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JOURNAL
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APRIL—1843.

ART. I.—*Note on Allore and Rohri.* By Lieut. E. B. EASTWICK.

The country of Sindh presents but a scanty field for the researches of the Antiquarian, and but few monuments which could prove of use to the writer of history. Though traversed by the classic waters of the Indus and trodden by the armies of every invader of Hindustan, scarcely any work of bygone ages reminds the traveller of the past, or aids him in removing the obscurity in which the early history of this region is enveloped. Even the site of the once most celebrated cities of Sindh is disputed, and though perhaps but eight centuries have elapsed since the prosperity of Allore and Brahminabad was at its height, no record of their inhabitants is left; and vague tradition alone informs us that the mouldering heaps we now behold, were once the abode of thousands, and the seat of empire. In the *Chachnámáh* and *Mausumnámáh* we find no account of the ages which intervened between the invasion of Alexander and the conquest of Sindh by the generals of the Caliphs, except indeed a few names of kings and some puerile legends. We are left without any guide as to the natural changes which must have happened in that lapse of time, and which, if we may argue from what has occurred more recently, must have been of no common magnitude. It is therefore vain to speculate on the ancient geography of the tracts bordering on the Indus, and to build on conjectures which must be purely arbitrary. With reference however to Allore, once the capital of the Hindú Rájás who governed Sindh,

some scanty information may perhaps be collected, and among other things it appears possible to fix the date on which the Indus abandoned that ancient city and directed its course into a new channel between Rohri and Sakkar. In the small island of Khwaja Khizr, nearly opposite Rohri, is a masjid whose appearance bespeaks antiquity. In this building is the following inscription:—

چون این درگاه والا شد هویدا خضر با خط شیرین در نوشتن
 که آب خضر دارد در حوالی بی تاریخش شد از درگاه عالی
 ۳۴۱

When this Court was raised, be it known, Khizr wrote this in pleasing verse. That the waters of Khizr surrounded it. Its date is found from the Court of God.

If this date ۳۴۱ be correct, the masjid was erected in the year 952 A. C., about 250 years after the Muhammadan invasion of India. The mistake, if there is any, is intentional, for the literal date corresponds to that of the figures. Thus :

| | | | | |
|---|---|-----|---|------------|
| د | = | 4 | } | درگاه عالی |
| ر | = | 200 | | |
| گ | = | 20 | | |
| ا | = | 1 | | |
| ه | = | 5 | | |
| ع | = | 70 | | |
| ا | = | 1 | | |
| ل | = | 30 | | |
| ی | = | 10 | | |

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But the inscription is corroborated both by tradition and by other circumstances which present themselves to the local inquirer. The popular legend tells us, that a shepherd named Bájee, whose hut stood where the Mahal of Bájee, one of the divisions of the town of Rohri, now stands,

observed at night a bright flame burning at some distance from him. Thinking it had been kindled by travellers, he sent his wife to procure a light from it, but as often as she approached it, it vanished. She returned and told her husband, and he disbelieving her report, went himself and then discovered that it was indeed a miraculous manifestation. Awestruck with what he had seen, he erected a Takea on the spot, and devoted himself as a fakir to the religious care of the place. Soon after this, the Indus altered its course, and abandoning the walls of Allore encircled the ground on which the Takea of Bájee stood, and which is now called the island of Khwaja Khizr.

There is another story to be found in the Chachnámáh which relates that the Rája of Allore was desirous of possessing the beautiful daughter of a merchant who resided in his city. The unhappy father, unable to oppose the wishes of the king, entreated that a respite of eight days might be allowed to him, and having spent that time in fasting and prayer, he was miraculously conveyed with his daughter and all his wealth to the island of Khizr, the river at the same time deserting the city of Allore, which was thus doomed to desolation for the tyranny of its king.

However the truth of these tales may be, the existence of the legend gives strength to our belief in the genuineness of the inscription. We find too, that among the tombs in Rohri and Sakkar, though for the most part they are of the age of Akbar, there are some whose antiquity ascends nearly to the date in the inscription given above. In the island of Sati opposite the fort of Bakkar is an inscription to this effect.

| | |
|-------------------------|------------------------------|
| آن بھر فن یگانہ و کامل | میر والا نژاد سعیدالدین |
| جنت عدن ساخت کہ منزل | دل از این خاکدان گرفت اورا |
| شدا لفر دوس میر صاحب دل | سال فوتش چون جستم از دل بگفت |

Seyud uddin born of a noble house. His soul removed from this house of clay,
Unequaled and perfect in wisdom. He made paradise his abode.

When I sought the year of his death my heart responded,
The Mir, lord of my heart, became an inhabitant of Paradise.

Now these words would give the date 384 A. H. as follows :

| | | | |
|-----------|---|---|-------------|
| 40 = | م | } | میر صاحب دل |
| 10 = | ی | | |
| 200 = | ر | | |
| 90 = | ص | | |
| 1 = | ا | | |
| 7 = | ح | | |
| 2 = | ب | | |
| 4 = | د | | |
| 30 = | ل | | |
| 384 A. H. | | | |

The appearance of the tomb is extremely ancient, and justifies our belief in the correctness of the date. It is situated at the eastern extremity of the island and is much dilapidated. It seems probable, therefore, that the change in the course of the Indus from Allore to Rohri actually took place in the year 341 A. H. as given in the inscription in the Masjid of Khwája Khizr, and that soon after the divergence of the stream, the population of Allore began to migrate to Rohri, and among them probably came the family of Seyuds on the tomb of one of whom appears a date only fifty years subsequent to that of the Masjid of Khwája Khizr. In assigning an antiquity of eight centuries to Rohri and even to Sakkar, it will not be thought that their foundation is carried too far back, for it appears that several centuries ago they had reached a high state of wealth and importance. This is attested by the numerous and costly structures erected prior to and during the reign of Akbar, and by the resort of Seyuds who emigrated hither from the most distant countries. Akbar conquered Sinde in 1572 A. D., and though nearly three centuries have elapsed, the buildings erected during his reign are evidently among the most modern of the edifices which cover the hills on each side of the river. The former Masjid of Rohri bearing the following inscription, will serve as an instance :—

The Khusrau of the age, the asylum of the faith, Sháh Akbar,
 Giver of crowns and subduer of kingdoms.
 The Sháh, whose host is as the stars, and whose throne is the sky,
 Defender of the law and leader of the age.
 Whose servants equal Cæsars and Emperors,
 Whose nobles are great as the Khan of Tartary.
 The lowest of thy servants, O Sháh !
 Tho chief resembling Jamsid, throne of the age,
 Leader of bright soul, bounteous as the ocean,
 Pillar of liberality and storehouse of benefits,
 Fatch Khan, whose blood shedding scimitar
 Laid waste the foundations of injustice,
 Built this cathedral for a heavenly recompense,
 And in the hope of a more enobled abode in Paradise.
 Heart expanding as the holy Caabah,
 Soul delighting as the gardens of Eden,
 May it continue uninjured by the lapse of ages.
 I sought in my mind for a word corresponding to its date.
 Tho Khan built this Masjid and bid adieu to life.

No. 2. Another example will be found in a small domed building which now forms part of the Agency at Sakkar, which is of the time of Akbar, but of perfectly modern appearance. It bears the following inscription :—

“ In the time of the Khálifat of the great Sháh, most revered king of kings, brightness of the faith, Muhammad Akbar the king, exterminator of infidels, may God establish his kingdom !

“ This building was erected for good purposes by the noble Muhammad Mañsum of Bakkar, the son of Seyud Sífa Tarmúzi for the common benefit of all Músalmáns.—Whoever makes a tomb in this edifice, the curse of God, and of the prophet, and of angels, and of the faithful, on him rest !
 1008 A. H.

Opposite is another building with these verses—

“ Sweet spot that like the gardens of the blest,
 Breathes heavenly pleasures to the enraptured breast,
 Mansion of bliss ! thy date let strangers find,
 In hailing thee the Eden of the mind. 1006. A. II.”

Contrasted with these buildings, the tombs on the hill overlooking the

Agency, seem evidently of a far higher antiquity. Among all these ruins there is no trace of any Hindú place of worship. Not even at Allore, though once governed by a Hindú dynasty, is there any specimen of Hindú architecture to be found. There are some circular towers which would seem very ancient, and the tracery and carved work of which is laid on to the walls in a very rude fashion, but these are nevertheless tombs of Músalmáns from the Kabar in the inside turned towards the Kiblah. What is said to have been the Kót and palace of the Rájás, is now a vast mound of undistinguishable ruin. In one place where Mir Rustam Khán, the Khyrpore chief, caused an excavation to be made, the wall has been laid bare and appears to be of great thickness, about twelve feet as nearly as I could guess. The Mir was not rewarded for his labour by discovering any thing, and the work was soon discontinued from superstitious motives. The distance of Allore from Rohri is about five miles, and the road passes over a bridge to which an undue antiquity has been ascribed by some. There is no reason however to suppose it older than the statements of the natives would make it, that is, about two centuries. It is plain, that it never could have been thrown across the main stream of the Indus, for the height of the centre arch is only fourteen feet, and the whole length of the bridge does not exceed six hundred. Long after the main river had deserted Allore, it is probable, that a small body of water may have continued to flow in the ancient channel, across which this bridge was thrown either by Muhammad Maásum, or some other munificent noble of that age. After crossing the bridge you come upon a small village, containing about sixty families, of whom two-thirds are Músalmáns, and the rest Hindús. They are subject to little exaction from the Amírs, and find a sale for the produce of their farms among the votaries of Shakar Ganj Sháh. From this village an extensive ridge of ruins is to be traced in a north-easterly direction. In this huge congeries, there is no inscription to be found or any thing worthy of notice, except a picturesque ruin which bears the name of Alumgír's Masjíd, and two tombs of Seyuds. Who these worthies were, is now forgotten, but their names remain, Shakar Ganj Sháh and his Khalifu Khutáb Uddin Sháh. The tomb of the former is a celebrated ziyárat, and the people of the neighbouring villages make a pilgrimage to it twice monthly. It has no dome or edifice over it, but is a plain white sepulchre with a neat border of carved flowers resembling the fleur de lys. Among the ornaments which the piety of the devotees had suspended over the tomb,

were some stopples of decanters, but evidently in ignorance of their use. For on its being explained to the Mújáwar, that these ornaments had originally belonged to wine vessels, he was greatly scandalized and forthwith threw them away, laying all the blame of their suspension on his wife. I could discover nothing else at Allore worthy of notice, except two stones in the bed of the river, bearing an inscription to the effect, that they were set up by Muhammad Maäsum to mark the ancient course of the stream. This noble Seyud was the founder of many costly works in the vicinity of Rohri. He is buried in the cantonment at Sakkar at the foot of a tower ninety feet high, which he erected and which overlooks the country for many miles. The person who claims to be his descendant, has already prepared his last resting place in the same cemetery. At Rohri they pretend to possess a hair and a half from the head of the Prophet,—the Múi Múbárik as it is called. They are set in a gold tube adorned with large rubies, and a great deal of mummery is observed in displaying them. The Mújáwar gave me the following account of their translation to Rohri:—"In the year nine hundred and fifty-two of the Hejira, Makhdin Miyán Abdúlbákí Sadíkí, the Mújáwar of the Mir Múbárik, arrived at Sakkar from Istambol, and gave such convincing proofs of the genuineness of these blessed relics, that all the great and pious men of the time visited them as pilgrims, such as Sháh Hyder Hakáni and Múkh dum Abdúlmalak. The office of Mújáwar then descended on Hají Muhammad bin Abdúlsatár Sadíkí, who enjoyed it for no less a period than eighty years. After him Sháh Hafiz Muhammad Izhák became Mújáwar, and Hafiz Mahummad Riza and Hafiz Mahummad Múrád, the sons of the said Hají Mahummad, and to the descendants of Hafiz Mahummad Izhák the office now belongs."

II.—*Description of a Copper-plate Grant found at Khárepátan, on the Viziadurga river; with a fac-simile, a transcript in Balbodh, and an English translation.* In a letter to the President of the Society:
 BY BALL GUNGADHAR SHASTREE, Esq.

Bombay, 19th November, 1842.

MY DEAR SIR,

1. Having been informed, that a Brahman, of Khárepátan, a town situated on the river of Viziadurga or Gheria, had, some time ago, acci-

dentially found a Copper-plate Grant, I succeeded in obtaining the loan of it through a friend; and I have now the pleasure of sending you a *fac-simile* of it, as well as a transcript in Balbodh and an English translation, for being laid before the Bombay Branch of the Royal Asiatic Society, should you deem it worthy of the notice of that body.

2. The four plates composing the Grant are connected, as usual, by a ring running through a hole, and bearing the accompanying figure, which, from having the box of Lingam on its neck and a snake twining round its arms, would appear to be that of a devotee of Shiva. The inscription on the plate is dated in the year 930 of Shalivahana. It is peculiarly rich in the genealogies of the princes of the Deccan and Conkan; containing in addition to a catalogue of the ancestors of the Donor,—a tributary of the Conkan,—two names of Chalukyas, then holding sovereign power in the greater part of the Deccan; and no less than fourteen names of the Yadava kings, whose authority was subverted by a member of the former family, about the end of the ninth century.

3. The records of the Chalukya and Yadava dynasties, already found and decyphered, have generally corroborated each other; and the names as well as the order of succession of the kings of those families, have been made out on the concurrent testimony of a mass of inscriptions collected by Mr. W. Elliott, of the Madras Civil Service, and Mr. W. H. Wathen, the late Chief Secretary to the Government of Bombay. Great deal, however, yet remains to be done in completely tracing the lines of these kings; and it is of great importance to procure additional documents in support of the facts already brought to light, or in elucidation of the points hitherto regarded as doubtful.

4. In the Grant of the Chalukya kings, which I had the honour of presenting to your Society through Professor Orlebar, last year, I verified the names of some of the early kings of that race, mentioned in Mr. Elliott's tables, in No. VII. of the Asiatic Society's Journal, for May 1837. In the one that accompanies these remarks, there occurs the name of Teilapa, who recovered the dignity of his race from the Yadavas, and that of his son Satya Shri, both of which are to be found in Mr. Elliott's list. The accompanying inscription describes the latter king as reigning in the Shaka year 930 (1008 A. D.), or one year after his accession to the throne, according to the authority quoted above. It also confirms the temporary alienation of the power of the Chalukyas in the ninth century, and the subjugation of the princes of Ráshtra Kuta by Teilapa, as mention-

ed in a copper-plate grant found at Meritch, and published with a translation by Mr. Wathen in No. V. of the Asiatic Journal, for March 1836. This fact appears, moreover, to be supported by the authority of Col. Tod. (p. 2, No. VII. Asiatic Jour.)

5. The names of the Yádava kings of Ráshtira Kuta require some consideration. Those given in the enclosed grant, though agreeing generally with the list given by Mr. Wathen in p. 105 of No. V. of the Asiatic Journal, on the authority of a grant found at Kardla, dated Shaka 894, (or A. D. 973), differ from them in more than one instance. I give both lists below for the sake of comparison :—

The accompanying Plate.

- 1 Danti Durga.
- 2 Krishna Rájá (his paternal uncle).
- 3 Govinda Rájá.
- 4 Nirupama.
- 5 Jagat Tunga.
- 6 Amogha Varsha.
- 7 Akála Varsha.
- 8 Indra Rájá (his grandson).
- 9 Amogha Varsha II.
- 10 Govinda Rájá (his brother).
- 11 Baddiga (his paternal uncle).
- 12 Krishna Rájá (his son).
- 13 Khotika (his brother).
- 14 Kákala (his brother's son).

Kardla Plate.

- 1 Nandi Durga.
- 2 Krishna Rájá, his paternal uncle.
- 3 Govind Rájá.
- 4 Nirupama, his younger brother.
- 5 Jagat Rudra.
- 6 Madanogha Varsha, (Amogha-Varsha).
- 7 Akála Varsha.
- 8 Jagat Rudra.
- 9 Indra Nripa.
- 10 Jagat Rudra.
- 11 Amogha Varsha.
- 12 Krishna Déva.
- 13 Khodviga Déva.
- 14 Kákala Rájá.

6. The first seven names in both lists are no doubt the same. The change of the first into Nandi Durga, and of the 6th prince into Madanogha Varsha, are mere errors of the translator, and not supported by the original Sanskrit. The eighth prince is called Jagat Rudra by Mr. Wathen, while his name in the accompanying grant is Indra Nripa. On referring to the original Sanskrit of the Kardla plate, it appears that Jagat Rudra is not mentioned there as a descendant of the Yádava family, but is introduced as the father of Indra Rájá ; who being, according to the enclosed grant, a *daughter's* son of Akála Varsha, there is nothiug contradictory

in supposing him to be the son of Jagat Rudra. But Indra Rájá's mother is described in the Kardla grant as the daughter of his uncle Shankara Gana, king of Chedi, and not of Akála Varsha. The easiest way of accounting for the discrepancy, however, appears to me to suppose that the name of नम (daughter's son) is applied in the accompanying inscription to a son of Akála Varsha's son-in-law, not born from his daughter, but from a different wife. This supposition is fully warranted by the common use of that word.

7. The 10th prince, Jagat Rudra II. of Mr. Wathen, appears to be the same as the first prince of that name; and the 11th, Amogha Varsha, is another son of his, born from Govindava, another daughter of his uncle and father-in-law, Shankara Gana of Chedi; so that he is a half-brother of Indra Nripa. Whether he was a brother of this last prince, or his son, as stated in the accompanying inscription, we have no difficulty in identifying him with Amogha Varsha II. in my list. Govind Rájá, the 10th, is a brother of this last-named ruler, and the next, Baddiga, is a paternal uncle of Govind, and, consequently, another brother of Amogha Varsha. Both these names are omitted in the Kardla Plate.

8. Some difficulty now presents itself with regard to the 12th and 13th princes in my list—the two sons of Baddiga. Though both these names are to be found in the Kardla grant, yet we have the following account of their connection with Amogha Varsha. "His elder brother, Shri-Krishna Rájá-Déva, having left this earth to seize Indra's kingdom, Khodviga Déva, the son of Amogha Varsha, and Kandaka Déví, the daughter of Yuva Rájá, succeeded: a most renowned prince."* The apparent inconsistency between the two plates is satisfactorily explained by supposing that Krishna Rájá only was the son of Baddiga; and Khodviga, described as his भ्राता (brother) was his cousin, and the son of Amogha Varsha, born as mentioned above. There can be no hesitation in admitting this, when it is recollected that भ्राता is used not only for paternal cousins, but for more distant relations.

9. This view of the subject derives some support from the opinion of Prof. H. Wilson, of Oxford, who makes the following remarks on Mr. Wathen's genealogy of the Yádavas. (p. 393, No. IV. Asiatic Jour.)

10. "It is probable that two collateral branches (of the Yádavas)

* See p. 102, No. V. Asiatic Society's Journal, March 1836.

are described, the junior of which intermarried with the Ráshtra Kuta princes of Chedi, and exercised an authority, nominally at least, subordinate to the other. Akála Varsha and Amogha Varsha, the last of either series, seem to be contemporaries; and that the latter, notwithstanding his lofty titles, was inferior to the former, is implied in the expression, "Meditating on his feet," (Shrimad Akála Varsha Pádánudhyáta,) as one of the titles of Amogha Varsha." The modification that I suggest in this theory, is to suppose that Jagat Rudra did not belong to the Yádava family, that his name is introduced in the Kardla plate to connect the descent of Indra Rája and Amogha Varsha II. from Akála Varsha; and that the former, instead of being contemporary with the latter, was his grandson, who might, without any contradiction, be described as meditating on the feet of his ancestor, Akála Varsha.

11. According to this hypothesis, the names in the accompanying grant may thus be connected with Mr. Wathen's list.

- 1 Danti Durga.
- 2 Krishna Rája (his paternal uncle).
- 3 Govind Rája (his son).
- 4 Nirupama (his younger brother).
- 5 Jagat Tung or Jugat Rudra (his son).
- 6 Amogha Varsha (his son).
- 7 Akála Varsha (his son).
- 8 Jagat Rudra (his son-in-law).
- 9 Indra Nripa (his son).
- 10 Amogha Varsha II. (his son or brother).
- 11 Govind Rája (his brother).
- 12 Baddiga (his paternal uncle, and brother to Amogha Varsha).
- 13 Krishna Rája (his son).
- 14 Khotika or Khodviga (cousin of Krishna Rao, and son of Amogha Varsha II).
- 15 Kákala (his nephew).

It is with great diffidence that I offer the preceding remarks, the truth of which can be established or disproved only by future discoveries. It is probable that the writer of the accompanying inscription was not rightly informed of the pedigree of the enemies of his lord paramount, the Chalukya king Satya Shri.

12. The era of Krishna Rájá and Govind Rájá, the second and third in the above list, is furnished in a copper-plate, found at Van-Dai-dori, in the district of Nassick, by L. R. Reid, Esq., and published in No. X. of the Asiatic Society's Journal. According to this document, Govind-Rájá was on the throne in 730 Shaka (A. D. 808), and in the Kardla inscription the date of Kákala's reign is Shaka 894 (A. D. 973); so that placing this last prince's accession about ten years before this time, or in Shaka year 884, and making a deduction of two princes, who, being introduced merely to explain the descent of Kákala, never ascended the throne, in all probability, we have between Govind and Kákala ten princes, whose reigns extend over a period of 154 years; giving 15·4 years for the duration of each reign, which does not much exceed the ordinary average.

13. The capital of these Yádava princes of Ráshtra Kuta is described in the Kardla grant as Mandya Khéta, which Mr. Wathen supposes to be the same as Man-Khéra in the dominions of the Nizam of Hyderabad. No grants by this dynasty have been as yet found in the collections made by the late Col. McKenzie.

14. I now come to the family of the donor, Ráhu Raja. The fact of its having been descended from the kings of Ceylon is remarkable on more than one account. The only interesting circumstances mentioned about this chief are, that the authority of his family extended from the Ghauts to the sea, and that one of them, Avasara, lent his aid to the ruler of Chandra Míla, which Mr. Wathen conjectures to be Tanjore, from its native name of Chandáwar.

15. The names of the princes of this family are as follows. :—

| | | | |
|---|----------------|----|--------------------|
| 1 | Jhalla Phulla. | 6 | Avasara II. |
| 2 | Dharma. | 7 | Indra Rájá. |
| 3 | Diyapa Rájá. | 8 | Bhima. |
| 4 | Avasara. | 9 | Avasara III. |
| 5 | Aditya Varma. | 10 | Ráhu, (the Donor). |

Of these the first is stated to have enjoyed the favour of Krishna Rájá (the first) of the Yádava race, who reigned in the beginning of the 8th century of Sháliváhan, as shewn above; so that we have ten of these petty princes reigning over a period of 200 years (or between 730 and 930 of Sháliváhan). This gives an average of 20 years to each prince; and

it does not appear much beyond probability, when it is considered that the situation of the Conkan being far from attractive to invaders, it has ever been more tranquil than any other part of the country.

16. All the three villages described in the accompanying inscription are given in perpetuity to a family of Brahmans of the Matta Mayura race, having the surname of Karkarolí. They all appear to be situated in the district of Viziadurga. Shantashmandí, the first, must obviously have been situated between the villages of Bápardé, Manché, and Savadalé; the two last of which, as stated in the grant, are on the banks of the river. The sites of the other two villages cannot be so easily made out, though there are places in the district, having the names of Gavána and Savadalé, mentioned in the grant as boundaries.

17. The language of the inscriptions has nothing remarkable in it. The character does not differ much from the modern Balbodh; and the only letters belonging to the Cave Alphabet that I find are ञ for ऋ; ॠ for ॡ; ॢ for ॣ; । for ॥; and perhaps one or two others.

I remain, dear Sir,

Yours most sincerely,

BALL GANGADAR SHASTREE.

21st November 1842.

TO THE REV. JOHN WILSON, D.D.,

President of the Bombay Branch of the Royal Asiatic Society.



Ring connecting the Plates, with the image appended to it.



Fac-simile of the Copper Plate.

८० उंरुमः सिवाय ॥ हे लौल्लालितयलुदलुयन लो गुण्यायदा गा
हतस्वर्गं । गा इ त सुक्रिसं पुट ग ल मुक्ताक वंतालुवे । पालो वी कृ कया
लमा म्ब धजटा यश्रु म् तो श्री वि तं कं का लं च य द्दु तं स्मित म वत्वी से र तद्व
स्वित म्ब ना गो त्रं कि श्रु कृ तो कृ म पु प वस ति क्कौ स दा व म्बे व क्रो वा क्रो द्दो
२ लु को श्या म यय न प व का कं म्बितो वा कृ ही कः ५ का व म्बा क्की त मूलः प्र कृ ति न
तिं प्प को वा न ले द न्ने पृष्टः ॥ सा प्रा र्घी र्घी ह वं । एया यदुकु लतिल को ना पू कृ टे स्व
ना लो ॥ वश म्मी द्दु र्गः प्र कृ १ पि य नू तः क ष्ण ना जः पि त धु स्त स्मो । ना वि
दू ना ज म्ब म्बु कि नु पा ना ५ स्मो कृ ग डुं ग दे वः ॥ त यु त्री मो प्प व र्घी नि पु व कृ द
ह को ५ स्मो प्प था का ल वा र्घी क प्पा कृ स्त्री दू ना जो नु चि न त न व पु म्ब नु तो मो प्प व
र्घे ५ सं गा न न म्ब वि वा मो व स कृ व
तम्ब क की या श्रु ता गो वि कृ ना जो दू
इ न व कृ स म्ब हृ पृ तः ५ ह नि नि व
त ॥ पि तृ ष्ण म्ब म्ब सी च्र ल य ज

पगृह्णा ग्नावन्मियचः पनः। प्रतापवाहाहाडुमे यलि धग्र वत्त कृती ॥ तस्मादे
 यप वाजो कृदि जिमी पुगु लोचिनः भ्रान्तस्यदु पु रायमू कादिवाताम्बु वास घः
 वरु वावयन सू सा श्रीवि साघ्रायतन्व विर। एकमेत्र प्रलग्ना रि कालुख लु प राक्रमः॥
 जादिह्यर्मा पु शे सुत्रे ज या दिष्टवन्न तः। तस्मा दयुस। राजाता जि तारिर्द र्म वाक् पः॥
 येन न्नागद पु न ज स्मो म् स्ना हा य मदाद्याः भन तोरु व दिन्ना जा षण ग शो गातियु
 3 नृव जात स्मा प्रकृत काग्ण कृद्गीमा दी मारु विक्रमः ते ज सा राहु व द्रु म् चन्द्र म लु ल
 उ कू तः॥ तत स्त्वा व स ता ना जा जा ता ती व वि वे क वाप्र। प्रा कुः प्रा कु ऊ ना वा गतः
 वृनः युन म रूप वा कृ ॥ र रु का माय य क स्मा द्र जो पु ल्प व गो व वः ॥ की ति हो मी ति
 सा य्रा घे व दू से बी जि त वि यः॥ पच मरु हान क म हा ना जा वि वा ज मी त ल्प स्र य दे
 या कु वा त म ग ल्प क सी न ह ना जः स्र घो वा व स्व सं व ७ मा क णो व जो क प दे प्र क
 का मा ल्प वर्ग मा ह या ग्नु वः सं वि दि तं य श्वा कू ली क ऊ रा प्र त वा च वृ श्रा सं यो य
 कं वि प य प त क मि वे प्र वि यो ग दुः ग्यं षा वि ऊ ना म च ल स्ता क च लं प
 सवी य कं प व कं व ल क म ल द ल चा त ज ल ल व स दृ सी य का यु षी

नताकल्ययिदयी हतांतो राती कांठय
 माकाकूतयुनाकू पा लांकलियुगेसदा
 संतोःषडाकक ॐ वारिमुके निवैकू नामो यथा दस रथ स हान हू यकू ॥ तत्पत्नत्व जा
 पियातुनं बुविनेग्वलायारु र्शु वःस मरु वेदु यिह घृताजः ॥ सो नंदिता मलु
 ष्यागदृ हृणयातेतस्मि चैव सप्रा यकासमा त म्पुता ग्यो रि का ग्फ सतोऽहृ च्छीहर्ला
 गगंवागोर्हित स्त्रीः ॥ क काल द्वाय द्वात्थेकुवोरु र्शु ज क प्रियः ॥ आ सी प्र य लु क मे व
 प्रतापजित साय वः ॥ म मतेतं वि किर्ति एते ल पोऽदु क्म ही यतिः या लु का कू य द्वा ॥
 जि वु न चा ति ग ज के म्ती ॥ त ग्णत्व जः य नं जि पुः स्पतः ग्ण म्प यो कू व ता क्कि
 ती स्व नः स स्व ए कि कि क्रामे क च सोर्हितः ॥ प यं प्र व र्द मान या लु का कू य श्री म्प ल प्र
 य ना जे च रू पा टी म्कु सा सति ॥ ७ ॥ आ सी द्वि या व रा वी सो ग क ल द क जी पि तः
 जी मूत के तोः स पुत्रो का म्मा जी म्प त या ह कू ॥ त तः सिलान यं सो दु किं हल म्प्रा कू
 तां य व थ प्र कू त म्पू त मो म्पा ग्ग म्पा ग्ग वा कू र्ति ता र्जितः ॥ मा म्पाल ल फुल्लः ग्ण तः
 त प्ल ना ज प्र सा द या क। स मु द्र ती र स द्वा कू द म्प स सा व का म्प व त ॥ त न्पु त्रो व म्प

गु लकि विवेदि राकू यः १ प्रतिहू कूः
 शानः साको मुक्ति नि व ज ग तुं त कू यः ॥

मं त्वादाक परल भविव कड छा॥३
वर्द्धाघोर्षे प्रवी सूर्यसु ता स्व गा वः।

क्रं च मु कि हिः अग्ने न प नं प्र थ मं सु,
लोक न यं । त दा व हि द नै यः का व क

गो व म ही क्ष द घा त ॐ ति मु कि व च क म व वा र्ये पि । श नु द्वा । स काल क स्वा सु य पि स
क रू प का ला ती त म्ब म्ब प क व स ते पु जिं स द वि के षु प्र वर्त मा क की ल क म्ब म्ब
ना क र्म त जे ष्ट पि लुं मा म्म सी म द वै स्वे ना द व प-सो प चान पृ जा पु न च्च न म्ब लु म्म
टि त मं म्काना छं थ म्म न प स्वि स्तु ज का द्वा द क द्वा र वि द्द क्क म्म रा ता छ पा षा वा य र्म
भा क्क षा श्री ग्रा म्म म्म ष्ण ष्ण द्वा दि क क्षा र पु र्वा ता म लि ग्रा म प्र पा द कि ल तो वा प न प ट
ग्रा म मार्गः प स्वि म तः स ग कू ल क पि रु ग्रा म वा ह ला । उ क न तः का न क ही ४ त वा ५
स क बी न ग्रा म स्र म्म पृ र्वा ता क न वा ह ला । द द्वि ल तः का न प ल्नी ग्रा म क दी । प स्वि म तः
म मु द्दः उ क न तो म वा ह ल ग्रा म क दी । त था व उ क्क ल ग्रा म म्म म्म पृ र्वा ता रोग दे व प र्वा
त य म ल प्र म्म नो द द्वि ल तो ५ ग्व ५ द या ह ला । प स्वि म तः प ट म्म उ पा षा लः उ क न तः
म्मा ग क ग्रा म सी म वी प र्थ तः ॥ ४ ॥ त था दे व ल्म म्म ग्रा म जी व लो कः । ११ छ द्द नु ले ना
का कू न ०२१ म्म छा प ली ह ह कः ०११ त दे त द्वा म र्म या दि कं व लु ना प्पा ट वि कि क्क म र्म
ना क्क की या या म्म न सि द्द म्म चा ट कू र म्म वे स पृ र्वा द न दे य दा य व लु दा य व क्क श्री म्म

ममनाय कर्को राली मंतति प्रष्टत विदुः सुखं च यो नार्यमो ग्णमाचं शकं पालकी यो श्रीम
कुरु मयु राकू या कूर्गंत कर्के तालि म्ना क गुनु क्रमा या वसि द्वा कू त्ता को यद्द त। माहा
कृत मसां त पोम हि म प्र वृत्ता सेष म्ना कं प्रा वा व प्र दी प प्र का सि त स्वर्गा पव र्ग मा गी लौ
स मा वि ज य ल द्त्रि सु व क की नी कं श्री म द द्यो ज स म्दु गु न् ली च न ल कम ता कू ली क म कु
लि यः श्री म द ने य वि द्दु क्त्वे वि षा दा क ष्ट ४ पे ल म म दा ज त्ता थि दी पा कू ना या त व हि
श श्व र्गु ग रि मा लं १२ वे म् ल व कू पु न् य ह्ने क क् ल म्नी यो या त प्र व ह ल्म श्व र्गु व न तं
दा त्रि का कु दु म्ना कि चो तै लि क कु दु म्ब मे कं १ मा ला का न कु दु म्ब १ कु म्ब का न कु दु म्ब १ न ज
क कु दु म्ब १ दु र्गा कू ने न ज ग ती पु नार्थे दु र्मित्वा अ प्य ह्ना कि क थु के प्र र्षा ता य म्ति
प्रा का गा द चि ल तो म क्के ट गो पु न च स्वि म तः सी व ट मार्ग उ च्च न तो मार्ग कू पः ॥ दु र्गा इ
हि स्व पु थ वा ष र्थे प्र र्थे प्र मि द्द वः वा रु व म् ॥ १० ॥ त दि दं वं म्मा मा म की क मा न्नी की कि र्नी
वि हि र्के ता के न कु पाल की य मु क्त्वा मु कि रिः । या नी ह द द्वा कि पु ना क ने कि र्ना कि
१ म्मा र्थे य य म्ना तालि । कि म्मा ल्वा वा कू प्रति मा कि ता कि को का म द्वा वुः पु क ना द दी त । व
हु कि र्ष मु थ कू क्रा गा ऊ किः य रा रा दि
दा पर ल म । स षे ष क्कि ना या लं मा
किः ॥ य य य य य द्वा कू मि स्त य त य त
या सं दी र्प्य पा ला क म् । अ त प व र्ष यः

प्राहुर्दोषार्द्रयोः कृपालुः कर्मदश्च ह
वातनामरुद्रः। सामाग्नो यं वर्मसं

मिंसाविकुः पार्थिवशुक्रयोः कृयाया

उर्कपालीकाले काले पालुः कृयोः कृयद्विः।

यस्त्वेवमर्थितापि कलिकालमुषितमरुद्रः पुणतकवर्मदायन्तुमिंकनिष्ठति
क्षरक्किन् यपालमकुरुविच्छति। उक्तं च स्वदंष्ट्रं पनदन्नाम्याया हानतवसुसुग

४ ति कृमिदः आह्वेनावाकुमकृतयतामेव कनकं ब्रजेता ॐ तिमकिवचककवक
र्यसमसागामिके पति क्रिः पालकवर्म परललाकृपवकनली यः। कपुव
स्त्रलोपकलद्वापनेरुवितृमयथाविते। देवं श्रीनहजा जन्व हस्त्रहस्त्र
मात्रोपयति स्वहस्त्रोयं मम श्रीनहना जन्व मुद्रासुदं क्रियासुदं कृत्ति
सुदं अविद्रुकम्बनाजन्व हस्त्रसुदं उ सुद्रिमायाति सासकम् ॥ ७०७
सिवमसु ॥ सांविग्रहि कस्त्री। देवपालसुते कलोकपार्य कान्वा लिग्निं

गिदम् ॥

Transcript of the Plate in Balbodh.

