arca, and the rest') is wrong: for the very fewest hours of night to us occur when the sun's place is at the end of Mithuna [Gemini]; and of course the very utmost hours of day are at the same period. From that limitary point, the sun's progress regulates the seasons; namely, the cold season (sisira) and the rest, comprising two months each, reckoned from Macara [Capricorn]. Therefore what has been said concerning the motion of the limitary point is wrong, being contradicted by actual observation of days and nights.

'The objection, however, is not valid: for now the greatest decrease and increase of night and day do not happen when the sun's place is at the end of Mithuna: and passages are remembered, expressing "The southern road of the sun was from the middle of Aslesha; and the northern one at the beginning of Dhanishtha;"'

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* Brahma siddhanta, ii. § 54.
† This quotation is from Varahamihira's sanhitæ ch. 3, § 1 and 2.
others [of like import]. But all this only proves, that there is a motion; not that the solstice has made many revolutions through the asterisms.'

It was hinted at the beginning of this note, that Brah-megupta's longitude (dhruvaca) of a star is the arc of the ecliptic intercepted by the star's circle of declination, and counted from the origin of the ecliptic at the beginning of Mėsha; as his latitude (vicsēpa) of a star is the star's distance on a circle of declination from its point of intersection with the ecliptic. In short, he, like other Hindu astronomers, counts longitude and latitude of stars by the intersection of circles of declination with the ecliptic. The subject has been before noticed.† To make it more clear, an instance may be taken: and that of the scholiast's computation of the zenith distance and meridian altitude of Canopus for the latitude of Canyakubja (Canouj) may serve as an apposite example.

From the vicsēpa of the star Agastya, 77°, he subtracts the declination of the intersected point of the ecliptic 23° 58'; to the remainder, which is the declination of the star, 53° 2', he adds the latitude of the place 26° 35'; the sum, 79° 37', is the zenith distance; and its complement to ninety degrees, 10° 23', is the meridian altitude of the star.‡

The annual variation of the star in declination, 1"., 7, is too small to draw any inference as to the age of the scholiast from the declination here stated. More especially as it is taken from data furnished by his author; and as he appears to have been, like most of the Hindu astronomers, no very accurate observer; the latitude assigned by him to

* Pṛṭhūḍaca svāmī chaturvēda on Brahm.
† Pages 324, &c., and 407 of the present volume,
‡ Pṛṭhūḍaca svāmī on Brahm., ch. 10, § 35.
the city in which he dwelt being no less than half a degree wrong: for the ruins of the city of Canouj are in 27° 5'. N.

G.

Āryabhaṭṭa's Doctrine.

Āryabhaṭṭa was author of the Āryashtasata (800 couplets) and Dasāgitīcā (ten stanzas), known by the numerous quotations of Brahmegupta, Bhāttotpala, and others, who cite both under these respective titles. The Laghu Ārya siddhānta, as a work of the same author, and, perhaps, one of those above-mentioned, is several times quoted by Bhāscara's commentator Munīśvara. He likewise treated of algebra, &c. under the distinct heads of Cullīca, a problem serving for the resolution of indeterminate ones, and Vija, principle of computation, or analysis in general.—Lil. c. 11.

From the quotations of writers on astronomy, and particularly of Brahmegupta, who, in many instances, cites Āryabhaṭṭa to controvert his positions, (and is in general contradicted in his censure by his own scholiast Prithūdaca, either correcting his quotations, or vindicating the doctrine of the earlier author), it appears that Āryabhaṭṭa affirmed the diurnal revolution of the earth on its axis, and that he accounted for it by a wind or current of aerial fluid, the extent of which, according to the orbit assigned to it by him, corresponds to an elevation of little more than a hundred miles from the surface of the earth: that he possessed the true theory of the causes of lunar and solar eclipses, and disregarded the imaginary dark planets of the mythologists and astrologers, affirming the moon and primary planets (and even the stars) to be essentially dark, and only illumined by the sun: that he
noticed the motion of the solstitial and equinoctial points, but restricted it to a regular oscillation, of which he assigned the limit and the period: that he ascribed to the epicycles, by which the motion of a planet is represented, a form varying from the circle and nearly elliptic: that he recognised a motion of the nodes and apsides of all the primary planets, as well as of the moon; though in this instance, as in some others, his censurer imputes to him variance of doctrine.

The magnitude of the earth, and extent of the encompassing wind, is among the instances wherein he is reproached by Brahmagupta with versatility, as not having adhered to the same position throughout his writings; but he is vindicated on this, as on most occasions, by the scholiast of his censurer. Particulars of this question, leading to rather curious matter, deserve notice.

Āryabhaṭṭa's text specifies the earth's diameter, 1050 yójanas; and the orbit of circumference of the earth's wind [spiritus vector] 3393 yójanas; which, as the scholiast rightly argues, is no discrepancy. The diameter of this orbit, according to the remark of Brahmagupta, is 1080.

On this it is to be in the first place observed, that the proportion of the circumference to the diameter of a circle, here employed, is that of 22 to 7; which not being the same which is given by Brahmagupta's rule (Arithm. § 40), must be presumed to be that which Āryabhaṭṭa taught. Applying it to the earth's diameter as by him assigned, viz. 1050, the circumference of the earth is 3300; which evidently constitutes the dimensions by him intended: and that number is accordingly stated by a commentator of Bhāscara. See Gañ. on Līl. § 4.

This approximation to the proportion of the diameter of a circle to its periphery, is nearer than that which both
BRAHMEGUPTA and ŚRĪDHARA, though later writers, teach in their mensuration, and which is employed in the Sūrya siddhānta; namely, one to the square-root of ten. It is adopted by BHĀSCARA, who adds, apparently from some other authority, the still nearer approximation of 1250 to 3927.—(Līl. § 201.)

ĀRYABHĀTĪ shows, however, to have also made use of the ratio which afterwards contented both BRAHMEGUPTA and ŚRĪDHARA; for his rule adduced by GAṆESĀ (Līl. § 207) for finding the arc from the chord and versed sine, is clearly founded on the proportion of the diameter to the periphery, as one to the square root of ten: as will be evident if the semicircle be computed by that rule: for it comes out the square root of \( \frac{1}{10} \), the diameter being 1.

A more favourable notion of his proficiency in geometry, a science, however, much less cultivated by the Hindus than algebra, may be received from his acquaintance with the theorem containing the fundamental property of the circle, which is cited by PRĪTĪHŪDACĀ.—(BRAHM. 12, § 21.)

The number of 3300 yōjanas for the circumference of the earth, or 9\( \frac{1}{8} \) yōjanas for a degree of a great circle, is not very wide of the truth, and is, indeed, a very near approach, if the yōjana, which contains four crōsās, be rightly inferred from the modern computed crōsā found to be 1, 9 B. M.* For, at that rate of 7, 6 miles to a yōjana, the earth's circumference would be 25080 B. miles.

The difference between the diameter of the earth and that of its air (vāyu), by which term ĀRYABHĀTĪ seems to intend a current of wind whirling as a vortex, and causing the earth's revolution on its axis, leaves 15 yōjanas, or

114 miles, for the limit of elevation of this atmospheric current.

H.

Scantiness of the Additions by later Writers on Algebra.

The observation in the text on the scantiness of the improvements or additions made to the algebra of the Hindus in a long period of years after Āryabhāṭṭa probably, and after Brahmegupta certainly, is extended to authors whose works are now lost, on the faith of quotations from them. Śrīdhara's rule, which is cited by Bhāscara (Vij-gaṇī, § 131), concerning quadratics, is the same in substance with one of Brahmegupta's (ch. 18. § 32—33). Padmanābha, indeed, appears from the quotation from his treatise (Vij-gaṇī, § 142) to have been aware of quadratic equations affording two roots; which Brahmegupta has not noticed; and this is a material accession which the science received. There remains an uncertainty respecting the author, from whom Bhāscara has taken the resolution of equations of the third and fourth degrees in their simple and unaffected cases.

The only names of algebraists who preceded Bhāscara, to be added to those already mentioned, are, 1st, an earlier, writer of the same name (Bhāscara), who was at the head of the commentators of Āryabhāṭṭa; and, 2d, the elder scholiast of the Brahma siddhānta, named Bhāṭṭa Balabhadra. Both are repeatedly cited by the successor of the latter in the same task of exposition, Prīṭhūdaca Swāmi, who was himself anterior to the author of the Śirômaṇī, being more than once quoted by him. As neither of those earlier commentators is named by the younger Bhāscara, nor any intimation given of his having consulted and employed other treatises besides
the three specified by him in the compilation of the *Vijagañña*, it is presumable, that the few additions, which a comparison with the *Cuttaca* of *Brahmegupta* exhibits, are properly ascribable either to *Śrīdhara* or to *Padmānābha*: most likely to the latter, as he is cited for one such addition;* and as *Śrīdhara’s* treatise of arithmetic and mensuration, which is extant, is not seemingly the work of an author improving on the labours of those who went before him.† The corrections and improvements introduced by *Bhāscara* himself, and of which he carefully apprizes his readers,‡ are not very numerous, nor in general important.§

I.

*Age of Āryabhaṭṭa.*

Under the Abbasside khalifs *Almanṣūr* and *Almāmūn*, in the middle of the eighth and beginning of the ninth centuries of the Christian era, the Arabs became conversant with Indian astronomy. It was at that period, as may be presumed, that they obtained information of the existence and currency of three astronomical systems among the Indians;|| one of which bore the name of *Āryabhaṭṭa*, or, as written in Arabic characters, *Ārjabahr†* (perhaps

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* Vij-gaṅ, § 142.
‡ *Vij-gaṅ* before § 44, and after § 57. also Ch. 1, towards the end; and Ch. 5. § 142.
§ Unless *Lil.* § 170 and 190.
†† *Cossali’s* *Argobahr* is a misprint (Orig. &c. dell’ Alg. vol. i, p. 207). *Casiri* gives, as in the Arabic, *Argobahr*; which, in the orthography here followed is *Arjabahr*. 
intended for Ārajaḥbara), which is as near an approximation as the difference of characters can be expected to exhibit. This then unquestionably was the system of the astronomer whose age is now to be investigated; and who is in a thousand places cited by Hindū writers on astronomy, as author of a system and founder of a sect in this science. It is inferred from the acquaintance of the Arabs with the astronomical attainments of the Hindus, at that time, when the court of the khalif drew the visit of a Hindū astrologer and mathematician, and when the Indian determination of the mean motions of the planets was made the basis of astronomical tables compiled by order of the khalifs, 'for a guide in matters pertaining to the stars,' and when Indian treatises on the science of numbers were put in an Arabic dress; advertizing also to the difficulty of obtaining further insight into the Indian sciences, which the author of the Tārikhul hucamā complains of, assigning for the cause the distance of countries, and the various impediments to intercourse: it is inferred, we say, from these, joined to other considerations, that the period in question was that in which the name of Āryabhata was introduced to the knowledge of the Arabs. This, as a first step in inquiring the antiquity of this author, ascertains his celebrity as an astronomical authority above a thousand years ago.

He is repeatedly named by Hindu authors of a still earlier date: particularly by Brahmegupta, in the first part of the seventh century of the Christian era. He had been copied by writers whom Brahmegupta cites. Varahamihira has allusions to him, or employs his astronomical determinations in an astrological work at the beginning of the sixth century. These facts will be further weighed upon as we proceed.

For determining Āryabhata's age with the greater precision of astronomical chronology, grounds are pre-
sented, at the first view promising, but on examination insufficient.

In the investigation of the question upon astronomical grounds, recourse was in the first place had to his doctrine concerning the precession of the equinoxes. As quoted by MUNĪŚVARA, a scholiast of BHĀŚCARA, he maintained an oscillation of the equinoctial points to twenty-four degrees on either side; and he reckoned 578159 such librations in a calpa.* From another passage cited by BHĀṬṬOTPALA on VARĀHAMIHIRA,† his position of the mean equinoxes was the beginning of Aries and of Libra.‡ From one more passage quoted by the scholiast of BRAHMEGUPTA,§ it further appears, that he reckoned 1986120000 years expired before the war of the Bhārata: and the duration of the calpa, if he be rightly quoted by BRAHMEGUPTA,¶ is 1008 quadruple yugas of 4320000 years each.

From these data it follows that, according to him, the equinoctial point had completed 263699 oscillations at the epoch of the war of the Bhārata. But we are without any information as to the progress made in the current oscillation when he wrote, or the actual distance of the equinox from the beginning of Mēsha: the position of which, also, as by him received, is uncertain.

His limit of the motion is trepidation, 24°, was evidently suggested to him by the former position of the colures declared by PĀRĀŚARA; the exact difference being 23° 20′.