नमः शिवाय ॥ हे लोळालितचंडदंडचरणागुष्ठाग्रभागाहतस्वर्गगोद्वतशुक्ति
संपुटगलन्मुक्ताभृतंतांडवे ॥ पाणीवीक्ष्यकपालमाश्वथजटाचंद्रामृतेर्ज्जीवितं
कंकालंचयदद्भुतंस्मितमवत्तीशेनतद्वाश्विरं . ॥ १ ॥ गोत्रंभित्वानभूतो नमभु
पत्रसतिर्नैसदाधर्मक्रोनाक्रांतोदंडकोटयानचपरपवनाकंपितोनांतहीनः ॥ ना-
धस्तान्नीतमूरुः प्रकृतिरतिघनानोरणेदत्तपृष्ठः सौत्यथौस्तीहवंशोयदुकुलति-
लकोराष्ट्रकूटेश्वराणां ॥ २ ॥ तत्रासीदंतिदुर्गःप्रभुरपिचततः कृष्णराजः
पितृव्यस्तस्माद्गोविंदराजस्तमनुनिरुपमोस्माञ्जगतुंगदेवः ॥ तस्यत्रो मो-
घवर्ष्योरिपुवनदहनोस्थाप्यथाकालवर्ष्योनसास्य श्रीद्रराजो रुचिरतरवपुस्तीसुतो-
मोघवर्ष्यः ॥ ३ ॥ शृंगाररसनिसासोत्रसंतवद्वरवधूसमूहवृत्तः ॥ हरि-
रिवस्तस्यकनीयान्भ्रातागोविंदराजोभूत् ॥ ४ ॥ पितृव्यस्तस्यासीत्प्रणय-
जनताकल्पवितपीकृतातोरातीनां नयगुणनिधिर्बंदिगनृपः ॥ प्रतिछंदःसाक्षात्कृतयु-
गनृपाणां कलियुगे सदाचारःशातोमुनिरिवजगत्तुंगतनयः ॥ ५ ॥ शंभोः
षडाननइवात्रिमुनीरैवेदूराभोयथादशरथस्यहरेर्ज्जयंतः ॥ तस्यात्मजोपि
चतुरंबुधिमिखलायाभर्ताभुवःसमभवद्भुविकृष्णराजः ॥ ६ ॥ सोयंक्षित्यामं-
डलंयोगदृष्ट्यायातेतांस्मिंश्वैवसघ्रावकाशं ॥ तस्यभ्रातागयोटिकाख्यस्ततोभू-
त्पृथ्वीभर्तात्यागकामोर्जितश्रीः ॥ ७ ॥ ककलस्तस्यभ्रातृव्योभुवोभर्ता
जनप्रियः ॥ आसीत्प्रचंडधामेवप्रतागजितशात्रवः ॥ ८ ॥ समरेतंबिनि-
जिःयतैलपोभून्महीपतिः ॥ चालुक्यनृपभ्राजिष्णुययातिराजकेसरी ॥ ९ ॥
तस्यात्मजःपरंजिष्णुः ख्यातःसत्याश्रयोभवत् ॥ क्षितीश्वरःसत्यवृत्तिविक्रमैकर-
सोर्जितः ॥ १० ॥ एवंप्रवर्धमानचालुक्यान्वयश्चासत्याश्रयराजेशेभूपाटी
मनुशासति ॥ ॥ आसीद्विद्याधराधीशो गरुत्मदनुर्जीवितः ॥ जीमूतकेतोः
सत्युत्रोनाम्नाज्जीमूतवाहनः ॥ ततःसिलारवंशोभूर्सिंहलक्ष्माभृतांवरः ॥ प्रभू-
तभूतसौभाग्यभाग्यवानुजितोर्जितः ॥ नाम्नाज्ञलफुल्लख्यातः कृष्णराजप्रसाद-
वान् ॥ समुद्रतीरसद्घातदेशसंभावनोभवत् ॥ तस्यत्रो धर्मएवाभून्नाम्ना धर्म-
यशःपरः । प्रतापवान्महादुर्गात्रिलपत्तनकृत्कृतो । । तस्मात्तद्विपराजोभूद्विजि-
गीषुगुणान्वितः ॥ स्नातस्यनूपुरासन्ननालिकेराखुनासयः ॥ बभूवावसरस्तस्मा-
न्नीतिशास्त्रार्थतत्त्ववित् ॥ चक्रमेत्रप्रलग्नारिकाण्डश्वण्डपराक्रमः । आदित्य-

वर्मापुत्रोभूत्तेजसादित्यवत्ततः । तस्मादवसरोजातोऽजितारिर्धर्मवानृपः । येत्रत्य
चन्द्रपुरजक्षमाभूःसाहाय्यमदायः । ततोभवदिन्द्रराजोत्यागभोगातिभुग्वरः ॥
तस्मात्प्रभूतभाग्योभूद्भूमोभीमाभविक्रमः । तेजसाराहुवद्प्रस्तचन्द्रमण्डलउज्व-
लः । ततश्चावसरोराजाजातोतीविविवेकवान् । प्राज्ञःप्राज्ञजनावासःशूरःपर-
मरूपवान् । रहुनामाभवत्तस्माद्राजापुण्यभृतांवरः । नीतिज्ञोनीतिशास्त्रार्थवृत्थसे-
वीजिर्द्वैद्यः ॥ परमरुद्धारकमहाराजाधिराजश्रीसत्याश्रयदेवानुध्यातमण्डलि-
कश्रीरहुराजःसर्वमेवस्वसंबर्ध्यमानपौरजानपदप्रधानामात्यवर्गमाहूयास्तुवः संवि-
दितं ॥ यथातलीनजरापूतनाचर्व्वग्रासंयौवनंनिरयपतनमिवेष्टवियोगदुःखंभा-
विजरांमरणसाकरणं च शरीरकंपवनचलकमलदलगतजललवसदृशीधनायुषी-
मत्त्वादानपरलक्ष्यविवेकबुध्या । उक्तंचमुनिभिः । भग्नेरपत्यंप्रथमंसुवर्णदौर्वैष्ण-
वीसूर्यसुताश्वगावः । लोकत्रयंतेनमवेत्थिदत्तं यः कांचनंगांचमर्हीचदद्यात् ॥
इतिमुनिवचनमवधार्य पित्रोर्हृदोशेनात्मनश्च श्रेयसे शकनृपकालातीतसंस्वत्सरनव-
शतेषु त्रिंशदधिकेषुप्रवर्तमानकीलकसंवत्सरांतर्गतज्येष्ठपौर्णमास्यां श्रीमदधै-
श्वरदेवपञ्चोपचारपूजापुरस्सरखण्डस्फुरटितसंस्कारार्थं सत्तपस्विभोजनाच्छा-
दनच्छात्रविद्वज्जनाद्यागताद्युपयोगार्थंशान्तष्माण्डीग्रामस्तस्याघट्टनानि कथ्यान्ते
। पूर्वतोमणिग्रामप्रपा । दक्षिणतोत्रापरवटग्राममार्गः । पश्चिमतः सवान्द-
लकपितृग्रामवाहला । उत्तरतः क्षारनदी ॥ ४ ॥ तथासनवीरग्रा-
मस्तस्यपूर्वतोझरवाहला । दक्षिणतः कारपण्डीग्रामनदी । पश्चिमतःसमु-
द्रः । उत्तरतोगवहणग्रामनदी । तथावड्डुलग्रामस्तस्य पूर्वतोभोगदेवपर्वत
यमलप्रस्तरोदक्षिणतोऽगवडवाहला । पश्चिमतःपटसडपाषाणः । उत्तरस्तामा-
नग्रामसीमवीपर्वतः । ४ । तथादेवलक्ष्मीग्रामेजीवलोकः । १ । व्यद्रहलेचा-
कान्तरः । १ । शय्यापल्लयांदूहकः । १ । तदेतद्ग्रामत्रयादिकंचतुराषाटवि-
छिन्नं सर्वराजकीयायाद्यंतरमचाटभटप्रवेशपूर्वदत्तदेवदायब्रह्मदायवर्ज्य श्री-
मत्तमयूरान्वयकर्करोलीसंततिप्रसूतविद्वद्ब्रह्मचर्याचार्यभोग्यमाचंद्रार्क पालनी-
यं ॥ श्रीमन्मत्तमयूरान्वयातर्गतकर्करोलीसंतानगुरुक्रमायातासिंघाततत्त्वाकां-
पहृतमोहांधतमसानांतपोमहिमप्रध्वस्ताशेषशंकानां प्रबोधमदीपप्रकाशितस्वर्गाप-
वर्गमार्गाणांसभाविजयलब्धत्रिभुवनकीर्त्तीनां श्रीमदं भोजशंभुगुरूणांचरणकमलां-

तर्लीनमधुलिङ्ग्यःश्रीमदानेत्रेयविद्वद्रुभ्योविद्यादानस्वरूपेणसमदात् ॥ तथा
 दीपांतरायातवहित्रास्वर्णवदिवाणं । १ । चेमून्यचंदपुरवर्ज्यकंदळमूलीयायात-
 स्वर्णवरणं ॥ दारिकाकुटुंबानिचतैलिककुटुंबमेकं । १ । मालाकारकुटुंबं । १ ।
 कुंभकारकुटुंबं ॥ १ ॥ रजककुटुंबं ॥ १ ॥ दुर्गाद्यंतरेच जगतीपुरार्धभूमिं
 तस्याश्वाप्याघट्टनानिकथ्यते । पूर्वतोवसतिप्राकारोदक्षिणतोमर्कटगोपुरं पश्चिमतः
 सीवटमार्गउत्तरतोमार्गकूपः ॥ दुर्गादबहिश्चपुष्पावाट्यर्थपूर्वप्रासिध्वडवाभुवं ।
 तादिदंधर्ममामकीनमामकीनैर्भाविभिर्नरैर्द्वैरनुपालनीयमुक्तचमुनिभिः ॥ यानीह
 दत्तानिपुरानरैर्द्वैर्दानानिधर्मार्थयशस्कराणि । निर्माल्यवांतप्रतिमानितानिकोनाम
 साधुयुनराददीत ॥ बहुभिर्वसुधाभुक्त.रात्रिभिःसगरादिभिः । यस्ययस्ययदाभू-
 मिस्तस्यतस्यतदाफलं ॥ सद्योदानंनिरायासंसायासंदीर्घपालनं । अतएवर्षयः
 प्राहुर्दानाच्छ्रेयोनुपालनं ॥ दत्त्वाभूमिभाविनःशार्थिवेन्द्रान्भूयोभूयोयाचतेरामचंद्रः ॥
 सामान्योयं धर्मसेतुर्नृपाणांकालेकालेपालनीयोभबद्धिः । यस्त्वेवमभ्यर्थितोपिकलि-
 कालमुषितमनस्कःपुरातनधर्मदायलुप्तिकरिष्यतिसएव निरयफलमनुभविष्यति ।
 उक्तं च । स्वदत्तांपरदत्तांवायोहरेतवसुंधरां ॥ षष्टिर्वर्षसहस्राणिविष्टायांसकृ-
 मिर्भवेत् ॥ षष्टिर्वर्षसहस्राणिस्वर्गैतिष्ठतिभूमिदः । आछेत्ताचानुमंताचतान्येव
 नरकं व्रजेत् । इतिमुनिवचनान्यवधार्यसमस्तागामिनृपतिभिः पालनधर्मफललोभ-
 एवकरणीयः । नपुनस्तल्लोपकलहपरैर्भवितव्यं । यथाचेत्तेहयंश्रीरहुराजस्वह-
 स्तेस्वहस्तमारोपयतिस्वहस्तोयंममश्रीरहुरायस्य । मुद्राशुत्थंक्रियाशुत्थंभुक्ति-
 शुत्थंसचिन्हकं ॥ राजस्वहस्तशुत्थंतुशुत्थिमायातिशासनं ॥ ७ शिवमस्तु ॥
 सांधिविग्राहिकश्रीदेवपालसुतेनलोकपार्यनाम्नालिखितगिदं ॥

Translation of a Copper-plate Grant, found at Khárepítan, on the Viziadurga river, bearing 930 Shaka year (or 1008 A. D.)

Invocation to Shiva. . . May we ever receive protection from that merry humour of Shiva ; who wonderfully smiled, when he saw the skull in his hand filled with the pearls which had been scattered from the shells of the heavenly river, trodden by the extremities of the toes of his feet, while his post-like legs were lifted up and down in dancing ; and when he perceived the same skull immediately converted into a living skeleton by the immortalizing nectar of the moon contained in his clotted hair. There is a race (vunsha, of the lords of Ráshtra Kuta ornament to the family of Yaadus), which, (unlike the other vunsha or bamboo) has issued without injuring its* ancestors ; which admits of no drunkards ; is never cross in a charitable deed ; is never bent under the burden of tribute ; and is never shaken by gale-like enemies. Its roots do not descend to low places, nor does it turn its back in battle, its texture being solid. King Danti Durga of this race was succeeded by his paternal uncle Krishna Rájá ; who was followed by Govinda Rájá, after whom flourished his younger brother Nirupama. This prince was succeeded by Jagat Tunga. Amogha Varsha his son, was to his enemies what fire is to a forest. His son Akála Varsha was followed by his comely grandson, Shri Indra Rájá, and from him was born Amogha Varsha. His younger brother Govinda Rájá, was, like Hari, an asylum to the feeling of love, and surrounded by crowds of young damsels like the spring. His paternal uncle Baddiga, the son of Jagat Tunga, became a desire-yielding tree to his supplicants, while he was a second Pluto to his enemies. He was, in point of virtuous deeds an image, in Kali Yuga, of the kings of Krita Yuga, and was as mild as a Muni. As six-headed god to Shumbhu, as moon to Atri Muni, and as Ráma to Dasharátá, so was his son Krishna Rájá to himself. After this king left this earth by means of Yoga, (?) his brother Khotika, (or

* Here is a play of words, founded upon the two meanings of "vunsha," which cannot be translated. The sense of the words employed is given above, as intended to be understood in reference to the royal race. In connection with the bamboo, with which the royal race is contrasted, the words used, namely गोत्र, मधुप, धर्म and दण्ड, mean a hill, a black-bee, nature, and a club, instead of ancestors, drunkards, charitable deeds, and tribute. The rest of the allusion may be easily understood.

Gyotika) who acquired glory with a wish of displaying generosity, ruled the earth. His brother's son Kákala, was a popular king, who had defeated all the enemies by his prowess. Having defeated this king in battle the lion-like and glorious king Teilapa, of the Chálukya race, descended from Yayati, came to the throne. His son Satyáshrayo, renowned as a warrior by his exploits, became after him the master of the earth, and governed it with equity. While this Satyáshraya, lord of kings, descended from the flourishing race of Chálukyas, was ruling over the surface of the earth, (his tributary Rahu Rájá was master of the Conkan, whose pedigree is as follows). The Shilara race of the king of Singala (Ceylon,) derives its origin from Júmít Váhana, the son of Jímúta Ketu, the lord of the Vidya Dharás, who was preserved by the celestial Garúd (the eagle of Vishnú). In this race was born Jhala Phalla, mighty in deeds, but handsome in person, who under the favour of Khrishna Rájá (of the Yálava race mentioned above), governed the tract of country between the sea and the Sahya mountains. His son Dharma, as his name implies, was bent upon acquiring fame by virtuous actions, and had distinguished himself for valour as well as for the foundation of towns and the construction of forts. From him was born Diyapa Rájá, who was possessed of all the qualities of a conqueror; and to him, after he bathed himself in the water of the cocoanut fruit, was born Avasara, who comprehended the doctrines of morality, and was celebrated for his grand exploits. His son A'ditya Varma resembled A'ditya (the sun) by his glory; and from him descended the virtuous king Avasara, who defeated his enemies and aided the kings of Chandra Pura.* From him was born Indra Rájá, who was as famous for his enjoyments as for his generosity. His fortunate son Bhíma resembled Bhíma (the 3rd of the Pandvas) in valour, and by his effulgent glory had eclipsed the splendour of Chundra Mundala, (the Court of Chundra Nagaru?) as Rahu does that of the moon. From him was descended king Avasara, who was possessed of great prudence and wisdom, who afforded refuge to learned men, and was both handsome and brave. To him was born king Rahu, the chief of the virtuous men, who having made himself acquainted with morality, was assiduous in respecting those who had distinguished themselves for virtuous conduct, and in duly regulating his passions. This tributary king Shri Rahu Rájá, meditating on the feet of the great

sovereign Satyáshraya, and assembling his chief ministers and the principal inhabitants of his capital (commands, as follows). Be it known to you, that youth is a morsel, greedily swallowed by the beldame "old age;" that the grief from the separation of what is dear is like the torments of hell; that body is constantly being solicited by old age and death; and that wealth and life are as transient as the drops of water on the leaf of a lotus plant tossed about by the wind. Knowing this, as well as keeping in mind the virtuous effects of gifts, and considering the saying of the Muni, namely, "Gold is the first offspring of fire, land is the offspring of Vishnu, and cows are the offspring of the sun;" and he, therefore, who gives away land, gold, and cows, gives away three worlds;—also keeping in view the good of our parents and of ourselves, and for the purpose of contributing to the Panchopachára worship of Shri Argheshwar, to the repairs of his temple, as well as the supply of food and clothing to good devout men, their disciples and learned men—we have given on the 15th of Jeshta in the Shaka or Shalivahan year Kilaka, 920 years having elapsed from the commencement of that era:—1st. The village Shanta Shmandi of which we mentioned the boundaries. To the east, the creek* of Manigam; to the south, the road leading to Bâparavata; to the west, the torrent running through the burying-ground of Savandala; and to the north, the salt river. 2nd. The village of A'sana Vira; to the east of which is the Jhara torrent; to the south, the river of Karpandi; to the west, the sea; and to the north, the river of Gavahana. 3rd. The village of Vadadgula; to the east of it lies the hill of Bhoga Deva and the double rock; to the south the torrent of Gwedada; to the west, the rock of Patsada; and to the north the boundary hill of Tamana. Also 1st, Jivaloka in the village of Deva Lakshmi; 2d, Akantara in Vyadgarula, and Duhaka in Shaya Pallí. These three villages, &c. bounded on four sides, and free from all royal taxes, and from the ingress of the Government people and the military shall be

* The word प्रपा of which this is a translation, properly means a booth erected for the distribution of water. But its Marathi synonym पोट also means in the provincial dialect of the Southern Conkan, a creek or inlet running towards a river; and as the language of the place is far from pure, and contains more than one provincial term, I am disposed to think that the word is used in this latter sense. One great reason for this conjecture is, that booths for the distribution of water are as unknown as unnecessary in the Conkan; and that creeks are usually referred to as the boundaries of villages.

enjoyed, with the exception of any prior grants to gods and brahmans, by the learned and the pious descendants of the race of Matta Mayara, descended from Karkarolí. May this grant be protected as long as the sun and the moon exist! This is given to Atreya, the learned preceptor that gave us instruction, and was himself a black bee in the lotus-like feet of Shrímat Shambhu Guru, who had dispelled the mist of ignorance by the diffusion of the light of philosophy, handed down from preceptors to disciples in the enlightened race of Matta Mayara; had removed all objections by the power of his devotions; had illustrated the path of heaven and beatitude by the communication of spiritual knowledge; and had obtained, throughout the three worlds, the reputation of having conquered the assemblies of learned men. We have also given to them a golden vehicle, that has been received from a foreign island, and gold which may be produced from vegetables except in Chandapura.* We have also assigned to the said brahmans a family of slaves, or female publicservants; a family of oil men; a family of potters; and a family of washermen;† and have likewise allotted to them half of the land of the Jagat Pura, of which the boundaries are as undermentioned: To the east, the dwelling palace; to the south, the monkey gate; to the west, the road leading to Shévata; and to the north, the well on the public road. Out of the fort also we have granted the spot formerly known as the mare's ground, for making a garden. This grant of mine should be preserved by my posterity as well as other future kings. As Munís have said, "Grants assigned by former kings with a view to the promotion of virtue and the acquisition of fame are like offerings once dedicated and become stale, or like matter ejected from the mouth. What good man will take them back? Many kings, as Sugara, &c. have enjoyed the sovereignty of this earth; to whomsoever the earth belongs, to him belongs the fruit thereof. It is not difficult to give once away, but it is very difficult to preserve a grant for a long time; for this reason the Rishis have said that the preservation of a grant is a more pious act than the assignment of it. Rámchundra, having given land, again and again solicits

* I am extremely doubtful about the correctness of this reading. After very attentive consideration, however, I was unable to give any other interpretation to the passage.

† These families were to enjoy their lands rent-free, and in return to serve the brahmans. The custom of making such assignments has existed under every native Government.

future kings : this is a common duty of rulers, and you should protect it from time to time. He who, though thus entreated, will resume old grants shall experience the torments of hell. It is further declared that he who resumes a land given either by himself or by another becomes a worm in filth for sixty thousand years. He who makes a grant of land remains in heaven for sixty thousand years ; he who resumes it, or approves of its resumption, continues in hell for the same period." Considering these sayings of the Munís, all future kings should covet the credit of having performed their duty of preservation. They should by no means eagerly quarrel for setting grants aside. We have set our hands, the own hands of Shri Rahú Rája, to this. A grant is purified (ratified) when it is accompanied with seals, formalities, precedents, symbols, and the king's own hands. May there be prosperity !—Written by Lokapárya, son of Shri Déva Pála, employed in the negociation of war and peace.

ART. III.—*Climate of Karrack.*

Bushire, 14th October, 1842.

To the Secretary to the Literary Society, Bombay.

SIR,—Perhaps the accompanying notes of the range of the Thermometer at Karrack, for April, May, June, July, and August last, may be acceptable to the Society. They were kept by myself, and are not very neatly written out, but may nevertheless be interesting to any one who wishes to have a minute account of the climate of Karrack during the summer.

I may observe that I have usually marked the hours of the day when tatties were used. "No tatties" are registered at the usual tatty hours when none were used, and when no mention is made of whether there were tatties or not, then there were none. In very hot winds the difference produced on the thermometer by the air passing through a good tatty was 12 or 14 degrees—generally the difference was only 8 or 10 degrees ; and the difference between the temperature close to the tatty and removed seven feet from it, but opposite to it, in a spacious room was 3 degrees. In a corner of the room, not in the direct line opposite to the tatty the difference was 5 degrees.

As a general rule, when there was wind from any quarter whatever the heat was bearable, and it was only during the calms accompanying the wind when it had veered to the east and south-east, that the air was intolerable. As a general rule, there ought to be three places for sleeping—one, a bed in a bedroom with a punkha hung to one of the cross-sticks of it, to be used when there is not a breath of wind; one, a bed on a terrace, either with or without a fly of a tent on it, for sleeping in when there are gentle or moderate winds from any direction; and one in a verandah facing the north-west, to retire to when it blows a gale from the N. W., so as to be entirely fanned by the wind but so as not be in a draught. In the same night, according to the variations of the wind, one may be glad to resort to all three of these contrivances by turns, and so to obtain rest, when others who have not made such preparations pass a sleepless and restless night.

I send you also a memorandum given to me by Colonel Davies of the average range of the thermometer at Karrack in 1841 during the summer months. The year 1842 was esteemed cooler than 1841, but the months of September and of October till now have been unusually oppressive. From the middle of November till the end of May the climate is both agreeable and healthy, although sometimes about the middle of November fevers and colds are severe. This last piece of information I received from Colonel Davies.

I remain, Sir,

Your very obedient servant,

H. D. ROBERTSON.

Thermometer at Karrack.

| | | | | | | | |
|------------|-----------|-------------|-----------|---------|-----------|----------|---------|
| Highest. | Lowest. | | Highest. | Lowest. | | Highest. | Lowest. |
| January... | 61 ... 49 | February... | 65 ... 52 | March | 69 ... 56 | | |

| | 6 A.M. | 2 P.M. | 3 A.M. | Aver. | WINDS. |
|-----------------|--------|--------|--------|-------|---------------|
| January | 66 | 59 | 67 | 57 | |
| February | 69 | 61 | 60 | 60 | |
| March | 65 | 67 | 66 | 66 | |
| April 1st | 63 | 69 | 64 | 65 | N. W. strong. |
| 2nd | 65 | 68 | 65 | 65 | .. light. |
| 3rd | 64 | 68 | 65 | 65½ | .. moderate. |

APRIL—continued.

| Days. | 6 A.M. | 9 A.M. | 12 A.M. | 3 P.M. | 6 P.M. | Average. | WIND AND WEATHER. |
|---------------------|--------|--------|---------|--------|--------|----------|--|
| 4 | 64 | 65 | 66 | 68 | 65 | 65½ | N. W. moderate gale. |
| 5 | 65 | 67 | 69 | 72 | 70 | 68½ | Do. calm; sun hot; evening, West. |
| 6 | 67 | 68 | 71 | 71½ | 71 | 69½ | South; warm; West in the evening. |
| 7 | 65 | 69 | 72 | 72 | 71 | 70 | S. Westerly; light air; West and N. W. evening. |
| 8 | 64 | 71 | 73 | 74 | 72 | 71 | West; mild; cloudy; evening a calm. |
| 9 | 68 | 70 | 72 | 74 | 72 | 71 | W. S. W. mild; clear sky; S. W. |
| 10 | 65 | 72 | 73 | 75 | 73 | 71½ | N. W. mild; calm 12; West 2 P. M. S. W.; strong. |
| 11 | 67 | 72 | 74 | 75 | 74 | 72½ | Night, East, mild; noon, West, cloudy. |
| 12 | 72 | 74 | 76 | 78 | 76 | 75 | North-East; cloudy, relaxing; 12 N. W.; hottish wind. |
| 13 | 74 | 76 | 77 | 78 | 76 | 76 | { N. W.; calm; more bracing; muschitos and flies very troublesome since the 8th; 12, S. W. squalls; clear weather; relaxing; night, South. |
| Average from first. | 66½ | 69½ | 71 | 72½ | 68½ | 69 | |
| | A.M. | A.M. | P.M. | P.M. | P.M. | Average. | WINDS, &c. |
| 14 | 70 | 76 | 81 | 80 | 78 | 77 | Warm; South; calm 2 h.; S. W.; cloudy |
| 15 | 74 | 75 | 80 | 80 | 78 | 77½ | Do. East; cloudy; 12 h. S. W. cool. |
| 16 | 74 | 78 | 81 | 80 | 76 | 77½ | Do. S. W. calm, hazy; 12 N. W. 2 S. W. |
| 17 | 74 | 77 | 80 | 79 | 74 | 77 | N. E. heavy dew, cool; 11 S. W.; cool and pleasant. |
| 18 | 72 | 77 | 80 | 79 | 75 | 77 | W. heavy dew; calm 10; S. W.; pleasant. |
| 19 | 70 | 75 | 78 | 77 | 75 | 75 | South; heavy dew; cool; cloudy; delightful. |
| 20 | 72 | 75 | 77 | 76 | 75 | 74½ | S. E. by E. strong wind; cloudy 3 h. N. W. |
| 21 | 70 | 74 | 76 | 74 | 72 | 73 | N. W. gale; moderate at 3 P. M.; cold. |
| 22 | 68 | 75 | 78 | 75 | 73 | 74 | N. W. cold; delightful; 10 h. strong wind. |
| 23 | 68 | 74 | 78 | 76 | 75 | 74 | W. N. W. calm; 9 h. N. E.; cloudy, drops of rain W. |
| 24 | 74 | 77 | 81 | 79 | 75 | 77 | W. N. W. calm; 11 h. East; cloudy, 2 h. W. |
| 25 | 74 | 77 | 82 | 82 | 80 | 80 | N. 12 h. N. E. 3 h. S. W. pleasant. |
| 26 | 76 | 78 | 86 | 82 | 81 | 80½ | N. and N. W. 4 h. S. W. hottish wind. |
| 27 | 78 | 82 | 83 | 81 | 79 | 80½ | S. strong; sun observed with dust; muggy, 4 h. West. |
| 28 | 75 | 81 | 85 | 83 | 78 | 80½ | W. W. calm 3 h. strong from N. W. |
| 29 | 75 | 79 | 82 | 80 | 75 | 80 | Strong N. W. all dry; delightfully cool. |
| 30 | 75 | 77 | 84 | 82 | 81 | 80 | N. W. moderate; cool; strong in afternoon. |
| Average. | 73½ | 77 | 79½ | 79 | 79½ | 77 | |
| Average from first. | 70 | 73½ | 76 | 75½ | 74 | 73½ | |

MAY.

| DATE. | Gunfire. | 0 A.M. | 2 P.M. | 5 P.M. | 9 P.M. | Average. | WIND AND WEATHER. |
|-------|----------|--------|--------|--------|--------|----------|---|
| 1 | 80 | 81 | 85 | 84 | 82 | 82 | Strong; N. Wester; hottiah. |
| 2 | 80 | 82 | 86 | 83 | 80 | 82 | Do. do. do. |
| 3 | 77 | 80 | 86 | 82 | 78 | 80 | Do. do. very cool. |
| 4 | 76 | 78 | 83 | 81 | 78 | 79 | Do. do. very cool. |
| 5 | 73 | 74 | 76 | 74 | 73 | 74 | Do. do. evening very cool. |
| 6 | 72 | 74 | 78 | 76 | 75 | 75 | Do. do. moderate 4 h. S. W. |
| 7 | 63 | 72 | 78 | 75 | 74 | 73 | Calm, S. W. 1 h. S. W. heavy dew. |
| 8 | 71 | 74 | 82 | 80 | 78 | 77 | Calm; W.S.W.; warm. |
| 9 | 74 | 76 | 80 | 80 | 78 | 77½ | Ship. Calm; W.S.W.; went to Bushire. |
| 10 | 76 | 78 | 82 | 08 | 78 | 79 | Bushire. Calm; W. S. W.; 3 h. arrived. |
| 11 | 75 | 80 | 83 | 83 | 81 | 80½ | Bushire. Calm; East. 10 h; S. W. strong breeze. |
| 12 | 78 | 80 | 84 | 85 | 84 | 82 | Ship. Variable and calms; heavy dew. |
| 13 | 79 | 82 | 80 | 80 | 80 | 80 | Ship. Karrack; warm N. W. |
| 14 | 80 | 82 | 83 | 82 | 80 | 81½ | Do. Strong N. W. |
| 15 | 80 | 82 | 84 | 83 | 82 | 82 | Do. do. do. moderate. |
| 16 | 82 | 84 | 85 | 86 | 84 | 84 | Light and variable; tatties. |
| 17 | 80 | 83 | 84 | 84 | 82 | 82½ | N. W. fog and dust; hot wind. |
| 18 | 80 | 82 | 84 | 86 | 84 | 83 | Do. moderate; very hot wind. |
| 19 | 81 | 83 | 84 | 86 | 89 | 85 | Calm; N. E. no wind; relaxing. |
| 20 | 84 | 79 | 80 | 82 | 84 | 82 | N. W. moderate; evening, strong, pleasant. |
| 21 | 82 | 83 | 82 | 82 | 85 | 83 | W. N. W.; cool, gentle, breeze. |
| 22 | 84 | 84 | 82 | 82 | 86 | 83½ | N. Wester; hottiah wind after 5 P.M. |
| 23 | 83 | 84 | 82 | 83 | 86 | 83½ | N. West; calms; southerly after 5. |
| 24 | 82 | 83 | 82 | 82 | 86 | 83 | Slept on terrace first time. South-west and S. East; hot wind; from 5 P.M. calm. |
| 25 | 82 | 83 | 82 | 82 | 85 | 83 | Pitched tent on terrace, calm. S. E. |
| 26 | 83 | 83 | 83 | 83 | 85 | 83½ | S. W. N. E. South; and S. W. S. W. calm; N. W. |
| 27 | 84 | 83 | 83 | 83 | 86 | 84½ | Tatties. N. W. calm; 10 h. N. W. 7 h. West; hot wind till 11 P.M. The wind always hottiah from 6 to 10 P.M. |
| 28 | 86 | 84 | 84 | 84 | 86 | 85 | Gunfire at 4 h. 7 m., sunrise at 5 h. 8 m. wind N. W. moderate. Evening the great Shemaul or Northwest wind of 40 days set in at 5 P.M. |

| DATE. | Gunfire. | 9 A.M. | 2 P.M. | 5 P.M. | 9 P.M. | Average. | WIND AND WEATHER. |
|-------|----------|--------|--------|--------|--------|----------|--|
| 29 | 86 | 84 | 84 | 84 | 86 | 85 | Strong gale; hazy. |
| 30 | 86 | 84 | 90 | 91 | 92 | 88½ | Elphinstone. Bushire. Do. do. sailed ship for Bushire at 11 A.M. very high wind during the night, accompanied with sand. |
| 31 | 86 | 88 | 92 | 91 | 99 | 89½ | No tatties. Do. do. high wind during the night. The wind at present coolest from 6 to 10 P.M. at Bushire on the edge of the sea. |

MONTH OF JUNE 1842.—Karrack and Bushire.

| DATE. | Gunfire. | 9 A.M. | 2 P.M. | 5 P.M. | 9 P.M. | Average. | WIND, &c. |
|-------|----------|--------|--------|--------|--------|----------|--|
| 1 | 86 | 93 | 91 | 91 | 90 | 90 | Strong N. West wind, very high during the night; moderate in the morning; Bushire. |
| 2 | 87 | 93 | 91 | 91 | 90 | 90 | Do. do. do. |
| 3 | 86 | 86 | 89 | 89 | 88 | 87½ | Do. do. high all day; cooler. |
| 4 | 84 | 85 | 86 | 86 | 84 | 85 | Do. do. till 12, then moderate and clear weather. |
| 5 | 84 | 86 | 87 | 88 | 84 | 86 | Moderate N. Wester; sailed at 7 A.M. from Bushire. Moderate breeze all day; arrived at Karrack at 6 A.M. |
| 6 | 82 | 83 | 83 | 84 | 83 | 83 | Strong wind began again with alternate furious blasts of cold and hot; evening slightly hot. |
| 7 | 82 | 83 | 84 | 84 | 83 | 83 | Very strong N.W. wind with dust like yesterday; obscured by the dust; very cool. |
| 8 | 82 | 83 | 83 | 83 | 83 | 83 | Moderate N. W. very cool; yet 5° difference, with a tatty and without. |
| 9 | 82 | 84 | 86 | 88 | 86 | 85 | At midnight of 8th S. E.; morning S. W.; no tatties, noon West, 4 P.M. N.W. very light; hot day. |
| 10 | 82 | 88 | 88 | 86 | 86 | 86 | S. W. by S. calm oppressive; 12 h. no tatties S. W. 4 h. W. cool. |
| 11 | 82 | 86 | 88 | 88 | 88 | 86½ | Tatties S. E. 9 A.M. evening sailed for Bushire 12 h. S. W. no tatties; 4 h. West; all night calm. |
| 12 | 84 | 88 | 83 | 83 | 85 | 85 | Tatties. S. W. cool; 9 A.M. W. N. W. light wind; not very hot; 5 h. S.W. 7 h. N. E. calm. |
| 13 | 83 | 84 | 83 | 84 | 84 | 83½ | Tatties. W. N. W. cool; 10 h. stronger, 4 h. strong N. W. hot wind; Cool wind after 5 P.M. |
| 14 | 84 | 86 | 84 | 84 | 83 | 84 | W. N. W. mild and calm; cool 12 h. hot wind light, 5 h. S. W. cool and delightful. |
| 15 | 84 | 84 | 83 | 83 | 83 | 83 | W. N. W. mild and cool; 4 P.M. S. W. very cool; 7 h. N. W. hottish, strong till 12 P.M. |
| 16 | 84 | 84 | 84 | 84 | 86 | 84 | N. W. fine cool breeze, veering to West; in the evening light breeze. |
| 17 | 86 | 86 | 85 | 86 | 86 | 86 | W. N. W. light breeze, very close and warm; night East for 2 hours and S. E. |
| 18 | 87 | 88 | 89 | 89 | 88 | 88 | W. N. W. calm; close and hot; 5 P.M. West; calm at 9 P.M. quite in the last two nights very close. The morning delightful. |

| DATE. | Bar. Hrs. | 9 A.M. | 12 P.M. | 3 P.M. | 9 P.M. | Average. | Wind, &c. |
|-------|-----------|--------|---------|--------|--------|----------|---|
| 19 | 89 | 90 | 87 | 79 | 80 | 85 | N. W. calm till noon, then strong North wester; very hot wind; 12 degrees difference of tattles. |
| 20 | 83 | 88 | 80 | 86 | 87 | | No tattles. N. W. Cool delightful morning; breeze moderate all night and very light after 1 p. m.; hottish at 5 p. m.; wind S. E. & S. excessively warm; at 9 1/2 p. m. breeze from Eastward but perspiration flowing in streams, although cooler at 12 p. m.; wind westerly. |
| 21 | 86 | 87 | 88 | 89 | 90 | | Tattles. 4 A. M. to 3 P. M. N. E. very oppressive. W. breeze at 11 cool; 3 h. N. W. light, very warm. |
| 22 | 88 | 89 | 84 | 85 | 88 | | Tattles. At 6 p. m. 21st the S. E. set in again till 12 p. m. then the N. W. strong for 3 hours; then calm and heavy dew; at 9 A. M. fine N. W. gentle breeze; strong hot N. W. till 12 p. m. |
| 23 | 86 | 86 | 84 | 83 | 86 | | Tattles. Strong N. Wester without change; not very hot yet 10° difference without and with a tatty, that is placing the thermometer close to the tatty; at a distance 6° difference. |
| 24 | 86 | 89 | 84 | 84 | 86 | | Tattles. N. W. all night and strong during the day; delightfully agreeable all night. |
| 25 | 85 | 87 | 85 | 85 | 86 | | Tattles. N. W. still fine breeze; cool all day and all night and very agreeable. |
| 26 | 84 | 86 | 83 | 83 | 86 | | Tattles. N. W. still; fine fresh breeze till evening when moderate; all night pleasant. |
| 27 | 84 | 86 | 85 | 89 | 86 | | Tattles but no wind. Calm N. W. light breeze; pleasant weather till sunset when wind changed to S. E. and continued till 1 A. M. of the 28th; oppressively hot; without wind. |
| 28 | 84 | 86 | 89 | 88 | 86 | | No tattles. Light N. W. from 1 A. M. till 6 P. M.; warm day and very oppressive night; wind variable from S. to S. E. and N. E. till 3 A. M. of the 29th. |
| 29 | 85 | 86 | 88 | 88 | 86 | | At 3 A. M. N. W. pleasant morning—at 10 A. M. S. E. and South very oppressive and warm all night while there was a cooling breeze too from the South—the |
| 30 | 86 | 86 | 88 | 88 | 86 | | wind changed to N. E. at 4 A. M., at 9 S. E. again, and strong enough to feel cool. The air gives the sensation of being loaded with moisture, and from 5 to 8 A. M. there was a dense fog obscuring the sun but not resting on the surface of the earth. The wind kept at South and S. East the whole day and was cool to the feeling, although perspiration flowed profusely. It was at N. W. for half an hour at 3 P. M. |

wind changed to N. E. at 4 A. M., at 9 S. E. again, and strong enough to feel cool. The air gives the sensation of being loaded with moisture, and from 5 to 8 A. M. there was a dense fog obscuring the sun but not resting on the surface of the earth. The wind kept at South and S. East the whole day and was cool to the feeling, although perspiration flowed profusely. It was at N. W. for half an hour at 3 P. M.

9th, 10th, 11th, 12th, Southerly winds and oppressive. { In June { In all 16 days
 20th, 21st, & 22nd. Do. and Easterly; excessively oppressive. { 11 days. { out of the 40 of
 27th, 28th, 29th, 30th, Ditto do. do. do. { 9 days { the Shimulawes
 1st, 2nd, 3rd, 4th and 5th July, Ditto do. do. do. { continually { 24 for the N. W.

21st, Winds very variable apparently inclining to N. W. during the day. South and S. E. from 6 to 12 P. M. Westerly till 5 A. M. then variable, then N. W.

22nd, A few ripe figs from Shikh Nafin's garden.

24th, White grapes within a few days of being ripe.

26th, Apples and grapes from Busora; plums, peaches and pears also on 21st June.

Eclipse of the Sun on 8 July } Friday. JULY 1842. New Moon 8d. 10h. { For
 Full Moon 22d. 14h.5' } KARRACK.

| DATE. | 4A.M. | 6 A.M. | 2P.M. | 5P.M. | 9P.M. | Average. | WIND, &c. |
|-------------------|-------|--------|-------|-------|-------|----------|---|
| 1 | 86 | 89 | 92 | 92 | 88 | | Still the Shurges or South-East wind and excessively oppressive, although the wind is cool to the feelings; and the wind is strong occasionally; S. E. all night till 5 A. M.; at N. W. but calm at 7, then S. and S. W.; at 5 P. M. to 12 variable; very warm all night with little or no wind. No tatties for 5 days now. |
| 2 | 84 | 86 | 88 | 92 | 88 | | Still S. E. and calm; excessively warm all day; evening strong S. W. cool breeze till 9 P. M. then change to N. W.; but calm all night and very warm. |
| 3 | 86 | 88 | 96 | 94 | 89 | | Tatties. At 5 A. M. wind at W. S. W.; calm till 1 P. M. then N. W. till 9 P. M.; hot wind till 10 P. M. |
| 4 | 85 | 88 | 86 | 86 | 89 | | Tatties. Hot wind; W. by S. at 5 A. M., W. N. W. at 8; 11 h. hot wind from N. W. not oppressive; but hot except for an hour at evening. The wind was Westerly all night. |
| 5 | 85 | 89 | 86 | 86 | 92 | | Tatties. Hot wind; wind W. N. W.; delightful morning from 4 to 8 A. M.; at 9 hottish wind; pleasant day and also night; wind continuing a pleasant breeze from N. W. all night |
| New Moon springs. | 6 | 86 | 90 | 86 | 86 | 92 | Tatties. Delightful morning N. W. fine breeze; wind hottish all day; cool behind tatties; evening cool; strong N. Wester; continued cool gale all night. |
| | 7 | 85 | 92 | 86 | 86 | 90 | Tatties. Delightful gale from N. W., all day and all night quite cool; wind hot during the day but delightful by 6 P. M. |
| | 8 | 88 | 89 | 85 | 85 | 88 | Do. do. do. do. do. do. |
| | 9 | 86 | 88 | 85 | 85 | 89 | Tatties. Do. do. do. but much more moderate. Do. do. till 1½ A. M. when it fell calm and punka was required till 5 A. M. of the 11th to 16. |
| | 10 | 85 | 88 | 86 | 86 | 89 | Tatties. Charming morning; still and calm; wind N. W. (said to be the last breath of the Shimal for this year)—wind all day, a cool breeze at West and delightful evening till 12 P. M. |
| | 11 | 84 | 88 | 85 | 85 | 88 | Tatties. From 1 A. M. to 4; calm and oppressive (punka), then delightful morning; wind at West; gentle breeze at 1 P. M. strong wind N. W. again and hot; 86 without tatties. |
| | 12 | 85 | 88 | 86 | 85 | 88 | Tatties. The North Wester continued a fine cool breeze all last night (no punka), and same all day to day. |
| | 13 | 85 | 87 | 86 | 85 | 88 | Tatties. Still the N. Wester all day and all night excepting for 3 hours; a S. E. from 10 P. M. to 1 A. M. when it was very warm; afterwards quite cool. |
| | 14 | 84 | 87 | 85 | 85 | 89 | Tatties. Delightful morning again; N. Wester strong with dust; in the evening continued a fresh breeze; all night quite cool. |
| | 15 | 88 | 92 | 86 | 86 | 92 | Tatties. Delightful morning and N. Wester still continued all night, cool and strong; from 23th June till now figs every day.—The black came in today. |
| 16 | 85 | 87 | 82 | 84 | 90 | | |

| DATE. | 4A.M. | 9A.M. | 2P.M. | 5P.M. | 9P.M. | Average. | WIND, &c. |
|-------|-------|-------|-------|-------|-------|----------|---|
| 17 | 84 | 88 | 86 | 86 | 89 | | Tatties. N. W. fine breeze. Hajee Yacob says we shall have 14 days yet of this wind, then 7 days calm from sunrise to 11 A.M. thereafter West wind all day and all night. 44 days till Canopus rises and cool weather begins. |
| 18 | 85 | 87 | 85 | 83 | 89 | | Tatties. Do. do. with clouds till 9 A.M. quite cool outside; last night wind ceased for 2 hours from 12 to 2; cool all day; wind for 3 evenings always hot from 8 to 10. |
| 19 | 87 | 88 | 86 | 87 | 90 | | Tatties. Wind hottish all night but not so as to prevent sleeping cool in it; very high at 12 P.M.; morning, charming breeze; cool; high wind all day; not hot, if out of the wind the heat is then felt but in it no sensation of heat. Dates half ripe for cooking. |
| 20 | 87 | 88 | 85 | 86 | 91 | | Tatties. Wind still N. W. but weather getting warmer; cool in the wind but out of it heat is felt. The wind is hot in puffs and generally hot from 7 to 10 P.M. 3 hours calm from 11; 10 P.M. to 2 A.M. very warm but not oppressive; sandflies during the calm tormenting. |
| 21 | 88 | 89 | 86 | 87 | 93 | | Tatties. No wind this morning but air agreeable; at 10 A.M. wind springs up at W. N. W.; hot wind till 10 P.M. then calm. |
| 22 | 88 | 90 | 86 | 87 | 94 | | Tatties. The N. Wester evidently dying off; still pleasant however and thermometer 82 close to the tatty; hot wind till 10 P.M. then cool. |
| 23 | 88 | 90 | 86 | 87 | 94 | | Tatties. Calm but pleasant N. W. veering to W.; weather increasing in heat but still the N. W. wind keeps it cool; night rather warm. |
| 24 | 88 | 92 | 84 | 88 | 95 | | Tatties. Calm weather; growing very hot; N. W. then E. and N.E. at 11 P.M. S. E., the heat very oppressive; came in from veranda and slept under the punks very comfortably; very hot all day; wind at E. S. E. and E. but almost none; very oppressive. |
| 25 | 88 | 92 | 86 | 86 | 94 | | Tatties. Slept to-night on the terrace; exceedingly pleasant and gentle airs all night; in the fort the people could not sleep from the excessive heat. |
| 26 | 88 | 93 | 93 | 93 | 94 | | Tatties. Pleasant morning but hot atmosphere, Wind W. then N. W. slight but hot. |
| 27 | 88 | 92 | 84 | 88 | 96 | | Tatties. Strong N. West wind set in after 12 P.M. sky cloudy and sun and moon obscured; hot strong N. W.; obliged to descend from terrace at 2 A.M. on account of high wind. |
| 28 | 90 | 92 | 86 | 88 | 96 | | Tatties. Continued hot all day; close to tatty thermometer 78 degrees; slept in veranda to-night; cloudy. |
| 29 | 88 | 90 | 86 | 86 | 92 | | Wind still strong at N. W. but cooler; delightful all night; clouds at 10 P.M. but after that time cool and veering to S. W. |
| 30 | 88 | 92 | 86 | 86 | 92 | | Charming morning; moderate N. Wester still; delightful day and night; the wind not hot now in the evenings. |
| 31 | 88 | 90 | 86 | 86 | 92 | | Delightful again; wind at N. W. strong breeze; occasional hot puffs; delightful evening and night. |

August.

Monday, 1st, New Moon. 6. 18. Full 21. 5 h.

| DATE. | 4 A.M. | 9 A.M. | 3 P.M. | 5 P.M. | 9 P.M. | Aver age. | WIND, &c. |
|-------|--------|--------|--------|--------|--------|--------------|--|
| 1 | 88 | 90 | 85 | ... | ... | | Cool and delightful morning; wind strong at noon always without intermission from N. W. |
| 2 | ... | ... | ... | ... | ... | | Was too ill to attend to the Thermometer. |
| 3 | ... | ... | ... | ... | ... | | Still wind N. W. and delightful weather. |
| 4 | ... | ... | ... | ... | ... | | The Shurgee (S. E. wind) commenced and was excessively distressing; heat the greatest yet felt; I was attacked with a swelled face (a common complaint) and suffered a good deal. |
| 5 | ... | ... | ... | ... | ... | | The North-west wind again set in strong and cool and delightfully fresh all night. |
| 6 | ... | ... | ... | ... | ... | | Delightful morning; N. W. strong and cool. |
| 7 | 88 | 90 | 86 | 85 | 94 | | Tatties. Do. do. do. |
| 8 | 87 | 91 | 87 | 86 | 93 | | Tatties. Do. do. do. |
| 9 | 88 | 91 | 88 | 86 | 94 | | Tatties. Do. do. do. |
| 10 | 88 | 92 | 86 | 86 | 83 | | Tatties. Delightful till 5 p. m., when wind died away and changed to East; oppressive heat for two hours; then cool breeze from E., from S. E. and S. W. all night. |
| 11 | 88 | 90 | 92 | 93 | 93 | | No tatties. The Shurgee continues to-day, but wind constantly changing; generally S. and S. W. strong N. E. at midnight; then delightful S. W. till the morning when it became calm; Variable all day; light winds and great heat in the day. |
| 12 | 87 | 91 | 94 | 93 | 93 | | No tatties. N. E. again from 9 to 5 then South-west; those who slept on terraces for the last three nights found it delightfully cool; those in sheltered places and houses dreadfully oppressive; light N. winds in the morning and very warm; close warm night; no wind till 9 a. m. |
| 13 | 88 | 90 | 91 | 91 | 92 | | No tatties. Wind very hot from N.W. |
| 14 | 88 | 100 | 92 | 93 | 94 | | No tatties. Continued a North-wester all night; pleasant. |
| 15 | 89 | 90 | 88 | 86 | 93 | | Tatties. North-wester but not strong; all night pleasant. |
| 16 | 89 | 90 | 86 | 86 | 92 | | Tatties. N. W. strong; rode round the island this morning and quite cool till 7 a. m. the S. E. wind set in at 7 p. m. cool wind and strong all night. |
| 17 | 88 | 90 | 94 | 94 | 94 | | No tatties. Variable winds during the past night, chiefly S. W. and S. very cool; morning still and close. |
| 18 | 89 | 90 | 90 | 94 | 93 | | No tatties. Morning again still and close but the night delightful; generally S. E. all night; and E. and S. E. till 1 p. m. when N. W. by W.; very oppressive from 6 p. m.; then cool. |
| 19 | 90 | 91 | 94 | 90 | 94 | | Tatties. Morning still and close; at 1 a. m. very warm wind and variable; oppressive till 1 p. m. when a N. Wester set in; evening delightful; West wind till 1 a. m. then close till 3 a. m. then cool till 7 a. m. S. W.; then close; wind E. and |

| DAYS. | 4A.M. | 9A.M. | 3P.M. | 5P.M. | 9P.M. | AVER- AGE. | WIND, &c. |
|-------|------------------|-------|-------|------------------|-------|---------------|---|
| 20 | 88 | 90 | 92 | 88 | 92 | | S. E. A Shurgee and variable all day until 1 A. M. of 21st, when N. E. then N. W. |
| 21 | 89 | 92 | 93 | 89 | 93 | | Tatties. Hot wind and warm till 5 P. M. then cool west wind; at 1 A. M. wind set in at N. W. a strong gale. |
| 22 | 89 | 94 | 97 | 86 | 94 | | Tatties. Strong gale at N. W. to W. all day but wind hot; all night strong N. W. and cool and agreeable all night. |
| 23 | 90 | 94 | 97 | 87 | 93 | | Tatties Do. Do. at N. W. by W. do. do. very hot; all night N. W. wind raises Thermometer to 97; close to Tatty 84 only; night very agreeable. |
| 24 | 90 | 93 | 93 | 92 | 92 | | No Tatties. Moderate breeze at N. W. by W. delightfully cool wind. No tatties all day; cool winds and delightful night N. W. wind towards morning felt cold. |
| 25 | 86 | 89 | 91 | 94 | 93 | | No tatties. The temperature of the air greatly reduced to-day; wind still strong at N. W. by W. the dates on the island $\frac{1}{2}$ eaten up; great caution recommended not to get cold by sudden changes; colds give fever at this season; cool all night. |
| 26 | 88 | 90 | 92 | 86 | 92 | | Tatties. Wind comes round to West at 6 A. M. N. W. all night; morning delightful; also the night; threatening gale in the evening; fogs ended. |
| 27 | 88 | 90 | 92 | 86 | 92 | | Tatties. Strong N. W. gale all night and all day; clouds of dust; quite cool all night. |
| 28 | 85 | 88 | 90 | 90 $\frac{1}{2}$ | 90 | | No tatties. Gale moderated; gentle cool N. W. wind in morning and all day; warm night from 1 A. M. when it fell quite calm; air cool though oppressive. |
| 29 | 83 $\frac{1}{2}$ | 88 | 91 | 91 | 91 | | No tatty. Calm, but air very cool in riding quick; very warm till 3 P. M. when a slight breeze set in; little wind; calm at 7 P. M. slept in tent; delightfully cool W. N. W. from 12 to 4 A. M. then calm; gentle N. W. wind at 6 A. M. East at 10 A. M. and warm but the wind cooling; At 2 N. W. by W. again inclining to west in the evening; night calm and close till 1 A. M. |
| 30 | 84 | 88 | 89 | 90 | 89 | | N. W. wind gentle at 1 A. M. and delightfully cool till daylight; then calm. |
| 31 | 84 | ... | ... | ... | ... | | |

| Average temperature of European Hospital at Karrack with wet Tatties. | Sunrise. | 12 o'clock. | 3 P. M. | 5 P. M. | Average. | |
|---|----------|-------------|---------|---------|------------------|------------------------------------|
| July... | 87 | 92 | 91 | 90 | 89 | } Tatties till the 15th September. |
| August | 89 | 93 | 94 | 91 | 92 | |
| September | 85 | 92 | 93 | 88 | 89 $\frac{1}{2}$ | |
| October | 79 | 81 | 87 | 84 | 81 | |
| November | 72 | 78 | 78 | 75 | 76 | |
| December | 64 | 65 | 65 | 54 | 64 $\frac{1}{2}$ | |

In May and June, the heat was as great as in July, and the nights during two months, from 15th July to 15th September, are at times very oppressive and always hot, although a change for the better was perceptible about the 20th of August.

ART. IV.—*Extracts from the Proceedings of the Bombay Branch of the Royal Asiatic Society.*

At a Special General Meeting of the Bombay Branch of the Royal Asiatic Society held in the Library Rooms on Friday the 30th December 1842, agreeably to the following Resolution of the Monthly Meeting held on the 14th instant—

“The Rev. Dr. J. Wilson having intimated his intention to send in his resignation as President of the Society, it was resolved:—

“That a Special Meeting of the Society be convened for the purpose of testifying their sense of Dr. Wilson’s valuable services, and high respect for his character.”

It was proposed and carried unanimously:—

1. That a Committee be appointed to draw up an address to Dr. Wilson, expressive of the great respect for his character, and of the high estimation in which the services which he has rendered the Society, during the time he has filled the office of President, are held, and of its great regret at the cause by which it is deprived of a continuance of his able and valuable services.

2. That the Committee for the above purpose consist of Colonel Dickinson, Dr. Kennedy, J. L. Phillips, Esq., C. Morehead, Esq. M.D., and the Secretary.

3. It was further resolved that, to mark the sense of the Society of the valuable services rendered by Dr. Wilson in the cause of Oriental Literature, he be requested to accept the office of Honorary President of the Bombay Branch of the Royal Asiatic Society.

4. With reference to that part of Dr. Wilson’s letter referring to the copies of *Yaçna* and *Vispárád* in his possession, that he be solicited to permit them to be lithographed at the Society’s expense.

5. That Dr. Wilson’s letter, read at the Meeting, be printed.

The following is the letter referred to:—

MY DEAR SIR,—I have the pleasure of forwarding to you for the Bombay Branch of the Royal Asiatic Society, a copy of a work by myself, which has just issued from the press, entitled “*The Pársí Religion, as contained in the Zand-Avastá and propounded and defended by the Zoroastrians of India and Persia, unfolded, refuted, and contrasted with Christianity.*”—This work I have taken the liberty of inscribing to the Office-bearers and Members of the Society, in token of my gratitude for the kindness and indulgence extended to me while very imperfectly discharging the duties, and supporting the honours, of the Chair, and for the warm interest which many of them individually have taken in my labours to disseminate useful, but more especially divine, knowledge among the Natives of this great country, whose present social and moral condition, as well as past history, it is one of the principal objects of the Society to investigate and unfold. Though the volume is in some degree controversial in its form, it is fully expository of the principles of the Zoroastrian creed as set forth in the recognized standards, the interpretation, and commentaries of its past and present votaries, and the notices and allusions of classical record and oriental tradition. It contains also several tolerably close translations from the Zand and other Iranian languages, which may, in some degree, facilitate their study in the case of those who may not hitherto have directed to them their attention. I could wish that it were more worthy your acceptance, but such as it is, it has cost me a degree of labour and research which nothing but a warm and sincere regard to the highest interests of the interesting and enterprizing class of Natives whom it more immediately respects, could have originated and supported.

I am the more gratified in being able at present to send to our Society this token of my personal regard, because my unavoidable departure for Europe renders it necessary for me,—as I now do,—to tender to the Society my resignation of the honorable office which I have held, through its favour, for upwards of seven years.

In taking leave of the Society, I cannot but express the great gratification and satisfaction which I have enjoyed in its fellowship since the day I was enrolled as one of its Members. The objects which it seeks to accomplish are highly important, whether they be considered as referring to the diffusion of literary and general information, and the cherishing of a liberal sympathy among the members of our own body during their Indian exile,—or the investigation of the languages, customs, religions,

antiquities, history, and present state of the interesting land in which we sojourn, and the other countries of the east which are contiguous to it ; and the study of the diversified forms of the works of God by which we are surrounded. The foundation by it of the best and most extensive Library in Asia, the establishment of a general Museum, which, though long overlooked, now enjoys in your own concern for its prosperity, the highest scientific superintendence ; and the varied and numerous contributions which its members have made to oriental literature and to science, are unequivocal proofs that it neither has been inactive, nor unsuccessful in the pursuit of these objects. When I was first called to occupy its chair, I took the liberty of briefly reviewing its past proceedings, and glancing at the field of its present inquiry. I could willingly now advert to its intermediate proceedings, and those of its resident and non-resident members which have been conducted independent of its auspices ; but I have not leisure, at this hour, to do them the justice even of a distinct mention. Major General Vans Kennedy has with singular ability and acuteness, clearly expounded the peculiarities of the six Indian philosophical schools, and ingeniously compared them with the system of the West. The merits of Mr. Wathen have been next to those of James Prinsep in the discovery of the cave character of India, and the decipherment and translation of ancient inscriptions, the most satisfactory historical authorities of the east. Dr. Bird is most zealously continuing research in the same department, and will soon favour us with a curious and interesting volume. The late Mr. Dickinson furnished us with what we fondly hoped were nearly the first fruits of his high attainments, and historical research and correct and classical taste, in his critical remarks on the Arabic language, and his inquiries into the destiny of the tribes of Israel and the history of Armenia. Dr. Stevenson has opened up a very curious subject of investigation in his interesting and learned papers on the Ante-Brahmanical worship of the Dakhan ; and he has unsealed some of the greatest mysteries of Hinduism by an actual translation of the most distinctive portion of the Sáma Veda. Colonel Sykes has laboriously collected and philosophically analyzed numerous notices of the state of Society in India during the period of the supremacy of the Budhas, as well as interspersed them with theories, which, established or rejected, must awaken inquiry, as well as aid the arrangement and distribution of facts and circumstances which have been already noticed. In the papers of Captain

LeGrand Jacob of Katiawar, we have had proof of that exemplary diligence and ability, which, if generally imitated and evinced, would soon make us familiar with the antiquities and peculiarities of the different provinces with which we are more particularly connected. Along the line of march of our army to and from Affghanistan, we have been conducted by a most observant guide, Dr. Kennedy, whose pages bear the impression of much more than the lively fancy, and the play of wit and good humour, by which they are distinguished. I dare scarcely allude to the last work of the late Sir Alexander Burnes, the most enterprizing of our modern British travellers, and in whose death our country suffered its greatest loss, amid late catastrophies. The Hon. M. S. Elphinstone, formerly President of the Society, has given to the world the calmest and most judicious digest of the History of India which has yet appeared, and interspersed it with the result of his own correct observations of the present state of Native Society. We have lately been joined by several promising members; and our Quarterly Journal, so ably conducted by yourself, will, I doubt not, greatly quicken and facilitate their researches. Mr. Eastwick, to whom we have already been indebted for a translation of the *Kissah-i-Sanján*, and who is the author of the translation of the *Zartusht-Námah* in the volume which I send to you, will, I hope, give us versions of all the most curious legends of the Zoroastrians to be found in the Persian language. Captain Ramsay and Mr. Glasgow have furnished us with the legends of the *Kathís*, one of the most conspicuous tribes in the peninsula of *Gujarát*; and they may very profitably continue their collections and translations. The Royal Asiatic Society of Great Britain and Ireland, in noticing in their annual report my own paper on the *Jungle Tribes of the Northern Konkan*, have strongly expressed their wish to be put in possession of Articles of a similar nature connected with the several districts of India. The illumination, conversion, and social elevation of the natives, I need scarcely observe, are most intimately connected with our discovery and consideration of their actual state.

I am happy to be able to inform you that the lithographing from my own MS. of twenty-five-copies of the *Vandidád*, in the *Zand* language, but *Gujarati* character with a *Gujarati* translation, paraphrase, and comment by *Aspandiarjí Framjí* assisted by *Mulla Firuz* and other learned *Dasturs* of the *Kadmi* sect, as proposed by *Dr. Buist* and *Mr. Pigott*, and readily acquiesced in by the Society, is now completed. The work forms two

neat octavo volumes, and will prove an acquisition very acceptable to the Orientalist desirous of studying the sacred books of the Pársís. It contains their *doctrinal* standards, with many of the traditions from the Pahlivi and Sanscrit, which are supposed to illustrate it. It is put forth exactly according to the copy which came into my possession. I instructed the native who corrected the proofs, to tolerate no departure from the original manuscript, even where it might be thought to be somewhat erroneous. It is a mere *help* to a critical rendering and interpretation of the Vandidád, and as such only should it be received. The copies should be judiciously disposed of, if not sold at cost. There has scarcely been time to receive any orders for any of them from Europe. One, however, has come to my hands. It is from the Chief Librarian of the University of Edinburgh, the Rev. Dr. Brunton. I should like soon to know what the Society intends to do in reference to lithographing the Yaçna, and Vispárád, which interspersed with the Vandidád, complete the larger Zoroastrian Liturgy. Translations into Gujarátí of the Khurdá Avastá, or Minor Liturgy have been published by the Pársís themselves.

I beg to present to the Society two Cufic inscriptions from the South of Arabia. I have kept them by me for some time, in the fruitless hope of being able to forward with them translations. If fac-similes of all the unpublished inscriptions in the museum were from time to time given in the journal, no difficulty I think would occur in procuring versions. I also present to the Society a copy of the Zartusht-Námah in Persian, lately lithographed on my own account ; and a copy in three volumes, folio, of the best edition of the Greek Lexicon of Suidas.

It is not without emotion I sever this link which has bound me to office with the Society ; and I beg to assure the members that I shall ever remember with gratitude the kindness which I have experienced at their hands. As opportunities are presented, I shall continue to prosecute the objects which they have in view, and seek an early opportunity of disposing of, in some form or other, the fragmentary collections which I have made in connection with late investigations. If I can be of the slightest use to the Society in Europe, or in my contemplated journey in Egypt, Arabia, Syria, and other parts, I beg them to command my services.

I am, my dear Sir, yours very respectfully,

JOHN WILSON.



١٨٢

بِهَذَا كَلِمَةٍ لَكُمْ وَأَنْتُمْ تَلْوُونَ الْقُرْآنَ وَالْحَمْدُ لِلَّهِ

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
الرَّبُّ هُوَ الَّذِي أَنْزَلَ إِلَيْنَا الْكِتَابَ
وَإِنَّكَ لَمِنَ الْمُرْسَلِينَ
إِنَّ مَثَلَ حَالِ الْوَالِدِ وَالْوَالِدَاتِ
الَّذِينَ يَوَارِثُونَ مَا تَرَكَوا إِذَا تَوَلَّوْا
أَنْفُسَهُمْ وَالْوَالِدَاتُ الَّذِي تَرِثْنَ
مَا تَرَكَتِ الْأُمَّهَاتُ وَالْبَنَاتُ
الْمُتَّكِرَاتُ أُولَئِكَ مِثَالُ مَا تَرَكَتِ
الْوَالِدَاتُ إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ
الْمُتَّكِرَاتُ أُولَئِكَ مِثَالُ مَا تَرَكَتِ
الْوَالِدَاتُ إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ

أُولَئِكَ مِثَالُ مَا تَرَكَتِ الْوَالِدَاتُ
إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ
الْمُتَّكِرَاتُ أُولَئِكَ مِثَالُ مَا تَرَكَتِ
الْوَالِدَاتُ إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ
الْمُتَّكِرَاتُ أُولَئِكَ مِثَالُ مَا تَرَكَتِ
الْوَالِدَاتُ إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ
الْمُتَّكِرَاتُ أُولَئِكَ مِثَالُ مَا تَرَكَتِ
الْوَالِدَاتُ إِذَا تَوَلَّوْا أَنْفُسَهُنَّ
الَّذِينَ يَتَّبِعُونَ مَا تَرِكُوا مِنْكُمْ
أُولَئِكَ يَرْثُونَ مَا تَرَكَتِ الْوَالِدَاتُ
وَالْبَنَاتُ وَالْمُتَّكِرَاتُ

The sample of a paper inscription taken from one of the stones from South Arabia, first sent to the Bombay Branch of R. S. Society by Dr. Wilson, Honorary President in Decr. 1842.

Handwritten text in an ancient script, likely Cufic, arranged in approximately 10 horizontal lines. The characters are highly stylized and interconnected.

Fac-simile of a Cufic Inscription taken from one of the stones from South Arabia; presented to the Bombay Branch of the R. A. Society, by Dr. Wilson, Honorary President, in December 1842.

P.S.—I have put into Mr. Westergaard's hands the Hamyaric inscription from Aden. He has completed the decipherment. It has turned out to be exactly what it was represented to be at our last meeting.

J. W.

TO J. G. MALCOLMSON, ESQ., M.D., F.R.S.,

Secretary Bombay Branch of the Royal Asiatic Society.

ART. V.—*Fac-similes of two Arabic Inscriptions, in the Cufic character, from Tombstones in Southern Arabia; presented by Dr. WILSON, Honorary President of the Society, with remarks, translations in English, and transcripts in Arabic, by JAMES BIRD, Esq.*

The Fac-similes of these Inscriptions were lately presented to the Society by the Rev. Dr. Wilson without any information being given as to their localities, beyond a statement that they were taken from tombstones in Southern Arabia. The contents of them are not without interest; as the earliest of them, No. 1, dated Hejra 326, A. D. 938, makes mention of the tribe of *Muzaynat*, inhabiting this part of the country; and No. 2, dated Hejra 472, A. D. 1080, states that the person buried was the emancipated slave of Mahomed-al-Tefisee, showing that the intercourse which existed between Southern Arabia and Persia, from the middle of the sixth century of our era, was still kept up in the end of the eleventh. Aden appears to have been the emporium of this part of the country from the earliest times, being mentioned by Ptolemy the Geographer, as a city of Arabia Felix, situated on the ocean, in the kingdom of the Homeritæ, or family of Hamyar, descended from Kahtan, son of the patriarch Eber; whose descendants are distinguished from the foreign or adopted Arabs of the family of Ismail, among which the tribe of *Muzaynat* was one, and to which the lady mentioned in inscription No. 1, belonged. About the year A. D. 570, the Abyssinians, who invaded southern Arabia at the instigation of the Emperor Justinian, anxious to wrest from the Persians their monopoly in the silk trade, had subjugated Yemen, and subverted the Jewish religion in this quarter, substituting in its place that of Christianity. Abrahah, surnamed Al'Ashrem, who was the Abyssian

nian General, seeing the advantages derivable from the concourse of pilgrims frequenting Mekkah as the shrine of the Sabean idolatry, determined to erect a rival fabric at *Sanaa*, to which pilgrims from all parts of the world might resort. To this building, which appears to have been dedicated to the Christian faith, not without some admixture however of the Sabean idolatry, Abrahah gave the name of the Keleisa, or Church; which was completed in exquisite workmanship, and splendour of decoration, calculated to ensure the veneration of all pilgrims frequenting it. In the same metropolis too, was the palace or mansion of the Hamyar kings of Southern Arabia called *Ghumdan*; which Masudi, writing in the beginning of the tenth century, A. D., states to have been one of the two most famous palaces on earth, and of which the other was the Aiwani Kisra, on the Euphrates near Ctesiphon, and of which an arch is yet remaining. The former is only of interest in the history of Southern Arabia as having been the probable site of those numerous inscriptions, on white marble and stone, discovered in the walls of the houses at *Sanaa*, by Mr. Cruttenden of the Indian Navy, and said by the inhabitants to have been brought from *Mareb*, or the ancient Saba. This character, of which inscriptions have been found at *Hassan Ghoráb* near Aden, and at *Ham-mam* and *Dis*, has been conjectured to be the *Hamyaric*, while others have supposed that it bears a strong resemblance to the Ethiopic. Certain it is, however, that the use of it, in Southern Arabia, preceded the Arabic character called *Anbary*, and may be the same as the *Mosnad*, or the more ancient character called *Ismaeli*, or *Suri*, which was used previous to the introduction of the Cufic, in which the two inscriptions now translated are written. Captain Haines lately transmitted to the society a copy of an inscription, in the same ancient character, as found at *Sanaa* and *Hassan Ghorab*; and which he states to have been taken from a block of white marble dug up in the neighbourhood of Aden. The latter was the port of this part of the country, and the residence of a Nestorian Bishop under the metropolis of Dhafar, whose metropolitans were ordained from Persia, in the time of Cosmas Indicoplestes, about the end of the sixth century: from which period the intercourse with Persia seems to have been constant and uninterrupted. The surname of *Al-Tefisee*, used in inscription No. 2, showing that the person mentioned was an inhabitant of Teflis in Georgia, would indicate the residence in Southern Arabia of Persian families, even as late as the end of the eleventh century; and to

whom the Zeidi sect of Shias, or followers of Ali, now residing at Sanaa probably owe their origin. The whole of this part of the country offers a wide and interesting field of research for the philologist, and antiquarian; and as the same traditions regarding the fall of Adam and his expulsion from Paradise, with his subsequent residence on the mountains of Ceylon,* are known in the history of the Arabs as well as in that of the Bauddhas, it may be of some utility in tracing the religious history of the latter, to ascertain the nature of that connexion which subsisted between Arabia and India from the beginning of the Christian era.

Translation into English of Inscription No. I.

God hath borne witness, that verily there is no God but he, and the angels, and those endowed with wisdom, who, professing the same, execute righteousness. There is no one but God, the mighty, and the wise.

In the name of God, the compassionate, the merciful. Be merciful O God! to your slave, the daughter of your two slaves, Fatimah daughter of Ismail, the son of Ibrahim-al-Muzanee: forasmuch as she was professing there is no God but you, and Mahomed is your slave and prophet. May the peace and blessing of God be upon her, who was declaring your unity, acknowledging your supremacy, was continually trusting to your mercy, and in need of your pardon. Now indeed and departure from friends have conveyed her to you, and through which separation from her family, the abodes of the living are become sad, and those of the dead joyous by her association with them; when having retired from this world of trouble, and far from the habitations of men, she has abandoned both family and property. Be merciful to her, O God;

* The figure of *Buddha's* foot which exists at the top of *Adam's peak* in the Island of Ceylon, was identified as a type of our great ancestor previous to the arrival of the Portuguese, on the shores of India; and the Mahomedan author Masudi, A. D. 943, makes mention of mount *Rahwan*, on which Adam descended when expelled from Paradise, adding that a race of Hindus, in the Island of Ceylon, descended from Adam, derived their origin from the children of Cain. The analogy between these traditions of the *Arabs* and *Buddhists* may probably be traced back to that period of early history, when both people were *Samaneans*; and maintained, according to the authority of the *Mefatih-el-'olum*, that the world had no beginning; while they believed in the metempsychosis, and that the earth is constantly declining.

pardon her faults and forgive her offences ; make spacious her grave, be her companion in her solitude, and join her to her prophet Mahomed, on whom be peace. She died, and may God be merciful to her, on Sunday the sixth day of the month of Ramzan, in the year 326.

Transcript of Inscription No. I in modern Arabic characters.

بسم الله الرحمن الرحيم

اللهم ارحم امك وبنت عبدك فاطمة ابنت اسمعيل بن ابراهيم
المزني فانها كانت تشهد ان لا اله الا انت وان محمد عبدك ورسولك
صلى الله عليه وسلم مقرب بوحدا نيتك معتزلة بربو بيتك لم تزل
فقيرت الي ارحمتك محتاجت الي مغفرتك وقد اسلمها اليك الا و
خلاص الا وليا فانفردت من الا خلاء واوحشت بفقدتها منازل الا
حيا وانست بجوارها الموتى وبات عن المزار و بعدت عن الديار و
حالت عن الاهل والاهل اللهم اغفر خطيتها وتجاوز عن سيئتها ووسع لها في
حقرتها وكن لها نبي وحدثها والحقها بذبيها محمد عليهما السلام توفيت
رحمها الله يوم الاحد لتسع خلون من شهر رمضان سنت ست وعشرين
وثلاثمات شهد الله ان لا اله الا هو والملائكة واولو العلم قايما
بالقسط لا اله الا هو العزيز الحكيم

Translation into English of Inscription No. II.