* Page 378 of the present volume. † Viṣṇu sanhitā, ch. 2.
‡ From the beginning of Mēsha to the end of Canyā (Virgo), the half the ecliptic passes through the north. From the beginning of Tula to the end of (the fishes) Mina, the remaining half passes by the south.¶ Pṛṭhūdaca on Brahm., c. i. § 10 and 30, and c. xi. § 4.
|| Six Menus, twenty-seven yugas and three-quarters.
¶ Pṛṭhūdaca on Brahm., c. i. § 12.
But the commencement of Pārāśara’s Aslēsha, in his sphere, or the origin of his sidereal Mēsha, are unascertained. Whether his notions of the duodecimal division of the zodiac were taken from the Grecian or Egyptian spheres, or from what other immediate source, is but matter of conjecture.

Quotations of this author furnish the revolutions of Jupiter in a yuga,* and of Saturn’s aphelion in a calpa;† and those of the moon in the latter period; but the same passage,‡ in which the number of lunar revolutions in that great period are given, supplies those of the sun; namely, 4320000000: differing from the duration of the calpa according to this author as cited by more ancient compilers. The truth is, as appears from another quotation,§ that Āryabhāṭṭa, after delivering one complete astronomical system, proceeds in a second and distinct chapter to deliver another and different one as the doctrine of Pārāśara; whose authority, he observes, prevails in the Cali age: and though he seems to indicate the calpa as the same in both, he also hints that in one a deduction is made for the time employed in creation; and we have seen, that the duration of the calpa differs in the quotations of compilers from this author.

The ground then being insufficient, until a more definitive knowledge of either system, as developed by him, be recovered, to support any positive conclusion, recourse must be had, on failure of precise proof, to more loose presumption. It is to be observed, that he does not use the Śaca or Sumbat of Vicramāditya, nor the Śaca era of Śālivāhana, but exclusively employs the epoch of the war of the Bhārata, which is the era of Yudhis-

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† Mun. on Bṛhas., c. i. § 33.  
‡ Mun. on Bṛhas., c. i. § 16—18.  
§ Vāt. and Mun. on Bṛhas.
THIRA and the same with the commencement of the Cali yuga. Hence it is to be argued, that he flourished before this era was superseded by the introduction of the modern epochas. VARĀHAMIHIRA, on the other hand, does employ the Śaca, termed by him Śaca-bhūpa-cāla and Śacendra-cāla: which the old scholiast interprets 'the time when the barbarian kings called Śaca were discomfited by VICRAMĀDITYA:* and BRAHMEGUPTA, uses the modern Śaca era, which he expresses by Śaca-nṛtipāntē, interpreted by the scholiast of BHĀSĀRA 'the end [of the life or reign] of VICRAMĀDITYA, who slew a people of barbarians named Śacas.' VARĀHAMIHIRA'S epoch of Śaca appears to have been understood by his scholiast BHAṬTĀPTALA to be the same with the era of VICHAMĀDITYA, which now is usually called Sambat, and which is reckoned to commence after 3044 years of the Cali age were expired: and BRAHMEGUPTA'S epoch of Śaca is the era of SĀLIVĀHANA, beginning at the expiration of 3179 years of the Cali yuga; and accordingly this number is specified in his Brahma siddhānta. When these eras were first introduced is not at present with certainty known. If that of VICRAMĀDITYA, dating with a most memorable event of his reign, came into use during its continuance, still its introduction could not be from the first so general as at once and universally to supersede the former era of YUDHISHTHIRA. But the argument drawn from ĀRYABHĀṬTA'S use of the ancient epoch, and his silence respecting the modern, so far as it goes, favours the presumption that he lived before the origin of the modern eras. Certainly he is anterior to BRAHMEGUPTA, who cites him in more than a hundred places by name; and to VARĀHAMIHIRA, whose compilation is founded, among other authorities, on

* Viṅhak sanhitā,
the Rómaca of Šríšhéña, and Vásishṭha of Viśhńu Chandra, which Brahmegupta affirms to be partly taken from Áryabháttā.\textsuperscript{*} The priority of this author is explicitly asserted likewise by the celebrated astronomer Gañēśa, who, in explanation of his own undertaking, says: 'Rules framed by other holy sages were right in the Tréta and Dwápara; but, in the present age, Páráśara's. Áryabháttā, however, finding his imperfect, after a great lapse of time, reformed the system. It grew inaccurate, and was therefore amended by Durgasinha, Mihira, and others. This again became insufficient: and correct rules were framed by the son of Jishńu [Brahmegupta] founded upon Brahma's revelation. His system also, after a long time, came to exhibit differences. Céśava rectified it. Now, finding this likewise a little incorrect after sixty years, his son Gañēśa has perfected it, and reconciled computation and experience.'\textsuperscript{†}

Áryabháttā then preceded Brahmegupta, who lived towards the middle of the sixth century of the Śaca era; and Varáhamihira placed by the chronologers of Ujjayaní at the beginning of the fifth or of the second; (for they notice two astronomers of the name.) He is prior also to Viśhńu Chandra, Šríshéña, and Durgasinha; all of them anterior to the second Varáhamihira; and an interval of two or three centuries is not more than adequate to a series of astronomers following each other in the task of emendation, which process of time rendered successively requisite.

On these considerations it is presumed, that Áryabháttā is unquestionably to be placed earlier than the fifth century of the Śaca: and probably so, by several (by

\textsuperscript{*} Brah. Siddh., c. 11, § 48—51.

\textsuperscript{†} Citation by Nárśinha on Súr. Siddh.
more than two or three) centuries: and not unlikely before
the commencement of either Śaca or Sambat eras. In
other words, he flourished some ages before the sixth
century of the Christian era: and perhaps lived before, or,
at latest, soon after its commencement. Between these
limits, either the third or the fourth century might be
assumed as a middle term. We shall, however, take the
fifth of CHRIST as the latest period to which Āryabhaṭṭa
can, on the most moderate assumption, be referred.

K.

Writings and Age of Varāhamihira.

This distinguished astrological writer, a native of Ujjā-
yanī, and son of Ādityadāsa,* was author of a copious
work on astrology, compiled, and, as he declares, abridged
from earlier writers. It is comprised in three parts; the
first on astronomy; the second and third, on divination:
together constituting a complete course. Such a course,
he observes in his preface to the third part, has been termed
by ancient writers Sanhita, and consists of three scant-
dhas or parts: the first, which teaches to find a planet’s
place by computation (gaṇita), is called tantra; the se-
cond, which ascertains lucky and unlucky indications, is
named hórd; it relates chiefly to nativities, journeys, and
weddings; the third, on prognostics relative to various
matters, is denominated sáčhā. The direct and retrograde

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* Prihat jātaca, c. 26, § 5; where the author so describes himself.
His scholiast also calls him Avantica from his native city Ujjuyanī,
and terms him a Magadhā Brāmen, and a compiler of astronomical
science. Bhāttotpala on Pri.-jāt. 1. The same scholiast similarly
describes him in the introduction of a commentary on a work of his
son Prit’huyaṣas.
motions of planets, with their rising and setting, and other particulars, he goes on to say, had been propounded by him in a treatise termed Carana, meaning, as the scholiast remarks, his compilation entitled Pancha siddhantica: which constitutes the first and astronomical portion of his entire work. What relates to the first branch of astrology (hord), the author adds, had likewise been delivered by him, including nativities and prognostics concerning journeys and weddings. These astrological treatises of his author, the scholiast observes, are entitled Vrihat jataca, Vrihad yatra, and Vrihad vivaha patala. The author proceeds to deliver the third part of his course, or the second on divination, omitting, as he says, superfluous and pithless matter, which abounds in the writings of his predecessors: such as questions and replies in dialogue, legendary tales, and the mythological origin of the planets.

The third part is extant, and entire; and is generally known and cited by the title of Vrihat sanhit, or great course of astrology: a denomination well deserved; for, notwithstanding the author's professions of conciseness, it contains about four thousand couplets distributed in more than a hundred chapters, or precisely (including the metrical table of contents) 106.

Of the second part, the first section, on casting of nativities, called Vrihat jataca, is also extant, and comprises twenty-five chapters, or, with the metrical table of contents and peroration which concludes it, twenty-six. The other two sections of this part of the course have not been recovered, though probably extant in the hands of Hindu astrologers.

The scholia of the celebrated commentator of this author's works, who is usually called Bhattotpala, and who in several places of his commentary names himself Utpala (quibbling with simulated modesty on his appellation, for
the word signifies stone),* are preserved; and are complete for the third part of the author's course, and for the first section of the second: and the remainder of it likewise is probably extant, as the copy of the first section in the possession of the author of this dissertation terminates abruptly after the commencement of the second.

This commentator is noticed in the list of authorities furnished by the astronomers of Ujjayanī, and is there stated as of the year 890 of the Śaka era (A. D. 1068). Sir William Jones supposed him to be the son of the author, whose work is expounded by him. The grounds of this notion, which is not, however, very positively advanced by that learned orientalist,† are not set forth: No intimation of such relation of the scholiast to his author appears in the preface or the conclusion, nor in the colophon, of the commentary which has been inspected: nor in the body of the work, where the author is of course repeatedly named or referred to, without however any addition indicative of filial respect, as Hindu writers usually do employ when speaking of a parent or ancestor. Neither is there any hint of relationship in the commentary of the same scholiast Bhāṭṭotpāla on a brief treatise of divination, entitled Praśna-coshti, comprising fifty-six stanzas by Prīṭhuyāsas son of Varāhamihira. The suggestion of the filial relation of the scholiast is probably therefore a mere error.

The Puncha siddhāntica of Varāhamihira has not yet been recovered; and is only at present known from

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* Preface to the commentary on the Vṛihat jētaca. Conclusion of the gloss on ch. 18 of Vṛihat sanshita, &c. ‘Stone (ulpala) frames the raft of interpretation to cross the ocean composed by Varāhamihira.’

† The words are ‘the comment written by Bhāṭṭotpāla, who, it seems, was a son of the author.’ As. Res., vol. ii. p. 390.
quotations of authors; and particularly a number of passages cited from it by his scholiast in course of interpreting his astrological writings. An important passage of it so quoted will be noticed forthwith.

It is a compilation, as its name implies, from five siddhántas; and they are specified in the second chapter of the Vṛihat saṁhitā, where the author is enumerating the requisite qualifications of an astronomer competent to calculate a calendar. Among other attainments, he requires him to be conversant with time measured by yugas, &c. as taught in the five siddhántas upon astronomy named Pauliśa, Rómaca, Vāsisht'ha, Saura, and Paitámaha. *

The title of Varahamihira's compilation misled a writer on Hindu astronomy† into an unfounded supposition, that he was the acknowledged author of the five siddhántas; the names of two of which moreover are mistaken, Soma and Paulastya being erroneously substituted for Rómaca and Pauliśa. These two, as well as the Vāsisht'ha, are the works of known authors, namely, Pulisa, Śrīśeṇa, and Vīshnū Chandra; all three mentioned by Brahmegupta: by whom also the whole five siddhántas are noticed under the very same names and in the same order;‡ and who has specified the authors of the first three.§ The Vāsisht'ha of Vīshnū Chandra was indeed preceded by an earlier work (so entitled) of an unknown author, from which that, as well as the Rómaca is in part taken;|| and it may be deemed an amended edition: but the Rómaca and Pauliśa are single of the names; and no Hindu astronomer, possessing any knowledge of the history of the science cultivated by him, ever

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* Vṛihat saṁhitā, c. 2. § 7.  
‡ Brahma siddhánta, c. 14.  
§ Ibid. c. 11.  
|| Ibid.
ever could imagine, that Varāhamihira composed the work which takes its name from Pulisha, the distinguished founder of a sect or school in astronomy opposed to that of Āryabhatta.

The passage of the Pancha siddhánticá cited by the scholiast,* and promised to be here noticed, has been quoted in an essay inserted in the researches of the Asiatic Society,† as well as a parallel passage of the Vṛihat sanhitá,‡ both relative to the ancient and actual position of the colures; and deemed parallel (though one be less precise than the other), since they are cited together as of the same author, and consequently as of like import, by the scholiast.§ The text of the Vṛihat sanhitá is further authenticated by a quotation of it in the commentary of Prīṭhūdaca on Brahmegupta;|| and the former position of the colures is precisely that which is described in the calendar appendant on the Vedas,¶ and which is implied in a passage of Pārāśara concerning the seasons, which is quoted by Bhāṭṭotpala.