In the name of God, the compassionate, the merciful.

“ But the pious shall be lodged in a place of security, among gardens and fountains : they shall be clothed in brocade and satin, and shall sit facing one another. Thus shall it be : and we will espouse them to fair damsels, having large black eyes.”*

This is the Tomb of the mother of Mahomed-bin-Ikbal, the emancipated slave of Ahmed-bin-Mahomed Al Tefisee ; who died on Wednesday, when six days were wanting to complete the month of Rajab, in the year 472. May God be merciful to her and pardon her crimes ; and may God's peace be on the prophet Mahomed and his descendants.

* See Sale's Al-Koran, end of Chap. 44.

Transcript of Inscription No. II. in modern Arabic Characters.

بسم الله الرحمن الرحيم

ان المتقين في مقام امين في جنات و عيون يلبسون من سندس و
استبرق متقابلين كذلك و زوجاتهم بحور عين هذا قبرام محمد بن
اقبال مولى احمد بن محمد النفليسي توفيت يوم الاربعاء است بتين
من شهر رجب سنة اثنتين و سبعين و اربع صابت رحمة الله و غفر لها
و صلى الله على محمد النبي و آل و سلم

ART. VI.—*Extract from the Proceedings of a Meeting of the Bombay Branch of the Royal Asiatic Society on the 14th December, 1842.*

Read the following letter from the Curators of the Museum of Economic Geology of India, requesting the assistance of the Society and its members to carry out the views of the Committee of Papers of the Asiatic Society and of Government.

The Curators were authorised to forward to Calcutta, any duplicates that might be considered useful.

“SIR,—I am authorised by the Committee of Papers of the Asiatic Society, to forward to you the accompanying Memorandum relative to the MUSEUM OF ECONOMIC GEOLOGY OF INDIA now forming, in the confident hope that you will personally, and through your friends, kindly assist their views and those of Government, as far as lies in your power.

With respect to carriage of Specimens, such small ones as may not exceed the usual dawk banghy weight, say 500 tolas, may be sent at once, addressed to the Secretary of the Asiatic Society, and those above that weight despatched by the nearest water carriage, preferring the steamers, if obtainable.

I am, Sir,

Your obedient Servant,

H. PIDDINGTON,

Curator, Mus. Econ. Geology of India.”

CALCUTTA, November, 1842.

MUSEUM OF ECONOMIC GEOLOGY OF INDIA.

The objects of the Museum of Economic Geology of India, which has been established by Government at Calcutta, under orders from the Honorable the Court of Directors, in conjunction with the Asiatic Society and at its Rooms, are the following : They are, as scientific men will perceive, generally those of Economic Geologists in all countries, but there are some peculiarities connected with India, and the situations of Europeans in it, which will oblige us to go into a little detail, to explain to those who may not already take an interest in these matters, our wants, our wishes, and our hopes of the advantages which may accrue to the community from this new establishment. Its objects then are briefly these :—

1. To obtain the most complete Geological, Mineralogical, and Statistical knowledge possible of all the mineral resources of India, wrought or unwrought, so as to make them as publicly known as possible ; to show how they have been, or are now wrought, or how they might be so to the best advantage.

2. To obtain a complete set of specimens, models, and drawings, relative to the Mining operations, Metallurgical processes, and Mineral manufactures of all kinds, of India, Europe and America ; so as to afford to the public information of everything which can be turned to account here or in Europe, and perhaps prevent loss of time, waste of capital, and disappointment to the Indian speculator.

3. To furnish the Engineer and Architect with a complete collection of all the materials, natural or artificial, which are now, or have formerly been used for buildings, cements, roads, &c., and of all which *may* possibly be useful in this department, whether European or Indian.

4. To collect for the Agriculturalist, specimens of all kinds of soils remarkable for their good or bad qualities, with the subsoil, subjacent rocks, &c., and by examination of these, to indicate their various peculiarities and the remedies for their defects.

5. To collect for Medical men, the waters of mineral springs, mineral drugs, &c. &c.

6. And finally, by chemical examinations of all these various specimens, to determine their value, and how they may be best turned to account for the general benefit of the community.

With objects like these the Museum of Economic Geology may be said to be placed between the purely scientific geologist and the merchant, the

miner, the farmer, the manufacturer, and the builder, or in other words, the merely practical men, who may desire to know how the knowledge of the geologist and mineralogist,—to them often so recondite, and apparently so useless,—can forward their views : and its office, to be, if possible, to answer all questions of this nature which may arise, for public benefit.

This may sometimes be done from books, but the great library must be the collections of our Museum, which are in fact a library of examples, to which the commentary is the laboratory ; where, aided by the resources of the collection, questions may often be solved in an hour, a day, or a week, which it would take half an *Indian* life to obtain the mere materials for investigating. An extensive collection, then, is the first requisite, and this should, if possible, comprise every inorganic product of the earth from which mankind derive any advantage, with every information relative to it. It will readily occur to the reader, that in India, owing to her infancy in some of the arts dependent on these products, as in mining, agriculture, &c.; and her singular progress in others, as in peculiar branches of Metallurgy and the like, our almost absolute ignorance of what her methods and resources are, the peculiarities of situation in which these resources may exist, those of climate, workmen, and many others, we have almost every thing yet to learn ; and that to accomplish our objects, we cannot be too well furnished with all the knowledge and examples of Europe and the Americas, and all those of India, or of Asia. Without these, our progress must be very limited ; but in proportion as we obtain them, we may hope, without presumption, to see the day when the mines, the quarries, and the soil of India may be done justice to, which assuredly, has never yet been the case.* In this all classes are so clearly interested, that it

* It is curious to find that upwards of 140 years ago, the ores of the precious metals were an article of export from the Dutch East Indies! This is clearly shown by the following passage from Schlutter's work, as translated by Hellot, and published by him under the title of "Hellot sur les Mines," Paris, 1753. In Vol. II. p. 285, Chap. XLVI. "*On East Indian Ores and their Fusion by the curved Furnace,*" he says—

"In 1704, Schlutter received by a private channel twenty-five quintals of ore from the East Indies, &c." And again: "These sorts of ores (of gold and silver) sent from India by the Dutch were frequently smelted at the foundry of Altenau in the Upper Hartz, but had never been smelted in the Lower Hartz. This ore was in lumps from the size of a nut to that of walnut, and by trials it was found that the quintal of 110lbs. contained 1 oz. 8 drs. of gold and 3½ oz. of silver."

would be superfluous to show it, as it is to show that the resources of every country are far more readily developed with public means for investigating, preserving, and publishing all knowledge belonging to them, than where none such exist.

It is therefore hoped, that those who may be desirous of assisting this great public work, will bear in mind, that nothing, however familiar it may be to those on the spot, is indifferent to us ; for *if not wanted for the institution, it may serve to procure that which is*; and the following note is given rather as a general memorandum than as specifying all which is desired. The general rule is, that details cannot be too numerous, nor specimens too various, particularly if purely Indian.

DESIDERATA FOR THE MUSEUM OF ECONOMIC GEOLOGY OF INDIA.

I.

Mines and Mining Products.

1. Specimens of all crude ores, just as found. If possible also of the rocks or matrix in which found ; of those indicating the vein at the surface ; of the walls of the veins ; of the strata or beds passed through before reaching them ; and of the rocks of the surrounding country.

2. The ores after preparation for the furnace by picking, washing, stamping, roasting, &c.

3. The rejected ores, gravel or stones found with those used ; which often go under odd names as those of " mother, devil," or the like.

4. The fluxes used, if any.

5. Memorandum of the kind of fuel used, samples of it if coal or coke, &c. ; names of the trees, as bamboo, &c. if charcoal ; and if not too far, send specimens.

6. The roasted or half smelted ore.

7. The pure metals as obtained in a merchantable state, of all the qualities.

8. The slags, of all kinds, from the furnaces and smeltings.

9. Drawings or models (to scale if possible) of all furnaces, machinery, and implements used in any of the processes, with drawings, plans, and models of the mine. Earthen models of the furnaces, &c. may often be well made, by the native image-makers for a mere trifle.

10. Specimens of any tools used.

11. Traditions, history, and statistics of the mine or mineral products, as (1.) How and when found ; (2.) Produce, gross and net ; (3.) Rent if farmed, or what tax payable on the product ; (4.) Price of daily labour ; (5.) Amount of labour obtainable for a given price ; (6.) Estimated profits, past and present ; (7.) Reasons for decay or increase ; (8.) What is now required to make the mine more productive : (9) Copies or notices of any books or accounts of the mine ; (10.) Health, comfort, morals, and condition of the workmen employed, average of ages, and of life among them if thought unhealthy ; seasons and hours of work. Superstitious notions, peculiar diseases, &c. &c.

II.

Buildings, Cements, Pottery, Colours, Roads, &c.

1. Specimens from the quarries, of all kinds of building stones, useful or merely ornamental.

2. The same of limestones, shells, corals or other articles, used to make lime or cements of all kinds.

3. Specimens of the strata above and below the quarried stone.

4. Any fossil shells, bones, fish, plants, insects, or other appearances of organic remains large or small, found in or near the quarries, or amongst the rubbish and watercourses of quarried spots. If specimens appear too large to move, please to give a notice, with an eye-sketch, and estimate of the expense of moving, and preserve it till a reply is sent.

5. Specimens of the building stones or remarkable bricks used in any public edifices, monuments or tombs, with the date of their erection if known, and a note to say if exposed to weather or protected by stucco, paint, or roofs.

6. Memoranda and specimens of any plants or animals destructive to masonry, as boring worms and shells in water, and the like, with specimens of their work.

7. Ornamental or stucco-work : specimens of it, new or old, interior or exterior, with the best account procurable of the materials, preparations, and working of them.

8. Specimens of stones and marbles, shells, &c. used for image or ornament-making ; of earths for pottery, and varnishes of coloured earths of all sorts, whether used as pigments or not.

9. Specimens of peculiarly good materials used for roads, whether

ancient or modern, with prices, methods of using them, and other Memoranda.

10. Prices of all the above; rates of labour, carriage, &c. from the rough to the wrought state, and all other statistical details as in the case of Mines and Mineral products above mentioned.

III.

Agricultural Geology.

1. Specimens of soils of good, and the best qualities, for all kinds of produce, as sugar, cotton, tobacco, &c.

2. Of infertile soils or veins of earth.

3. Of the subsoil or rock.

4. Of the stones scattered about these soils.

5. Memoranda relative to the height of these soils above the water of wells in the rains and dry season, and of its drainage, shelter, exposition, &c.

6. Of any kind of earths, mud, or stones used as manures, as peats from the jheels, kunkurs, &c.

7. Of the deposits (fertile and infertile) left either by the common inundations or by violent floods, with memoranda of their effects on the cultivated soil.

8. Specimens from any separate spots, where gravel or stones are collected in quantities after inundations or floods.

9. Accounts of remarkable floods, and average heights of the rise of rivers, of the raising of the soil, alterations in its produce consequent thereupon, and all other details.

10. Memoranda relative to the formation or destruction of river-banks, islands, &c. with measurement if obtainable.

11. Samples of all kinds of efflorescent salt-earths, with specimens of the different salts prepared from them, prices of preparation, selling rates, and accounts of the processes and uses of the salts.

12. Specimens of brine springs, with details of manufactures if boiled for salt, and statistics of labour and produce, &c. as in the case of mines.

IV.

Medical Geology.

1. Specimens of mineral medicines of all sorts, whether produced on

the spot or imported, crude and prepared, with notes and samples of the process of preparation in all its stages.

2. Of the water of mineral springs, their temperature, incrustations about them, account of their uses, and specimens of the rocks or soil in which found.

V.

Native Metallurgical Processes of Mineral Manufactures.

1. Exact descriptions of them, however rude or simple they may appear, with samples of the ores, fuel, fluxes, products, slags, &c.

2. Models or drawings (to scale if possible) of the furnaces and implements of all kinds; specimens of these last may be sent.

3. Memoranda and samples of the earths or sands used for moulds in castings, of the crucibles and beds, raw and baked, and of the raw material from which made.

4. Prices of raw and wrought materials.

5. Drawings of machinery used for turning, boring, polishing, &c.

In conclusion: It is not supposed that any individual, unless wholly devoted to the research, can supply the whole of the desired specimens, or even of the knowledge relative to any one product; but any *single* item of the foregoing may be of importance, at sometime, to some one; and it will be the special duty of the Asiatic Society, and of the Curator of the Museum, to see justice done to every contribution; whether relating to the Geology of India in general, or to this peculiar branch of it.

H. PIDDINGTON,

Curator, Museum Economic Geology.

ART. VII.—*Note on Fossil Plants discovered in the Sandstone Rocks at Kamptee near Nagpoor.* By JOHN G. MALCOLMSON, Esq.

The accompanying three lithographs represent fossil leaves, discovered in the sandstone quarries of the banks of the Khanan river, opposite to the cantonment of Kamptee, by Lieut. Munro, of H. M. 39th Regt. F.L.S., who at the request of Colonel Walpole, kindly presented them to me. It is very remarkable, that no fossils had been found in these

rocks previous to Mr. Munro's fortunate discovery, as the quarries have been worked for many years, and have been examined by several geologists, including Dr. Voysey, and Capt. Jenkins the distinguished commissioner in Assam. I presume that they must be confined to some thin strata in the sandstone, as during a residence of some years at Kamptee, I did not observe them, although my attention was naturally directed to the subject, by the numerous fossils I had met with in the neighbouring districts. Be the cause of their having been so long overlooked what it may, it affords encouragement to the re-examination of the same rocks which extend over so large a part of the south of India, especially in the Southern Mahratta Country, and in Guzerat, Eedur, &c.

In the Geological map of a great part of the Hyderabad and Nagpoor countries, published in the 5th vol. of the Transactions of the Geological Society of London, I have coloured the Kamptee sandstone, as well as the other rocks of the same character extending along the Wurdah* and Godavery rivers, as the equivalent of the diamond sandstones of the Madras ceded districts, and of the sandstone rocks near Kulladgee, Badamee, and Atchera, in our own neighbourhood. The truth of these identifications, the reasons for which are detailed at length in the paper above referred to, has been since confirmed by a report of Major Wilkinson, the resident at Nagpoor, addressed to the Secretary to the Coal Committee, Calcutta, on the 22d April 1841. "In Wyragurh, about 90 miles to the south west of the city of Nagpoor, there are diamond mines. I formerly visited them with Mr. Jenkins, when he was resident at Nagpoor; the following

* In the Madras Journal of Science for October, 1834, I have given a figure of a fossil plant, I had discovered some years before in the sandstone of Won in the Hyderabad territory, acquired from the Nagpoor Rajah in 1818. The hill of Won is composed of sandstone, dipping in all directions from the apex, and varying in colour from white to red and yellow. It contains also ferruginous grains or scales, either in seams or disseminated through its substance. In a fragment of this kind much resembling the Bangnapilly diamond Breccia, a fossil was discovered having a compact structure and deep black colour, and it is probably a portion of a hollow, compressed vegetable, the centre of which is filled with the sandstone. It is the only instance that has come to my knowledge of a fossil having been found in the sandstones of Southern India; and as the rock corresponds in Geological position and mineralogical characters with the diamond sandstone, the fact is of considerable interest, even if the formations were not found to be continuous, as will be stated hereafter. The specimen is deposited in the Museum of the Asiatic Society of Bengal. Geological Transactions, vol. 5. p. 557.

is what he has written about them. "The diamond mines of Wyragurh, were formerly celebrated, though now they do not yield sufficient returns to render them worth working. The diamonds were found in earth which forms small hills in the vicinity of Wyragurh. The spots are still distinguishable where they have been dug up. During the reign of the late Raja Raghoojee Bhonsla, the mines were worked at a considerable expense, but only a very few small diamonds of little value were found, and they are now entirely neglected."*

But a question of much greater importance here presents itself as to the identity of these rocks with the coal strata of the Bengal Provinces and of the Upper Nerbudda, and also with those sandstone rocks of Guzerat, which appear to be identical in mineralogical characters, and in their geological relations. If this should prove to be correct, coal will most probably be found in the sandstone ranges of the eastern part of Guzerat, in situations sufficiently accessible to render it matter of less regret, that the Nerbudda cannot be rendered navigable much above Tulluckwarra. The fossil plants discovered by Mr. Munro, are, however, too imperfect to enable us to refer them with certainty to any of the few Indian coal plants yet described or figured. They bear a considerable resemblance to the *Glossopteris danœoides* of the Burdwan coal field, figured by Dr. Royle, in his 2d plate. The narrower leaves may belong to another species, or more probably to a different part of the same plant. The lithographs were executed under the direction of Capt. Smith, of the Madras Engineers, from very beautiful drawings by Mr. Forbes, but as Capt. Smith observes, "subjects like these are very difficult for pen-work lithography, and the people at Madras do not much practice chalk." The consequence is that the cross hatching obscures the structure of the fossil, especially in Nos. 2 and 3. With these plants impressions were found not unlike those of the large bony scales of the sauroid fish of the carboniferous and old red sandstone rocks, especially these of the latter. They are, however, too imperfect to justify any opinion as to their nature, although, in a subject so new, no indication should be overlooked.

* Reports and abstracts of the Proceedings of the Committee for the investigation of the coal and mineral resources of India and Calcutta. *Journal of Natural History* for July, 1842, p. 260.

NOTE.—In a paper on the Geology of the country between Byapoor and Bellary, by Capt. Newbold, published in No. 46 of the *Journal of the Asiatic*

ART. VIII.—*Observations on the Comet of 1843 ; made at the Astronomical Observatory, Bombay.* By DR. BUIST.

Read 12th April 1843.

On the evening of the 4th March, a little after sunset, a most extraordinary appearance presented itself in the sky, consisting of a vast beam of light inclining at an angle of 45° towards the South ; it was distant about 35° from the moon, which was to the northward. The right ascension was very near one hour ; the end of the tail, which when first observed was about 20° , was nearly of the same declination with the moon ; the comet itself had set, before its tail attracted notice. The tail was single for about half its length, appearing to exhibit a purplish black shadow at both edges, such as is sometimes perceptible in the bright beams of Aurora Borealis, for which it might, unless from its fixeness and position, have been readily mistaken. Towards its upper ex-

Society of Bengal N. S., the following passage occurs, "The softer and finer varieties of the cream colored limestone found in the vicinity of Tallicotta are well adapted for lithographic purposes. Some of the specimens which I brought hence, were sent down to the lithographic establishment at St. Thomas' Mount, and found to answer. There is also a fine laminar limestone found in the bed of the river, with beautiful dendritic appearances between the plates. A specimen of this dendritic limestone was examined for me, by Dr. Wight, who kindly affords me the following note. "The arborescent appearance in the slate I think an organic remain. At least, I find, when under a high magnifying power, that the black lines can, with the point of a needle, be pricked off without touching the stone, as if the carbonaceous matter of the plant was still there. I feel uncertain, however, whether to call the original a moss or fucus, but think the latter."

As this observation will probably find its way into other works, with the weight which will justly attach to the names of the observers, I think it may be useful to remark, that these markings are probably nothing more than metallic arborizations, such as abound in this limestone wherever it occurs. Fine examples may be seen in the collection of rocks from the Southern Mahratta Country, presented by Lieut. Hibbert of the Engineers especially those from Tallicotta. At page 554 of the 5th vol. of the Geological Transactions, I have noticed a report of the same kind of fossil plants said to have been found in the Cuddapa limestones, but which I ascertained to be more dendritic markings on the surface of the strata.

tremity it seemed for a few nights to be divided by a thin line of shadow ; this was not perceptible after the 10th.

It had been observed so early as the 2nd and 3rd of the month at Madras and various other parts of India, but was not noted at Bombay. At Agra it was for a time believed to be an exhibition of Zodiacal light. The stars were perfectly visible through all parts of the tail.

| | | | |
|------------------------|-------------------------------|----------|----------------|
| Bombay 4th March 1843. | Altitude of the Summit of the | Tail 10° | pointing S. E. |
| " | Azimuth of Do. | do. | 113° |
| " | " | Base | 10½° |

} at 7h. 15' P. M.

5th March, Sunday. The head was very distinctly visible above the horizon shortly after sunset, and left no doubt that it was a magnificently developed comet : its splendour was however considerably impaired by the light of the moon. On the 5th and 6th the tail of the comet seemed to vibrate, pulses of light appearing to shoot out longitudinally every 15 seconds. This appearance was observed by several individuals simultaneously, who were perfectly at one as to the interval of time between the pulses. There were no more noticed after the 7th, on which night they were only slightly apparent. The subjoined observations were made at the Bombay Government Observatory, Colaba, Lat. 18° 53' 52" N. Lon. 4h 51' 19" E. by Kera Laxuman C., a young Bramin, one of the assistants, who had been carefully instructed by Professor Orlebar. The instrument employed was an altitude and azimuth circle, the length of the telescope being 23 inches, with semi-diameter of the altitude and azimuth circles 6·5 and 8·5 inches respectively, made by W. T. Gilbert. This was placed on a large stone pillar based upon the ground, and terminating under the cupola of the Observatory, at an elevation of 75 feet above the mean level of the sea ; the instrument like most of the others in the Astronomical Department of the Observatory, is by no means such as could be trusted for accurate or precise observations. The altitudes given in the subjoined are uncorrected for refraction, and the azimuths are measured from the South and not from the North, as the term generally means. The time given is Bombay mean time at the Observatory.

The following observations were made at the Observatory on the evenings of 6th, 7th, &c. till the end of the month, at which latter date the comet became too obscure to be fit for observation.

| Time 1843. | | Altitude. | | | Azimuth. | | | Approximate length of Tail. | Remarks. | | |
|------------|-----|-----------|----|-----|----------|----|-----|-----------------------------|----------|-------------|--|
| H. | ' | " | ° | ' | " | ° | ' | | | " | |
| Mar. 6th | 6 | 51 | 15 | 7 | 1 | 2 | 74 | 39 | 11 | Clear. | |
| " | 6 | 56 | 32 | 5 | 40 | 31 | 75 | 6 | 41 | | |
| " | 7 | 1 | 44 | 4 | 41 | 20 | 75 | 33 | 31 | | |
| Mar. 7th | 6 | 46 | 13 | 10 | 27 | 10 | 73 | 16 | 34 | 34° | |
| " | 7 | 1 | 27 | 7 | 2 | 40 | 74 | 39 | 18 | | |
| " | 7 | 22 | 52 | 2 | 16 | 57 | 76 | 28 | 17 | | |
| Mar. 10th | 6 | 50 | 18 | 15 | 50 | 51 | 71 | 13 | 6 | 34° | |
| " | 7 | 11 | 32 | 11 | 5 | 27 | 73 | 17 | 40 | | |
| " | 7 | 32 | 36 | 6 | 23 | 51 | 75 | 12 | 23 | | |
| Mar. 11th | 6 | 51 | 4 | 17 | 32 | 15 | 70 | 37 | 16 | " | |
| " | 7 | 21 | 14 | 10 | 48 | 45 | 73 | 39 | 10 | | |
| " | 7 | 51 | 31 | 4 | 2 | 20 | 76 | 17 | 38 | | |
| Mar. 13th | 7 | 21 | 23 | 14 | 8 | 45 | 72 | 42 | 21 | " | |
| " | 7 | 35 | 37 | 10 | 55 | 54 | 74 | 4 | 21 | | |
| " | 7 | 45 | 30 | 8 | 42 | 30 | 75 | 0 | 44 | | |
| Mar. 17th | 7 | 49 | 13 | 13 | 14 | 15 | 74 | 20 | 53 | 34° | |
| " | 7 | 52 | 5 | 12 | 34 | 45 | 74 | 35 | 7 | | |
| " | 7 | 56 | 24 | 11 | 35 | 46 | 75 | 1 | 35 | | |
| Mar. 18th | 7 | 45 | 21 | 15 | 7 | 55 | 73 | 46 | 4 | " | |
| " | 7 | 56 | 27 | 12 | 37 | 1 | 74 | 55 | 17 | | |
| Mar. 19th | 8 | 3 | 20 | 11 | 59 | 20 | 75 | 28 | 18 | | |
| " | 7 | 3 | 2 | 25 | 32 | 33 | 69 | 5 | 11 | Faint. | |
| Mar. 21st | 7 | 21 | 34 | 23 | 17 | 49 | 72 | 4 | 16 | | |
| " | 7 | 30 | 53 | 21 | 3 | 28 | 72 | 6 | 32 | | |
| Mar. 22nd | 7 | 41 | 19 | 10 | 23 | 22 | 73 | 12 | 4 | Very faint. | |
| Mar. 24th | 7 | 30 | 11 | 21 | 3 | 49 | 73 | 5 | 27 | | |
| Mar. 26th | 7 | 55 | 52 | 18 | 11 | 13 | 74 | 56 | 35 | | |
| Mar. 27th | 7 | 30 | 28 | 24 | 20 | 33 | 72 | 22 | 16 | 28° | |
| " | 7 | 38 | 13 | 23 | 37 | 11 | 73 | 12 | 59 | | |
| Mar. 29th | 7 | 46 | 58 | 21 | 12 | 25 | 74 | 23 | 9 | | |
| Mar. 30th | 7 | 43 | 56 | 22 | 8 | 20 | 73 | 17 | 55 | 23° | |
| Mar. 31st | do. | | | do. | | | do. | | | | |
| | | | | | | | | | | 21° | } Observation within 3 minutes of arc. |
| | | | | | | | | | | 20° | |

The Tail was observed till the 4th of April, on which it disappeared also.

These observations were taken with great care, but the comet becoming obscure towards the end of the month, could not be distinctly seen in the telescope; the observations about that period, therefore, should be considered right only within three minutes of arc.

ART. IX. — Meteorological Observations.

The Observations in the present number were made at the Magnetic Observatory. The Barometer is a standard of Newman; the readings are

continued as noted from the scale, without correcting for temperature or capillary. The Barometer from which the Observations for May, June, and July 1841, were noted, is a standard by Adie of Edinburgh;—its readings are 0·150 higher than those of Newman; so that assuming this last for the true standard, and as such it is now employed, 0·150 must be subtracted from the observations of No. 1 of the Journal to reconcile them with the others. The most of the instruments in use till September 1842, were the same as those noted by Professor ORLEBAR.

The term-day observations of July due to the following number were lost; the assistants had at this time dropped away one after another, till one only remained, and he was sick. From the 1st September the hourly readings continue uninterrupted, and the means of the month, instead of the term-day observations, will be supplied for future numbers after the month of August.

GEORGE BUIST,

In charge of the Observatory.

Magnetic Observatory, Bombay, Colaba, Meteorological Observations, 21st April 1842.

| Bombay Mean Time. | Standard. | | Thermo. | | Differ- ence. | Correct. Barom. | Wind. | Remarks. |
|-------------------------|-----------|---------|---------|------|------------------|--------------------|------------|-----------------------|
| | Barom. | Thermo. | Dry | Wet. | | | Direction. | |
| h. ' 2 12 | 29·832 | 83·5 | 81·8 | 76·8 | 5·0 | 29·685 | N.W. | Clear. |
| 3 | 29·820 | 83·2 | 81·8 | 76·8 | 5·0 | 29·674 | .. | .. |
| 4 | 29·838 | 83·0 | 81·5 | 77·0 | 4·5 | 29·693 | N.W.byN. | .. |
| 5 | 29·832 | 82·9 | 80·2 | 75·8 | 4·4 | 29·687 | .. | .. |
| 6 | 29·850 | 81·9 | 80·0 | 78·0 | 4·0 | 29·707 | .. | .. and calm. |
| 7 | 29·876 | 82·9 | 83·2 | 77·5 | 5·7 | 29·731 | .. | .. " |
| 8 | 29·892 | 84·5 | 84·0 | 78·2 | 6·4 | 29·742 | N.W. | .. |
| 9 | 29·906 | 85·8 | 85·5 | 77·8 | 7·7 | 29·753 | .. | .. |
| 10 | 29·900 | 86·3 | 85·8 | 79·8 | 7·0 | 29·744 | .. | .. Fresh breeze. |
| 11 | 29·892 | 86·9 | 86·4 | 78·8 | 7·6 | 29·736 | .. | .. " " |
| 0 | 29·872 | 87·2 | 87·1 | 77·8 | 9·3 | 29·715 | .. | .. " " |
| 1 | 29·844 | 87·2 | 86·9 | 77·0 | 9·9 | 29·687 | .. | .. Strong breeze. |
| 2 | 29·820 | 87·5 | 87·2 | 76·0 | 11·2 | 29·662 | .. | .. with " " |
| 3 | 29·800 | 87·7 | 87·2 | 74·8 | 12·4 | 29·642 | .. | .. |
| 4 | 29·798 | 87·4 | 87·0 | 72·2 | 14·8 | 29·640 | .. | .. |
| 5 | 29·790 | 86·8 | 86·0 | 72·2 | 13·8 | 29·635 | .. | .. Strong breeze. |
| 6 | 29·800 | 85·2 | 84·0 | 71·3 | 12·8 | 29·649 | .. | .. Gentle breeze. |
| 7 | 29·804 | 84·6 | 83·0 | 77·8 | 5·2 | 29·654 | N.E. | .. Fresh breeze. |
| 8 | 29·822 | 84·5 | 82·9 | 74·6 | 8·3 | 29·672 | N.W. | .. " " |
| 9 | 29·828 | 83·9 | 82·5 | 74·5 | 8·0 | 29·680 | .. | .. " " |
| 10 | 29·830 | 83·6 | 82·0 | 74·9 | 7·1 | 29·683 | .. | .. " " |
| 11 | 29·822 | 83·3 | 81·0 | 75·0 | 6·9 | 29·676 | .. | .. " " |
| 0 | 29·812 | 83·0 | 81·6 | 75·0 | 6·6 | 29·667 | .. | .. " " |
| 1 | 29·800 | 82·9 | 81·3 | 75·1 | 6·2 | 29·655 | .. | .. with a few Cirrus. |

Magnetic Observatory, Bombay, Colaba, Meteorological Observations
23rd May 1842.

| Bombay Mean Time. | Standard. | | Stand. Thermo. | Thermo. | | Differ. ence. | Correct. Barom. | Wind. | | Remarks. |
|-------------------------|-----------|---------|-------------------|---------|------|------------------|--------------------|---------|---------|--|
| | Barom. | Thermo. | | Dry | Wet. | | | Direct. | Force. | |
| 6 | 29 | | ... | ... | ... | ... | ... | | Gentle. | |
| 7 | 29.830 | 83.5 | 82.9 | 83.1 | 74.5 | 8.6 | 29.683 | W. | ... | Clouded. |
| 8 | 29.840 | 84.2 | 83.8 | 83.2 | 75.0 | 8.2 | 29.690 | S. | ... | " with light rain. |
| 9 | 29.846 | 84.9 | 84.0 | 83.4 | 75.0 | 8.4 | 29.695 | ... | ... | " and no rain. |
| 9½ | 29.850 | 85.4 | 84.8 | 84.0 | 75.2 | 8.8 | 29.690 | ... | ... | " " " |
| 10 | 29.850 | 86.0 | 85.2 | 84.9 | 75.4 | 8.5 | 29.697 | ... | ... | " " " |
| 10½ | 29.848 | 86.5 | 85.9 | 85.8 | 75.9 | 10.0 | 29.693 | ... | ... | 7-8ths Clouded. |
| 11 | 29.840 | 86.6 | 86.1 | 85.8 | 76.0 | 9.8 | 29.685 | S.W. | ... | 8-8ths " " |
| 0 | 29.830 | 87.0 | 86.7 | 86.4 | 76.0 | 10.4 | 29.674 | ... | ... | " " " |
| 1 | 29.820 | 87.8 | 87.6 | 86.9 | 76.5 | 10.4 | 29.661 | ... | ... | 7-8ths " " |
| 2 | 29.808 | 87.9 | 87.6 | 87.2 | 77.0 | 1.02 | 29.649 | ... | ... | 3-8ths Cumulostratus and Cumulus. |
| 2½ | 29.796 | 88.2 | 88.0 | 87.9 | 77.6 | 10.3 | 29.637 | ... | ... | " " |
| 3 | 29.778 | 88.5 | 87.9 | 87.2 | 77.5 | 9.7 | 29.618 | W.byS. | ... | Clear in the N., and W., 3-8ths Cumulostratus. |
| 3½ | 29.778 | 88.3 | 87.8 | 87.2 | 78.5 | 8.7 | 29.619 | S.W. | ... | " " " " " |
| 4 | 29.768 | 88.2 | 87.6 | 87.2 | 78.8 | 8.4 | 29.609 | ... | ... | Z. Clear 2-8ths Cumulo- stratus and Cirrostra- tus in N. E. and S. with Cirri in the W. |
| 4½ | 29.762 | 88.1 | 87.6 | 87.0 | 78.5 | 8.5 | 29.603 | W.S.W. | ... | " " " " |
| 5 | 29.762 | 87.9 | 87.4 | 86.8 | 77.8 | 9.0 | 29.604 | ... | ... | " 1-8th " " |
| 5½ | 29.764 | 87.5 | 87.0 | 86.3 | 78.8 | 7.7 | 29.607 | ... | ... | Zenith clear, Cumulus and Cumulostratus in N. E. and S. |
| 6 | 29.768 | 87.3 | 86.8 | 86.5 | 78.0 | 5.5 | 29.602 | W.byS. | ... | " " " " |
| 7 | 29.778 | 86.2 | 85.2 | 84.5 | 77.2 | 7.3 | 29.623 | W.byN. | ... | Clear with moonlight. |
| 8 | 29.785 | 85.2 | 84.5 | 84.0 | 77.0 | 7.0 | 29.629 | ... | ... | A few clouds in the east |
| 9 | 29.790 | 85.0 | 84.1 | 84.0 | 76.0 | 8.0 | 29.640 | ... | ... | " " " |
| 9½ | 29.790 | 84.9 | 84.0 | 83.9 | 76.5 | 7.4 | 29.640 | ... | ... | " " " |
| 10 | 29.796 | 84.8 | 84.0 | 83.8 | 76.2 | 7.8 | 29.646 | ... | ... | Clear. |
| 10½ | 29.796 | 86.7 | 84.0 | 83.8 | 76.2 | 7.6 | 29.642 | ... | ... | " |
| 11 | 29.798 | 84.5 | 83.9 | 83.7 | 76.3 | 7.4 | 29.647 | ... | ... | A few clouds in the S. and E. |
| 0 | 29.798 | 84.4 | 83.8 | 83.5 | 76.8 | 6.7 | 29.637 | ... | ... | 5-8ths Overcast. |
| 1 | 29.776 | 84.2 | 83.6 | 83.2 | 77.2 | 6.0 | 29.629 | ... | ... | 7-8ths " |
| 2 | 29.764 | 84.2 | 83.6 | 83.2 | 77.5 | 5.7 | 29.616 | ... | ... | 4-8ths " |
| 2½ | 29.764 | 84.2 | 83.5 | 83.0 | 76.8 | 6.2 | 29.616 | ... | ... | 6-8ths " |
| 3 | 29.764 | 84.0 | 83.4 | 83.0 | 76.8 | 6.2 | 29.617 | ... | ... | 7-8ths " |
| 3½ | 29.760 | 84.0 | 83.2 | 83.0 | 76.7 | 6.3 | 29.613 | ... | ... | " " |
| 4 | 29.760 | 83.9 | 83.2 | 83.9 | 76.5 | 6.4 | 29.613 | ... | ... | " " |
| 4½ | 29.772 | 83.9 | 83.0 | 82.9 | 76.5 | 6.4 | 29.625 | ... | ... | " " |
| 5 | 29.798 | 83.8 | 83.0 | 82.8 | 76.4 | 6.4 | 29.641 | ... | ... | " " |
| 5½ | 29.800 | 83.9 | 83.1 | 82.9 | 76.8 | 6.1 | 29.652 | ... | ... | " " |

Magnetic Observatory, Bombay, Colaba, Meteorological Observations
21st June 1842.

| Bombay Mean Time. | Standard. | | Stand. Thermo. | Thermo. | | Differ- ence. | Correct. Barom. | Wind. | | Remarks. |
|-------------------------|-----------|--------|-------------------|---------|------|------------------|--------------------|---------------------|--------|-----------------|
| | Barom. | Thermo | | Dry. | Wet. | | | Direct. | Force. | |
| A. M. | | | | | | | | | | |
| 6 | 29.530 | 82.6 | 81.6 | 81.6 | 79.0 | 2.6 | 29.333 | W.S.W. | ... | S-sths Numbis. |
| 7 | 29.534 | 82.2 | 81.6 | 81.2 | 78.6 | 2.6 | 29.392 | W.byN. | .. | " " |
| 8 | 29.566 | 82.2 | 81.4 | 80.5 | 78.0 | 2.6 | 29.424 | W. | ... | " " Light rain. |
| 9 | 29.580 | 82.8 | 83.8 | 82.3 | 79.1 | 3.2 | 29.436 | ... | ... | " " no rain. |
| 9½ | 29.580 | 82.8 | 83.8 | 82.2 | 79.0 | 3.2 | 29.436 | ... | ... | " " " |
| 10 | 29.588 | 82.6 | 81.5 | 81.0 | 78.6 | 2.6 | 29.445 | ... | ... | " " light rain. |
| 10½ | 29.588 | 82.6 | 81.8 | 81.0 | 78.8 | 2.2 | 29.445 | ... | ... | " " " |
| 11 | 29.590 | 82.6 | 82.3 | 82.0 | 79.0 | 3.0 | 29.447 | W.by ² . | ... | " " no rain. |
| 0 | 29.590 | 83.0 | 82.6 | 82.2 | 79.0 | 3.2 | 29.447 | ... | ... | " " " |
| 1 | 29.590 | 82.6 | 81.2 | 80.0 | 78.5 | 1.5 | 29.436 | W.byN. | ... | " " heavy rain |
| 2 | 29.590 | 82.8 | 82.8 | 82.0 | 79.5 | 2.5 | 29.435 | W.byS. | ... | " " light rain. |
| 2½ | 29.590 | 82.5 | 82.4 | 81.9 | 79.4 | 1.5 | 29.436 | ... | ... | " " heavy rain. |
| 3 | 29.570 | 82.8 | 81.6 | 81.2 | 79.2 | 2.0 | 29.426 | ... | ... | " " " |
| 3½ | 29.570 | 82.7 | 81.7 | 81.0 | 79.0 | 2.0 | 29.427 | N.W. | ... | " " " |
| 4 | 29.570 | 82.9 | 82.2 | 81.6 | 79.2 | 2.4 | 29.426 | ... | ... | " " light rain. |
| 4½ | 29.580 | 82.8 | 81.6 | 80.8 | 79.0 | 2.8 | 29.416 | N. | ... | " " no rain. |
| 5 | 29.580 | 82.2 | 81.2 | 80.8 | 78.5 | 2.3 | 29.424 | ... | ... | " " " |
| 5½ | 29.586 | 82.2 | 81.2 | 81.0 | 78.5 | 2.5 | 29.424 | S.W. | ... | " " " |
| 6 | 29.566 | 82.2 | 81.2 | 81.0 | 78.2 | 2.8 | 29.424 | ... | ... | " " " |

The above only extend over a period of twelve hours. Professor Orlebar left Bombay for Europe on sick certificate on the 1st of May, and his successor was placed in charge on the 15th of July; at this time there was only a single assistant in the Magnetic and Meteorological department of the Observatory: and without losing the day, before or after the term day it was impossible for him to attempt the consecutive hourly observations.

ART. X.—Copy of the Asoka Inscription at Girnar. By Captain
LEG. JACOB, and N. L. WESTERGAARD, Esq.

The following inscription should have appeared at the beginning of this number, but it was thought advisable, to defer putting it into the hands of the lithographer, until Captain Jacob could be consulted as to the mode of having it executed. The lithographed copy itself has unfortunately not had the benefit of Captain Jacob's revision, but it is hoped that it will be found to be a faithful transcript of the original. Another copy

has been transmitted by Mr. Westergaard to Professor Lassen, and will probably appear in Germany, with the advantage of a commentary by that celebrated orientalist. The original is deposited, for reference, in the library of the Society.

If any apology were required for publishing a correct copy of the most valuable historical monument yet discovered in India, it will be found in the following extract of a private letter, dated the 8th April, from Captain Jacob, who devoted a long time to making and correcting the copy. Those who take an interest in the subject will find Mr. J. Prinsep's papers, and the *Journal of Lieut. Postans' Journey*, made by order of the Supreme Government, at pages 219, 334, 365 and 864, of the 7th vol. of the *Journal of the Asiatic Society of Bengal* for 1838.

“The History of the Girnar Inscription's copyings is first to be seen in Prinsep's *Journal*. You are aware of his attempt to obtain more perfect copies than those first made by Captain Lang, at the instigation of our late President. For this purpose, Lieut. Postans was deputed to Joonaghur, who took infinite pains to secure exactitude, aided by Captain Lang who was with him at the spot.

“These copies were forwarded to Calcutta, but reached as the ever-to-be lamented Prinsep was on the eve of departure from the land which his genius had helped to illumine. The MSS. and cloth copies rotted in the Calcutta godown. I gave a duplicate copy of the cloth copy to your predecessor at Postans' request, for the London (Parent) Society, but never could ascertain what became of it.

“I undertook to make fresh copies of these Inscriptions for the Calcutta people, and I had been engaged some time in the rock when Mr. Westergaard arrived in India. I gave him my present copies, and we went over them partly together at the rock. The old Asoka inscription you are now about publishing, was I think nearly faultless; but for the two published in your last number, you are indebted chiefly to our Danish brother's labours for the correct form in which they appear.”

Southern Division of the Inscriptions on the Eastern half of the Girnar Rock near Joonaghur.

1st Division.

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T.T. 35. 1. 6. 1. 1

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T.T. 35. 1. 6. 1. 1 *Prinsep's of natural fracture.

...
T.T. 35. 1. 6. 1. 1

1. 𑀘𑀓𑀡𑀓𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 2. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 3. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿

4th Division.

4. 𑀘𑀓𑀡𑀓𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 5. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 6. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 7. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 8. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 9. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 10. 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿

ॐ क्खव्वं अस्स भगवतो अस्स भगवतो अस्स भगवतो अस्स भगवतो अस्स भगवतो
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5th Division.

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Fracture of the Block.

𑀘𑀓𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
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SPACE but NO letters.

7th Division.

𑀘𑀓𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿
 𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹𑀺𑀻𑀼𑀽𑀾𑀿

might be

8th Division.

19

𑀘𑀓𑀡𑀓𑀢𑀓𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *no more.*
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *no more.*
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *finished.*

9th Division.

𑀘𑀓𑀡𑀓𑀢𑀓𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *no more.*
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *no more.*
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹 *no more.*
 𑀺𑀻𑀼𑀽𑀾𑀿𑀠𑀡𑀢𑀣𑀤𑀥𑀦𑀧𑀨𑀩𑀪𑀫𑀬𑀭𑀮𑀯𑀰𑀱𑀲𑀳𑀴𑀵𑀶𑀷𑀸𑀹

11th Division.

3E1CFCLEBESADAKLITADAKSLSLEJNDXSTOAXNKHEDDANDBHAKEDDANOD-DB
AK:BDHSMNA+XNLKLNAXVSGLSDALNBNANLXVHFLEOMZILXELDRS+
GELKELIFEDDANBYLGLNLTOMKODANANLXVHFKTLKXBSLDBLGL:NLG:BD+Hψ
GLO+L:J+DLXLDGLIADKLTALVHFNDAKSLTOXSLT

12th Division.

3E1CFCLEBESADAKLITADAKSLSLEJNDXSTOAXNKHEDDANDBHAKEDDANOD-DB ^{doubtful}
^{or no more.} AK:BDHSMNA+XNLKLNAXVSGLSDALNBNANLXVHFLEOMZILXELDRS+
GELKELIFEDDANBYLGLNLTOMKODANANLXVHFKTLKXBSLDBLGL:NLG:BD+Hψ
GLO+L:J+DLXLDGLIADKLTALVHFNDAKSLTOXSLT

Handwritten text in Brahmi script, consisting of four lines. The text is written from right to left. The first line contains a long sentence. The second line contains a shorter sentence. The third line contains a sentence with a circled word at the end. The fourth line contains a circled word at the end. There are some annotations in the text, such as 'no more letters' and 'uncertain if more letters'.

no more letters
uncertain if more letters

Handwritten word in Brahmi script, circled.

13th Division.

Handwritten text in Brahmi script, consisting of four lines. The text is written from right to left. The first line contains a long sentence. The second line contains a shorter sentence. The third line contains a sentence with a circled word at the end. The fourth line contains a circled word at the end. There are some annotations in the text, such as 'no more letters' and 'uncertain if more letters'.

uncertain if more letters

doubtful if more letters

no more letters.

Handwritten characters in Brahmi script.

Evidence of the

on all but, if not, altering; impossible; very faint trace, apparently unrecognition of rock, or T
> Doubtful whether the dorsal line be fracture or letter, the vowel *i* being the most likely portion.
† Very doubtful if them there be an upper stroke to constitute a *k* or *g* impossible.
‡ *g* rather than *u*, or impossible.

Back:
... (K) (P) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... no more letters
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... no more letters
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... no more letters
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... Perhaps one letter more
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... no more letters.
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ... no more letters + Perhaps it, but extremely doubtful.
... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ...

A Single Line.

... (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) ...

14th Division.

୦ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
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 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦
 ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦ ୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୦

Finish.

JOURNAL
OF THE
BOMBAY BRANCH
ROYAL ASIATIC SOCIETY.

OCTOBER—1843.

ART. I.—*Translation of an Inscription found at Nagpore ; with a Fac-simile, and Transcript in Balbodh.*—BY BALL GUNGADHAR SHAŚTREE, Esq.

Remarks on the historical value of the Inscription.

1. The accompanying Inscription, copied from a stone at Nagpore, was sent to me last year by Dr. Stevenson, to whom it had been transmitted by Mr. L. R. Reid. On examining it attentively, I found that, though copied with some care, it was inaccurate in many places ; and besides wanting one or two lines at the commencement, had blanks in different parts, in which the letters must have been illegible on account of fracture or some other circumstance. The part omitted at the beginning, is, however, of no consequence in a practical point of view ; for, since the two or three lines that follow contain the customary invocations, it could not possibly have reference to any other subject. In regard to the blanks, I have filled them up with such words as were suggested by the context ; and it is highly satisfactory to find that with the exception of the name of one king, very little of the important part of the Inscription can be affected by any difference of opinion in regard to my conjectural readings, which, as admitting of doubt, I have distinguished with a mark of interrogation or enclosed within brackets.

2. It will be perceived from the subjoined English Translation, that

the Inscription contains a kind of eulogy on the kings of the Pramára family, written during the reign of Nara Verma, in the Samvat year 1161 or 1105 A. D. The race whose achievements it commemorates, is one of the four Agniculas, the account of whose birth or regeneration from the sacrificial fire of Vasishta Muni, as given by Col. Tod, is repeated in the 10th verse ; though the motive assigned by the imagination of the poet to Vasishta for creating new tribes of Kshatriyas, is a desire of taking revenge on his opponent Vishwámitra, and not the general prevalence of heterodoxy and vice all over India.

3. The Pramáras (more properly Paramáras according to our Inscription) appear to have acted an important part in the history of the middle ages of India. I extract the following remarks from the authority just cited, regarding the extent of their territory, the names of the principal kings of their family, and the capitals to which their power was transferred at various periods.

“ The Pramára, though not, as his name implies, the chief warrior, was the most potent of the Agniculas. He sent forth thirty-five *Sachæ*, or branches, several of whom enjoyed extensive sovereignties. ‘ The world is the Pramáras,’ is an ancient saying, denoting their extensive sway ; and the *No-kote maroosthullí* signified the nine divisions into which the country, from the Sutledge to the ocean, was partitioned among them.

“ Maheshwar, Dhar, Mandoo, Oojein, Chundrabhaga, Cheetore, Aboo, Chandravati, Mhow, Maidana, Parmavati, Omrakote, Bekher, Lodurva, and Puttun, are the most conspicuous of the capitals they conquered or founded.

“ Though the Pramára family never equalled in wealth the famed Solanki princes of Anhalwarra, or shone with such lustre as the Chohan, it attained a wider range, and an earlier consolidation of dominion than either, and far excelled in all, the Purihara, the least and last of the Agniculas, which it long held tributary.

“ Maheshwar, the ancient seat of the Hya kings, appears to have been the first seat of government of the Pramáras. They subsequently founded Dharanagar and Mandoo on the crest of the Vindhya hills ; and to them is even attributed the city of Oojein, the first meridian of the Hindus, and the seat of Vicrama.

“ There are numerous records of the family, fixing eras in their history, of more modern times ; and it is to be hoped that the interpretation

of yet undeciphered inscriptions, may carry us back beyond the seventh century.

“The era of Bhoj, the son of Monj, has been satisfactorily settled; and an inscription in the nail-headed character, carries it back a step farther, and elicits an historical fact of infinite value, giving the date of the last prince of the Pramáras of Cheetore, and the consequent accession of the Gehlotes.

“The Narbada was no limit to the power of the Pramáras. About the very period of the foregoing inscription, Ram Pramár held his court in Telungana, and is invested by the Chohan bard Chand, with the dignity of paramount sovereign of India, and head of a splendid feudal association, whose members became independent on his death. The bard makes this a voluntary act of the Pramáras; but coupled with the Gehlote's violent acquisition of Cheetore, we may suppose the successor of Ram was unable to maintain such supremacy.

“While Hindu literature survives, the name of Bhoj Pramára and ‘the nine gems’ of his court cannot perish; though it is difficult to say which of the three princes of this name is particularly alluded to, as they all appear to have been patrons of science.

“Chandragopta, the supposed opponent of Alexander, was a Mori, and in the sacred genealogies is declared of the race of Takshac. The ancient inscriptions of the Pramáras, of which Mori is a principal branch, declare it of the race of Tusta and Takshac, as does that now given from the seat of their power, Cheetore.

“Shalwahan, the conqueror of Vicramaditya, was a Takshac, and his era set aside that of the Tuar in the Dekhan.

“Not one remnant of independence exists to mark the greatness of the Pramáras; ruins are the sole records of their power. The prince of Dhát in the Indian desert, is the last phantom of royalty of the race; and the descendant of the prince who protected Humayoon when driven from the throne of Timur, in whose capital, Omerkote, the great Akbar was born, is at the foot of (the) fortune's ladder; his throne in the desert the footstool of the Bulotch, on whose bounty he is dependent for support.

“Among the thirty-five Sachæ of the Pramáras, the Vihil was eminent, the princes of which line appear to have been lords of Chamravati, at the foot of the Aravulli.

“The Rao of Bejoli, one of the sixteen superior nobles of the Rana's

court, is a Pramára of the ancient stock of Dhar, and perhaps its most respectable representative."*

4. As the preceding passage is almost the only one in the Annals of Rajesthán which has an exclusive reference to the Pramáras, I have taken it entire to show the result of the investigations of Col. Tod in regard to this family. I may state that those of the events mentioned by him, which relate to the whole of the period antecedent to the eleventh century of the Christian era, appear to rest almost entirely on tradition, the only written documents discovered before the time he wrote, being three copper-plate grants found at Ujjayani, two bearing dates between the *Samvat* years 1192 and 1200, and one without date.† After a careful examination of their contents, Mr. Colebrooke considers them as authenticating the following series of kings, viz. Udayaditya Déva; his son Nara Varma Déva; his son Yasho Varma Déva; and his two sons Jaya Varma Déva, and Lakshmi Varma Déva; the reigns of these princes extending from the latter part of the eleventh century of the Christian era to near the close of the twelfth. Col. Tod carries the line retrospectively on the authority of the *Madhucaraghar* Marble and *Bhoja Charitra*, and places the names of Sindhu, Munja, Sindhula, and Bhoja, before that of Udayaditya, the earliest king mentioned in the Ujjayani plates.

5. A copper-plate grant, dated *Samvat* 1267, was found at Piplianaggar, in the territory of Bhopal, by the late Mr. L. Wilkinson, the Political Agent at that place. The inscription upon it, which appears with a translation by him in the Journal of the Asiatic Society of Bengal for July 1836,‡ brings down the genealogy to the beginning of the thirteenth century of Christ; following the prince last mentioned in the Ujjayani plates, with the names of Vindhya Varma, Amushyayana, Subhása Varma, and Arjuna; and, as the late Mr. Prinsep observes in a note upon it, "exactly filling up the blank between the former prince and Birsal in 1220." This document also mentions Bhoja, as being the father of Udayaditya, confirming the last of the three names prefixed by Col. Tod to the Ujjayani list, on an authority which might be regarded as not altogether decisive.§ Another copper-plate grant, found in the

* Annals of Rajesthán, Vol. I. p. 91.

† Trans. of the Royal Asiatic Society, Vol. I. p. 231.

‡ See page 377.

§ Two other grants by this same king, Arjuna, dug up at Piplianaggar,

same locality* by Mr. Wilkinson, supplies the name of **Harrischandra Déva**, the son of **Lakshmi Varma**, the brother of **Jaya Varma**. This is dated **Samvat 1236**, or **A. D. 1180**.

6. The Nagpore Inscription, now brought to light, contains, as before observed, an eulogy written by order of **Nara Varma** in **Samvat 1161**, or **A. D. 1105**, descriptive of the glory and achievements of his ancestors, and particularly his brother, **Lakshmídharma**. It will appear to be a document of some historical importance, as it confirms the names of **Udayaditya**, and his father, **Bhoja**, mentioned in the various records above referred to, and supplies the names of **Bhadra Rája**, **Bhoja Rája**, **Bhimaka**, and **Vairi Sinha**, ascending upwards from **Bhoja** in a reverse order of time, and carrying the line about 80 years backwards, or to the year **A. D. 965**, at an average of twenty years to the duration of each reign. These names, arranged in the order of time, and connected with those already found in other grants, will stand as follows :—

1. **Vairi Sinha.**
2. **Bhímaka (his son).**
3. **Rája Rája or Bhoja Rája† (his son).**
4. **Bhadra Rája (his younger brother).**
5. **Bhoja Déva (his son).**
6. **Udayaditya (his son).**
7. **Lakshmídharma (his son).**
8. **Nara Varma Déva (A. D. 1105, his brother).**
9. **Vasho Varma Déva (A. D. 1137, his son).**
10. **Jaya Varma Déva (his son).**
11. **Lakshmi Varma Déva (his brother).**
12. **Vindhya Varma (son of Ajaya Varma).**
13. **Harrischandra (A. D. 1179 son of Lakshmi Varma).**
14. **Amushyayana (son of Vindhya Varma).**
15. **Subhása Varma (his son).**
16. **Arjuna (his son, A. D. 1211).**

appear to correspond with this, word for word, one later by three and the other by five years.

* See page 736, *Journal of the Asiatic Society of Bengal* for August 1838.

† The first syllable being a blank, either **र**, **भो**, or any other letter may be supplied. This is the exception alluded to in para. first of this paper.

It must be noticed that in this enumeration, we see nothing of Sindhu, Múnja, or Sindhula, placed by Col. Tod before the 5th prince on the authority of Bhoja Charitra, &c.

7. Though we have two Bhojas in the above list, neither of them can, for a moment, be supposed to be identical with the famous patron of the "nine gems;" for had either been a lover of literature to any extent, the writer of our Inscription, who does not appear to have much regard for truth when exalting the merits of the ancestors of his master, would surely never have omitted to take due notice of such an agreeable topic. The theories of Mr. Bentley and Major Wilford, the former of whom places the reign of Rájá Bhoja between the years 982 and 1082 A. D. and the latter supposes the death of that prince as having occurred between 977 and 982 at the latest,* appear, therefore, to have been shaken to the base by a clear and forcible evidence, the existence of which could not have been imagined at the time those distinguished orientalist writers.

8. The records of the Pramára kings, already collected, are also quite sufficient to show how little reliance ought to be placed on the genealogies of the Hindu kings, given by Abul Fazil in the Ayeen Akbari. In his list of the Malwa kings, quoted in Mr. Prinsep's Chronological Tables,† it is difficult to identify even half of the names contained in the preceding catalogue.

9. In such a hyperbolic eulogy as the accompanying, no particular importance can be attached to any of the exploits assigned to the elder Pramáras, or to Lakshmídharma. But the defeat of Karna, king of the Karnatica, by Udayaditya, the conquest of Tripura by Lakshmídharma and his victories over the Angas, the Kalingas, the chieftains of the south as far down as Rama's bridge, and those of the north as high as the country of the Turushkas, on the banks of the river Vanku, some stream perhaps in Káshmir, may be particularized as showing the great extent of the resources of the Pramáras at the period under investigation.

10. The villages granted by Lakshmídharma, and confirmed by his brother and successor Nara Varma, are mentioned as being situated in the province of Vyapúr. The site of this I am unable to fix. I may,

* See Asiatic Researches, Vol. VIII. and preface to Wilson's Sanscrit Dictionary, page vi.

† See Appendix to the Bengal Asiatic Society's Journal for December, 1835.

however, offer a conjecture on the subject. Nagpúr, means a town of serpents, and is very frequently known to the learned among us by the synonymous epithet of Vyálapur. It is not improbable that the ancient name of the place was Vyápur, and that some influential individual or chief changed it into the more significant appellation of Vyálapur. The successors of Nara Varma appear to have reigned in Mandap and Nilagiri, which affords a proof in favour of Col. Tod's long list of the Pramára capitals.

11. The language of the Inscription is, as above remarked, extremely pompous and figurative, quite characteristic of the age in which it was written; though considered very elegant according to the modern perverted notions of our writers, who, like the author of this eulogy, do not even scruple to exalt their heroes above the gods, by employing childish play on words and other similar artifices. There is scarcely a single couplet in which we have not one or two words employed in a double meaning. Its hyperboles, metaphors, and mythological allusions, are so far-fetched and unnatural, that, notwithstanding all my pains, I fear, some of them may yet be found unintelligible to a mere English reader.

12. The character in which the Inscription is written, is what Mr. Prinsep calls "Kutilla" or crooked, a name given to it in one of the grants of the middle ages discovered by him. A line or two at the bottom appear somewhat different from the rest, the form of the letters being evidently ornamental. The character, on the whole, is nearly the same as that of the Khárepátan grant, and I need not, therefore, describe it any further.

Translation of an Inscription found on a stone at Nagpore.

[The transcript begins with a part of a sentence, from which circumstance and from the absence of the usual invocation, it appears that the first line of the Inscription has not been copied or had been effaced]. O Goddess! may we be blessed with openness, generosity, sweetness, deep meditation, and equanimity, which attributes belong to you; and [O Sarasvatti (the goddess of speech), do thou also inspire me with thy attributes, simplicity, elegance, unity, and harmony.¹] May the lord of Lakshimi, who is without a second in the three worlds, be propitious to

¹ Wherever a simile or contrast is expressed by a play upon words, I have distinguished their secondary sense by using brackets of this kind. []

you (mankind). The sun and other luminaries shine forth, having an asylum in his imperishable heaven. May good poetry, which abounds in Jāti and other kinds of metre, as well as in the figures of speech, pathetic sentiments, and other ornaments, be propitious to us ; [resembling virtuous and learned men descended from a good race, possessed of noble accomplishments, and capable of feeling poetical charms]. May Shiva, who is formidable to the towers of his insupportable enemy ;² who adorns himself with ashes, and to whom Kubera does homage, grant you happiness, like the Agni race [which is terrible to its foes, is adorned with prosperity, and honoured by the king of kings]. Glory to the lotus-seated Brahma, who, like pearls, is produced in the hollow of this oyster-like mundane egg, and is honoured by Mahesha [as pearls are by rich men]. May we be blessed with enjoyment and beatitude by the awful and noble figures of the lords of Umá and Ráma, one of whom delights in an utter absence of worldly desire, a wreath of human skulls, skins of tigers and elephants, and a sprinkling of ashes ; while the other indulges himself in passion, and takes pleasure in garlands of flowers, apparel, necklaces, and fragrant ointments. May Vishnu be propitious, who, like a universal car, has created this universe without being different from it, to maintain the Karma Mīmāṃsa Philosophy? There is a noble mountain, named Abu, which mocks the pride of the lord of the mountains (the Meru) by its lofty summits, and resembles the blue firmament by its brows composed of sapphire. The circle of the lotuses, waving in lakes on its sky-reaching-peaks, may be compared to a fragment of another mundane egg. Brahma, being desirous of ascertaining whether the abode of the gods or that of men was purer,³ suspended to the two extremities of this mountain, which, methinks, resembles a true balance, the heaven inhabited by gods, and the earth peopled by human beings ; when the former went up in consequence of the pillar-like celestial mountain, and hence was proved to be endowed with greater purity. This Abu aspires to the beauty of the universal car, which has the earth and the heavens for its two wheels, connected by an axis, reaching on the one hand the expanse of water, and, on the other, the confines of space, and appears bending in this rugged career of life, by being impeded

² Tripurásura.

³ This alludes to the ancient Hindu custom of testing the character of a man by weighing him. Being lighter was always regarded as a proof of honesty or innocence.

in the regions of the stars. On this hill, whose green and pleasant brows were overflowed with the waters of the celestial streams, resided the Muni Vasishtha, the chief of those versed in the Vedas ; who, obedient to his father (Brahma), carried to the upper portion of the mundane egg the river Yamuna, in the form of smoke proceeding from the sacred triad of fires, in order to effect a junction with the (celestial) Ganga. His precepts, like guides, extricate the car-like triad of the worlds, when pursuing a wrong direction, it sinks into the quicksand of temporal affairs, bordering on the great stream of knowledge. Once on a time when Kamsika (Vishwámitra) paid a visit to the forest, and was endeavouring to carry away the cow Nandini who had delighted him by producing every thing necessary for his entertainment, the enraged Muni Vasishtha propitiated the fire by his offerings, and from it came forth Parimára, the true conqueror and slayer of foes. His family became an image of those of the sun and moon ; that, assuming humility and delighting in huge armour, faithful banners, and great renown ; [these glorying in having given birth to Rághava, Vishala-Varma, Satya Ketu, and Prithu.] That is invincible to the race of the immortal gods, is produced from fire, and fond of (polite) assemblies ; [these gave birth to the kings Aja, Ráma, Nalla, and Bharata.] In this race flourished the king Vairi Sinha, on whose royal birth, prosperity, prowess, imperial dignity, generosity, and courage, shed a lustre ; while the space before his throne was strewed with gems and rubies, dropped from the crowned heads of kings, who constantly attended his court to do him homage. While he was marching to conquer the remotest quarters of the globe, the regions of space, filled with umbrellas of peacock's feathers shining like emeralds, appeared as if choked up with the poisonous respirations proceeding from the exhausted Shesha,¹ trembling under the load of the earth, which was oppressed, under the feet of the marching train of his lusty elephants. His fiery and immortal spirit still survives in the subterranean regions in the person of the Vúdava fire ; on the earth, in that of the golden mountain ; in the heavens, in that of the starry firmament ; and in the horizon, in that of the gold-coloured arch. He ruled the earth, shaming Indra in heaven by his prosperity ; defeating the army of his foes in hostile lands by his prowess ; and surpassing, by his support of the earth, the lord of the serpents in the regions inhabited by those beings. From

¹ The great serpent that supports the earth.

him was born king Bhíma, who gave a new face to the earth ; whose wrath was cooled by tears flowing from the eyes of the widowed families of his enemies ; and the flame of whose valour is still visible in the starry firmament, sending down its smoke in the shape of the blue sky. The clusters of pearls, projected upwards from the foreheads of the elephants slain by him, though falling down in the shape of stars, have not yet reached the earth. Here is a great marvel ; to whom shall we relate it? Who will believe it? This king, though he supported the earth, earned extraordinary Lukshimi (wealth) and assisted the pure-minded, did not resemble Vikuntha (Vishnu) [as he was always irresistible.] His son Shri-Rája Rája (or Bhoja Rája), acted as the Pinak-armed god (Mahádeva) to the towers of his enemies ; and his fiery spirit, with a desire of protecting this globe, has overspread it in the form of the mountain Lokáloka.⁵ Even in his pleasant excursions, his armies covered the earth ; the dust, raised by his cavalry, obscured the horizon ; and the noise of the chains rattling on the march of his elephants, filled the concavity of the basin of the universe. His foes, when they were transformed into gods on being slain by his sword, and saw their headless trunks surrounded by armed men, became impatient to descend from their celestial chariots to combat new heroes, but the heavenly virgins encircled round their necks and held them back from returning to the earth. His younger son, the renowned Shri Bhidra Rája was endowed with a fiery spirit, akin to the blazing Vádava, and slew his enemies, brandishing his sword like a stream, tossed about by a strong gale of wind. The dust raised by the march of his cavalry, assumed the appearance of smoke, which, methinks, may be compared to that of the all-devouring fire, as if the same proceeded through excavations made into the earth by his elephants. His foes regarded him as endowed with the profundity of the ocean, as manifested at the annihilation of the world; the might of the world-destroying wind ; the stability of the lord of the tortoises, that supports the earth ; the spaciousness of the basin of the universe ; the brilliancy of the world-consuming fire, and the magnitude of the celestial vault. The throne of his son Shri Bhoja Déva, who, occupying the pinnacle of royal greatness, peculiarly adorned this world, was the only refuge to those, who, having lost their kingdoms through envy, were obliged to do him homage by lower-

⁵ The mountain supposed to mark the confines of the universe, or the space illuminated by the sun's rays.

ing their heads before his lotus-like feet, which were kissed by the lustre of the gems composing their crowns. (The next verse, which describes the train of the elephants of this king, is rather unintelligible). In the recitation of his praises in the assembly of the gods, Vikuntha (Vishnu) envies the four-mouthed Brahma ; this god is jealous of the five-mouthed Hará, who cannot bear to see himself surpassed by his six-mouthed son. This commander of the heavenly host again grieves, when he sees the superior eloquence of the chief of serpents, endowed with a thousand mouths. This king having attained the companionship of Indra, the state was involved in dissensions in consequence of being deprived of its sovereign ; and at such a period came into the world his son Udayáditya, who subverted the king Kanrá of the Karnátaka, that had harassed the earth ; imitating thereby the achievement of the great Boar. Though the groups of his foes, overcome by the dazzling sun of his glory, met a noble death from him on the field of battle, they derived full satisfaction, when they pierced ⁶ the orb of the day-star, mistaking him for their enemy in the heat of their revenge. The lord of the serpents having witnessed his victories on a day of battle, closed his eyes in a transport of joy ; by which he was deprived of the gratification of hearing his praises recited, and the hopeless creature severely reproached his huge body, which performs the function of hearing by the organ of sight. Shri Lakshama Déva, the son of that light of the three regions, imitated Prajapati, by devoting himself to the protection of his subjects, and, following in his conduct the ethics of Manu, obtained for himself an imperishable renown. His marching drum, methinks, meant to proclaim, " O lord of the tortoises and others ! give ye your combined support to the earth, oppressed under the load of this army. O hostile kings ! humiliate yourselves quickly, or you will be ruined. O immortals, whose eyes have no power of twinkling, close ye your eyes, or they will be covered with dust." As soon as he began his march, the kings of the east deserted their brothers and relations to save themselves ; those of the south were so terrified that they had no great hopes even of their lives ; the princes of the west abandoned all hope as deceitful ; while the chiefs of the north, in order to avert death, resolved to forsake enmity. When this prince

⁶ This alludes to the belief of the Hindu warriors, that all those who die in the field of battle, penetrate the orb of the sun and pass to the higher regions.

with a view to procure noble elephants, invaded the eastern quarter of the globe, presided over by Indra, fear took refuge in the capital of the king of Gauda, as did Indra in heaven with his celestial companions. Having conquered Tripuri in a campaign, resembling an ordinary excursion of pleasure on some occasion of joy, and having annihilated his enemies, he spent (some time) on the banks of the Godávári; covered with pleasure gardens and hills, the beauty of which was enhanced by gentle breezes blowing over rivulets. In that sacred stream, whose waves were constantly bent upon undermining the hills on its banks, the elephants of the king plunged themselves, as if to expiate the sins committed in battle. These animals being in their rut, demolished the lower sides of the Vindhya mountains, mistaking them for the elephants of the enemy; as torrents rolled down from them in the disguise of trunks, while their lofty summits resembled frontal globes, and clouds covering their heads threw down a sprinkling of rain, in the form of the temporal juice. While the king was crossing these mountains, the hoofs of his fleet horses operated as a hatchet upon the rocks hardened by the action of water; while a horde of innumerable wild elephants, incited by the odour of the temporal juice, oozing from his elephants, sprang up and rambled through the forests. The elephants of Anga and Kalinga retired from the field of battle, when they beheld those of Shri Lakshama Déva, claiming a connection with the guardians of the light cardinal points and the love of their mistresses, and boasting of a companionship with the regents of the clouds. The praise of being the first of Purushas (men,) and the asylum of Shri (the goddess of wealth,) as well as that of having supported the earth, and protected it from the Bala Vairi ⁷ (the enemies of Indra) is said by the learned men to be peculiarly due to Vishnu; but this is an exaggeration. The billows of the sea, which reach the sky and the clouds at the world's destruction, and are the companions of gloom, covering the universe at that period, yielded in height to the elephants belonging to the vassals of Lakshmidhara when they plunged themselves into the sea. (The next verse which follows the same idea is very obscure.) Those pearls which dropped from the golden girdles of the ladies of his vassals, while bathing in the sea, bestowed upon the waters of the Tamraparni, their peculiar quality (of

⁷ This word, used in reference to the king, signifies powerful enemies, and as all the epithets are thus applicable to him, the assertion that the praise is peculiarly due to Vishnu, is represented to be an exaggeration.

producing pearls,) which contributes to the support of the king of the Pandyas. This Lakshmídhara on being informed that he had reached the bridge, constructed with hills and huge rocks by Māruti and the other attendants of Ráma, when about to cross the sea, gave no heed to the statement, and formed a bridge of the elephants composing his retinue, as if to invade some other island in the ocean. No sooner had the shouts of the van of his three-divided army reached the point guarded by Yama (south), than the regent of the west, though holding a snare in his hand, became hopeless in regard to the protection of his post from the impending calamity. While the elephants of the king were quietly drinking up the waters of the ocean, each taking one draught, like Agasti, there is no telling where fire, the fishes, or the Mainak and other hills were. As to Hari, he must have been asleep. None of these knew what was taking place. The Mainak and other hills with large fishes, served as boats to the marching army, consisting of elephants adorned with pearls, which assumed the swinging motion of the Mandara.⁸ When this king, being jealous of the Yakshas, marched towards the region guarded by Kubera, the people of that quarter abandoned their dwellings [as well as their riches]. In his gardens, he reared like Punnaga, Areca and other trees, the plant of fame, which was watered by the sweat dropping from the crowned foreheads of kings, whom his victorious arm, eminently skilled in the use of the sword, had humbled. After having rooted out Turuskha Datá (a Turkish chief) by his victorious arm, he resided on the Vanku, whose banks were covered with saffron. He then caused his favourite parrot to be taught to recite his praises in a mellifluous voice, resembling that of the goddess Sarasvati. On the occasion of a solar eclipse, this victorious king, impressed with pious motives, duly bestowed (upon Brahmans?) two villages in the province of Vyápur, and these were exchanged for another, called Mokhala Pátala by his brother Nara Varma Deva, with a view to secure eternal good. This king Lakshmídhara, caused this temple to be constructed, with figures commemorating his numerous exploits. In the Vicrama year 1161.

O learned men, be of good cheer, and examine our sweet composition with an acute eye. I bow to that audience, which sheds tears of joy at the charms of poetry.

⁸ The mountain with which the ocean was churned by the gods.

Fac-simile of the Inscription.