The position of the colures, affirmed as actual in his time by Varāhamihira, in the Vṛihat sanhitá, implies an antiquity of either 1216 or 1440 years before A. D. 1800, according to the origin of the ecliptic determined from the star Chītrā, (Spica virginis) distant either 180° or 183° from it; or a still greater antiquity, if it be taken to have corresponded more nearly with the Grecian celestial sphere. The mean of the two numbers (disregarding the surmise of greater antiquity), carries him to A. D. 472. If Varāhamihira concurred with those Indian astronomers, who allow an oscillation of the equinox to 27° in

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* On Vṛihat sanhitá, c. 2. † See page 387 of the present vol.
‡ C. 3. § 1 and 2. § On Vṛihat sanh. c. 2.
|| Brahm. siddhánta, c. xi. § 54. ¶ See vol. i. p. 103.
1800 years, or a complete oscillation of that extent both E. and W. in 7200 years, he must have lived soon after the year 3600 of the Cali yuga, or 421 Śaca, answering to A. D. 499; which is but six years from the date assigned to him by the astronomers of Ujjayani, and twenty-seven from the mean before inferred.

It is probable, therefore, that he flourished about the close of the fifth century of the Christian era; and this inference is corroborated by the mention of an astrologer of this name in the Panchatantra, the Sanscrit original of the fables of Pilpay, translated in the reign of Nushirvan, King of Persia, in the latter part of the sixth century and beginning of the seventh.*

To that conclusion there is opposed an argument drawn from a passage of the Bhāswatī caraṇa; in which the author of that treatise, dated 1021 Śaca (A. D. 1098), professes to have derived instruction from Mihira, meaning, it is supposed, oral instruction from Varahamihira; and the argument has been supported by computations which make the Sūrya siddhānta and Jātacarhāva, the latter ascribed to Varahamihira, to be both works of the same period, and as modern as the eleventh century.†

To this it has been replied, that the Mihira, from whom Satānanda, author of the Bhāswatī, derived instruction, is not the same person or personage with the author of the Vṛihat sanhitā; if indeed Satānanda's, expression do intend the same name, Varāha.‡ That expression must be allowed to be a very imperfect designation, which omits half, and that the most distinctive half, of an appellation: and it is not such as would be applied

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* Pref. to the Sanscrit edition of the Hitopadesa, printed at Serampur. [See page 173 of the present volume.]
by a contemporary and auditor to an author and lecturer, whose celebrity could not yet be so generally diffused, as to render a part of his name a sufficient intimation of the remainder, without previous and well established association of the terms. But even conceding the interpretation, it would then be right to admit a third Varāhamihira, besides the two noticed by the chronologists of Ujjayānī; and the third will be an astronomer, contemporary with Rāja Bhója déva, and the preceptor of Sātānanda, and author of the Jātacārṇava, supposing this treatise on nativities to be properly ascribed to an author bearing that name, and to be on sufficient grounds referred to the eleventh century.

There remains to be here noticed another treatise on casting of nativities, to which the same favourite name of a celebrated astrologer is affixed. It is a concise tract entitled Laghu jātaca: and its authenticity as a work of the astrologer of Ujjayānī is established by the verifying of a quotation of the scholiast Bhāttotpala, who cites a passage of his author's compendious treatise on the same subject (swalpa jātaca), in course of expounding a rule of prognostication concerning the destination of a prince to the throne, and his future character as a monarch (Vṛihat jātaca I. I.). That passage occurs in the Laghu jātaca (Misc. Chap.). It is hardly to be supposed, that the same writer can have given a third treatise on the same subject of nativities, entitled Jātacārṇava.

The question concerning the age of the Sūrya siddhānta remains for consideration. It is a very material one, as both Varāhamihira and Brahmegupta speak of a Saura (or Solar) siddhānta, which is a title of the same import: and unless a work bearing this title may have existed earlier than the age which is assigned, for reasons to be at a future time examined, to the Sūrya siddhānta
the conclusions respecting the periods when they respectively wrote, are impeached in the degree in which those grounds of calculation may deserve confidence. Those grounds in detail will be discussed at a separate opportunity. But independently of this discussion of their merits, sufficient evidence does exist to establish, that more than one edition of a treatise of astronomy has borne the name of Sūrya (with its synonyma) the sun. For Lacshmīdāsa cites one under the title of Vṛihat sūrya siddhānta* (for a passage which the current solar Siddhānta, does not exhibit), in contradistinction to another more frequently cited by him without the distinctive epithet of Vṛihat: and in these latter instances his quotations admit of verification. A reference of Bhāscara to a passage of the Saura, or, as explained by his own annotation, the Sūrya siddhānta, does not agree with the text of the received Sūrya siddhānta.† His commentators indeed do not unreservedly conclude from the discrepancy a difference of the work quoted, and that usually received under the same title. Yet the inference seems legitimate. At all events the quotation from the Vṛihat sūrya siddhānta, in the Gaṅita tatwa chintamāni of Lacshmīdāsa, proves beyond question, that in that commentator's opinion, and consistently with his knowledge, more than one treatise bearing the same name existed.

There is evidence besides of Arabian writers, that a system of astronomy bearing the equivalent title of Ārca (Solar) was one of three, which were found by them current among the Hindus, when the Arabs obtained a knowledge of the Indian astronomy in the time of the Abbasside khalifs, about the close of the eighth century or commencement of the ninth of the Christian era.‡ Ārcand,

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* Gaṅ. tatwa chint. on Spheres of Śirōmaṇi, ch. 4. Cons. of Sines.'
† See page 374 of the present volume.  ‡ See note N.
the name by which the Arabs designate one of those three astronomical systems, assigning it as an Indian term, is the well known corruption of Ārca in the common dialects, and is familiar in the application of the same word as a name of a plant (Asclepias gigantea), which bearing all the synonyma of the sun, is called vulgarly Ācand or Ārcand.

The solar doctrine of astronomy appears then to have been known by this name to the Arabians as one of the three Indian astronomical systems a thousand years ago. The fact is, that both the title and the system are considerably more ancient. Revisions of systems occasionally take place; like BRAHMAGUPTA'S revision of the Brahma siddhānta, to adapt and modernize them; or, in other words, for the purpose, as BRAHMAGUPTA intimates, of reconciling computation and observation. The Sūrya or Ārca siddhānta, no doubt, has undergone this process, and actually exhibits manifest indications of it.*

In every view, it is presumed, that any question concerning the present text of the Sūrya siddhānta, or determination of that question, will leave untouched the evidence for the age of the author of the Vṛihat sanhīda, VARĀHMĪHIRA, son of ĀDITYADĀSA, an astrologer of Ujjayani, who appears to have flourished at the close of the fifth, or beginning of the sixth century of the Christian era. He was preceded, as it seems, by another of the same name, who lived, according to the chronologists of Ujjayani, at the close of the second century. He may have been followed by a third, who is said to have flourished at the court of RĀJĀ BHŌJA DĒVA of Dhara, and to have had SATĀNANDA, the author of the Bhāśwatī, for the scholar.

L.

Introduction and Progress of Algebra among the Italians.

Leonardo of Pisa was unquestionably the first who made known the Arabian algebra to Christian Europe. The fact was, indeed, for a time disputed, and the pretensions of the Italians to the credit of being the first European nation which cultivated algebra, were contested, upon vague surmises of a possible, and therefore presumed probable, communication of the science of algebra, together with that of arithmetic, by the Saracens of Spain to their Christian neighbours in the Peninsula, and to others alleged to have resorted thither for instruction. The conjecture hazarded by Wallis (Algebra historical and practical) on this point, was assisted by a strange blunder, in which Blancanus was followed by Vossius and a herd of subsequent writers, concerning the age of Leonardo, placed by them precisely two centuries too low. The claims of the Italians in his favour, and for themselves as his early disciples, were accordingly resisted with a degree of acrimony (Gua; Mém. de l'Acad. des Sc. 1741, p. 436.) which can only be accounted for by that disposition to detraction, which occasionally manifests itself in the literary, as in the idler, walks of society. The evidence of his right to acknowledgments for transplanting Arabian algebra into Europe was for a long period ill set forth: but, when diligently sought, and carefully adduced, doubt was removed and opposition silenced.*

The merit of vindicating his claim belongs chiefly to Cossali.† A manuscript of Leonardo's treatise on

* Montucla, 2d Ed. Additions.
† Origine, &c. dell'Algebra. Parma 1797.
arithmetic and algebra, bearing the title of Liber Abbaci compositus a Leonardo filio Bonacci Pisano in anno 1202, was found towards the middle of the last century by Targioni Tozzetti* in the Magliabechian library at Florence, of which he had the care; and another work of that author, on square numbers, was afterwards found by the same person inserted in an anonymous compilation, treating of computation, (un trattato d'Abbaco), in the library of a royal hospital at the same place. A transcript of one more treatise of the same writer was noticed by Tozzetti in the Magliabechian collection, entitled Leonardì Pisani de filiis Bonacci Practica Geometricæ composita anno 1220. The subject of it is confined to measurement of land; and being mentioned by the author in his epistle prefixed to the revised Liber Abbaci, shows the revision to be of later date. It appears to be of 1228.† Tozzetti subsequently met with a second copy of the Liber Abbaci in Magliabecchi's collection: but it is described by him as inaccurate and incomplete.‡ A third has been since discovered in the Riccardian collection, also at Florence: and a fourth, but imperfect one, was communicated by Nelli to Cossali.§ No diligence of research has, however, regained any trace of the volume which contained Leonardo's treatise on square numbers: the library in which it was seen having been dispersed previously to Cossali's inquiries.

It appears from a brief account of himself and his travels, and the motives of his undertaking, which Leonardo has introduced into his preface to the Liber Abbaci, that he

† Cossali, Origine, &c. c. 1. § 5.
§ Origine, &c. dell'Algebra, c. 2. § 1.
travelled into Egypt, Barbary, Syria, Greece, and Sicily; that being in his youth at Bugia in Barbary, where his father Bonacci held an employment of scribe at the Custom-house, by appointment from Pisa, for Pisan merchants resorting thither, he was there grounded in the Indian method of accounting by nine numerals: and that finding it more commodious, and far preferable to that which was used in other countries visited by him, he prosecuted the study,* and with some additions of his own and taking some things from Euclid's geometry, he undertook the composition of the treatise in question, that "the Latin race might no longer be found deficient in the complete knowledge of that method of computation." In the epistle prefixed to the revision of his work he professes to have taught the complete doctrine of numbers according to the Indian method.†

His peregrinations then, and his study of the Indian computation through the medium of Arabic, in an African city, took place towards the close of the twelfth century; the earliest date of his work being A.C. 1202.

He had been preceded by more than two centuries, in the study of arithmetic under Muhammedan instructors, by Gerbert (the Pope Silvester II.),‡, whose ardour for the acquisition of knowledge led him, at the termination of a two years noviciate as a Benedictine, to proceed by stealth into Spain, where he learnt astrology from the Saracens, and with it more valuable science, especially

* Quare amplexetens strictius ipsum modum Yndorum, et actentius studens in eo, ex proprio sensu quaedam addens, et quaedam ex subtilitatis Euclidis geometriam artis apponens, &c.

† Plenam numerorum doctrinam edidit Yndorum, quem modum in ipsa scientia præstantiorem elegi.

‡ Archbishop in 992; Pope in 999; died in 1003.
arithmetic. This, upon his return, he communicated to Christian Europe, teaching the method of numbers under the designation of Abacus, a name apparently first introduced by him (rationes numerorum Abaci*), by rules abstruse and difficult to be understood, as William of Malmesbury affirms: Abacum certe primus a Saracenis rapiens, regulas dedit, quae a sudantibus Abacistis via intelliguntur.† It was probably owing to this obscurity of his rules and manner of treating the Arabian, or rather Indian arithmetic, that it made so little progress between his time and that of the Pisan.

Leonardo’s work is a treatise of arithmetic, terminated, as Arabic treatises of computation are similarly,‡ by the solution of equations of the two first degrees. In the enumeration and exposition of the parts comprised in his fifteenth chapter, which is his last, he says, Tertia erit super modum Algebrae et Almucabala; and, beginning to treat of it, Incipit pars tertia de solutione quarundam quaestionum secundum modum Algebrae et Almucabala, scilicet oppositionis et restaurationis. The sense of the Arabic terms are here given in the inverse order, as has been remarked by Cossali, and as clearly appears from Leonardo’s process of resolving an equation, which will be hereafter shown.

He premises the observation, that in number three considerations are distinguished: one simple and absolute, which is that of number in itself: the other two relative, being those of root and of square. The latter, as he adds,

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† De Gestis Anglorum, c. 2.
‡ See Mr. Strachey’s examination of the Khulásatu’l hisáb, As. Res., vol. xii. Early History of Algebra.
is called census, which is the term he afterwards employs throughout.