द्वन्द्वनमोत्तारत्यौ। प्रसादो दार्यमावुर्य समाविसमताद
 यः। युवयोर्ये गुणाः सन्निवाये चोतेपिसन्नुनः॥ एकएव
 तुवनतयेपिसश्रीपतिर्नैवतुवोवत्ततयोअ - - १ द्वयपद
 श्रितोथमीभास्करपृचृतयश्चकासति॥ जातैवृत्तुश्च

एालंकेरवारदः। सरसाश्चप्रसीदन्तुसुक्तयः सूर
 अश्वनः॥ दुर्द्धरारिपुरनद्रुचीषाणाभूरिभूतिमविरा
 ऊराऊकृतसक्तिमः क्रिआद्वद्विवंशसदृशः शिवः शिवः॥
 जातामहा र्णागत्यान्नब्रह्माण्डशुक्तिसंपुटात्माहश
 तामुक्ताऊद्वत्याज्ञाजायानयः॥ विराग्यं च सरागतां च नृ
 शिरां मातां च माल्यानि च द्या प्राणकपच्चर्मणी च वस। न
 चाहीश्च हारादित। यद्भूतिं च विालपनं च भजातभी मंच
 तथं च तद्विद्याद्रूपमुमारमारमणायार्तुकिंच मुक्तिंच वः॥
 विश्वरथंसमः। अमीमाज्ञानृति एकतवात। स्वात्तिन्ननिर्धि
 ता। शषवि। श्वाविष्णुः पुनातु वः॥ अग्निग्रस्तगिरीद्रुगर्बग
 रिमानीलाश्मसानूल्लसत्कात्तिव्रातविडद्वितामूरतलः श्री
 मान्नागाम्रावुदः। यस्याद्यामतालाद्विलम्बिशिखरप्राज्ञा
 रपद्माकराप्रइवत्पद्मपरागचक्रळितरब्रह्माण्डखलुआया
 त॥।।। विरावृतमन्त्रमण्डलमिदं मास्तीश्वभूमण्डलं कृ

त्वावर्म तुला जमानय पुषा सस्यान्त अर्च्यस्य च । जानृ
 यावदवेतुमिच्छति विविः किं शुद्धमित्यतायारूढं तावद्गा
 दमत्ती शिखरिस्तस्मान्नात्ताम लुलं ॥ लात्तवित्तिद्य ऊल
 विप्रविभूमिचक्रमाकाशचक्रमपि अत्र दिगन्नानि । सं
 सारवर्त्मनि महाविषामनिषन्नताग्रान्ते कतटविश्वन
 धानृलनृमीः ॥ तस्मिन् च दविदांवरः सत्तगवानाकाशग
 द्वापसः पुरप्लावितकान्नाकामलताटतिष्ठद्विसिष्वा मुनिः
 यास्तवानलबूमवर्त्तियमुना प्रीत्येपितुव्रताणा गद्गास
 द्गमसिद्वा स मन्यब्रह्मा लुख लुप्रति ॥ विद्यामहास
 रिदुषान् विवर्त्तिप्यारसं सारोसेकतविषनूमसक्त ॥ मा
 तायश्च तिलाकरप्रमुत्यपसंप्रवृत्तमुत्तारयन्ति शताशाशुक्ल
 टशनुयाः ॥ आयातस्य कटावनकृतिपतराच्छिन्नतः कोशि
 कस्यातिव्यावितवमुजात्वजननादानदिनी नन्दिनी निर्ज्ज्वा
 कुपितन एत न हविषासं हर्षिताद्दृहिषावीरः शयीपरमार
 ञ्चत्यनुपमः सत्यान्निदानातवत् ॥ रायचर्चनविशालवम्भ
 नृत्सत्याकतुपृसकीर्त्तिपाषिवः । वर्द्धातममहिमांशुचन्द्र
 मः सततिप्रतिकृतिर्यदन्वयः ॥ वराजरामराजाताना
 लाद्गवः सत्तारतः । ग्राहञ्चन्द्रायारिवद्यजायतामस
 न्वयः ॥ ३ द्रष्ट ॥ वांशस्मिन्नेरिसिंहः न्द्रित्तिपतिरतवद्गू

रिचूति प्रतावश गळोदायी शौर्यप्रचयपरिचय प्राद्यासो
 राघसिद्धिः। नम्र कृपापालतालसूलदलितलुलत्कानूका
 दीराकाटितुद्यग्नाणि कृचक्रसुपुटितमणि मत्यादपीगप
 कलः॥ सवीशाविऊय प्रयाणसमाययास्यनूनीलप्रते
 म्नीयूरातपवाराणेः शुशुक्तिरनष्टावकाशादिशः। सयन्म
 त्तकरीन्द्रघन्चरणप्राग्नारदी लीठिराराग्नूद्रूतविपन्नाश
 षसविषश्वासावरुद्वाच॥ पातालवडुवामुखानलमिषा
 तृथीतालचस्फुरात्मोवल्लीचलकैतवादियतिचब्रह्मा
 खलुचूला - - अत्काश्चनचक्रवालंवल्यद्याजाच्चदिश
 उलयत्याद्यापित्तनुल्लतत्यविचलीततः प्रतापानलः॥
 स्वर्लाकपुवविद्विवक्कितिपुचद्यालनूगाहपुचस्वाराजं
 चरिपुव्रजंचनुरजिन्वागाविराजंचयः। ऐश्वर्येणचवि
 क्रामएचवरात्तारनृगत्वगचन्यकुर्त्तयपरतवश्चसमतिक्वा
 र्मय्यपृथ्वीमघात्॥ २०८॥ तस्मादेरिवृपावातवनवव्राचेवथदुः।
 रवाद्भवद्वाथाग्नफणशान्नाकापदहनः श्रीतीयाकात्तन्वृ
 पः॥ आवित्तवितनूतनस्मितिरंयब्रह्माखलुचूलाद्यस्याद्यापि
 विल्लक्तातवियदोकेवृमः प्रतापानलः॥ अनुगगनमुद
 म्बुः सुलमुक्ताच्चयायजदत्तिदलितकुष्टाकुम्भिनुम्लसू
 लत्यः। सततमपिपत्तन्नास्तद्यद्यावन्नपृथ्वीपृथुलतरलता

राद्याऊभा जातजा न्नामृत्या श्रुमदृष्टमशुतमिदंकास्मेसमा
 चकृन्नाह। काच्वतत्रतिपघातचतदृपिप्रसूयात। कोवुकात्सनुदु
 त्यापिवसुंवरामसदंशीलबुधपिल्लनृंगीचयः कुर्वकार्यमान
 कशः सुमनसामागान्नावेनुतां॥ १॥ तस्मादिरिवपुषि
 नीवद्विवप्रारवलुद्यबरप्रबंसेकपिनाकपाणिरऊनिशा
 ऊराजा नृपः। प्रायः प्रावृतवात्पिपालयिपयायत्यप्र
 तापाजात्प्रात्प्रकालाकमहामहीव्रवलयद्याजान्महीमणु
 लं॥ अस्मिन्सर्प्यतिलीलयापिललितेः सेन्यैसमुक्तांनि
 तवाहथहविसारिन्नलिपटलद्यालुपृटिग्नलुलेः। अयम्।
 नृकरीलूलद्वयपटाप्राइवालानाचूइवलाप्रइवच्छूइवलनादिनि
 र्प्ररचतब्रह्माणुमाष्टादरेः॥ यन्निस्त्वंशनिरस्त्रमस्तकत
 माल्लून्यघाउर्ल्लत्तववत्वस्वकवन्नुदतमासदृष्टाना
 टे॥ ब्रष्टितं। संहषांत्यतात्वाविमानशिखरादाग्निश्रकाग्रहन
 रीरानसररागिणाउपुविरसचूयसिद्वाङ्गनाः॥ २॥ त
 स्थासीदघषाविवः पृथुयराः ग्रीत्तिद्रा। जानुजः न्फुहु
 द्वाउवपावकस्फुटहः। सादयारोयानलः। यः संग्राम
 यु७गान्तवल्गितनुजापुर्वातदूराल्लसत्काल्लानयितमणुल्य
 ग्रपल्लमदूयद्भमतः॥ व्रजतिजयिनिमत्तामितजाप
 नजाऊतूरलतुरंगावागाद्भूततूरलराजिः। विकंटकरटि

तारत्तपृत्तृष्टृष्टरद्भुदुटितस्वरायन्तादन्तकालाग्निवूमः॥
 गाक्षीयप्लव्यार्णवस्यचवलंकल्पान्नवातक्षचासुगानंकमाठ
 शितु---रता---भा७स्यचा।तजः कालहुताशनस्य
 चमहीयस्यघाचक्रस्यचस्वीकृत्यवविनिर्मितयमवि
 दुःप्रत्याजिष्टधीनुजः॥७५२॥तत्सूनुत्तुवनेकतूषणमत्तू
 ङ्गपालचूडामणि॥च्छायाडम्बरतश्चितांद्रिकमलःक्षी
 ण्माडाटावाळप---यस्याद्यपमम---यन्निचरणोरान्ना
 सनाद्वासिनःसाद्भविविनमनिर्हुरनटात्काटीराकाटि
 त्विषः॥रटंसटटपाटवप्रकटप्रजरस्फूर्द्धितस्फुर-मः
 उमूरादुमरडिल्लिामाडामरा।स्फुटत्कपटनुयूरप्र
 पदसंपतत्संयमन्नमद्भुवन-त्तल-गरय-मनुच्चा
 कः॥वेकुलुःकमलासनायचतुरास्यायस्वयंचुःपुनःप
 च्चास्यायहरायशम्भुरपिषड्न्त्यायपुत्रायचा।सनानीरपि
 दन्दशूकपतायजसंसहस्यमनाजाघापिस्पृहयत्यम
 र्त्यसमिवाय-र्त्तिनुत्कीर्त्तयन्॥७५६॥तस्मिन्चासव
 वउतानुपगतिरांचचकुल्याकुलिमण्णस्वामिभितस्यव
 भुवुदयादित्यात्तवद्भूपतिः।।यानादृत्यमहाल्लातापग
 गिलत्कल्लीटकल्लप्रत्तूम् बीपालकदर्वितांतुवभिमांश्री
 मद्दराहायितं॥२॥स्मादुग्रतरप्रताप---मणिनूटद्गु

ईशतासादारपात्करविभ्रमादभिमु।खः प्रापञ्चिअेः पञ्चता ।
 मान्यासायभिति प्रतीतिचिततामर्षप्रकार्षण त्भित्वात्ता
 स्करम७ लंरिपुत्तयः प्रापुः परांनिर्वृतिं॥ एकस्यांत्तमिते
 विला क्त्वाविज्जयंय ॥ स्यापरस्यांस्त्रुव --- वक्रतांसम
 र्घयतिदृग्निहूसतसद्वायाकिंवानृनिमीलित कृण
 तया।श्रोतेः सुखैर्वञ्चितग्रजः कर्लमकर्लमयहिपतिः
 सीयंवपुग्निश्चति॥०८॥ पुत्रस्तस्यज गत्वायेकतराणः
 सस्यध्वृजापालनद्यापारप्रावहाः प्रजापतिरिप - लकृमा
 दावात्तवत्। नीत्या अनमनुस्तथनुविदावनासोनावेव
 स्वतःसर्वत्रापिसदाश्रवर्द्धतय ष क्रीर्तिन्नाववस्वतः ॥
 सत्तुयत्रियतांगुरर्चलचराङ्गः कूर्मराजादयः सद्या
 नप्यतन्नीदुतंनमर्तताप्रत्यार्घिपृथीभुजः। वन्दम्मकु
 पिवीयतागनिमिषाः पांसुः पुरापूरयात्यवंद्याहरतिप्र
 याणपदाहायस्यस्वनचूडाना॥ यस्मिन्स --- वानृवापिहि
 बुलेः पूर्वः परित्यक्षलकः प्राणस्यकषापिकानरतया
 ना।पनृयासदन्दिणेः। प्राशाकृत्स्निरसत्कालतिविकाल
 र्निधीयातपश्चिमेर्मर्तुं।कवलमुत्तरेनृपतिति।ईसथ
 त्याद्यास्यात॥ प्रयातिअस्मिन्प्रघमंदिशं हारङ्गिहीर्षया
 नन्यसमानदन्निनं॥ यर्घाविशङ्कोउपातः प्ररदरसूः

षाशदसहसापुरंदरः॥नुत्साहात्रतिसन्निमित्तकुनिताऊस
 प्रयाण - मणा क्रम्यतिपुरीराणेकर तिकाच्चिवस्यविद्वेषिगः
 ॥यनावास्यतविच्चा निर्जर मनुत्सं चार चानूलसल्ला लायानलता
 विनानवसातार हापकत्त्व - ल॥जाता नऊन्यग्रयमार्कना
 निवीऊनियत्कुञ्जुर मऊनानि जटाचाला च्चा टनतत्पराया
 रिगप्रवाहाम्भिपरंपरायाः॥यथाालाल कनालनि र्जरकराः
 कुम्भाय मानान्म मकूटान्ताः कटकन्नितागवि गलप्रयाय
 मानामूतः॥प्रायास्तपिवासविसिन्नुरवियायद्वाहिनीवारणे
 नुन्मीलन्मदामदुरे च्चिन्तिदिरविन्यस्यपादाचलाः॥स्फार
 त्कलाारवारमूगितगुरुतटीकूटकुम्भकटकूपाय प्रश्वत्पुरा
 गृत्वरितहरिटगूटकचक्रम्यगणाः॥यनाल द्यनासना
 करिकरताटाद्यमटानागुठा च्चाविद्वागल्थचन्यद्विपकल
 पटलद्यामलाविन्टापादाः॥अदिक्खिन्नुरवन्दवःक्यमः
 ल्लात्मादिगवात्तवःक्रीडाक्रउनुदुमूकानिऊलगुक्काब्रह्म
 चयहिपः॥यात्मनानृपगच्चसिपुरमनुन्नेतीविहस्तीक
 नेस्तेरथककलिङ्गकुञ्जुरकुलियुद्वायवाद्वाकुलिः॥द
 वास्तापुंरुषात्तमःसत्तगवानाशिश्चिाययःशिखाय्य
 नदंवलिविरितःदिशुनादिशुंसमाश्वासितं॥यनाकारिव
 मुच्चारतिटवतःसानन्दमृदाकृतायस्यप्राच्यपप्यानिवि

बुचऊने घीऊस्तुनिः प्रसुता॥ अय कल्यानलवूममउललित्ता
 ठकाटनीविद्विषः संवर्ती लुसितानकारसु हृदस्यरु
 द्वियद्वान्ववाः वित्ना - - - - लादघशयनुदपावगाहा
 यतेर्यत्सामन्वमतद्रुजरवरितास्तथश्रावनुर्मयः॥
 कुन्तसमुवासादार्ययतापावीमुपाश्रुति॥ मीलापेनीव
 केर्त्तयविष्वादाचववादाव॥ लील्लाम्नः प्रवानयरीयपृववा
 सामन्नरुसीगन्निनीश्राणि - - - - - एरसनीमु
 क्ताः पतन्निस्मयाः तात्तिः संप्रविपप्राधनुपृषिबीअत्तां
 म्रपल्लीपयः पथ्याद्यापितादवपाद्यनृपास - वातवेजाअ
 त॥ स्वाभिर्नप्रसासत्तरत्नवातासमस्वायामारुतिप्रा॥
 यापाहृताशिलगृह्णरवितादृदिपूति - - य - - -
 इत्यनुदेहलमकधितंतजेरवडुअययः सनाहास्ति
 कासतुनेरविदावटीपान्तरापक्रमं॥ न्वावत्तकृपसय
 घाअमाशयस्यअिघसर्षितास - - इ॥ म्रतूत्स्वकीयांक
 कुत्तंअपाआद्गापाअितुं पाशालूदयपशः॥ - गनाल
 प्रमुखावसन्निनुहवित्कालाग्निरात्तकचित्सन्नि कापि
 तिभिं गिलप्रचृतयः कुत्सपिशातहरिः। पताइत्तिनाका
 पियत्तुलके तस्याथप्राधंयः पीत्वाअकरितिः कृतेक
 स्तेस्तेरगह्यायितं॥ अयेः संतूयतिमिडिलप्रचृतितिः

संसर्षिणस्तन्नातापा ता क बस व न्तु तांशिखरिणा मेना
 कमुस्याअपि। ताम्य न्मन्द रड म्बराणिदिवारतेरथाश
 षमुवि व्यात्सनागदराऊ - - - रकराप् - - - ना
 - इवलेः॥ प्रक्षतिति। कृारिवराठराऊमन्यंत्वदाशांप्र
 तियस्ययानुः। द्विकपितीत्फक्षितवित्तपाशेत्तूपेःप्र
 तीपेर्वित्तत्वेर्वत्तव॥ आरामाः सयरायरावपितदापु
 न्नागपूगादिमद्गुल्मीन्तर्वनादवतायिवजयश्रीमय
 शःपादपाः। यस्यासन्नऊदण्डच७मलसाह्लासिल
 म्नीकृताकृणीपालऊरुपालग७लगलकीलालकु
 ल्याकुलाः॥ एवालात्रवाततुरुपुदत्तविलसद्वाहाव
 लीवल्लनेकाम्यकुक्रुमाकसराविकमृदोवंकूप
 क७खाल। यनावास्यसरस्वतीसविधतासाविन्हावास्था
 टवशादूनुत्कदषंतिपमुरमतः कीराविपाद्याघत्
 ॥। तनद्यापुरम७लेसुनृतिनायास्मेग्राहमृग्रह
 यद्वमद्वयमग्रायणविधिनाविश्राणितंश्रद्धयात
 द्रात्यनरवर्मादवनृपतिःपथ्यसरीवर्त्ततद्दामंमा
 खलपाटकार्यमंदिशादशतयास्यचूया॥ ३९॥। त
 नस्वयं कृतानकप्रशस्तिस्तुतिचिरितं। श्रीमल्लन्त्री
 वारणंतद्वागारमकार्यत॥ सं ११६१॥

ॐ हाहावुमःसावुसमुत्सहवैकुशाग्रकल्याचवि
 यं विववोमद्यसूतावेचसमाश्रयवसुखचनःस्त
 क्सुमगुपावै ॥ वन्दनीयावुत्तोस्तन्मायातारो
 तोविपश्चितोयावशुमुश्चतःसाद्रमानन्तालस्य
 निर्वैरो ॥ ॥ ॐ ठ ॥

Transcript of the Inscription in Balbodh.

दधन्भो तारत्यै ॥ प्रसादौदार्यमाधुर्व्यसमाधिसमतादयः ॥ युवयोयै गुणाः संति
वाग्देव्यैतेपिसंतुनः ॥ एकएवभुवनत्रयेपिसश्रीपतिर्भवतुबोविभूतये । य (स्यचा)
व्ययपदश्रितोप्यमीभास्करप्रभृतयश्चकासति ॥ जातिवृत्त (त्तै) श्व (सहितागु)
णा लंकारवारदः (वारिदाः) । सरसाश्वप्रसीदंतु सूक्तयः सूरयश्वनः ॥ दुर्धरारिपुरभ-
द्रभीषणो भूरिभूतिम स) विशे (षभूषणः (रा) जराजकृतसक्तियः क्रियाद्वन्दि-
वंशसदृशशिवःशिवं ॥ जातामहाण्णवोत्पन्नेब्रह्माडिशुक्तिसंपुटे । महेश (संम)
तामुक्ताजयंत्यंभोजयोनयः ॥ वैराग्यंचसरागतांचनृशिरोमालांचमान्यानिचव्या-
घानेकपचर्मणीचवसनेचार्हाश्वहारादिच । यद्भूतिचविलेपनंचभजतेभीमंचभ-
व्यंचतद्दिश्याद्रूपमुमारमारमणयोर्भुक्तिचमुक्तिचवः । वैश्वरथ्यासमः (क) म्म (र्म)
मीमाज्ञानृ (मांसाभृ) तिकैतिवात् । स्वाभिन्ननिर्मिताशेषविश्वोविष्णुशुनातुवः ॥ अमिः
(म) ग्रस्तगिरीन्द्रगर्वगरिमानोलाश्मसानूलसत्कान्तिव्रातविडाम्बिताम्बरतलः श्रीमा-
न्नेन्द्रोब्बुदः । यस्यव्योमतलोद्विलङ्घिशिखरप्राग्भारपद्माकरप्रेङ्खत्वद्मपरा-
गचक्रळि (मि) तरब्रह्माण्डखण्डायते ॥ देवैरावृतमभ्रमण्डलमिदम्मर्त्यैश्वभूम-
ण्डलंकृत्वाव (ध) र्मतुलायमानवपुषोयस्यान्तयोर्न्यस्यच ॥ जानेयावदवैतमिच्छ-
तिविधिः किंशुद्धमित्येतयोरूर्ध्वतावदगादमःर्याशेखरिस्तस्मान्नभोमण्डलं ॥ लेभेवि-
भिद्यजलविप्रधिभूमिचक्रमाकाशचक्रमापयेनदिगन्तनेमि । संसारवर्त्मनिमहाविष-
मेनिषन्न (ण्ण) भाग्रान्नतैकतटाविश्वरथांत (ग) लक्ष्मीः ॥ तस्मिन्वेदविदांवरःसभग-
वानाकाशगङ्गापयःपूरप्लावितकान्तकोमलतटैतिष्ठद्वसिष्ठोमुनिः । यस्तेवा (स्तेता)
नलधूमवर्तियमुनांप्रित्यैपितुः (सु) व्रतोगङ्गासङ्गमसिद्धयेसमनयद्ब्रह्माण्ड-
खण्डंप्रति ॥ विद्यामहासरिद्रुपान्तविवर्तिघोरसंसारसैकतविषण्ण (ण्ण)मशक्तमेते ।
यस्यत्रिलोकरथमुत्थसंप्रवृत्तमुत्तारयंतिशतशोप्युपदेशतायाः आयातस्यकदाचन-
क्षितिपतेराछिन्दतः कौशिकस्यातिथ्योचितवस्तुजातजननादानन्दिर्नानन्दिर्नो । निज्जै
ताकुपितेनतेनहविषासंहर्षिताद्वर्हिषोवीरःश्रीपरमारइत्यनुपमः सत्याभिधानोभ-

वत् ॥ राषवाहृतविशालवर्मभूत्सत्येकेतुपृथुकीर्तिपार्थिवः । वर्धतेयमहिमांशुचंद्रमः
संततिप्रतिकृतिर्यदन्वयः ॥ वराज्रामराजितेनलोद्भवःसभारतः । ग्रहेन्द्रचन्द्र-
योरिवव्यजायतायमन्वयः ॥ ठ ॥ वंशोस्मिन्नैरिसिंहः क्षितिपतिरभवद्भूरिभूतिप्र-
भावःसाश्राज्यौदार्यशौर्यप्रचयपरिचयमाज्यसौराज्यासिद्धिः । नम्बक्षमापालभालस्थ-
लदलितुललक्तांतकोटारकोटिचूटयन्माणिक्यचक्रस्थपुटितमणितयादपीठोपकंठः ।
सर्वाशाविजयप्रयाणसमयेयस्येन्द्रनीलप्रभैर्मायूरातपवारणैः शुशुभिरेनष्टावकाशा-
दिशः । सर्पन्मत्तकरीन्द्रचक्रचरणप्रग्भारदीर्णस्थिरारम्भोद्भूतविपन्नशेषसविष-
श्वासावरुद्धा इव ॥ पातालेवडवामुखानलमिषातपृथ्वीतलेचस्फुरत्सौवर्णाचलकैतवा-
दियतिचक्रद्वण्डखण्डच्छलात् । चञ्चत्काञ्चनचक्रवालवलयव्याजाच्चदिङ्म-
ण्डलेयस्याद्यापिसमुल्लसत्यिवचलीभूतःप्रतापानलः ॥ स्वर्लोकेषुचविद्विबक्षिति-
षुचव्यालेन्द्रगेहेषुचक्षाराञ्चरिपुत्रञ्चपुरजिन्नागाधिराञ्चयः । ऐश्वर्येणचविक्रमे-
णचधराभारक्षमन्वेनचन्कुर्वेश्वपराभवंश्वसमतिक्रामंश्वपृथ्वीमधात् ॥ ~~॥~~ तस्मा-
द्वैरिनुपावभेदनवधुवध्वदुःखोद्भवद्बाष्पांभःकणशांतकोपदहनः श्रीभीमकोभू-
न्नपः । आविर्भावितनूतनस्थितिरयं ब्रह्माण्डखण्डच्छलाद्यस्याद्यापिविलोक्यतेवियद-
धोधूमःप्रतापानलः ॥ अनुगगनमुदस्थः (स्ताः) स्थूलमुक्तेच्छूयायेयदसिदलितनुष्टा
(दूष्या)कुम्भिकुम्भस्थलेभ्यः । सततमपिपतन्तस्तेद्ययावन्नपृथ्वीपृथुलतरलताराव्या-
जभाजोभजन्ते ॥ अत्याश्वर्यमदृष्टमश्रुतमिदं कस्मिन्समाचक्षमहेकोन्वेतत्प्रतिपद्य-
तेचतदपिप्रस्तूयतेकौतुकात् । उद्धृत्यापिवसुंधरामसदृशीलब्ध्यापिलक्ष्मीचयः कुर्व-
न्कार्यमनेकशः सुमनसापागान्नवैकुण्ठता ॥ ~~॥~~ तस्माद्वैरिवर्चनीवदधिपमार-
न्धुलुप्यसुरप्रध्वंसैकपिनारूपाणिरजनिश्रीरा (भो) जराजोनृगः । प्रायःप्रावृत्तवा-
न्निपालीषषयायस्यप्रतापानलोलोक्कालोकमहामहीध्रवल्यव्याजान्महीमण्डलं ॥
यस्मिन्सर्पीतलीलयापिललितैः सैन्यैः समुद्भ्रामितं वाहव्यूहविसारिधूलिपटल-
व्यालुमदिङ्मण्डलैः । अत्युद्भ्रान्तकरीन्द्रवृन्दपघटाभेद्दखालनेचुंखलमेद्दख-
च्छृंखलनादिनिर्भरभृतब्रह्माण्डभाण्डोदरैः । यन्निर्द्विशानिरस्तमस्तकृतयालब्धा-

न्यथादुर्लभदेवत्वंस्वकबन्धमुद्धतमधोदृष्ट्वाभट्टैवेष्टितं ॥ संदर्षांयततोविमानशि-
 खरादाश्लिष्यकंठेहठादीरान्वेषणरागिणोरुधरेसंभूयसिद्धाङ्गनाः ॥ ~~×~~ ॥ तस्या-
 सीदथपार्थिवः पृथुयशाः श्रीभद्रराजोनुजः स्फूर्ज्जद्वाडवपावकस्फुटमहः सोदर्य्य
 शौर्यान्लः । यःसंग्रामयुगान्तवल्गितभुजादुर्वातदूरोलसत्कलोलायितमंडलाग्र-
 पटलेनामर्दयद्भूभृतः ॥ ब्रजतिजयिनियत्रामित्रजातेनजज्ञेतरलतुरगवेगोद्भूतभू-
 रेणुराजिः ॥ विकटकरटिभारभ्रष्टभूपृष्ठरन्धादुदितइवसमन्तादन्तकालामिधूमः ॥
 गाभीर्यमलयाण्णवस्यचषलं कल्यातवातस्यचस्थेमानंकमठेशितुःप्रचुरताब्रह्माण्ड-
 भाण्डस्यच ॥ तेजकालहुताशनस्यचमहीयस्त्र्यंशुचक्रस्यच स्त्रीकृत्येवविनिर्मि-
 त्तयमविदुःप्रत्याजिपृथ्वीभुजः ॥ ~~×~~ ॥ तत्सूनुर्भुवनैकभूषणमभूद्भूपालचूडामणि-
 च्छायाडम्बरचुम्बिताधिक्रमलःश्रीभोजदेवोनुपः । यस्याध्यासनमाश्रयन्तिचरणौ
 राग्यासनोद्वातिनःस्पर्द्धाबन्धविनम्रनिर्झरनटकोटीरकोटिविषः । रटत्पटइपाटत्रप्र-
 कटकुत्ररस्फूर्जितस्फुरद्भ्रमरडम्बरोडुमरुडिण्डिमोड्डामरा । स्फुटकरटकुत्रज-
 रप्रपदसंपतत्संयमभ्रमद्भुवनभूतलप्रगटयमरुच्चक्रैः ॥ वैकुण्ठकमलासनायचतुरा-
 स्यायस्वयंभूयुनःपञ्चास्यायहरायशम्भुरपिषड्वक्त्रायपुत्रायच । सेनानीरपिदन्द-
 शूकरतयेब्रह्मसहस्राननायाद्यापिसृहयत्यमर्त्यसमितौयत्कीर्त्तिमुक्तीर्त्तयन् ॥ ~~×~~ ॥
 तस्मिन्वासवबन्धुतामुपगोराज्येचकल्याकुलेभमस्वाभिनितस्यसूनुरुदयादित्योभवद्
 भूपतिः । यनोद्धृत्यमहाण्णवोपमगिलक्कर्णाटकर्णप्रभुमुर्वीपालकदर्थिताभुवमि-
 मांश्रीमद्वराहायितं ॥ यस्माद्दुग्रतरप्रतापनिचयादारूढदुर्दर्शनादूरेभास्करविक्ष-
 मादभिमुखैः प्रापंचि यैः पञ्चता । मन्येसोयमितिप्रतीतिविततामर्षप्रकर्षेणतेभित्वा
 भास्करमण्डलंरिपुचयाः प्रापुः परानिर्वृतिं ॥ एकस्यांभ्र(स) मितौविलोक्यविजयं
 यस्यापरस्यांस्तुव वक्र (कृ) तांसमर्थयतिदृग्विद्ग्रीहासतस्यद्वये । किंचानन्दनि-
 मीलितेक्षणतयाश्रीतैस्तुलैर्वैचितश्वक्षुःकर्णमकर्णमप्यहिपतिःस्त्रीयं वपुर्नैदति ॥
~~×~~ ॥ पुत्रस्तस्यजगतत्रयैकरणेःसम्यक्प्रजापालनव्यापारप्रवहाःप्रजापतिरिवश्री-
 लक्ष्मदेवोभवत् । नीत्यायेनमनुस्तथानुविदधेनासीनवैवस्वतःसर्वत्रापिसदाप्यवर्द्ध-

तयथाकीर्तिर्नैवैवस्वतः ॥ संभूयधियतगुरोर्बलभराद्भोःकूर्मराजादयः सद्योनश्यत
विद्रुतंनमतरेप्रत्यर्थिपृथ्वीभुजः । चक्षुर्मक्षुपिधीयतामनिमिषाः पांसुःपुरापुरयत्ये-
वंव्याहरतिप्रयागपटहोयस्यस्वनछद्मना ॥ यस्मिन्सर्पतिबाधवोपिविधुरैः पूर्वैःपरि-
त्यज्यतेकः (का) प्राणस्यकथापिकातरतयानापेक्ष्यसे (ते) दक्षिणैः । भाशावलिरस-
त्फलेतिविकैलिनश्चैयतेपाश्चैर्मर्तुकेवलमुत्तरैर्नृपतिभिर्द्वेषाप्ययोध्यास्यते ॥
प्रयातियस्मिन्प्रथमंदिशंहरेर्जिहीर्षयानन्यसमानदान्तिना ॥ यथाविश्रब्धौडपतेः
पुरंदरस्तथासुरैः स्वः सहसापुरंदरः ॥ उत्साहोन्नतिसन्निमित्तजनिताबलप्रयाण-
क्रमेणाक्रम्यत्रिपुरारिगैकरतिकान्विध्वस्यविद्वेषिणः ॥ येनावास्यतविश्वनिर्झररुत्सं-
चारचारूलसह्योलोद्यानलतावितानवसतौगोदोपकण्ठकिल ॥ जातानिजन्मभव-
घमाज्जनादिबीजानियक्तुंजरमज्जनानि । तटाचलच्छाटनत्वरारयारिगप्रवाहोर्मिपरं-
परायाः ॥ येव्यालोलकरालनिर्झरकराःकुंभायमानोन्नमत्कूटाताः कटकातभागविग-
लदानायमानबुदाः । प्रायस्तेपिविरोधिसिन्धुरधियायद्वाहिनीवारणैरुल्मीलन्मदमे-
दुरैर्विभिदिरेर्विध्यस्यपादाचलाः ॥ स्फारत्कलारवारिस्थगितगुरुतटीकूटकुट्टाकटङ्क-
कप्रायमैखत्पुराप्रत्वरितहरिचमूचक्रचन्क्रम्यमाणाःयेनालंघ्यंतसेनाकरिकरटतटो-
द्दामदानांबुगन्धव्याविद्धागण्यवन्यद्दिपकुलपटलव्याकुलाविन्ध्यपादाः॥ येदिकसिंधु-
रबंधवक्षयमरुल्लोलादिगिभ्याभृतक्रीडाक्रोडकुटुम्बकानिजलमुकुसब्रह्मचर्याभुषः ।
यत्सेनानृपगंधसिंधुरमरुन्मैत्रीविहस्तीकृतैस्तैरप्यंगकालिगकुंजरकुलैर्युद्धायबर्धोज-
लिः ॥ देवास्तो(वोसौ) पुरुषोत्तमःसभगवानाशिश्चियेयःश्रियायेनेदंबलिवैरितःस-
मवनाद्विश्वंसमाश्वासितं । येनाधारिवसुंधरेतिदव (र) तः सानंदमंदाकृतायस्य
प्राप्यपयोनिधौबुधजनैर्व्याजस्तुतिः प्रस्तुता । येकल्पानलधूममंडललिखत्कादंबिनी
विद्वेषः संवतौल्लासितान्धकारसुहृदस्तुद्यदियद्बाधवाः ॥ विश्राजच्छकुलादयश्च-
मनुदेपाथोवगाहोद्यतैर्यत्सामन्तमतंगजैरधरितास्तेप्यम्बुधेरूर्मयः॥ कुंभसंभवसोदर्यै
यत्रापाधिमुपाश्रिते । शीलयाैर्नीचकेस्तैयोर्विध्यबाधवाडवे ॥ लीलांभः प्रवणे
यदीयपृतनासामंतसीमंतिनीश्रोणिश्रेणिगलत्सुवर्णरसनामुक्ताः पतंतिस्मयाः ।

ताभिः संप्रतिपप्रथेनपृथिवीयत्ताम्रपर्णीपयः पश्याद्यापितदेवपाण्ड्यनृपतेर्जीवातवेजा-
यते ॥ स्वामिन्नेषससेतुरत्रभवतो रामस्ययोमारुतिप्रायोपाहृतशैलगन्धरचितोप्य-
ब्धिप्लुतेरिच्छया ॥ येनागत्यकुतूहलेनकथितंतज्जैरवज्ञाययः सेनाहास्तिकसेतुनैव
विदधेदीपांतरोपक्रमम् ॥ त्रिधाविभक्तेनयथायमाशांयस्याग्रिमसेर्पतिसैन्यशब्दे । अ-
भूत्स्वकीयांककुम्भंयपायाद्रोपायितुंपाशभृदप्यपाशः ॥ मैनाकप्रमुखावसंतिकतिचित्
कालामिरास्तेकाचित्सन्तिकापितिर्मिगिलप्रभृतयः कुत्रापिशोतेहरिः । यत्तद्देत्तिनको-
पियत्रजलघीतस्याप्यशब्दंपयःपीत्वायत्करिभिःकृतैकचुलुकैस्तैस्तरगस्यायितम् ॥
यैस्संभूयतिर्मिगिलप्रभृतिभिःसंसापिणस्तन्वतेपोताधानसबन्धुतांशिखारिणोमैनाकमु-
ख्याअपि । भ्राम्यन्मन्दरडम्बराणिदधिरेतैरप्यशोषेबुधैयंस्तेनागजराजसारकरमै-
मुक्तावितानोज्ज्वलैः ॥ यक्षातितिक्षोरिवराजराजमन्यांतदाशाप्रतियस्ययातुः ।
द्विधापिभीत्युज्झितवित्तपाशिभूपैःप्रतीपिर्विभवैर्बभूवे ॥ आरामासधराधराअपितदा
पुत्रागपूगादिमद्गुल्मांतर्वनदेवताइवजयश्रीमद्यशःपादपाः ॥ यस्यासन्भुजदंडच-
ण्डिमलसहोलासिलद्वीभृतःक्षोणीपालजभालमंडलगलक्कीलालकुल्याकुलाः । खे-
लोत्खाततुरुष्कदत्तविलसद्बाहावलीवेलेनेक्काम्यत्कुमुमकेसरधिकमृदोवंकूपकण्ठ-
स्थले । येनावास्यसरस्वतीक्षविधतासाहित्यवाक्पाटवस्वाटूनुक्तपत्रिपंजरगतःकी-
राधिपोध्याप्यते ॥ तेनव्यापुरमण्डलेसुकृतिनायस्मैग्रहेन्द्रग्रहेयद्ग्रामद्वयमग्रियेणवि-
धिनाविश्राणितंश्रद्धया । तद्भ्रातानरवर्मदेवनृपतिः पश्यन्परीवर्त्यतद्ग्रामंमोखल-
पाटलाख्यमदिशदेशेभयेस्येछया ॥ ~~॥~~ ॥ तेनस्वयंकृतानेकप्रशस्तिस्तुतिचित्रितं
श्रीमल्लदमीधरेणैतद्देवागारमकार्यत ॥ सं ११६१

हंहोबुधाः साधुसमुत्सहध्वंकुशाग्रकल्पाचधियंविदध्वं । मध्यस्थभावंचसमाश्रय-
ध्वंसुखंचनभुक्तिसुधांगणध्वं ॥ वंदनीयावुभौस्तोमेश्रोतारौतौविपश्चितौ ॥ याव-
श्रुमुंचतः सांद्रमानंदालस्यनिर्भरौ ॥

ART. II.—*Result of a Comparison of the Observations of nine different Barometers, read every half hour, for 24 successive hours.* By GEO. BUIST, LL.D., in charge of Bombay Observatory.

The present paper was laid before the Society in an enlarged form, at the ordinary monthly meeting on the 9th July. It was originally meant to illustrate a Chart $3\frac{1}{2}$ by $2\frac{1}{2}$ feet in size, on which the Barometric curves deduced from the figure tables now alone given were projected. The portion of the paper specially alluding to these has been omitted as unintelligible without the chart, whose magnitude rendered it inadmissible, and which was not capable of being reduced to such dimensions as to permit of its being included in this journal.

An error in the standard Barometer which was then alluded to, having been detected by means of the combined observations, has now been corrected by the addition of 00·125 to the reading of the instrument. This very nearly corresponds with the interval which exists on the diagram, as well as in the readings noted on the figure tables printed along with it, betwixt the readings of the standard and the mean of all the readings of the other instruments. The standard Barometer is a large one by Newman (No. 58), the same as all the magnetic observatories are supplied with, with a tube of 530 diameter, requiring a correction of + 0·003 for capillarity. The scale is moveable, so that the correction for the rise of the mercury in the cistern is effected by bringing in contact with its surface the point of the rod to which the scale is attached. The barometer marked No. 8, is by Gilbert, and is the same in point of construction as those formerly supplied from the Government stores—the scale being of brass, the frame of wood. The Royal Society have stated, that no exact correction can be given for expansion in instruments of this form, which “no scientific observer would ever willingly use.”* No account has been taken of it in the following remarks. The Barometers from No. 1 to No. 6 are uniform in point of construction. They were manufactured and

* Report of the Committee on Physics and Meteorology, &c. 1840. Though this instrument has been noted in the table, no account has been taken of it in the subsequent speculations.

brought to Bombay in 1843 ; the experiment under review having been made just after their arrival. No. 7 is by the same maker, and is of the same form nearly : it was brought to India early in 1849, and has since been occasionally employed in the Deccan as a mountain Barometer.

These instruments are all very beautiful in point of workmanship. They are fitted up with a brass frame, in which the attached Thermometer is sunk. The cisterns are of cast iron, with a glass plunger which can be screwed up so as to move the mercury to the top of the tube. The neutral point is marked on a short glass tube, enclosed in a cast iron sheath, ascending from the top of the cistern. The mercury is on each observation screwed up to this, which at once gives the correction for rise in the cistern and for capillarity. No correction for temperature has been made. The instruments were in this respect subject to nearly the same fluctuations of heat ; the entire difference betwixt the attached Thermometers in no case amounting to two degrees Fahrenheit ; this is equivalent to a difference in the Barometer of 0·005. If this be added, some of the minor discrepancies will altogether disappear.

The instruments were numbered arbitrarily, for the sake of distinction only, just before commencing observations. The mean of 48 readings of No. 4, is 29·699 ; that of No. 7, 29·743 ; the difference between them is ·044. These are considerably the lowest and highest. Nos. 5 and 6 are perfectly coincident, and Nos. 1, 2, and 3, only differ ·004 and ·006 from each other respectively. The greatest of these very little exceeds the differences given betwixt some of the mountain Barometers provided for the Antarctic Expedition by the Royal Society's Standard ; the least of them are less than the disagreements betwixt the crown glass and flint glass Barometers of Somerset House.

The Sympiesometer which is noted in the table, is not here taken account of. It is a good instrument, by Adie, and has been in my possession since June 1840.

The following tables give the readings uncorrected. The standard is 36 feet above the mean level of the Sea ; the other instruments 33 feet ; there being no means of placing them exactly beside each other.

Observed Readings of Eight Barometers (half-hourly,) from 4 a.m. 20th June to 3½ p.m.

| Bombay Mean Time. | | Standard. | | No. 1. | | No. 2. | | No. 3. | | No. 4. | | No. 5. | | No. 6. | | No. 7. | | No. 8. | | Symplecomr. | |
|-------------------|----|-----------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|-------------|-------|
| | | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Symp. | The. |
| A. | M. | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | | degs. |
| 4 | 0 | 29.705 | 83.5 | 29.694 | 82.0 | 29.698 | 81.6 | 29.698 | 81.6 | 29.650 | 81.7 | 29.700 | 81.7 | 29.700 | 81.6 | 29.730 | 81.8 | 29.684 | 81.5 | 29.24 | 82.5 |
| 4 | 30 | .715 | 83.2 | .712 | 81.7 | .720 | 81.6 | .714 | 81.6 | .656 | 81.5 | .712 | 81.5 | .816 | 81.5 | .723 | 81.6 | .690 | 81.3 | .28 | 82.3 |
| 5 | 0 | .715 | 83.1 | .720 | 81.5 | .720 | 81.5 | .720 | 81.5 | .690 | 81.5 | .720 | 81.6 | .716 | 81.5 | .710 | 81.5 | .712 | 81.1 | .26 | 82.0 |
| 5 | 30 | .725 | 82.8 | .742 | 81.2 | .760 | 81.0 | .760 | 81.2 | .736 | 81.2 | .760 | 81.2 | .760 | 81.2 | .736 | 81.2 | .720 | 81.0 | .28 | 81.8 |
| 6 | 0 | .730 | 82.4 | .748 | 81.1 | .762 | 80.0 | .768 | 81.1 | .746 | 81.1 | .768 | 81.0 | .772 | 81.0 | .750 | 81.0 | .732 | 81.0 | .35 | 81.7 |
| 6 | 30 | .751 | 82.3 | .752 | 81.2 | .768 | 81.2 | .774 | 81.0 | .750 | 81.0 | .774 | 81.2 | .760 | 81.2 | .782 | 81.2 | .742 | 81.0 | .30 | 81.9 |
| 7 | 0 | .755 | 82.2 | .762 | 81.6 | .770 | 81.9 | .776 | 81.8 | .754 | 81.9 | .776 | 81.9 | .784 | 82.0 | .784 | 82.0 | .746 | 81.8 | .31 | 82.0 |
| 7 | 30 | .757 | 82.7 | .769 | 82.5 | .778 | 82.5 | .780 | 82.5 | .760 | 82.4 | .780 | 82.4 | .790 | 82.5 | .790 | 82.2 | .750 | 82.1 | .30 | 82.6 |
| 8 | 0 | .759 | 82.2 | .774 | 82.6 | .780 | 82.7 | .784 | 82.7 | .766 | 82.7 | .784 | 82.6 | .794 | 82.7 | .792 | 82.7 | .758 | 82.8 | .28 | 82.9 |
| 8 | 30 | .765 | 82.7 | .778 | 82.8 | .784 | 82.9 | .790 | 82.8 | .770 | 82.8 | .790 | 82.7 | .798 | 82.8 | .799 | 82.0 | .770 | 82.0 | .28 | 82.3 |
| 9 | 0 | .771 | 84.6 | .782 | 84.0 | .780 | 84.0 | .792 | 84.5 | .774 | 84.2 | .792 | 84.3 | .799 | 84.4 | .800 | 84.7 | .774 | 84.9 | .28 | 84.6 |
| 9 | 30 | .787 | 85.2 | .780 | 85.2 | .770 | 84.8 | .760 | 84.2 | .756 | 84.9 | .774 | 84.8 | .776 | 84.8 | .780 | 84.9 | .760 | 85.0 | .24 | 85.0 |
| 10 | 0 | .747 | 85.7 | .740 | 84.9 | .744 | 84.8 | .742 | 84.8 | .709 | 84.7 | .756 | 84.7 | .750 | 84.8 | .760 | 84.7 | .730 | 85.4 | .22 | 85.1 |
| 10 | 30 | .746 | 86.0 | .729 | 84.8 | .739 | 84.5 | .739 | 84.5 | .700 | 84.5 | .742 | 84.5 | .744 | 85.0 | .758 | 85.0 | .746 | 85.3 | .20 | 84.1 |
| 11 | 0 | .735 | 86.2 | .722 | 85.5 | .736 | 85.3 | .728 | 85.5 | .690 | 85.4 | .734 | 85.4 | .736 | 85.6 | .746 | 85.6 | .740 | 86.0 | .17 | 85.5 |
| 11 | 30 | .735 | 86.6 | .728 | 85.0 | .738 | 84.8 | .728 | 85.0 | .698 | 84.8 | .736 | 84.8 | .736 | 85.2 | .740 | 85.4 | .737 | 86.0 | .17 | 85.7 |
| P. | M. | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | .727 | 86.5 | .719 | 85.5 | .725 | 85.0 | .730 | 85.0 | .680 | 85.2 | .730 | 85.2 | .729 | 85.7 | .738 | 85.7 | .730 | 86.2 | .16 | 85.7 |
| 12 | 30 | .712 | 87.0 | .702 | 86.1 | .705 | 85.8 | .711 | 85.8 | .665 | 86.0 | .712 | 86.0 | .711 | 86.3 | .728 | 86.3 | .719 | 86.8 | .13 | 86.3 |
| 1 | 0 | .699 | 87.3 | .692 | 86.5 | .700 | 86.3 | .700 | 86.3 | .688 | 86.3 | .700 | 86.8 | .700 | 86.5 | .712 | 86.5 | .718 | 87.0 | .11 | 86.7 |
| 1 | 30 | .700 | 87.6 | .690 | 86.5 | .700 | 86.3 | .700 | 86.5 | .688 | 86.3 | .700 | 86.3 | .700 | 86.3 | .700 | 86.5 | .706 | 87.1 | .10 | 86.9 |
| 2 | 0 | .695 | 87.8 | .686 | 85.8 | .691 | 85.7 | .695 | 85.8 | .678 | 85.5 | .696 | 85.5 | .694 | 85.9 | .703 | 86.0 | .702 | 86.5 | .10 | 86.5 |
| 2 | 30 | .695 | 87.5 | .673 | 85.5 | .678 | 85.3 | .684 | 85.3 | .671 | 85.2 | .680 | 85.2 | .681 | 85.5 | .691 | 85.5 | .690 | 86.2 | .11 | 86.2 |
| 3 | 0 | .686 | 87.2 | .672 | 85.5 | .680 | 85.3 | .684 | 85.6 | .673 | 85.2 | .688 | 85.3 | .684 | 85.5 | .698 | 85.5 | .692 | 86.2 | .11 | 86.0 |
| 3 | 30 | .677 | 87.2 | .664 | 85.4 | .670 | 85.1 | .670 | 85.2 | .656 | 85.1 | .680 | 85.2 | .676 | 85.5 | .690 | 85.5 | .688 | 86.0 | .11 | 86.0 |

Table continued on next page.

Observed Readings of Eight Barometers (table continued) from 4 p.m. 20th June to 4 a.m. 21st June, 1843.

| Bombay Mean Time. | | Standard. | | No. 1. | | No. 2. | | No. 3. | | No. 4. | | No. 5. | | No. 6. | | No. 7. | | No. 8. | | Sympiesomr. | | |
|-------------------|----|-----------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------------|-------|--|
| | | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Barom. | The. | Symp. | The. | |
| P. | M. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | | degs. | |
| 4 | 0 | 29.671 | 87.1 | 29.658 | 85.1 | 29.660 | 85.0 | 29.666 | 85.0 | 29.656 | 84.8 | 29.670 | 85.9 | 29.670 | 85.3 | 29.630 | 85.1 | 29.680 | 85.9 | 29.11 | 85.8 | |
| 4 | 30 | .667 | 86.8 | .650 | 84.9 | .654 | 84.8 | .660 | 84.8 | .643 | 84.7 | .668 | 84.8 | .658 | 84.8 | .672 | 84.9 | .674 | 85.0 | .13 | 85.4 | |
| 5 | 0 | .673 | 86.6 | .658 | 84.5 | .660 | 84.6 | .663 | 84.5 | .630 | 84.3 | .664 | 84.3 | .662 | 84.4 | .673 | 84.5 | .680 | 84.6 | .14 | 84.6 | |
| 5 | 30 | .669 | 85.6 | .652 | 84.1 | .660 | 84.3 | .654 | 84.1 | .634 | 83.9 | .660 | 84.0 | .658 | 84.0 | .670 | 83.9 | .673 | 84.0 | .12 | 84.1 | |
| 6 | 0 | .669 | 85.2 | .650 | 83.7 | .658 | 83.6 | .650 | 83.5 | .658 | 83.7 | .660 | 83.6 | .660 | 83.7 | .672 | 83.6 | .672 | 83.7 | .12 | 84.3 | |
| 6 | 30 | .653 | 85.0 | .658 | 83.5 | .662 | 83.5 | .668 | 83.4 | .668 | 83.4 | .672 | 83.5 | .672 | 83.5 | .690 | 83.4 | .686 | 83.5 | .14 | 84.2 | |
| 7 | 0 | .695 | 84.9 | .690 | 83.4 | .693 | 83.4 | .690 | 83.4 | .686 | 83.3 | .696 | 83.4 | .700 | 83.5 | .712 | 83.4 | .708 | 83.4 | .16 | 84.2 | |
| 7 | 30 | .699 | 84.4 | .706 | 83.4 | .704 | 83.4 | .700 | 83.3 | .710 | 83.3 | .714 | 83.4 | .716 | 83.3 | .730 | 83.3 | .720 | 83.4 | .18 | 84.1 | |
| 8 | 0 | .703 | 84.2 | .712 | 83.0 | .698 | 82.9 | .694 | 83.0 | .708 | 83.0 | .699 | 83.0 | .724 | 83.3 | .726 | 83.5 | .704 | 83.8 | .20 | 83.8 | |
| 8 | 30 | .708 | 84.0 | .709 | 82.3 | .700 | 82.4 | .700 | 82.5 | .692 | 82.5 | .710 | 82.5 | .710 | 83.3 | .717 | 82.5 | .708 | 82.9 | .22 | 83.3 | |
| 9 | 0 | .715 | 83.2 | .709 | 81.9 | .706 | 81.9 | .718 | 81.9 | .700 | 82.0 | .728 | 82.5 | .720 | 82.7 | .732 | 81.9 | .704 | 82.9 | .24 | 82.7 | |
| 9 | 30 | .728 | 83.0 | .728 | 81.5 | .720 | 81.5 | .730 | 81.5 | .718 | 81.7 | .744 | 81.7 | .733 | 82.9 | .730 | 81.5 | .735 | 82.0 | .27 | 82.3 | |
| 10 | 0 | .727 | 83.0 | .723 | 81.8 | .730 | 81.5 | .740 | 81.5 | .721 | 81.6 | .742 | 82.0 | .744 | 82.0 | .754 | 81.5 | .735 | 81.8 | .29 | 82.2 | |
| 10 | 30 | .725 | 82.7 | .720 | 81.5 | .723 | 81.5 | .726 | 81.6 | .722 | 82.2 | .740 | 82.5 | .732 | 82.3 | .734 | 81.6 | .730 | 81.9 | .26 | 82.2 | |
| 11 | 0 | .727 | 82.7 | .722 | 81.2 | .726 | 81.4 | .728 | 81.5 | .726 | 82.4 | .742 | 82.5 | .736 | 82.8 | .770 | 81.9 | .738 | 81.8 | .26 | 82.4 | |
| 11 | 30 | .725 | 82.8 | .730 | 81.6 | .736 | 81.8 | .736 | 81.9 | .736 | 82.4 | .746 | 82.4 | .740 | 82.7 | .776 | 82.0 | .742 | 82.0 | .27 | 82.7 | |
| A. | M. | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | .718 | 83.0 | .724 | 82.4 | .724 | 82.3 | .722 | 82.3 | .726 | 82.5 | .728 | 82.7 | .726 | 82.8 | .760 | 82.5 | .732 | 82.4 | .24 | 82.2 | |
| 12 | 30 | .701 | 83.0 | .700 | 82.4 | .710 | 82.4 | .700 | 82.4 | .700 | 82.6 | .712 | 82.6 | .704 | 82.7 | .740 | 82.5 | .722 | 82.2 | .23 | 82.4 | |
| 1 | 0 | .685 | 83.1 | .690 | 82.2 | .688 | 82.2 | .690 | 82.2 | .696 | 82.4 | .696 | 82.4 | .684 | 82.5 | .700 | 82.2 | .700 | 82.1 | .20 | 82.0 | |
| 1 | 30 | .675 | 83.0 | .670 | 82.5 | .680 | 82.4 | .675 | 82.4 | .698 | 82.5 | .690 | 82.6 | .680 | 82.5 | .700 | 82.3 | .690 | 82.1 | .20 | 82.0 | |
| 2 | 0 | .667 | 83.0 | .678 | 82.0 | .667 | 82.0 | .670 | 82.2 | .658 | 82.5 | .689 | 82.5 | .680 | 82.5 | .698 | 82.5 | .682 | 82.2 | .20 | 82.7 | |
| 2 | 30 | .680 | 83.0 | .670 | 82.0 | .672 | 82.0 | .672 | 82.0 | .658 | 82.3 | .682 | 82.3 | .670 | 82.3 | .690 | 82.9 | .688 | 82.0 | .20 | 82.7 | |
| 3 | 0 | .673 | 82.9 | .664 | 82.0 | .663 | 81.9 | .672 | 82.2 | .660 | 82.3 | .680 | 82.2 | .670 | 82.2 | .688 | 81.9 | .680 | 82.0 | .20 | 82.4 | |
| 3 | 30 | .675 | 82.7 | .669 | 81.5 | .680 | 81.5 | .668 | 81.5 | .660 | 82.0 | .680 | 82.0 | .676 | 82.0 | .700 | 81.6 | .680 | 81.8 | .21 | 82.2 | |
| 4 | 0 | .675 | 82.8 | .676 | 81.6 | .676 | 81.5 | .674 | 81.6 | .660 | 81.9 | .678 | 81.7 | .674 | 81.9 | .702 | 81.5 | .682 | 82.8 | .22 | 82.1 | |
| Means. | | 29.711 | 84.5 | 29.706 | 83.3 | 29.710 | 83.2 | 29.712 | 83.2 | 29.699 | 83.3 | 29.718 | 83.4 | 29.718 | 83.5 | 29.743 | 83.1 | | | | | |

Barometrical Observations.

[Oct.

Dismissing No. 7, whose sluggish movements render it liable to suspicion, the mean height of the whole of the others may be assumed as nearly the proper elevation of the mercury for the day ; this was 29.710.

In comparing the altitudes of the Barometers at 4 o'clock on the morning of the 20th, which may be assumed as the minimum, or nearly so,—No. 7, continuing to descend till 5, with the maximum obtained by all the Instruments, save No. 2, exactly at 9 o'clock, we shall have the following result. In reality the comparison ought to have been with the maximum of 10 P.M. of the 19th, but of this we have no readings.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|--------------------|--------|--------|--------|--------|--------|--------|
| Maximum diff. 054 | 9 A.M. 29.780 | 29.790 | 29.792 | 29.774 | 29.792 | 29.799 | 29.800 |
| Mean range 097 | 4 ,, 694 | 698 | 699 | 650 | 700 | 700 | 730 |
| Interval 5 hours | Diff. 088 | 082 | 094 | 124 | 092 | 099 | 078 |

The following is the difference betwixt the same hour of maximum and the afternoon minimum of the 20th, which follows at 5 P.M., at an interval of 8 hours.

| | A. M. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|--------------------|--------|--------|--------|--------|--------|--------|---|
| Maximum diff. 035 | 9 A.M. 29.780 | 29.780 | 29.792 | 29.774 | 29.792 | 29.799 | 29.800 | |
| Mean range 123 | 5 P.M. 656 | 650 | 662 | 630 | 664 | 662 | 678 | |
| | Diff. 124 | 120 | 130 | 124 | 128 | 137 | 108 | |

The following is the range betwixt half-past 11 P.M. on the 20th and half-past 3 A.M. on the 21st.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|--------|--------|--------|--------|--------|--------|--------|
| P. M. 11½ | 29.730 | 29.736 | 29.736 | 29.736 | 29.746 | 29.740 | 29.776 |
| | 660 | 660 | 668 | 660 | 680 | 676 | 700 |
| A. M. 3½ | 070 | 076 | 068 | 076 | 036 | 064 | 078 |

Maximum diff. .010 = mean range 71.

But on this occasion the Instruments attained the maximum and minimum irregularly, in point of time for example :

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------|--------|--------|--------|-----|-----|--------|-----|
| 10 P.M. | 11½ | 10 | 11½ | 11½ | 11½ | 11½ | 11½ |
| 732 | 736 | 740 | 736 | 746 | 740 | 776 | |
| 660 | 660 | 668 | 66 | 678 | 674 | 700 | |
| ½ p. 3 | ½ p. 3 | ½ p. 3 | ½ p. 3 | 4 | 4 | ½ p. 3 | |
| 072 | 076 | 078 | 076 | 068 | 068 | 078 | |

Maximum diff. .010 = Mean range .070.

Five Instruments attained their maximum at ½ past 11, and two at 10 o'clock,—they had all fallen during a shower at ½ past 10 ; and though they all rose again, No. 1 & 3 did not attain the altitude they had reached

at the earlier hour ; so, in like manner, the morning minimum was disturbed by a shower a little before 2, and again before 4, which deranged the hour of minimum of Nos. 5 and 6, whose lowest point was at 4 o'clock. With the correction of 125 here applied to the standard, which exhibits, notwithstanding its disorganization, much the fewest anomalies, it gives very nearly the true range after all. The morning hour of minimum noted on the separate record of the Observatory was 3 A.M. on the 20th, and half past 3 on the 21st, as shown by the standard Barometer, the morning maximum being 9 A.M., that of the evening half-past 11 —The afternoon minimum hour is half-past 4. This gives an interval of nearly six hours betwixt the morning minimum and maximum ; of seven and a-half betwixt the latter and the minimum of afternoon ; of seven betwixt this again and the night maximum, and of no more than four betwixt the last and the morning minimum. This, of course, strictly refers to the day in question, and to that only, though it will probably be found to be near that for the month of June on an average of years.

The mean amount of the ascending range betwixt 4 A.M. and 9 A.M. on the 20th, is $\cdot 097$, the maximum $\cdot 124$, the minimum 70 ; both these are suspicious,—the former is the reading of a playful and vivacious instrument, No. 3, which seldom keeps with its brethren, the latter of a high set, but very dull sluggish one, which generally falls behind in all movements whether in ascent or descent ; the maximum difference amongst the seven amounts to $\cdot 054$.

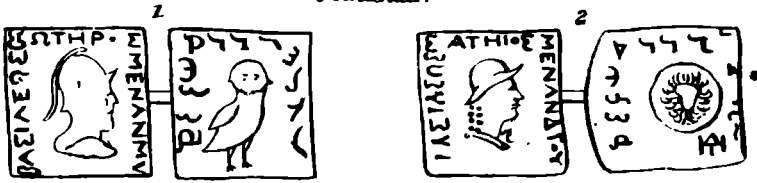
The mean amount of descent, betwixt 9 A.M. and half past 4 P.M. on the 20th, is $\cdot 122$, the maximum $\cdot 137$, the minimum $\cdot 102$,—this again by No. 7, the greatest difference betwixt any two is $\cdot 035$.

The morning descent from half-past 11 P.M. on the 20th, to half-past 3 on the 21st, is betwixt 70 or 71 , according as the Instruments are taken by a fixed hour, or by the points of maximum and minimum attained at different hours.

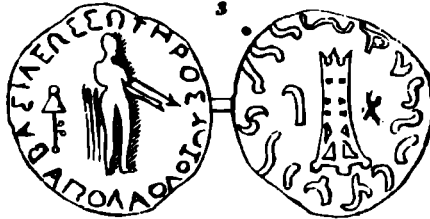
This experiment I expect to be again able to repeat with a still larger collection of Instruments after the cold weather sets in ; it is tedious and troublesome, and worthless, unless the Instruments be of nearly uniform make and of extreme accuracy. This, on the present occasion was, in all respects, the case.

BACTRIAN COINS.

Menander.



Apollodotus



MITHRAIC COINS.



Over the Cell on the left hand of the large Inscription at Nassick.

ΣΕΡΓΗΣ ΤΗΡΗΣ ΕΖΟΥΣ ΤΩΝ ΕΝ
 Η ΡΩΤΗΝ ΕΛΕΥΘΕΡΟΝ ΕΡΕΣΤΕΝ
 ΚΑΙ ΠΟΛΥΤΕΛΕΣ

ART. III.—*Observations on the Bactrian and Mithraic Coins, in the Cabinet of the Bombay Branch of the Royal Asiatic Society.* BY JAMES BIED, ESQ.

In the progress of deciphering the cave inscriptions on this side of India, I was led to the study of the Bactrian, Parthian, Indo-Scythian or Mithraic, Sassanian, and Kanaoj series of coins; and was not surprised to find proofs of an union between the *Bauddha* and *Mithraic* creeds; particularly after the deductions made by Mr. Prinsep on this subject, from his examination of the coins and relics discovered in the *Topé of Manikyala*.* Though an examination of our small cabinet may not add much to the obscure and lost portions of Indian history, it will nevertheless bring to light some new types of *Mithraic* coins; and is not without interest in the *Parthian* and *Roman* series; as the Parthian includes specimens of the coinage belonging to the *Christian kings of Edessa*, who were alternately in alliance with the Romans, and with their Parthian contemporaries, the kings of Persia. It may be yet further beneficial in extending the knowledge of numismatics among private individuals in this country; who having directed attention to the collection of coins and medals, may be willing to submit for publication the objects of their research, and thus widen the field of inquiry, by having before them, for comparison, stores of antiquarian relics, capable of illustrating the past condition and mythology of ancient India.

The conquests on the Indus, made by the Greek sovereigns of *Bactria*, the *Seleucidæ*, the *Parthian* and *Sassanian kings* of Persia, introduced into that part of the country, called *Indo-Scythia*, a variety of coins, distinguished by *Mythological devices*, and *bi-lingual inscriptions*, some of which have been improperly classed as belonging to unrecorded princes of Bactria, while they might be more truly ascribed to some of the Generals employed under the *Seleucidæ*, and to the Parthian and Sassanian satraps of Persia. In this department of oriental numismatics, notwithstanding the distinguished labours of Prinsep and Wilson, there remain ample materials for the investigation of others; and it is yet reserved for some one, possessing extensive historical acquirements, on the subject or

* Journal Bengal Asiatic Society for 1834, p. 436.

ancient times, and with a perfect knowledge of *Egyptian and Hindu* mythology, to appropriate the several coins to the different tribes and dynasties, to which they belong. Without presuming that I possess adequate acquirements for so great an undertaking, I may be permitted to add my mite to the stock of present knowledge on this subject; and if less successful than may be wished, in this investigation, my labours will doubtless be received with indulgence, where men of established reputation have left numerous *lacunæ* to be filled up.

Specimens of ancient Roman coins, in considerable number and variety are to be found in our cabinet; though we are far from being as rich as we should be in this department, and are without any of those which have been dug up in various parts of this country. The testimony of *Arrian's Periplus* of the Erythrian sea, the knowledge of towns and rivers on this side of India, evinced in Ptolemy's Geography, and the late discovery in the neighbourhood of Coimbatoor of five hundred and fourteen Roman coins, of the reigns of *Augustus, Tiberius, Caligula, and Claudius*, afford undeniable proof of the intimate connexion with India maintained by this people, during the first and second centuries of the Christian era, and at the period of their intercourse with the Parthians. Mr. Walter Elliot, of the Madras Civil Service, who is distinguished by like success and zeal in clearing up obscure portions of Indian history, informed me, by letter, that of these 514 coins, 134 were of the time of Augustus, 381 of the reign of Tiberius, 3 of Caligula, and 5 of Claudius. Roman coins have been previously found in the district of Coimbatoor, and the late Collector there, Mr. William Garrow, states that a silver denarius of Augustus was discovered in one of the ancient sepulchres of the country called *Pandukals**. whilst a number of irregularly shaped silver coins, stamped, by means of a punch, with various devices, and not uncommon in Southern India, were obtained from another of the same tumuli. These remains were with good reason attributed by Mr. Garrow, to a race of *Pandu Kulas* or Pandya tribe of Madura; one of whose chiefs dispatched the well known *Embassy to Augustus*, as related by *Dion Cassius*, which brought to him from India letters written in Greek as stated by Strabo, on the authority of Nicolaus Damascenus.† Somewhat more than fifty years ago, many

* An account of these tumuli will be found in Vol. III. p. 324, Transactions Bombay Literary Society.

† Strabonis Geograph. Lib. XV. p. 720.

gold Roman coins of the second century were recovered from the foundation of an old Hindu temple, near Nellore, some account of which will be found in Vol. III. of the Asiatic Researches. Besides these, several gold Roman coins were found, about three years since, in the neighbourhood of Sholapoor; and an *aureus* of *Trajan* from Cuddapah, with a *solidus* of *Zeno* from Madura, was obtained not long ago by Mr. Elliot.

Many of these Roman coins were doubtless introduced into India, in exchange for commercial articles of luxury, exported by the channels of the Red Sea and Persian Gulf; but some were probably brought by the Jewish and Christian refugees, who migrated to Mysore, in the *third* and *fourth* centuries: and with whose settlement in India, commenced the cycle of sixty, which was formed on the model of the Chaldean *Saros*, and dates from A. D. 75.

The word *dinar*, to designate the value of a particular coin in circulation among the Hindus, came to be used in *Sanskrit*, from the period when the Roman coinage was introduced into India; and the occurrence of this term, whether in inscriptions on antique monuments, or in ancient Sanskrit works, will enable us to determine the comparative age of either. The principal silver coin of the *Roman Republic* was a *silver denarius* after the model of the *drachma*, a leading designation of the Greek coinage, and Arrian in his *Periplus*, mentions that *denarii*, both gold and silver were among the articles exported from Europe to *Barygaza* or Broach.* In the Sanskrit inscription, from the *Bauddha* mound of *Bhilsa* in Malwa, translated by Mr. Prinsep, (*Journal B. A. S.* Vol. VI. p. 455,) the son of *Anuka*, subject to the great emperor *Chandragupta*, presents to the five temples of the all respected *Sramanas* (*Bauddhas*,) a piece of ground and twenty-five *dinars*, as an offering from the supreme Raja *Chandragupta*: who is not the *Sandracottus* of the Greeks, but was one of the family mentioned in the *Vishnu Purana*, and who ruled over *Magadha*, about A. D. 427, calculating from the death of Alexander the Great, according to the periods assigned for the *Maurya*, the *Sanga*, the *Kanva*, and *Andhra* dynasties of Hindu sovereigns. The name *dinar* again occurs in the *Raja Taringini*, a history of Kashmir, which states *Toromana*, younger son of *Pravarasena*, † struck *dinars* in his own name

* See Arriani *Periplus Maris Erythræio* page 28, Vol. 1. *Geographiæ veteris Scriptores Græci Minores*.

† History of Kashmir in *As. Res.* Vol. XVI. p. 37.

while he was yet only *Yava Rajya* or associated successor in the empire. This prince was cotemporary with Siladytia I. of Gujerat, who lived about A.D. 270—80 ; * previous to whose reign the Sakas, or Indo-Scythian tribes, had spread their power and influence throughout Western India; and soon after founded the city *Valabhipura* in Gujerat, which gives name to a particular era commencing A.D. 319. According to the authority of the *Raja Taringini*, the ruler of *Ujain* in Malwa, about this time was *Sri-man Harsha Vikramaditya*, the same as *Shapur II.* of Persia ; who appears to have possessed himself of Sejistan, and other parts of Indo-Scythia ; while part of Western India bore him allegiance under the authority of his satraps. Gibbon, † on the authority of Theodoret, states that the united forces of Persia and India were present while this Shapur besieged Nisbis A.D. 337, during the reign of Constantius ; and that the King was obliged to relinquish the siege, and march for the banks of the Oxus as the Scythian tribes, in the neighbourhood of Kabul, had invaded the northern part of his kingdom. This *Shriman Harshu Vikramaditya* of Kashmir history, who destroyed the *Sakas*, is no other than Shapur II. who, on the authority of Assemanus, instituted a persecution against the *Manicheans* and *Christians* throughout his dominions. Some of the *Mithraic coins* and the *fresco painting* in a niche of the second idol of the caves of Bamian, belong to this period. But with these preliminary historical remarks, on the subject of coins, I proceed to illustrate those met with in our cabinet.

BACTRIAN GREEK COINS.

We only possess three coins of this series ; two of which belong to *Menander*, and the other to *Apollodotus*. Eleven various coins of this class were presented to the Society, by Sir Alexander Burnes, during the

* This date is inferred from the copper plate grants of land, written in the cave character of the Sanskrit language, and obtained from Gujerat : which will be found in page 477, Vol. IV. for 1835, of the Bengal Asiatic Society, and Vol. VII. of the same work, page 966. The latter is plainly dated 365 *Samvat* or *Vikramditya* era A. D. 309, but Mr. Walthen, who translated the former, mistook the date of it for 9 of the *Valabhi* era ; whereas it is dated, agreeably to the custom of the *Balhara* emperors of India, in the 32nd year of the king's individual reign, or *Sridhara Sena*, who was the predecessor of *Siladitya I.*

† Gibbon's *Roman History*. Vol. III. p. 133. In addition to Gibbon's authority the *Dissertatio de Syris Nestorianis*, in part secunda *Bibliothecæ Orientalis*, page lv. may be consulted.

year 1832, but were subsequently sent to him in England, previous to the publication of his work, and have been since deposited, I suppose, among the archives of the British Museum. Without disturbing the chronological data, on which late numismatists have affiliated the reign of *Menander* with the period of the *Scythian invasion*, B. C. 126, by which the Greek kingdom of Bactria was overturned, I may briefly notice, that both this king and his successor, *Apollodotus*, prior to the discovery of their coins with bi-lingual inscriptions, were placed between *Euthydemus* and *Eukratides*, or B. C. 220, to 181. The devices of the *mummy* and *feather*, emblems of the Egyptian god Pthah, or the *Opifex Mundi*, found in conjunction with bi-lingual inscriptions, on the coins of Menander, like to those on the coins of the *Parthian kings*, *Phraates IV.* and *Vologeses I.*, but not in use before the time of *Eukratides* and the subsequent Roman connexion with the Parthians, must have been adopted when the intercourse between Egypt and India had become familiar. The occurrence of these devices, and of *Coptic inscriptions too*, on some of the *Mithraic coins*, which date subsequent to the Christian era, seem to confirm the accuracy of those chronologists, who place *Menander* and *Apollodotus* low down in the Bactrian scale.

MENANDER.

1. Square silver coin, middle size, head with helmet to the right; on the obverse, with a Greek inscription, round the edge ΒΑΣΙΛΕΩΣ ΣΩΤΗΡΟΣ ΜΕΝΑΝΔΡΟΥ. On the reverse, an owl, the Athenian emblem for Minerva, with an inscription round the edge in Bactrian Pali 𑀧𑀲𑀸𑀓𑀲𑀺𑀓𑀲𑀺𑀓𑀲𑀺𑀓 or Maharaja Rattasa Minanasa.