It is the equivalent of the Arabic mdl, which properly signifies wealth, estate; and census seems therefore to be here employed by LEONARDO, on account of its correspondent aceptation (quicquid fortunarum quis habet. STEPH.); in like manner as he translates the Arabic shai by res, thing, as a designation of the root unknown.

He accordingly proceeds to observe, that the simple number, the root, and the square (census), are equalled together in six ways: so that six forms of equality are distinguished; the three first of which are called simple, and the three others compound. The order in which he arranges them is precisely that which is copied by PACIOLI.* It differs by a slight transposition from the order in which they occur in the earliest Arabic treatises of algebra;† and which, no doubt, was retained in the Italian version from the Arabic executed by GUGLIELMO DI LUNIS, and others who are noticed by COSSALI upon indications which are pointed out by him.‡ For PACIOLI cautions the reader not to regard the difference of arrangement, as this is a matter of arbitrary choice.§ LEONARDO's six-fold distinction, reduced to the modern algebraic notation, is 1st, \(x^2 = p \cdot x\). 2d, \(x^3 = n\). 3d, \(p \cdot x = n\). 4th, \(x^2 + p \cdot x = n\). 5th, \(p \cdot x + n = x^3\). 6th, \(x^2 + n = p \cdot x\). In PACIOLI's abridged notation it is 1st, \(c^a e c^a\). 2d, \(c^a e n^a\). 3d, \(c^a e n^a\), &c.|| The Arabic arrangement, in the treatise of the Khuvarezmite, is, 1st, \(x^2 = p \cdot x\). 2d, \(x^3 = n\). 3d, \(p \cdot x = n\). 4th, \(x^2 + p \cdot x = n\). 5th, \(x^2 + n = p \cdot x\). 6th, \(p \cdot x + n = x^3\). Later compilations transfer the third of these to the first place.¶

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* Summa de Arithmetica, &c. † See note N. § Summa, 8, 5, 5. ‡ Origine, &c. dell' Alg. ¶ Khulsatul hisdb. || Summa, 8, 5, 5.
Like the Arabs, Leonardo omits and passes unnoticed the fourth form of quadratic equations, \(ax^2 + px + n = o\). It could not, indeed, come within the Arabian division of equations into simple, between species and species, and compound, between one species and two:* quantity being either stated affirmatively, or restored in this algebra to the positive form. Paciolo expressly observes, that in no other but these six ways is any equation between those quantities possible: Altramente che in questi 6 discorsi modi non è possibile alcuna loro equazione.

Leonardo's resolution of the three simple cases of equation is not exhibited by Cossali. It is, however, the same, no doubt, with that which is taught by Paciolo; and which precisely agrees with the rules contained in the Arabic books.† To facilitate comparison, and obviate distant reference, Paciolo's rules are here subjoined in fewer words than he employs.

1st, Divide the things by the squares [coefficient by coefficient], the quotient is the value of thing.

2d, Divide the number by the squares [by the coefficient of the square], the root of the quotient is the value of thing.

3d, Divide the number by the things [that is, by the coefficient], the quotient is the value of thing;‡

The resolution of the three cases of compound equations is delivered by Cossali from Leonardo, contracting his rugged Latin into modern algebraic form.

1st, Be \(ax^2 + px = n\). Then \(x = -\frac{1}{2}p + \sqrt{\left(\frac{1}{4}p^2 + n\right)}\).

2d, Be \(x^2 = px + n\). Then \(x = \frac{1}{2}p + \sqrt{\left(\frac{1}{4}p^2 + n\right)}\).

3d, Be \(x^2 + n = px\). Then, if \(\frac{1}{4}p^2 > n\), the equation is

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* Khulāsatu'l hisāb. † See note N; and As. Res., vol. xii.
‡ Summa, 8, 5, 6.
impossible. If \( \frac{1}{4} p^2 = n \), then \( x = \frac{1}{2} p \). If \( \frac{1}{4} p^2 > n \), then, \( x = \frac{1}{2} p - \sqrt{\left(\frac{1}{4} p^2 - n\right)} \), or \( x = \frac{1}{2} p + \sqrt{\left(\frac{1}{4} p^2 - n\right)} \).

He adds the remark: *Et sic, si non solvetur quæstio cum diminutione, solvetur cum additione.*

The rules are the same which are found in the Arabic treatises of algebra.* The same rules will be likewise found in the work of Paciolo, expressed with his usual verboseness in his Italian text: to which, in this instance, he has added in the margin the same instructions delivered in a conciser form in Latin memorial verses. As they are given at length by Montucla, it is unnecessary to cite them in this place. On the subject of the impossible case Paciolo adds, as a *Notandum utilissimum,* ‘Sel numero qual si trova in la ditta equatione accompagnato con lo censo, sel non e minore o veramente eguale al quadrato de la mita de le cose, el caso essere insolubile: e per conseguente dico aquaglimento non potere avenire per alcun modo.’ Summa, 8, 4, 12.

Concerning the two roots of the quadratic equation in the other case, under the same head, he thus expands the short concluding remark of Leonardo: *Sicche l'uno e l'altro modo satisfa al tema: ma a le volte se have la verità a l'uno modo, a le volte a l'alto;† el perche, se cavando la radice del ditto remanente de la mita de le cose non satisfacesse al tema, la ditta radice aggiungni a la mita de le cose, e averai el quesito: e mai fallara che a l'uno di tali modi non sia satisfatto al quesito, cioe giongendo la, ovvero cavando la del dimeciamento de le cose.* Summa, 8, 4, 12.

Bombelli remarks somewhat differently on the same point. *Nei quesiti alcuna volta, ben che di rado, il restante non servi, ma ben si la somma sempre.* Alg. 2. 262.

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* See note N.
† Compare with Hindu algebra. *Vij.-gaṭ. § 130* and 142.
The rules for the resolution of compound equations are demonstrated by Leonardo upon rectilinear figures; and in the last instance he has reference to Euclid.—Lib. 2. Th. 5. There is room then to surmise, that some of the demonstrations are among the additions which he professes to have made.

Among the many problems which he proceeds to resolve, two of which are selected by Cossali for instances of his manner, it will be sufficient to cite one, in the resolution of which the whole thread of his operations is exhibited; substituting, however, the more compendious modern signs. His manner of conducting the algebraic process may be fully understood from this single instance.

Problem : To divide the number 10 into two parts, such that dividing one by the other, and adding 10 to the sum of the quotient, and multiplying the aggregate by the greater, the amount is finally 114.

Let the right line $a$ be the greater of the parts sought; which I call thing (quam pono rem) : and the right line $b\ g$ equal to 10 : to which are joined in the same direction $g\ d, \ d\ e$, representing the quotients of division of the parts, one by the other. Since $a$ multiplied by $b\ e$ is equal to 114, therefore $a\times b\ g+a\times g\ d+a+\ d\ e=114$; and taking from each side $a\times b\ g$, there will be $a\times g\ d+a\times d\ e=114-a\times b\ g$. Be $g\ d$ the quotient 10—a, there will arise

\[
\frac{10-a+a\times d\ e=114-a\times b\ g=114-10\ a}{a}
\]

10—a $+ a \times d\ e=114—a\times b\ g=114-10\ a$; since $b\ g$ is equal to 10. Whence $a\times d\ e=104—9\ a$. But $d\ e$ is the quotient $a$; wherefore $a^2=104—9\ a$. So that

\[
\frac{a^2=1040—194\ a+9\ a^2}{10—a}
\]

$\frac{a^2=1040—194\ a+9\ a^2}{10—a}$. Restore diminished things (restituere res diminutus), and take one square from each side (et extrahe unum censum ab utraque parte), the remainder
is $8a^2 + 1040 = 194a$; and dividing by eight, $a^2 + 130 = 24\frac{1}{2}a$; and resolving this according to rule, $a = 97 - \sqrt{\frac{(97)^2 - 130}{8}} = \frac{97 - 33}{8} = \frac{8}{8}$

Besides his great work on arithmetic and algebra, Leonardo was author of a separate treatise, as already intimated, on square numbers. Reference is formally made to it by Paciolo, who drew largely from this source, and who mentions Le quali domande (questions concerning square numbers) sono difficillissime quanto alla demonstratione dela practica: comme sa chi ben l' a scrutinato. Maxime Leonardo Pisano in un particolare tractato che fa de quadratis numeris intitulado. Dove con grande sforzo se ingegna dare norma e regola a simili solutioni Summa I. 4. 6.

The directions for the solution of such problems being professedly taken by Paciolo chiefly from Leonardo, and the problems themselves which are instanced by him being probably so, it can be no difficult task to restore the lost work of Leonardo on this subject. The divination has accordingly been attempted by Cosali, and with a considerable degree of success. (Origine, &c. dell' Algebra, c. 5.)

Among problems of this sort which are treated by Paciolo after Leonardo, several are found in the current Arabic treatises; others, which belong to the indeterminate analysis, occur in the algebraic treatises of the Hindus; some, which are more properly Diophantine, may have been taken from the Arabic translation, or commentary, of the work of Diophantus. Leonardo's endeavour to reduce the solution of such problems to general rule and system, according to Paciolo's intimation of his efforts towards that end, must have been purely his own: as nothing systematic to this effect is to be found in the
Arabic treatises of algebra; and as he clearly had no communication through his Arab instructors, nor any knowledge of the Hindu methods for the general resolution of indeterminate problems, simple or quadratic.

Montucla, who had originally underrated the performance of Leonardo, seems to have finally conceded to it a merit rather beyond its desert, when he ascribes to that author the resolution of certain biquadratics as derivative equations of the second degree. The derivative rules were, according to Cardan's affirmation, added to the original ones of Leonardo by an uncertain author; and placed with the principal by Paciolo. Cardan's testimony in this respect is indeed not conclusive, as the passage in which the subject is mentioned is in other points replete with errors; attributing the invention of algebra to Mohammed son of Musa, and alleging the testimony of Leonardo to that point; limiting Leonardo's rules to four, and intimating that Paciolo introduced the derivative rules in the same place with the principal: all which is unfounded and contrary to the fact. Cossali, however, who seems to have diligently examined Leonardo's remains, does not claim this honour for his author; but appears to admit Cardan's position, that the derivative, or, as they are termed by Paciolo, the proportional equations, and rules for the solution of them, were devised by an uncertain author, and introduced by Paciolo into his compilation under a separate head: which actually is the case. (Summa, 8, 6, 2, &c.)

In regard to the blunder, in which Montucla copied earlier writers, respecting the time when Leonardo of Pisa flourished, he has defended himself (2d edit. Additions) against the reprehension of Cossali, upon the plea, that he was not bound to know of manuscripts existing in certain libraries of Italy, which served to show the age in
which that author lived. The excuse is not altogether valid: for Targioni Tozzetti had announced to the public the discovery of the manuscripts in question, with the date, and a sufficient intimation of the contents, several years before the first volumes of Montucla's History of Mathematics appeared.*

I am withheld from further animadversion on the negligence of an author who has in other respects deserved well of science, by the consideration, that equal want of research, and in the very same instance, has been manifested by more recent writers, and among our own countrymen. Even so lately as in the past year (1816) a distinguished mathematician, writing in the Encyclopædia which bears the national appellation,† has relied on obsolescent authorities and antiquated disquisitions concerning the introduction of the denary numerals into Europe, and shown total unacquaintance with what was made public sixty years ago by Targioni Tozzetti, and amply discussed by Cossali in a copious work on the progress of algebra in Italy, and in an earlier one on the origin of arithmetic, published more than twenty years since: matter fully recognised by Montucla in his second edition, and briefly noticed in common biographical dictionaries.‡

In the article of the Encyclopædia to which reference has been just made, the author is not less unfortunate in all that he says concerning the Hindus and their arithmetical knowledge. He describes the Lilavati as "a short and

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* Targioni Tozzetti's first volume bears date 1751. His sixth, (the last of his first edition) 1754. Montucla's first two volumes were published in 1758.
meagre performance headed with a silly preamble and colloquy of the gods." (Where he got this colloquy is difficult to divine; the Lilāvatī contains none.) "The examples," he says, "are generally very easy, and only written on the margin with red ink." (Not so written in any one among the many copies collated or inspected.) "Of fractions," he adds, "whether decimal or vulgar, it treats not at all." (See Ch. 2. Sect. 3 and Ch. 4. Sect. 2. also § 138.)

He goes on to say, "the Hindus pretend, that this arithmetical treatise was composed about the year 1185 of the Christian era, &c." Every thing in that passage is erroneous. The date of the Lilāvatī is 1150, at the latest. The uncertainty of the age of a manuscript does not, as suggested, affect the certainty of the date of the original composition. It is not true, as alleged, that the oriental transcriber is accustomed to incorporate without scruple such additions in the text as he thinks fit. Nor is it practicable for him to do so with a text arranged in metre, of which the lines are numbered: as is the case with Sanscrit text books in general. Collation demonstrates that no such liberty has been taken with the particular book in question.

The same writer affirms, that "the Persians, though no longer sovereigns of Hindustan, yet display their superiority over the feeble Gentoos, since they generally fill the offices of the revenue, and have the reputation of being the most expert calculators in the cast." This is literally and precisely the reverse of the truth; as every one knows, who has read or heard any thing concerning India.

The author is not more correct when he asserts, that "it appears from a careful inspection of the manuscripts preserved in the different public libraries in Europe, that the Arabians were not acquainted with the denary numerals
before the middle of the thirteenth century of the Christian era." Leonardo of Pisa had learned the Indian numerals from Arabian instruction in the twelfth century, and taught the use of them in the second year of the thirteenth: and the Arabs were in possession of the Indian mode of computation by these numerals so far back as the eighth century of the Christian era.*

To return to the subject.

After Leonardo of Pisa, and before the invention of the art of printing, and publication of the first printed treatise on the science, by Paciolo, algebra was diligently cultivated by the Italian mathematicians; it was publicly taught by professors; treatises were written on it, and recurrence was again had to the Arabian source. A translation of "the Rule of Algebra" (La Regola dell' Algebra) from the Arabic into the language of Italy, by Guglielmo di Lunis, is noticed at the beginning of the Ragionamento di Algebra by Raffaello Caracci, the extant manuscript of which is considered by antiquarians to be of the fourteenth century.† A translation of the original treatise of Muhammad ben Musa, the Khuwarezmite, appears to have been current in Italy; and was seen at a later period by both Cardan and Bombelli.‡ Paolo della Pergola, Demetrio Bragadini, and Antonio Cornaro, are named by Paciolo as successively filling the professor's chair at Venice; the latter his own fellow-disciple. He himself taught algebra publicly at Peroscia at two different periods. In the preceding age a number of treatises on algorithm, some of them with that title: others like Leonardo's, entitled De Abaco, and

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* See note N.
† Cossali, Orig. &c. dell' Algebra, vol. i. p. 7.
‡ Ibid. vol. i. p. 9. Cardan, Ars Magna, 5.
probably like his touching on algebra as well as arithmetic, were circulated. Paolo di Dagomari, in particular, a mathematician living in the middle of the fourteenth century, obtained the surname of Dell' Abaco for his skill in the science of numbers, and is besides said to have been conversant with equations (whether algebraic or astronomical may indeed be questioned), as well as geometry.*

With the art of printing came the publication of Paciolo, and the subsequent history of the inventions in algebra by Italian masters, is too well-known to need to be repeated in this place.

M.

Arithmetics of Diophantus.

Five copies of Diophantus, viz. three in the Vatican (Cossali, Orig. dell' Alg. i. 4. § 2.); Xylander's, supposed (Coss. ib. § 5.) to be the same with the Palatine inspected by Saumaïse, though spoken of as distinct by Bachet, (Epist. ad lect.); and the Parisian used by Bachet himself (ib.); all contain the same text. But one of the Vatican copies, believed to be that which Bombelli consulted, distributes a like portion of text into seven instead of six books. (Coss. ib. § 5.) In truth the division of manuscript books is very uncertain: and it is by no means improbable, that the remains of Diophantus, as we possess them, may be less incomplete and constitute a larger portion of the thirteen books announced by him (Def. 11.), than is commonly reckoned. His treatise on polygon numbers, which is surmised to be one (and that the last of the thirteen,) follows, as it seems, the six (or

* Cossali, vol. i. p. 9.
seven) books in the exemplars of the work, as if the preceding portion were complete. It is itself imperfect: but the manner is essentially different from that of the foregoing books: and the solution of problems by equations is no longer the object, but rather the demonstration of propositions. There appears no ground, beyond bare surmise, to presume, that the author, in the rest of the tracts relative to numbers, which fulfilled his promise of thirteen books, resumed the algebraic manner: or in short, that the algebraic part of his performance is at all mutilated in the copies extant, which are considered to be all transcripts of a single imperfect exemplar. (Bachet, _Ep. ad lect._)

It is indeed alleged, that the resolution of compound equations (two species left equal to one) which Diophantus promises (Def. 11.) to show subsequently, bears reference to a lost part of his work. But the author, after confining himself to cases of simple equations (one species equal to one species) in the first three books, passes occasionally to compound equations (two species equal to one, and even two equal to two species) in the three following books. See iv. Q. 33; vi. Q. 6 and 19; and Bachet on Def. 11, and i. Q. 33. In various instances he pursues the solution of the problem, until he arrives at a final quadratic equation; and, as in the case of a simple equation, he then merely states the value inferrible, without specifying the steps by which he arrives at the inference. See iv. Q. 23; vi. Q. 7, 9 and 11. But, in other places, the steps are sufficiently indicated: particularly iv. Q. 33 and 45; v. Q. 13; vi. Q. 24: and his method of resolving the equation is the same with the second of Brahmagupta's rules for the resolution of quadratics (Brahm. 18. § 34). The first of the Hindu author's rules, the same with Śrīdhara's quoted by Bhāscara (Vīj.-gañ. § 131. Brah. 18. § 32.), differs from that of Nūgnez (Nonius) quoted by
BACHET (on Dioph. i. 33), in dispensing with the preliminary step of reducing the square term to a single square: a preparation which the Arabs first introduced, as well as the distinction of three cases of quadratics: for it was practised neither by Diophantus, nor by the Hindu algebraists.

Diophantus has not been more explicit, nor methodical, on simple, than on compound, equations. But there is no reason to conclude, that he returned to either subject in a latter part of his work, for the purpose of completing the instruction, or better explaining the method of conducting the resolution of those equations. Such does not seem to be the manner of his arithmetics, in which general methods and comprehensive rules are wanting. It is rather to be inferred, as Cossali does, from the compendious way in which the principles of Algebra are delivered, or alluded to, by him, that the determinate analysis was previously not unknown to the Greeks, wheresoever they got it; and that Diophantus, treating of it cursorily as a matter already understood, gives all his attention to cases of indeterminate analysis, in which perhaps he had no Greek precursor. (Coss. Orig. dell' Alg. i. 4. § 10.) He certainly intimates, that some part of what he proposes to teach is new: ἵσως μὲν οὖν δοκεῖ τὸ πρᾶγμα δυσχερέστερον ἐπειδὴ μήπω γνώριμον ἐστι. While in other places (Def. 10.) he expects the student to be previously exercised in the algorithm of algebra. The seeming contradiction is reconciled by conceiving the principles to have been known; but the application of them to a certain class of problems concerning numbers to have been new.

Concerning the probable antiquity of the Diophantine algebra, all that can be confidently affirmed is, that it is not of later date than the fourth century of Christ. Among the works of Hypatia, who was murdered A.D.
415, as they are enumerated by Suidas, is a commentary on a work of a Diophantus, most likely this author. An epigram in the Greek anthologia (lib. ii. c. 22.) is considered with probability to relate to him: but the age of its author Lucilius is uncertain. Bachet observes, that, so far as can be conjectured, Lucilius lived about the time of Nero. This, however, is mere conjecture.

Diophantus is posterior to Hypsicles, whom he cites in the treatise on polygon numbers. (Prop. 8.) This should furnish another fixed point. But the date of Hypsicles is not well determined. He is reckoned the author, or at least the reviser,* of two books subjoined to Euclid's elements, and numbered 14th and 15th. In the introduction, he makes mention of Apollonius, one of whose writings, which touched on the ratio of the dodecaedron and icosahedron inscribed in the same sphere, was considered by Basilides of Tyre, and by the father of him (Hypsicles) as incorrect, and was amended by them accordingly: but subsequently he (Hypsicles) met with another work of Apollonius, in which the investigation of the problem was satisfactory, and the demonstration of the proposition correct. Here again Bachet observes, that, so far as can be conjectured, from the manner in which he speaks of Apollonius, he must have lived not long after him. Cossali goes a little further: and concludes on the same grounds, that they were nearly contemporary. (Orig. dell' Alg. i. 4. § 4.) The grounds seem inadequate to support any such conclusion: and all that can be certainly inferred is, that Hypsicles of Alexandria was posterior to Apollonius, who flourished in the reign of Ptolemy Euergetes: two hundred years before Christ.

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Several persons of the name of Diophantus are noticed by Greek authors; but none whose place of abode, profession, or avocations, seem to indicate any correspondence with those of the mathematician and algebraist: one, a prætor of Athens, mentioned by Diodorus Siculus, Zenoëbius, and Suidas; another, secretary of king Herod, put to death for forgery, as noticed by Tzetzes; and a third, the instructor of Libanius in eloquence, named by Suidas in the article concerning that sophist and rhetorician.

The Armenian Abu'lfaraj places the algebraist Diophantus under the emperor Julian. But it may be questioned, whether he has any authority for that date, besides the mention by Greek authors of a learned person of the name, the instructor of Libanius, who was contemporary with that emperor.

Upon the whole, however, it seems preferable to abide by the date furnished in a professed history, even an Arabic one, on a Grecian matter; and to consider Diophantus as contemporary with the emperor Julian, about A. D. 365. That date is consistent with the circumstance of Hypatia writing a commentary on his works; and is not contradicted by any other fact, nor by the affirmation of any other writer besides Bombelli, on whose authority Cossali nevertheless relies.

Bombelli, when he announced to the public the existence of a manuscript of Diophantus in the Vatican, placed the author under the emperor Antoninus Pius, without citing any grounds. His general accuracy is, however, impeached by his assertion, that the Indian authors are frequently cited by Diophantus. No such quotations are found in the very manuscript of that author's work, which he is known to have consulted, and which has been purposely re-examined. (Coss. i. 4. § 4.) Bom-
Bellot's authority was, therefore, very properly rejected by Bachet, and should have been so by Cossali.

N.

Progress and proficiency of the Arabians in Algebra.

In the reign of the second Abbasside khalif Almansur, and in the 156th year of the Hejira (A. D. 773), as is related in the preface to the astronomical tables of Ben al Adami, published by his continuator Al Câsem in 308 H. (A. D. 920), an Indian astronomer, well versed in the science which he professed, visited the court of the khalif, bringing with him tables of the equations of planets according to the mean notions, with observations relative to both solar and lunar eclipses and the ascension of the signs; taken, as he affirmed, from tables computed by an Indian prince, whose name, as the Arabian author writes it, was Phighar. The khalif, embracing the opportunity thus happily presented to him, commanded the book to be translated into Arabic, and to be published for a guide to the Arabians in matters pertaining to the stars. The task devolved on Muhammed ben Ibrâhim Alfasârî; whose version is known to astronomers by the name of the greater Sind-hind or Hind-sind, for the term occurs written both ways.* It signifies, according to the same author Ben al Adami, the revolving ages, Al dehr al dáher; which Casiri translates perpetuum aeternumque.†

No Sanscrit term of similar sound occurs, bearing a signification reconcilable to the Arabic interpretation. If a

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† Ibid. vol. i. p. 426, voce Katka. Sind and Hind likewise signify, in the Arabian writers, the hither and remoter India. D'Herbelot, Bibl. Orient. p. 415.
conjecture is to be hazarded, the original word may have been Sīḍḍhāṇṭa. Other guesses might be proposed, partly combining sound with interpretation, and taking for a termination sindhu ocean, which occurs in titles now familiar for works relative to the regulation of time, as Cāla sindhu, Samaya sindhu, &c. or adhering exclusively to sound, as Indu sindhu, or Indu siddhāṇṭa; the last a title of the same import with Soma siddhāṇṭa still current. But whatever may have been the name, the system of astronomy which was made known to the Arabs, and which is by them distinguished by the appellation in question, appears to have been that which is contained in the Brahma siddhāṇṭa, and which is taught in Brahmegupta's revision of it. This fact is deducible from the number of elapsed days between the beginning of planetary motions and the commencement of the present age of the world, according to the Indian reckoning, as it is quoted by the astrologer of Bulkh, Abu Mashar, and which precisely agrees with Brahmegupta. The astrologer does not indeed specify which of the Indian systems he is citing. But it is distinctly affirmed by later Arabian authorities, that only one of the three Indian doctrines of astronomy was understood by the Arabs; and that they had no knowledge of the other two beyond their names.* Besides, Āryabhāṭṭa and the Arca siddhāṇṭa, the two in question, would have furnished very different numbers.

The passage of Abu Mashar, to which reference has been now made, is remarkable, and even important; and, as it has been singularly misunderstood and grossly misquoted by Bailly, in his Astronomie Ancienne (p. 302), it may be necessary to cite it at full length in this place.

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It occurs at the end of the fourth tract (and not, as Bailly quotes, the beginning of the fifth), in Abu Mashar’s work on the conjunctions of planets. The author there observes, that ‘the Indians reckoned the beginning [of the world] on Sunday, at sunrise (or, to quote from the Latin version, Et æstimaverunt Indi quod principium fuit die dominica sole ascendente); and between that day and the day of the deluge (et est inter eos, s. inter illum diem et diem diluvii) 720634442715 days equivalent to 1900340938* Persian years and 344 days. The deluge happened on Friday (et fuit diluvium die Veneris) 27th day of Rabe 1st, which is 29 from Cibat and 14 from Adristinich. Between the deluge and the first day of the year in which the Hejira occurred (fuerunt ergo inter diluvium et primum diem anni in quo fuit Alhegira) 3837 years and 268 days; which will be, according to the years of the Persians, 3725 years and 348 days. And between the deluge and the day of Jesdagir (Yezdajerd) king of the Persians, from the beginning of whose reign the Persians took their era,……3735 years, 10 months, and 22 days.’ The author proceeds with the comparison of the eras of the Persians and Arabians, and those of Alexander and Philip; and then concludes the treatise: completi sunt quatuor tractatus, Deo adjuvante.

Bailly’s reference to this passage is in the following words. ‘Albumasar† rapporte que selon les Indians, il s’est écoulé 720634442715 jours entre le déluge et l’époque de l’hégire. Il en conclut, on ne sait trop comment, qu’il s’est écoulé 3725 ans dans cet intervalle: ce qui placeroit

* There is something wanting in the number of years: which is deficient at the third place. Both editions of the translation (Augsburg 1489, Venice 1515) give the same words.
† De Magn. Conj. Traité v, au commencement.
le déluge 3103 ans avant J. C. précisément à l'époque chronologique et astronomique des Indiens. Mais ALBUMASAR ne dit point comment il est parvenu à égaler ces deux nombres de 3725 ans et de 720634442715 jours.' *Ast. anc. ecl. liv. i. § xvii.

Now on this it is to be observed, that BAILLY makes the ante-diluvian period between the Sunday on which the world began and the Friday on which the deluge took place, comprising 720634442715 days, to be the same with the post-diluvian period, from the deluge to the *Hejira*; and that he quotes the author, as unaccountably rendering that number equivalent to 3725 years, though the text expressly states more than 1900000000 years. The blunder is the more inexcusable, as BAILLY himself remarked the inconsistency, and should therefore have re-examined the text which he cited, to verify his quotation.

Major WILFORD,* relying on the correctness of BAILLY's quotation, concluded that the error originated with either the transcriber or translator. But in fact the mistake rested solely with the citer: as he would have found if his attention had been drawn to the more correct quotation in ANQUETIL DU PERRON's letter prefixed to his *Rech. Hist. et Géog. sur l'Inde*, inserted in BERNOULLI'S 2d vol. of *Desc. de l'Inde* (p. xx). But, though ANQUETIL is more accurate than BAILLY in quotation, he is not more successful in his inferences, guesses, and surmises. For he strangely concludes from a passage which distinctly proves the use of the great cycle of the *calpa* by the Indian astronomers to whom ABU MASHAR refers, that they were on the contrary unacquainted in those days with a less cycle, which is comprehended in it. So little did he understand the Indian periods, that he infers from a specified

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number of elapsed days and correspondent years, reckoned from the beginning of the great cycle which dates from the supposed moment of the commencement of the world, that they knew nothing of a subordinate period, which is one of the elements of that cycle. Nor is he nearer the truth, but errs as much the other way, in his conjecture, that the number of solar years stated by Abu Mashar relates to the duration of a life of Brahma, comprising a hundred of that deity's years.

In short, Anquetil's conclusions are as erroneous as Bailly's premises. The discernment of Mr. Davis, to whom the passage was indicated by Major Wilford, anticipated the correction of this blunder of Bailly, by restoring the text with a conjectural emendation worthy of his sagacity.*

The name of the Indian author from whom Abu Mashar derived the particulars which he has furnished, is written by Bailly, Kankaraf; taken, as he says, from an ancient Arabic writer, whose work is subjoined to that of Messala, published at Nuremberg by Joachim Heller in 1648.† The Latin translation of Messahala (Má-shá-A-l-lá-h) was edited by Joachim Heller at Nuremberg in 1549; but it is not followed, in the only copy accessible to me, by the work of any other Arabic author; and the quotation consequently has not been verified. D'Herbelot writes the name variously; Kankah or Cancah, Kenker or Kankar, and Kengheh or Kanghah;‡ to which Reiske and Schulten's from further research, add another varia-

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† Astr. Anc. p. 303.
tion, Kengch;* which is not of Arabic but Persian orthography. Casiri, by a difference of the diacritical point, reads from the Tārikhu'l hucamā, and transcribes, Katka.† That the same individual is all along meant, clearly appears from the correspondence of the works ascribed to him: especially his treatise on the greater and less conjunctions of the planets, which was imitated by Abu Mashar.

Amidst so much diversity in the orthography of the word it is difficult to retrieve the original name, without too much indulgence in conjecture. Canca, which comes nearest to the Arabic corruption, is in Sanscrit a proper name among other significations; but it does not occur as the appellation of any noted astrologer among the Hindus. Garga does; and, as the Arabs have not the soft guttural consonant, they must widely corrupt that sound; yet Carmen and Cancah seem too remote from it to allow it to be proposed as a conjectural restoration of the Indian name.

To return to the more immediate subject of this note. The work of Alfasart, taken from the Hindu astronomy, continued to be in general use among the Muhammedans, until the time of Almāmūn; for whom it was epitomized, by Muhammed ben Musa al Khuvdrezm; and his abridgment was thenceforward known by the title of the less Sind-hind. It appears to have been executed for the satisfaction of Almāmūn before this prince's accession to the khelafet, which took place early in the third century of the Hejira and ninth of Christ. The same author compiled similar astronomical tables of his own; wherein he professed to amend the Indian tables which furnished the

mean motions; and he is said to have taken, for that purpose, equations from the Persian astronomy, some other matters from Ptolemy, and to have added something of his own on certain points. His work is reported to have been well received by both Hindus and Muhammedans: and the greater tables, of which the compilation was commenced in the following age, by Ben Al Adamی and completed by Al Caseм, were raised upon the like foundation of Indian astronomy: and were long in general use among the Arabs, and by them deemed excellent. Another and earlier set of astronomical tables, founded on the Indian system called Sind-hind, was compiled by Hαbash, an astronomer of Baghdad; who flourished in the time of the khalif Almamún.* Several others, similarly founded on the mean motions, furnished by the same Indian system, were published in the third century of Hejira, or earlier: particularly those of Fazl Ben Ḥātim Nārizī; and Al Hasan Ben Misbah.†

It was no doubt at the same period, while the Arabs were gaining a knowledge of one of the Indian systems of astronomy, that they became apprized of the existence of two others. No intimation at least occurs of any different specific time or more probable period, when the information was likely to be obtained by them, than that in which they were busy with the Indian astronomy, according to one of the three systems that prevailed among the Hindus; as the author of the Tārikhu’l hucamā, quoted by Casiri, affirms. The writer, whose compilation is of the twelfth century,‡ observes, that ‘owing to the distance

† Casiri, vol. i. pp. 413 and 421.
of countries and impediments to intercourse, scarcely any of the writings of the Hindus had reached the Arabians. ‘There are reckoned,’ he adds, ‘three celebrated systems (mazhab) of astronomy among them; namely Sind and hind; Arjabahar, and Archand.* one only of which has been brought to us, namely, the Sind-hind: which most of the learned Muhammedans have followed.’ After naming the authors of astronomical tables founded on that basis, and assigning the interpretation of the Indian title, and quoting the authority of Ben al Adamí, the compiler of the latest of those tables mentioned by him, he goes on to say, that ‘of the Indian sciences no other communications have been received by us (Arabs), but a treatise on music, of which the title in Hindí is Biyáphar, ’and the signification of that title “fruit of knowledge;”† the work entitled Calílah and Damanah, upon ethics; and a book of numerical computation, which Abu Jáfar Muhammed Ben Musa al Khuwârezmî amplified (basat), and which is a most expeditious and concise method, and testifies the ingenuity and acuteness of the Hindus.’

The book, here noticed as a treatise on ethics, is the well known collection of fables of Pilpai or Bidpai (Sans. Vaidyapriya); and was translated from the Pehleví version into Arabic, by command of the same Abbaside khalif Almansúr,‡ who caused an Indian astronomical treatise to be translated into the Arabian tongue. The Arabs, however, had other communications of portions of Indian science, which the author of the Tárikhu’l hucamî has in this place overlooked; especially upon medicine, on which

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† Sans. Vidyâphala, fruit of science.
‡ Introd. Rem. to the Hitopadèsa. [page 167 of the present volume.]
many treatises, general and particular, were translated from the Indian tongue. For instance, a tract upon poisons by Shanac, (Sansk. Characa?) of which an Arabic version was made for the khalif Al-mamún, by his preceptor Abbas ben Sáid Jóhart. Also a treatise on medicine and on matéria medica in particular, which bears the name of Shaşhurd (Sansk. Suśruta): and numerous others.*

The Khwarezmite Muhammad ben Musá, who is named as having made known to the Arabians the Indian method of computation, is the same who is recognized by Arabian authors with almost a common consent (Zacaria of Casbín, &c.) as the first who wrote upon algebra. His competitor for the honour of priority is Abu Kámil Shujáa ben Aslám, surnamed the Egyptian arithmetician, (Hastib al Misrî); whose treatise on algebra was commented by Ali ben Ahmed al Amrání of Musella;† and who is said by D’Herbelot to have been the first among learned Muslemans, that wrote upon this branch of mathematics.‡ The commentator is a writer of the tenth century; the date of his decease being recorded as of 344 H.§ (A. D. 955). The age in which his author flourished, or the date of his text, is not furnished by any authority which has been consulted; and unless some evidence be found, showing that he was anterior to the Khwarezmí, we may abide by the historical authority of Zacaria of Casbín; and consider the Khwarezmí as the

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† Tárikhu’l hucamá, Casiri, vol. i. p. 410.

‡ Bibl. Orient. 482. Also 226 and 494. No grounds are specified. Êbn Khalcán and Ḥajj Khalfah, whom he very commonly follows, have been searched in vain for authority on this point.

earliest writer on algebra in Arabic. Next was the celebrated Alchindus (Abū Yūsuf 'Alkendī), contemporary with the astrologer Abū Mashār, in the third century of the Hejira and ninth of the Christian era,* an illustrious philosopher, versed in the sciences of Greece, of India, and of Persia, and author of several treatises upon numbers. In the prodigious multitude of his writings, upon every branch of science, one is specified as a tract on Indian computation (Hisābu'l hindī): others occur with titles which are understood by Casiri to relate to algebra, and to the ‘finding of hidden numbers;’ but which seem rather to appertain to other topics.† It is, however, presumable, that one of the works composed by him did treat of algebra as a branch of the science of computation. His pupil, Ahmed Ben Muhammed of Sarkhas in Persia (who flourished in the middle of the third century of the Hejira, for he died in 286 H.), was author of a complete treatise of computation embracing algebra with arithmetic. About the same time a treatise of algebra was composed by Abū Hanifah Daināwari, who lived till 290 H. (A. D. 903.)

At a later period Abū'lwafā Buzjānī, a distinguished mathematician, who flourished in the fourth century of the Hejira, between the years 348, when he commenced his studies, and 388, the date of his demise, composed numerous tracts on computation, among which are specified several commentaries on algebra: one of them on the treatise of the Khuwarezmite upon that subject: another on a less noticed treatise by Abū Yahya, whose lectures he had attended: an interpretation (whether commentary or paraphrase may perhaps be doubted) of the work of Diophantus: demonstrations of the propositions contained

* Abulfaraj; Pococke, p. 179.
† Tārīkhul hucamā; Casiri, vol. i. pp. 353—360.
in that work: a treatise on numerical computation in general: and several tracts on particular branches of this subject.*

A question has been raised, as just now hinted, whether this writer's interpretation of Diophantus is to be deemed a translation or a commentary. The term which is here employed in the Tārikhu’l hucamā (tafsir, paraphrase,) and that which Abulfaraj uses upon the same occasion (fusur, interpreted,) are ambiguous. Applied to the relation between works in the same language, the term, no doubt, implies a gloss or comment; and is so understood in the very same passage where an interpretation of the Khuwarezmīte's treatise, and another of Abū Yāhīyā's, were spoken of. But, where a difference of language subsists, it seems rather to intend a version, or at least a paraphrase, than mere scholia; and is employed by the same author in a passage before cited,† where he gives the Arabic signification of a Hindī term. That Buzjānī's performance is to be deemed a translation, appears to be fairly inferable from the separate mention of the demonstration of the propositions in Diophantus, as a distinct work: for the latter seems to be of the nature of a commentary; and the other, consequently, is the more likely to have been a version, whether literal or partaking of paraphrase. Besides, there is no mention, by an Arabian writer, of an earlier Arabic translation of Diophantus; and the Buzjānī was not likely to be the commentator in Arabic of an untranslated book. D'Herbelot then may be deemed correct in naming him as the translator of the arithmetics of Diophantus; and Cossali, examining a like question, arrives at nearly the same conclusion; namely, that the Buzjānī

* Tārikhu’l hucamā; Casiri, vol. i. p. 433.
was the translator, and the earliest, as well as the expositor, of Diophantus.—(Orig. dell' Alg., vol. i. p. 175.) The version was probably made soon after the date which Abulfaraj assigns to it, 348 H. (A. D. 969), which more properly is the date of the commencement of the translator's mathematical studies.

From all these facts, joined with other circumstances to be noticed in progress of this note, it is inferred, 1st, That the acquaintance of the Arabs, with the Hindu astronomy is traced to the middle of the second century of the Hejira, in the reign of Almansûr, upon authority of Arabian historians citing that of the preface of ancient astronomical tables; while their knowledge of the Greek astronomy does not appear to have commenced until the subsequent reign of Harûn Alrashîd, when a translation of the Almagest is said to have been executed under the auspices of the Barmacide Yahya ben Khâled, by Abu Hiân and Salama, employed for the purpose.* 2dly, That they were become conversant in the Indian method of numerical computation within the second century; that is, before the beginning of the reign of Almâmûn, whose accession to the Khelafet took place in 205 H. 3dly, That the first treatise on algebra in Arabic was published in his reign; but their acquaintance with the work of Diophantus is not traced by any historical facts collected from their writings to a period anterior to the middle of the fourth century of the Hejira, when Abûlwaфа Buzjant flourished. 4thly, That Muhammad ben Musa Khwâdrezmi, the same Arabic author who, in the time of Almâmûn, and before his accession, abridged an earlier astronomical work taken from the Hindus, and who published a treatise on the Indian method of numerical computation, is the first

* Castri, vol. i. p. 349.
also who furnished the Arabs with a knowledge of algebra, upon which he expressly wrote, and in that khalif's reign, as will be more particularly shown as we proceed.

A treatise of algebra bearing his name, it may be here remarked, was in the hands of the Italian algebraists, translated into the Italian language, not very long after the introduction of the science into that country by Leonard of Pisa. It appears to have been seen at a later period both by Cardan and by Bombelli. No manuscript of that version is, however, now extant; or at least known to be so.

Fortunately, a copy of the Arabic original is preserved in the Bodleian collection. It is the manuscript marked CMXVIII. Hunt. 214 folio, and bearing the date of the transcription 743 H. (A.D. 1342). The rules of the library, though access be readily allowed, preclude the study of any book which it contains, by a person not enured to the temperature of apartments unvisited by artificial warmth. This impediment to the examination of the manuscript in question has been remedied by the assistance of the under librarian, Mr. Alexander Nicoll, who has furnished ample extracts purposely transcribed by him from the manuscript. This has made it practicable to ascertain the contents of the book, and to identify the work as that in which the Khudrezmī taught the principles of algebra; and consequently to compare the state of the science, as it was by him taught, with its utmost progress in the hands of the Muhammedans, as exhibited in an elementary work of not very ancient date, which is to this time studied among Asiatic Muslemans.

I allude to the Khulidsetw'l hisab of Behau'ldīn, an author who lived between the years 953 and 1031 H. The Arabic text, with a Persian commentary, has been printed in Calcutta; and a summary of its contents had been pre-
viously given by Mr. STRACHEY in his "Early History of Algebra," in which, as in his other exertions for the investigation of Hindu and Arabian algebra, his zeal surmounted great difficulties, while his labours have thrown much light upon the subject.*

The title page of the manuscript above described, as well as a marginal note on it, and the author's preface, all concur in declaring it the work of MUHAMMED BEN MUSA Khuwârezmî: and the mention of the khalif ALMAMÚN in that preface, establishes the identity of the author, whose various works, as is learned from Arabian historians, were composed by command, or with encouragement, of that khalif, partly before his accession, and partly during his reign.

The preface, a transcript of which was supplied by the care of Mr. NICOLL, has been examined at my request by Colonel JOHN BAILLIE. After perusing it with him, I am enabled to affirm, that it intimates "encouragement from the Imâm ALMAMÚN, Commander of the Faithful, to compile a compendious treatise of calculation by algebra;" terms which amount not only to a disclaimer of any pretentions to the invention of the algebraic art, but which would, to my apprehension, as to that of the distinguished Arabian scholar consulted, strongly convey the idea of the pre-existence of ampler treatises upon algebra in the same language (Arabic), did not the marginal note above cited distinctly assert this to be "the first treatise composed upon algebra among the faithful;" an assertion corroborated by the similar affirmation of ZACARIA of Casbín and other writers of Arabian history. Adverting, however, to that express affirmation, the author must be here under-

stood as declaring that he compiled (alaf is the verb used by him) the treatise upon algebra from books in some other language: doubtless, then, in the Indian tongue, as it has been already shown that he was conversant with Hindu astronomy, and Hindu computation and account.

It may be right to notice, that the title of the manuscript denominates the author, Abu Abdullah Muhammad ben Musa al Khuvarezmi, differing in the first part of the name from the designation which occurs in one passage of the Tārīkhul hucamā, quoted by Casiri, where the Khuvarezmi Muhammad ben Musa is called Abu Jafar.* But that is not a sufficient ground for questioning the sameness of persons and genuineness of the work, as the Khuvarezmi is not usually designated by either of those additions, or by any other of that nature taken from the name of offspring: and error may be presumed, most probably on the part of the Egyptian author of the Tārīkhul hucamā, since the addition which he introduces, that of Abu Jafar, belongs to Muhammad ben Musa ben Shaker, a very different person; as appears from another passage of the same Egyptian’s compilation.†

The following is a translation of the Khuvarezmi’s directions for the solution of equations, simple and compound, a topic which he enter’s upon at no great distance from the commencement of the volume, having first treated of unity and number in general.

'I found that the numbers, of which there is need in computation by restoration and comparison,‡ are of three kinds; namely, roots, and squares, and simple number relative to neither root nor square. A root is the whole of thing multiplied by [root] itself, consisting of unity, or

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NOTES AND ILLUSTRATIONS.

numbers ascending, or fractions descending. A square is the whole amount of root multiplied into itself; and simple number is the whole that is denominated by the number, without reference to root or square.

' Of these three kinds, which are equal, some to some, the cases are these: for instance, you say "squares are equal to roots;" and "squares are equal to numbers;" and "roots are equal to numbers."

' As to the case in which squares are equal to roots; for example, "a square is equal to five roots of the same:" the root of the square is five; and the square is twenty-five: and that is equivalent to five times its root.

' So you say "a third of the square is equal to four roots:" the whole square then is equal to twelve roots; and that is a hundred and forty-four; its root is twelve.

' Another example: you say "five squares are equal to ten roots." Then one square is equal to two roots: and the root of the square is two; and the square is four.

' In like manner, whether the squares be many or few, they are reduced to a single square: and as much is done to the equivalent in roots; reducing it to the like of that to which the square has been brought.

' Case in which squares are equal to numbers: for instance, you say, "the square is equal to nine." Then that is the square, and the root is three. And you say, "five squares are equal to eighty:" then one square is a fifth of eighty; and that is sixteen. And, if you say, "the half of the square is equal to eighteen:" then the square is equal to thirty-six; and its root is six.

' In like manner, with all squares affirmative and negative, you reduce them to a single square. If there be less than a single square, you add thereto, until the square be quite complete. Do as much with the equivalent in numbers.
Case in which roots are equal to number: for instance, you say "the root equals three in number." Then the root is three: and the square, which is raised therefrom, is nine. And, if you say "four roots are equal to twenty," then a single root is equal to five; and the square, that is raised therefrom, is twenty-five. And, if you say "the half of the root is equal to ten:" then the [whole] root is equal to twenty; and the square, which is raised therefrom, is four hundred.

I found that, with these three kinds, namely, roots, squares, and number compound, there will be three compound sorts [of equation]; that is, square and roots equal to number; squares and number equal to roots; and roots and number equal to squares.

As for squares and roots, which are equal to number: for example, you say "square, and ten roots of the same, amount to the sum of thirty-nine." Then the solution of it is: you halve the roots; and that in the present instance yields five. Then you multiply this by its like, and the product is twenty-five. Add this to thirty-nine: the sum is sixty-four. Then take the root of this, which is eight, and subtract from it half the roots, namely, five; the remainder is three. It is the root of the square which you required; and the square is nine.

In like manner, if two squares be specified, or three or less, or more, reduce them to a single square; and reduce the roots and number therewith to the like of that to which you reduced the square.

For example, you say "two squares and ten roots are equal to forty-eight dirhems;" and the meaning is, any two [such] squares, when they are summed, and unto them is added the equivalent of ten times the root of one of them, amount to the total of forty-eight dirhems. Then you must reduce the two squares to a single square: and
assuredly you know, that one of two squares is a moiety of both. Then reduce the whole thing in the instance to its half: and it is as much as to say, a square and five roots are equal to twenty-four dirhems; and the meaning is, any [such] square, when five of its roots are added to it, amounts to twenty-four. Then halve the roots, and the moiety is two and a-half. Multiply that by its like, and the product is six and a-quarter. Add this to twenty-four, the sum is thirty dirhems and a-quarter. Extract the root, it is five and a-half. Subtract from this the moiety of the roots; that is, two and a-half: the remainder is three. It is the root of the square: and the square is nine.

'In like manner, if it be said "half of the square and five roots are equal to twenty-eight dirhems;" it signifies, that, when you add to the moiety of any [such] square the equivalent of five of its roots, the amount is twenty-eight dirhems. Then you desire to complete your square so as it shall amount to one whole square; that is, to double it. Therefore double it, and double what you have with it; as well as what is equal thereunto. Then a square and ten roots are equal to fifty-six dirhems. Add half the roots multiplied by itself, twenty-five, to fifty-six; and the sum is eighty-one. Extract the root of this, it is nine. Subtract from this the moiety of the roots; that is, five: the remainder is four. It is the root of the square which you required: and the square is sixteen; and its moiety is eight.

'Proceed in like manner with all that comes of squares and roots; and what number equals them.

'As for squares and number, which are equal to roots; for example, you say, "a square and twenty-one are equal to ten of its roots;" the meaning of which is, any [such] square, when twenty-one dirhems are added to it, amounts 2 x 2.
to what is the equivalent of ten roots of that square: then the solution is, halve the roots; and the moiety is five. Multiply this by itself; the product is twenty-five. Then subtract from it twenty-one, the number specified with the square: the remainder is four. Extract its root; which is two. Subtract this from the moiety of the roots; that is, from five: the remainder is three. It is the root of the square which you required: and the square is nine. Or, if you please, you may add the root to the moiety of the roots: the sum is seven. It is the root of the square which you required; and the square is forty-nine.

When a case occurs to you which you bring under this head, try its answer by the sum: and, if that do not serve, it certainly will by the difference. This head is wrought both by the sum and by the difference. Not so either of the others of three cases requiring for their solution that the root be halved. And know, that, under this head, when the roots have been halved, and the moiety has been multiplied by its like, if the amount of the product be less than the dirhems which are with the square, then the instance is impossible: and, if it be equal to the dirhems between them, the root of the square is like the moiety of the roots, without either addition or subtraction.

In every instance where you have two squares, or more or less, reduce to a single square, as I explained under the first head.

As for roots and number, which are equal to squares: for example, you say, "three roots and four in number are equal to a square:" the solution of it is, halve the roots: and the moiety will be one and a-half. Multiply this by its like, [the product is two and a-quarter. Add it to four, the sum is six and a-quarter. Extract the root, which is two and a-half. To this add the moiety of the
roots: the sum is four. It is the root of the square which you required: and the square is sixteen.]"

The author returns to the subject in a distinct chapter, which is entitled "On the six cases of Algebra." A short extract from it may suffice.

"The first of the six cases. For example, you say, "you divide ten into two parts, and multiply one of the two parts by the other: then you multiply one of them by itself, and the product of this multiplication into itself is equal to four times that of one of the parts by the other."

"Solution. Make one of the two parts thing, and the other ten less thing: then multiply thing by ten less thing, and the product will be ten things less a square. Multiply by four; for you said "four times:" it will be four times the product of one part by the other; that is, forty things less four squares. Now multiply thing by thing, which is one of the parts by itself: the result is, square equal to forty things less four squares. Then restore it in the four squares, and add it to the one square. There will be forty things equal to five squares; and a single square is equal to eight roots. It is sixty-four; and its root is eight: and that is one of the two parts, which was multiplied into itself: and the remainder of ten is two; and that is the other part. Thus has this instance been solved under one of the six heads: and that is the case of squares equal to roots:

"The second case. "You divide ten into two parts, and multiply the amount of a part into itself. Then multiply ten into itself; and the product of this multiplication of ten into itself, is equivalent to twice the product of the part taken into itself, and seven-ninths: or it is equivalent to six times and a-quarter the product of the other part taken into itself."

"Solution. Make one of the parts thing, and the other
ten less thing. Then you multiply thing into itself: it is a square. Next by two and seven-ninths: the product will be two squares, and seven-ninths of a square. Then multiply ten into itself, and the product is a hundred. Reduce it to a single square, the result is nine twenty-fifths; that is, a fifth and four-fifths of a fifth. Take a fifth of a hundred and four-fifths of a fifth; the quotient is thirty-six, which is equal to one square. Then extract the root, which is six. It is one of the two parts; and the other is undoubtedly four. Thus you solve this instance under one of the six heads: and that is “squares equal to number.”

These extracts may serve to convey an adequate notion of the manner in which Khuwârezmî conducts the resolution of equations simple and compound, and the investigation of problems by their means. If a comparison be made with the Khulâsetvîl hisâb, of which a summary by Mr. Strachey will be found in the Researches of the Asiatic Society,* it may be seen that the algebraic art has been nearly stationary in the hands of the Muhammedans, from the days of Muhammed of Khuwârezmî† to those of Behâulîdîn of Aamul‡ notwithstanding the intermediate study of the arithmetics of Diophantus, translated and expounded by Muhammed of Buzjân. Neither that comparison, nor the exclusive consideration of the Khuwârezmî’s performance, leads to any other conclusion, than, as before intimated, that, being conversant with the sciences of the Hindus, especially with their astronomy and their method of numerical calculation, and being the author of the earliest Arabic treatise on algebra, he must be deemed to have learnt from the Hindus the resolution of simple* and quadratic equations, or, in short, algebra, a branch of their art of computation.

* Vol. xii. † On the Oxus. ‡ A district of Syria; not Amal, a town in Khurdsân. Com.
The conclusion, at which we have arrived, may be strengthened by the coincident opinion of Cossali, who, after diligent research and ample disquisition, comes to the following result.*

'Concerning the origin of algebra among the Arabs, what is certain is, that Muhammed ben Musa, the Khurârezmite, first taught it to them. The Casbinian, a writer of authority, affirms it; no historical fact, no opinion, no reasoning, opposes it.

'There is nothing in history respecting Muhammed ben Musa individually, which favours the opinion, that he took from the Greeks the algebra which he taught to the Mohammedans.

'History presents in him no other than a mathematician of a country most distant from Greece and contiguous to India, skilled in the Indian tongue, fond of Indian matters, which he translated, amended, epitomized, adorned: and he it was, who was the first instructor of the Mohammedans in the algebraic art.'†

'Not having taken algebra from the Greeks, he must have either invented it himself, or taken it from the Indians. Of the two, the second appears to me the most probable.'‡

O.

Communication of the HinduS with Western Nations on Astrology and Astronomy.

The position, that Astrology is partly of foreign growth in India; that is, that the Hindus have borrowed, and largely too, from the astrology of a more western region

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* Orig. dell' Alg., vol. i. p. 216. † Orig. dell' Alg., vol. i. p. 219. ‡ See his reasons at large.
is grounded, as the similar inference concerning a different branch of divination,* on the resemblance of certain terms employed in both. The mode of divination, called Tájaca, implies by its very name its Arabian origin. Astrological prediction by configuration of planets, in like manner, indicates even by its Indian name a Grecian source. It is denominated Hórdä, the second of three branches which compose a complete course of astronomy and astrology:† and the word occurs in this sense in the writings of early Hindu astrologers. Varáhamihira, whose name stands high in this class of writers, has attempted to supply a Sanscrit etymology; and in his treatise on casting nativities derives the word from Ahórátra, day and night, a nychthemeron. This formation of a word by dropping both the first and last syllables, is not conformable to the analogies of Sanscrit etymology. It is more natural, then, to look for the origin of the term in a foreign tongue: and that is presented by the Greek ἀσά and its derivative ἀσσόκτος, an astrologer, and especially one who considers the natal hour, and hence predicts events.‡ The same term hórdä occurs again in the writings of the Hindu astrologers, with an acceptation (that of hour§) which more exactly conforms to the Grecian etymon.

The resemblance of a single term would not suffice to ground an inference of common origin, since it might be purely accidental. But other words are also remarked in Hindu astrology, which are evidently not Indian. An instance of it is dréshadhána,|| used in the same astrological sense with the Greek δέκανδος and Latin decanus: words, which, notwithstanding their classic sound, are to be considered as of foreign origin (Chaldean or Egyptian) in the

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classic languages, at least with this acceptation. The term is assuredly not genuine Sanscrit: and hence it was before* inferred, that the particular astrological doctrine, to which it belongs, is exotic in India. It appears, however, that this division of the twelve zodiacal signs into three portions each, with planets governing them, and pourtrayed figures representing them, is not implicitly the same among the Hindu astrologers, which it was among the Chaldeans, with whom the Egyptians and Persians coincided. Variations have been noticed.† Other points of difference are specified by the astrologer of Balkh;‡ and they concern the allotment of planets to govern the decani and dréshcákhas, and the figures by which they are represented. Abu Mashar is a writer of the ninth century;§ and his notice of this astrological division of the zodiac as received by Hindus, Chaldeans, and Egyptians, confirms the fact of an earlier communication between the Indians and the Chaldeans, perhaps the Egyptians, on the subject of it.

With the sexagesimal fractions, the introduction of which is by Wallis ascribed to Ptolemy among the Greeks,|| the Hindus have adopted for the minute of a degree, besides a term of their own language, calá, one taken from the Greek λεπτός scarcely altered in the Sanscrit liptá. The term must be deemed originally Greek, rather than Indian, in that acceptation, as it there corresponds to an adjective λεπτός, slender, minute: an import which precisely agrees with the Sanscrit calá and Arabic dákík, fine.

† Ibid., vol. ix. p. 374. [p. 371 of the present volume.]
‡ Lib. intr. in Ast. Albumasis Abalachi, pp. 5, 12 and 13.
§ Died in 272 H. (885 C.) aged a hundred.
|| Wallis, Alg. c. 7.
minute; whence, in these languages respectively, calē and
dakīk for a minute of a degree. But the meanings of lipta
in Sanscrit are, 1st, smeared; 2d, infected with poison;
3d, eaten: and its derivative liptaca signifies a poisoned
arrow; being derived from lip, to smear: and the dic-
tionaries give no interpretation of the word that has any
affinity with its special acceptation as a technical term in
astronomy and mathematics. Yet it occurs so employed
in the work of Brahmegupta.†

By a different analogy of the sense |and not the sound,
the Greek µoĩqα, a part, and especially a degree of a circle,
is in Sanscrit ansa, bhāga, and other synonyma of part,
applied emphatically in technical language to the 360th
part of the periphery of a circle. The resemblance of the
radical sense, in the one instance, tends to corroborate the
inference from the similarity of sound in the other.

Cēndra is used by Brahmegupta and the Sūrya sīd-
dhānta, as well as other astronomical writers (Bhās-
cara, &c.), and by the astrologers Varāhamihira and
the rest, to signify the equation of the centre.‡ The same
term is employed in the Indian mensuration for the centre of a circle;§ also denoted by madhya, middle. It comes
so near in sound, as in signification, to the Greek kέντρον,
that the inference of a common origin for these words is
not to be avoided. But in Sanscrit it is exclusively tech-
nical; it is unnoticed by the vocabularies of the language;
and it is not easily traced to a Sanscrit root. In Greek, on
the contrary, the correspondent term was borrowed in ma-
thematics from a familiar word signifying a goad, spur,
thorn, or point; and derived from a Greek theme κέντρω.

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* Am. Cōkh.
† C. i, § 6, et passim.
‡ Brah. siddh. c. 2. Sūr. siddh. c. 2. Vṛihat and Laghu Jātacas.
§ Sūr. on Līl. § 207.
The other term, which has been mentioned as commonly used for the centre of a circle, namely, medhya, middle, is one of the numerous instances of radical and primary analogy between the Sanscrit and the Latin and Greek languages. It is a common word of the ancient Indian tongue; and is clearly the same with the Latin medius; and serves to shew that the Latin is nearer to the ancient pronunciation of Greek, than μέσος; from which Sipontinus* derives it, but which must be deemed a corrupted or softened utterance of an ancient term coming nearer to the Sanscrit medhyas and Latin medius.

On a hasty glance over the jātacas, or Indian treatises upon horoscopes, several other terms of the art have been noticed, which are not Sanscrit, but apparently barbarian. For instance, anapha, sunapha, durudhara, and cēma-drūma, designating certain configurations of the planets. They occur in both the treatises of Varāhamihira; and a passage, relative to this subject, is among those quoted from the abridgment by the scholiast of the greater treatise, and verified in the text of the less.† The affinity of those terms to words of other languages used in a similar astrological sense, has not been traced; for want, perhaps, of competent acquaintance with the terminology of that silly art. But it must not be passed unremarked, that Varāhamihira, who has in another place praised the Yavanas for their proficiency in astrology (or astronomy, for the term is ambiguous,) frequently quotes them in his great treatise on horoscopes; and his scholiast marks a distinction between the ancient Yavanas, whom he cha-

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† See p. 483. Another passage so quoted and verified uses the term cēndra in the sense above-mentioned.
racterizes as “a race of barbarians conversant with (hórd) horoscopes,” and a known Sanscrit author bearing the title of Yavanéśvara, whose work he had seen and repeatedly cites; but the writings and doctrine of the ancient Yavanas, he acknowledges, had not been seen by him, and were known to him only by this writer’s and his own author’s references.

No argument, bearing upon the point under consideration, is built on Bháscara’s use of the word dramma for the value of sixty-four cowry-shells (Lil. § 2) in place of the proper Sanscrit term pramána, which Śrídhará and other Hindu authors employ; nor on the use of dínára, for a denomination of money, by the scholiast of Brahme-gupta (12. § 12) who also, like Bháscara, employs the first mentioned word (12. § 14): though the one is clearly analogous to the Greek drachma, a word of undoubted Grecian etymology, being derived from ἰδράχμα; and the other apparently is so, to the Roman denarius, which has a Latin derivation. The first has not even the Sanscrit air; and is evidently an exotic, or, in short, a barbarous term. It was probably received mediately through the Muhammedans, who have their dirhem in the like sense. The other is a genuine Sanscrit word, of which the etymology, presenting the sense of ‘splendid,’ is consistent with the several acceptations of a specific weight of gold; a golden ornament or breast-piece; and gold money: all which senses it bears, according to the ancient vocabularies of the language.*

The similarity seems then to be accidental in this instance; and the Muhammedans, who have also a like term, may have borrowed it on either hand; not improbably from the Hindus, as the dínár of the Arabs and Persians is

* Amora císha, &c.
a gold coin like the Indian; while the Roman *denarius* is properly a silver one. D’Herbelot assigns as a reason for deriving the Arabic *díndar* from the Roman *denarius*, that this was of gold. The nummus aureus sometimes had that designation; and we read in Roman authors of golden as well as silver *denarii.* But it is needless to multiply references and quotations to prove, that the Roman coin of that name was primarily silver, and so denominated because it was equal in value to ten copper *as*;† that it was all along the name of a silver coin;‡ and was still so under the Greek empire, when the ἑνάγιον was the hundredth part of a large silver coin termed ἀργυροῦς.§

† Plin. 33. § 13., Vitr. 3. 1., Volus. Mæciæanus, Didymus.
‡ Vitr. and Vol. Mæc. § Epiphanius, cum multis aliis.
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