2. Square, copper; middle size head helmeted, to the right; inscription in Greek ΒΑΣΙΛΕΩΣ ΣΩΤΗΡΟΣ ΜΕΝΑΝΔΡΟΥ. Reverse, Medusa's head, the emblem of Minerva, with inscription, in Bactrian Pali 𑀧𑀲𑀸𑀓𑀲𑀺𑀓𑀲𑀺𑀓𑀲𑀺𑀓 or *Maharajasa Rattasa Minanasa*. The first of Menander's titles, *Maharaja* is the equivalent of the same in Greek; but the second, which has been considered a translation of *Soterus* has been variously read by Prinsep and Professor Lassen. Mr. Prinsep, after discovering the true nature of this Bactrian Pali, read the second epithet *Ladatasa* or *Nandatasa*; but Lassen conjectured the reading to be *Tadarasa*, the Prakrit translation of preserver. Neither of their readings have been deemed satisfactory, and I doubt its being meant as a translation for *Soterus*, but is on the contrary the Pra-

krit corruption for *Aratta*, or *Arhata*, signifying the venerated. It is not a little singular, Plutarch mentions *Menander*, was so beloved by his subjects that, on his death, different cities contended for his ashes, and adjusted their disputes by dividing his relics amongst them, while a similar story, which is told of *Gautama* or *Sukya Sinha*, is current among his Bauddha followers. Professor Wilson, in his appendix to the History of Kashmir, observes that, in the *Mahabharat Kerna Parva*, the *Arattas* had for their chief city *Sakala* or *Sagala*; the same which was known to the Greeks by the name of *Enthydemia*. In the Parthian mansions of *Isiodorus Characenus* it is said to belong to the *Sacæ* or *Scythians*; and under the name of *Sagala* it occurs in one of the western cave inscriptions. The *Arattas*, under the corrupted Prakrit name of *Rattas*, are mentioned in Mr. Walter Elliot's Hindu inscriptions, as having been subdued by *Teila Chalukya*, in Saka 895, or A. D. 919. Their country was called *Kankara*; which *Masudi*, in A. D. 915, describes as extending along the Indus, and sea coast of India, from the country of *Khozar* in the neighbourhood of the Caspian.

APOLLODOTUS.

3. Round copper figure of Apollo, looking to the right, and supporting by his left hand his arrow. Inscription in Greek ΒΑΣΙΛΕΩΣ ΣΩΤΗΡΣ ΑΓ°ΑΛ°Δ°Τ°Υ Rev: Tripod, with inscription in Bactrian Pali, more perfect than that on the coins published by Mr. Prinsep and Professor Wilson. It may be read 𑀧𑀸𑀓𑀭𑀸𑀢𑀺𑀓𑀺𑀓𑀺𑀓𑀺𑀓𑀺𑀓𑀺 or *Maharajasa Yadatasa Apaladatasa*. A similar coin will be found figured in Wilson's Plate IV. fig. 16, with the Pali inscription very indistinct. In our coin the second epithet for ΣΩΤΗΡΣ is doubtless *Yadatasa*, and cannot be a translation of the Greek term, but is meant to designate a tribe, as in the former coins of *Menander*. I am disposed to conjecture that it is meant to designate the *Yadavas*; the tribe from which Krishna sprung, which was a northern one. The coincidence between the legend of *Krishna* slaying the serpent *Kaliya*, in the sacred river *Yamuna*, and that of the *Pythian Apollo* killing the snake at Delphi, must be more than casual; and, as *Krishna's* appellations of *Govinda*, and *Kesava*, in *Sanskrit*, are direct translations of Apollo's titles, in *Greek*, viz. *Nomios νομιος* (the herding) and *ευχαιρης* *Eukhaites*, (well haired), there are strong reasons for presuming that the legends of the *Hindu Krishna* have been borrowed from those of the *Grecian Apollo*.

Across the field of this coin, written in Bactrian Pali, we meet with the syllable *Kra* ; which, written in Greek, occurs on the coins of the Bactrian princes, *Enthydemus* and his son *Demetrius*. This appellation for the *Sun*, is sometimes written *Kraka*, as on the coins of the Parthian king *Vologesis I.*, who lived A. D. 52 ; and seems of similar import as *Grag* in Armenian ; which Mr. Newman, in his translation of his *History of Vartan*, page 81, says was commonly used by the Armenians to designate the *holy fire*, which the Parsees name, in *Zend, Azeran*. A curious passage, in *Arrian's Parthics*, says that *Spartembus*, a friend of the conqueror *Bacchus*, dying, left his kingdom to his son *Budyas*, who after a reign of 20 years, was succeeded by his son *Cradevas*. The resemblance of *Budyas* to *Buddha*, and the perfect Sanskrit termination *Deva*, are striking coincidences : and the very name of the deity *Kra Deva*, occurs in the inscription from Nasick, lithographed at the bottom of the present plate of coins. It reads *Sidham ! Rajino Kshaparataṣa Kshatra-pṛṣa napapanasa, dhipati dinak putṛṣa, upvedatasa, Kradevanya dutumitrya daya dhama : navarka*, of which the translation is—*Be it accomplished. The compassionate gift of the sinless Satrap of King Shapur, son of the Supreme Lord, the day producer, follower of the minor Veda, to Kra Deva, the bestower of Mitra. The new sun, or year. The name of Kra Deva again occurs in Inscription XIV. Plate XLIV. of my work on the Caves of Western India.*

MITHRAIC COINS.

4. Middle size copper. Standing figure to the left, in cap, tunic, and boots, who holds a spear in his left hand, and is sacrificing over a fire altar. Inscription Greek, but of which, the usual BACAIΕVC BAEIAG ΩN KANHPKI KOPANO part is only visible. R : Figure of a female to the right, clad in a long vest, and holding in her right hand a flower or branch, which is carried to the nose after the manner of the fire worshippers : to which practice, Job makes allusion, in Chap XXXI. v. 26—28.

“ If I beheld the sun when it shined, or the moon walking in brightness ;

“ And my heart hath been secretly enticed, or my mouth had kissed my hand ;

“ This also were an iniquity to be punished by the judge, for I should have denied the God that is above.”

Halo round her head, and inscription on the edge, in Greek NANAIA, the appellation for the Persian Diana, or *Nanæa* of the Maccabees, whose temple, at Elymeis, or Persepolis, was plundered by Antiochus Epiphanes. This goddess among the *Chaldæans*, *Syrians*, and *Phœnicians*, was the deified moon, and sometimes the morning star, named *Baal-at-Samin*, or the Queen of Heaven. She was the same as the *Mithra* of the Persians, the *Myllita* of the Assyrians, and the *Alitta* of the ancient Arabs.

5. Copper. Standing figure of a *Magus*, or priest of the fire-worshippers, who under this form usually represented the sun. Inscription in Greek letters; of which the first part APΔ is only legible, but is usually followed by the word OKPO, both combined signifying the excellent *Sun*, as APΔ, or APTA, according to Selden and Hesychius, means great or splendid, and OKPO is a Zend or Pali corruption for *Arka* the Sun, as rightly interpreted by Mr. Prinsep. Reverse, female figure to the left, sacrificing over a fire-altar; Nimbus round the head; Coptic inscription on the edge MAO, which is the Coptic word U&Y mother, and the same according to Plutarch as μovθ the goddess Math, the Egyptian *genetrix*, and the same as the Persian *Nanaia*.

6. Copper. Figure of a *Magus* looking to the left; part, of the Greek inscription *Arđ Okro* on the edge. Reverse, figure looking to the left clad in a loose tunic. Inscription on the edge AΘPO, the Zend name for fire, and here the symbol for *Nanaia*; who, whether considered as the *Moon* or the planet *Venus*, was one of the seven fires, or planets, to which the Persians dedicated their fire temples.

7. Copper. Male figure riding on an elephant; inscription on the edge in Coptic Greek letters, ONAN OPO, meaning the good king, or an appellation for the sun; which is sometimes written PA ONAN OPO, signifying the sun, the good king. This inscription has been usually considered a Pali one, and read PAO NANO PAO, being interpreted *King of many kings*. It is true that *Nana* in the Pali language means *various*, and *manifold*;* but here it is the Coptic N&NE or N&NO& signifying good, applicable to PA or PH, the name of the sun: and that this interpretation is the correct one, seems evident from the fact of the reverse of this series of coins bearing a Coptic inscription ΦAPO *Pharo*, which has hitherto remained without explanation, but is nothing more than the Coptic defi-

* See Pali Grammar by the Rev. B. Clough; p. 73.

nite article ϕ with the word APO for $\text{O}\Sigma\text{PO}$ *the King*; or otherwise a name for the Egyptian god Horus, or a form of the sun. One of this series of coins, now in my possession, bears the following inscription EAIHPO, the word *El* being among the Cabalistic Jews intended to designate one of the numerous *intelligences* or divine orders of beings, formed to execute the commands of the first emanation from God, the primitive man or king of light; while IHPO, written on some of the coins OHPKE, is only an appellation for Horus; who, after the Egyptian manner, is sitting on the reverse of this coin supported by an ornamented seat or lotus. On the reverse of No. 7 figure of a female, and imperfect inscription of AP Δ OKPO.

8. Small, Copper; standing male figure, and inscription PAOKA. Reverse, standing figure looking to the left; rayed nimbus round the head; inscription on the edge MIAPO intended for *Mithro*, or the Persian name for Nanaia.

9. Silver, small size. Bust of a king looking to the left, and holding in his right hand a branch, as if worshipping the sun: inscription in Greek APPAT OPO OHPKI KOPANO, meaning *King of the Arratas Oerki of the tribe Karauna*. The *Karaunas*, or *Koranos*, were a Græco-Indo-Scythic tribe of robbers in the Punjaub, who are mentioned by Marco Polo.* Reverse, female and male figure, sacrificing in conjunction over a fire-altar, the former named in Greek letters NANA, and the other OKPO, being otherwise figures of the *moon* and *sun*, similar to the two colossal statues at Bamian, which were probably eculptured B. C. 337: as Clemens of Alexandria tells us, on the authority of Berosus the Chaldæan, that Artaxerxes, the son of Darius, and grandson of Ochus, set up statues of the Scythian Venus, at Ecbatana, and among the Persians and Bactrians, and pointed out that such should be worshipped.

10. Copper, small size. Figure of a saint, seated under a tree, like the wood hermits of old. Reverse, standing figure, whose head is surrounded by a nimbus; inscription in Coptic Greek letters NAN for EN&N, the good.

It has been admitted by those most competent to judge, that an intimate connection exists between the metaphysical systems of the Hindus and those of the Greeks; † and it is not less obvious, from the

* Travels of Marco Polo; p. 86.

† See Wilson's preface to Colebrooke's Translation of the Sankhya Karika, or Memorial Verses of the Sankhya Philosophy, p. IX.

testimony of the Bactrian, Parthian, and Indo-Scythian coinage, that regarding the mythology, and idolatry of the two countries, a system of *eclecticism*, on the subject of their gods, from the period when the Greeks who accompanied Alexander the Great into India, first discovered that the *Saraseni* worshipped deities similar in character to Bacchus and Hercules. Herodotus, the father of history,* tells us that the ancient Persians had neither statues, temples, nor altars; but worshipped the expanse of the firmament, under the name of *Jove*, (or the Hindu Indra,) adding thereto as deities, the sun, the moon, earth, fire, water and the winds; till in after times they copied the Assyrians and Arabians, by introducing among their deities *Mithra*, or the celestial Venus; and the same with *Nanaia* of our Mithraic coins, whose statues were originally set up by Artaxerxes, the grandson of Ochus. In her physical character, this goddess represented the natural fecundity of the earth; and in her astral one, the moon or the passive influence of the sun; and is hence called on the coins *Mao*, or the mother goddess. She is sometimes called in inscriptions *Myrionyma* or the many named; and when the government of Bactria and countries in the immediate neighbourhood of the Indus, passed from the power of the Greeks and Parthians, into the hands of the Indo-Scythian tribes, the latter appear to have adopted the worship of this goddess; whose name yet survives in Afghanistan, under that of *Bibi-Nani*, signifying in the Pali language, the *wise lady*. The last is an equivalent for *Pragna* or *deified nature*; known among the *Bauddhas* as *Dharma*, the type of inert matter, not yet evolved into various forms. This is at least her physical character connected with the metaphysical theories of generation; but in her celestial character, she is the *Nanaia* of the *Ard-okro* coins, the Chinese *Tienhou*, (the queen of heaven), named also *Shing-moon*, (the holy mother), or the passive principle and power of conception.

From the few coins and facts now before us we should not be warranted in tracing further the connection between the deities of the Greeks, Persians, and Indians; and a more comprehensive series of coins is requisite to develop the influence which the mythologies of these countries mutually exercised on each other, through an interchange of kindred subtilities.

* Book I, para. CXXXI.

ART. IV.—*A Chemical and Microscopic Examination of the Rock Salt of the Punjaub.* BY HERBERT GIRAUD, M.D.

Until very recently, the only accounts we have had of the salt mountains of the Punjaub, have been of a geographical and physical character ; the most accurately descriptive of which is that by Sir Alexander Burnes, in his travels into Bokhara (vol. I. p. 52.)

Attention however has been lately directed to the geological features of this interesting range of hills by Dr. Jameson's report of his Deputation by Government, to examine the effects of the great inundation of the Indus.* So far as regards the geographical and geological condition of the salt range, as it extends from Jalalpoor on the Hydaspes, to Maree on the Indus, this report is tolerably complete ; but it may require a more extended comparison of the organic remains of the several rocks to determine how far the limestone which alternates with the red sandstones and red marls,—the sandstones and marls themselves, and the shelly limestone, are the equivalents respectively of the magnesian limestone, the new red sandstone, and the mauschelkalk of Europe.

* “ First report of Dr. Jameson of his Deputation by Government to examine the effects of the great Inundation of the Indus.” Journal Asiatic Society, No. 135, 1843.

I cannot refer to this paper without directing attention to Dr. Jameson's account of the gypsum of Jalalpoor, which he conceived would be so important an article of importation into Bombay, and might be most advantageously used in the public buildings and for making ornamental works.—H. G.

Notes by the Secretary.

A quantity of gypsum (*Pierre à platne de Paris*) was imported into Bombay some years ago, from the Persian Gulf, where it is found abundantly, but I am not aware of the result of the experiments that were probably made with it. Judging from the specimens in the museum, it is not very pure, yet sufficiently so for most purposes for which it would be required in this country. Extensive rocks of earthy and granular sulphate of lime exist in the western parts of Marwar, and selenite occurs in various places in Kattiawar, also I found it at Dholgaum in the Rajpcepla country.

The following interesting description of Callabaugh is extracted from the introduction to Mr. Elphinstone's Cabool ; —“ Callabaugh, where we left the plain, well deserves a minute description. The Indus is here compressed by mountains into a deep channel, only three hundred and fifty yards broad. The mountains on each side have an abrupt descent into the river, and a road is cut along their base, for upwards of two miles. It had been widened for us,

The salt from these mountains has never been in high repute for its purity, and is unfit for the most culinary purposes ; this has been attributed to the presence of magnesia, although chemical analysis has never been had recourse to, to point out the nature of its foreign ingredients. There are, however, many features in its general character and appearance, as well as many points of relationship with rock salt from other parts of the world, and with the salt of the ocean that seemed to promise to invest with interest its microscopic and chemical examination. A large quantity of it has lately been imported into Bombay, and from this Dr. Malcolmson kindly favoured me with some well selected specimens.

As it is usually met with here, the salt is in large amorphous masses, varying in colour from white and pink to brick-red ; with here and there the colouring material aggregated into extremely thin laminæ and filling minute vesicular cavities. In a moist atmosphere it is extremely deliquescent, owing to the presence of chloride of calcium ; and, as it dissolves, the colouring matter is separated, and deposited in the solution. This colouring material is common, in variable quantity, to rock

but was still so narrow, and the rock over it so steep, that no camel with a bulky load could pass ; to obviate this inconvenience, twenty-eight boats had been prepared, to convey our largest packages up the river. The first part of this pass is actually overhung by the town of Calla-baugh, which is built in a singular manner upon the face of the hill, every street rising above its neighbour, and, I imagine, only accessible by means of the flat roof of the houses below it ; as we passed beneath, we perceived windows and balconies at a great height, crowded with women and children. The road beyond was cut out of solid salt, at the foot of cliffs of that mineral, in some places more than one hundred feet high above the river. The salt is hard, clear, and almost pure. It would be like crystal, were it not in some parts streaked and tinged with red. In some places, salt springs issue from the foot of the rock, and leave the ground covered with a crust of the most brilliant whiteness. All the earth, particularly near the town, is almost blood red, and this, with the strange and beautiful spectacle of the salt rocks, and the Indus flowing in a deep and clear stream through lofty mountains, past this extraordinary town, presented such a scene of wonders, as is seldom to be witnessed. Our camp was pitched beyond the pass, in the mouth of a narrow valley and in the dry bed of a torrent. Near it were piles of salt in large blocks (like stones at a quarry,) lying ready for exportation either to India or Chorassan. It would have taken a week to satisfy us with the sight of Calla-baugh ; but it threatened to rain, and had the torrent filled, while we were there, our whole camp must have been swept into the Indus."—Page 58-60, 2ND ED.



1.



2.



3.



4.



5.



6.



7.

salt from almost every locality, and has been too hastily referred by Chemists and Geologists to the presence of peroxide of iron ; although it is known that other foreign ingredients have in many instances been found imbedded in rock salt, such as silica, carbonate and sulphurat of iron, which occur in the salt of Zipaguira in Tropical America. Sulphurets of lead and zinc in that of Halle in the Tyrol ; while *organic matters* such as lignites, fruits, and minute shells, have been found in the salt of Williezka in Poland.*

Since the astonishing discoveries of Ehrenberg, which have not only displayed the internal organization of the myriads of living infusoria, but have also brought to light the fossil remains of generations upon generations of the animalculæ of early geological epochs, microscopic examinations of the aqueous rocks, particularly of those of the limestone family, have disclosed such vast quantities of organic remains in positions in which the presence of organic matter was least anticipated, that the history of no rock or compound mineral can be considered complete, until it has passed under a strict microscopic examination. To this I submitted the red colouring matter of the salt, and found it to consist altogether of organic remains.† Amongst a confused assemblage of matter, either too minute in its particles, or too broken up into irregular forms to distinguish anything like the traces of organization, there appeared many bodies which were evidently the remains of infusoria. That marked 1 in the accompanying drawing appears to correspond with the genus "Synedra" of Ehrenberg ; —it measures $\frac{1}{259}$ inch in length and $\frac{1}{9003}$ inch in breadth. No. 2 resembles, if it is not identical with the "Gaillonella ferruginea" (Ehrenberg) the animalculæ which constitutes the colouring matter of the iron ochre, and is therefore invested with peculiar interest as appearing in the colouring matter of this salt. Each of the moniliform segments of which it is composed, measures $\frac{1}{1000}$ inch in diameter. No. 3 appears to be related to the last, and should probably be referred to the same genus. No. 4 is abundant in the salt ; it has none of the characters of fossil infusoria, but may possibly be the scale of some small fish. It is so perfectly

* *Traité élémentaire de Mineralogie.* Par F. S. Bondant, Tom. 2nd, Paris, 1832.

† The microscope I use is one of Chevalier's acromatics ; power four hundred linear.

transparent, that the concentric lines on its surface are only discovered by causing the light from the reflector of the microscope to pass obliquely through it.

The vegetable remains consist of extremely minute filiform bodies having the characters of confervæ, and consisting of simple elongated cells, attached end to end to each other. (No. 4.) There are also amongst these, minute orbicular bodies which appear to be the spores of these confervæ. (No. 5.) The matrix, in which these distinctly organic remains are contained, is an aggregation of particles too minute and indefinite in form for their nature to be determined; it is probable that a great proportion of them are the ova of the infusoria.

These microscopic examinations were conducted with the greatest care, as it was conceived that farther light might be thrown upon a recent discovery by M. Payen* of the existence of myriads of minute crustacæ in

* The red colour is observed in the saline water of some springs, as in the evaporating vats of Salumba in Upper India, described by Mr. Gubbins, of the Bengal Civil Service, in the 7th volume of the Journal of the Asiatic Society of Bengal, page 363. The following extract is from a memorandum on the Maldiva Islands by Captain Moresby, I. N., read to the Bombay Geographical Society on the 3rd November 1836; but which does not appear in the proceedings. It throws much light on the cause of the rock salt of very distant regions having the same peculiar red colour.

"In the Milla-doo Madou Atoll are several islands (10 or 12) which have lagoons in them, which the dry land and trees completely surround; in some of these lagoons the water in them is brackish; they are not deep (from 2 to 6 feet); the bottom soft mud and very offensive in smell. No live coral grows in these lagoons; and shells are produced here, which are not found in the sea. In some of the lagoons at very high tides and strong breezes, the sea sometimes finds its way into them and again fills with water what was fast drying up.

"At Markandoo Island, which is on the centre and east side of the Atoll, there is a lagoon exactly in the centre of the island, which has no connection with the sea, nor ever had, the natives say; it is about one and a half feet deep, the water of a deep red colour, perhaps from decayed vegetable matter; it is brackish and abounds in small shrimps; and what is extraordinary, its margin is covered with mangrove trees, which are seldom or never found on any of the other islands. This lagoon, the natives say, is kept full by the rain, and that it never gets dry."

The red colour of the water no doubt arises from the shrimps or the animalcules on which they feed, and not on the vegetable matter, to which is to be ascribed the offensive smell of the mud caused by the decomposition of the sulphates in the brackish water.—Ed.

the waters of tropical seas and of certain salt lakes, and which have been found to be the cause of the red colour of the salt, which may be obtained by evaporation from these sources. These crustaceæ have been referred by M. Andoin to the order Branchiopoda.

In the salt, however, I have in vain attempted to discover a single articulation of these creatures.

Chemical Analysis.

One thousand grains of the dried salt with boiling distilled water afforded a clear solution, and a red pulverulent residue.

I. The qualitative examination of the solution indicated the presence of the following salts :—

Chloride of Sodium.

Do. of Calcium.

Sulphate of Magnesia.

It remained unaffected by the action of hydrosulphuric acid. Neither bichloride of platinum nor tartaric acid, (the tests still adhered to by Chemists for determining the presence of potassa,) gave the least indications. The proportion of lime was determined by means of oxalate of ammonia—the precipitated oxalate of lime being converted by ignition into carbonate, from which the proportion of lime, and hence of chloride of calcium, was calculated.

It is always difficult to separate magnesia from the other bases with which it may exist in combination. Most Chemists calculate its proportion from precipitates afforded either by carbonate of potash or by phosphate of soda with free ammonia ; both these processes however are beset with sources of inaccuracy ; for, by the first, the neutral carbonate of magnesia precipitated by neutral carbonate of potassa, is decomposed by the action of water in such a manner as to give rise to bicarbonate of magnesia which is soluble in water, and even though the magnesian solution may be boiled with an excess of carbonate of potassa, yet a portion of magnesia will still remain in solution. The precipitate also of phosphate of ammonia and magnesia is liable to the same inconvenience, particularly as repeated washings are necessary before it is converted by ignition into the neutral phosphate of magnesia. Instead, therefore, of either of these

methods I made use of caustic potassa, by which magnesia is precipitated even better than by carbonate of potassa, and in hot water is so sparingly soluble that the loss is too insignificant to be of any importance.

2. In examining the composition of the *red insoluble residue*, I found it to remain quite unaltered under the action of boiling nitric and hydrochloric acids, proving that it could not be an oxide of iron; conceiving it, therefore, to be a silicate of some base, I fused it with carbonate potassa, and then by submitting the fused mass to the action of hydrochloric acid, it gave abundant indication of the presence of iron.

Hence the chemical condition of this mineralized organic matter is identical with that of the iron ochre, and it is siliceous like Tripoli, both which are almost wholly composed of infusorial remains.

The following is the composition of 1000 grs. of the salt :—

| | |
|---------------------------|---------|
| Chloride of Sodium..... | 966·11 |
| Sulphate of Magnesia..... | 17·93 |
| Chloride of Calcium | 14·36 |
| Silicate of Iron | 1·6 |
| | 1000·00 |

I find upon inquiry that this salt is much used as an aperient amongst the natives of Bombay, and it is probable that from the proportions of sulphate of magnesia, and chloride of calcium in its composition, its properties resemble those of many saline mineral waters : as those of Leamington in the new red sandstone district of Warwickshire.

V.—*Metrical Translation of the 1st Book (Sarga) of the Raghuvans'a, a Heroic Sanskrit Poem, by Kálidása.* BY THE REV. J. MURRAY MITCHELL.

INTRODUCTORY NOTE.

A few preliminary observations will be of service in rendering the following translation from the Raghuvans'a interesting to English readers in general. The remarks now to be submitted will be of the most simple and elementary kind, embodying little or nothing that is new to Oriental

scholars, but probably not, on that account, the less useful to the class of readers for which they are intended.

We may conveniently divide Sanskrit literature into two parts, sacred and profane. It is by no means easy in all cases to draw the distinguishing line ; but the two-fold division is nevertheless perfectly just. Generally speaking, the profane portion of Sanskrit literature, when estimated by the laws of criticism and taste, is far superior in merit to the part that is deemed more peculiarly sacred. The most indulgent criticism can scarcely discover any poetical merit in the Vedas and Puránas ; while on the other hand the most fastidious taste must admit the beauty of many passages in the dramatic, heroic, and pastoral poetry of the Hindus.

Kálidása, the author of the Raghuvans'a, is one of the greatest, if not the very greatest, of the profane poets of India. His name is already familiar to the literary public, having been introduced to notice by Sir W. Jones, in his elegant version of the drama S'akuntalá. In attempting to form an estimate of the merits of Kálidása, we encounter, in the very outset, a formidable difficulty, in endeavouring to ascertain whether or not there has been more than one poet of the name. It is about as certain as we can consider any event in Indian history to be, which is recorded merely in books, and not engraved on copper plates or the ever-during rock, that Kálidása flourished at the court of Vikramáditya. Yet it is nearly equally well ascertained that Kálidása flourished at the court of king Bhoja ; and it is no easy matter to reconcile the two statements. Jones fixes his era in the century before Christ ; Mr. Elphinstone inclines to the fifth century ; Colebrooke and Professor Wilson say, at least 900 years ago.* Professor Wilson, in a later work than the one we have just quoted, fairly cuts the knot, by supposing that there were at least two poets, bearing the name of Kálidása. He appears to do so on the ground of the great diversity of style, between the writing generally ascribed to Kálidása and the Nalodaya. The writings of Kálidása are in general characterized, not only by exceeding elegance, but by perfect good taste ; while the Nalodaya, in violation of all the canons of taste, is, as Colebrooke expresses it, " a series of puns on a pathetic subject." Without entering at length into this question, we shall merely remark, that if Kálidása had lived at the period when the Sanskrit language had attained the

* Wilson's translation of the Megadúta, p. vii.

highest stage of refinement, and just before its corruption began, he might possibly have been the author of the *Nalodaya* as well as the *Raghuvans'a*. Such a man, wielding at will the resources of the most perfect language ever known, was under a strong temptation to attempt, as in the *Nalodaya*, some of those wondrous feats in versification, from which the good taste of the West has not preserved European literature. Poets very frequently (to use the language of Wordsworth)

Have felt the weight of too much liberty,

and of their free choice they have circumscribed that liberty often by sufficiently odd expedients. Besides, it may be questioned, whether good taste is a uniform characteristic of the undoubted writings of Kálidása. Some instances might be pointed out of what are technically called *conceits*, even in his most elaborate works.

Assuming then the probability of there having been only one Kálidása, we must admire the greatness and variety of his powers. The commendations which have been heaped on the play of *S'akuntalá*, show, that in the estimation of the best critics, Kálidása is reckoned the prince of Hindú dramatic poets. Jones has styled him the Shakspeare of India. Two other dramas are attributed to his pen, and these are not unworthy of the author of *S'akuntalá*. In the *Raghuvans'a* we have a specimen of heroic, or what may be denominated epic poetry. We have also, the *Kumára Sambhava* (the birth of Kumára;) and the *Meghadúta* (the Cloud-messenger), beside the *S'rúta Bodha*, a treatise on prosody, and the disputed *Nalodaya*, all probably from his pen. Probably, the greatest effort of the genius of Kálidása is *S'akuntalá*. He excels more in tenderness than sublimity, and the plot of the drama of *S'akuntalá* affords full scope to the bent of his genius. When we speak of the epic poets of India, let it not be supposed that India can boast of epic poetry of the same kind as that of Europe. The rules of Aristotle would fall with crushing weight alike on *Vyása*, *Válmika*, and Kálidása. But apart from all factitious distinctions and laws, it must be confessed, that if sustained elevation of thought and feeling be deemed essential to an epic poet, Kálidása must forego the title. Very seldom does he give utterance to any very lofty sentiment; seldom does he himself kindle, or cause the minds of his readers to kindle. His merits, however, are still considerable. We find in the *Raghuvans'a*, exact and elaborately minute descriptions of natural scenery, proving that Kálidása had attentively studied nature, and studied her with a poet's

eye. Tenderness has been already mentioned as one of his excellencies. His comparisons, similes, allusions, and figures of all kinds, are most abundant; they are always at the least pretty, and sometimes beautiful. In regard to language, Kálidása ranks exceedingly high in the estimation, both of his own countrymen and European scholars. On this point, it would be somewhat presumptuous for one, whose acquaintance with Sanskrit is of no long standing, to express any very decided opinion of his own. One thing, however, is evident to the merest beginner. The style of Kálidása is elaborate and refined in the highest degree; the consummate skill of the artist is visible throughout; the polish indeed is sometimes excessive.

A good deal has already been accomplished towards introducing the writings of Kálidása to the notice of the European public. The drama of S'akuntalá has been rendered into English prose, by the masterly hand of Jones. Another drama, Vikrama and Urvasí, has been translated by Professor Wilson, in his well known and esteemed work, the Hindú Theatre. A beautiful little poem, the Meghadúta, or Cloud-messenger, has been rendered into English rhyme by Professor Wilson. The Kumára Sambhava and the *Raghuvans'a* have been translated into Latin prose by a German scholar, Adolphus Frederic Stenzler. The latter two works have been published along with their Latin versions, by the Oriental Translation Committee. Reference will be made to the merits of some of these works by and by.

The *Raghuvans'a*, the first book of which is now offered in a metrical English version, consists of 19 books. The exploits of the race of Raghu form its subject. The line of kings, whose history it contains, is a pretty long one, but the poet at pleasure compresses the narrative of a reign into a few stanzas, or extends it to several cantos. Eight entire cantos are occupied with the history of Ráma, the son of Das'arath. In this part of his work, Kálidása comes into competition with the author of the great mythological poem the Rámáyana. He will not suffer by the comparison. Schlegel and other German writers of high name have been profuse in their commendations of the Rámáyana, but most men will be disposed to side with Colebrooke on this question. Colebrooke does not consider the Rámáyana to possess poetical merit of a high order, but includes it with the sacred poems in general, which he characterizes as "flat, diffuse, and no less deficient in ornament, than abundant in repetitions." From this

censure he excepts, and justly, the chief profane poems. No part of the Raghuvans'a, so far as I know, can be pronounced "flat" or "deficient in ornament." On the contrary, over-refinement, and a far too lavish use of poetical diction and imagery, generally characterize it.

Into the moral character of the Raghuvans'a I shall scarcely enter. With the exception of the last canto, it is less faulty than might have been expected of the production of a Hindú poet. The last canto, however, is exceedingly objectionable.

As a translation of the Raghuvans'a into Latin prose, has already been given to the world, it may be asked, what need there is of offering a new version of any part of it. Probably, had the Latin version in question, been executed with any considerable degree of spirit and elegance, the following translation of the first canto would not have been thought of. But apart from its total want of elegance, the fact that Stenzler's Latin version is in prose, is a strong objection to it. With the exception of the very highest poetry, as for example that of the Sacred Scriptures, where the sublime elevation, or the fervid devotion, of the sentiment does not require the aid of poetical measures to sustain it, there is perhaps no species of metrical composition in the world, that will bear translation into literal prose. What becomes of the fire of Pindar, or the *curiosa felicitas* of Horace? what of the majesty of Virgil, when those writers are presented to us in a prose translation? And what of the nameless and undefinable fascination of the music that breathes from the language of every true poet?

Assuming then, that a metrical translation is preferable to a prose one, ought it to be in rhyme or blank verse? Generally speaking it can be much more faithfully executed in the latter. Translations into rhyme generally abound with factitious, not to say spurious, ornaments. The chief objection to a blank verse translation is the difficulty of making it sufficiently musical. In all other respects it is much preferable to rhyme.

The stanza in which the first, fourth, tenth, twelfth, fifteenth and seventeenth cantos of the Raghuvans'a are composed, is called by Sanskrit Grammarians Anushtubh. It may be called the heroic stanza of Sanskrit poetry. It is far more frequently used than any other in their great poems, such as Manu, the Mahábhárata and Rámáyana, and the Puránas. It bears a resemblance to the measure which is called in the technical language of Latin grammarians, Iambic Tetrameter. An English reader

will understand its general construction, if he supposes two lines of the octo-syllabic measure so much used by Scott, thrown into one, with the rhymes omitted. In the Sanskrit poets, a shloka or stanza consists of four parts of equal length, two of which are written in one line. A shloka is in English terms a couplet, with a distinct pause in the middle of each line. The following marks will show the construction of the first four stanzas of the Raghuvans'a :—

| | | | |
|-----------------------|---------------------|---|--|
| — — — √ √ — — — √ | — — — √ √ — — — √ | } | The mark √ denotes a short syllable. Do. — a long syllable. |
| √ √ — — √ √ — — — √ | — √ — — √ √ — — — √ | | |
| √ — — — √ √ — — — √ | √ — — — √ √ — — — √ | | |
| √ — — — √ — — — √ | √ — — — √ — — — √ | | |
| — — — √ √ — — — √ | √ — — — √ √ — — — √ | | |
| — √ — — — √ — — — √ | — — — √ √ — — — √ | | |
| √ √ — — — √ √ — — — √ | — — — — — √ — — — √ | | |
| √ — — — √ √ — — — √ | — — — — — √ — — — √ | | |

It will be seen from the above specimen that each line is kept rigidly to its prescribed *number of syllables*. Each half-line consists of 8; and therefore the entire shloka, of 32 syllables. In this respect the Sanskrit poets enjoy less liberty than the Latin and Greek, who in most metres can vary the number of syllables within a considerable range. But the Sanskrit poets enjoy very great liberty in regard to the *quantity* of the syllables they employ. The four first syllables in each half-line are long or short at pleasure. The last syllable of each line is also long or short.

On the whole, the best idea of the Anushtubh may be obtained from a specimen like the following :—

I sing a race from birth stainless; successful in each bold emprise;
 To ocean's bounds they were victors; and borne on cars to heaven on high.
 The sacred fire they kept duly; all watchful they in duty's hour;
 Fell on the guilty due vengeance; no suppliant craved their grace in vain.

The reader who has been accustomed to the rhythm of English verse only, will feel a shock at the middle of each line, arising from the substi-

tution of a Spondee for an Iambus in the fourth foot. But the reader who is acquainted with classic metres will recollect the Scazon or Choliambus (limping Iambus), frequently used by Catallus,—as *e. g.* in the well-known ode :—

Peninsularum, Sirmio, insulārūmque.
 Ocelle, quascunq̄ue in libentibus saḡnis.
 Marique vasto fert uterque Neptūnus.
 Quam te libenter quam que lætūs invīso.

In these lines, at the sixth foot, we have the Spondee, and it has the same effect on an ear accustomed only to English metres, as in the Sanskrit metre under review.

In the following version of the first canto of the Raghuvans'a, the number of syllables which each line has in the original is exactly followed in the greater part of the translation. At the 35th stanza a syllable is omitted at the commencement, which changes the verse to Trochaic. The Trochaic measure is kept up to the 60th stanza.

The Spondee at the end of the first hemistich of each shloka has not been attempted. It does not accord with the genius of the English Iambic stanza.

Occasionally, the pause, for variety's sake, has been removed from the middle of the verse. I am not aware that this is ever done in the original.

Occasionally also elisions (as they are generally, though not very correctly, called), have been introduced. In the hands of one who skilfully wields the English measures, elisions tend greatly to the beauty, as well as the variety, of the verse,—as in the line of Milton,

O'er many a frozen, many a fiery Alp,—

in which there are no fewer than three such elisions. Indeed, justice cannot be done to our English metres without the occasional use of elisions. They have accordingly been sometimes employed in the following version :—

METRICAL TRANSLATION OF THE 1ST BOOK OF THE RAGHUVANS'A,
AN HEROIC SANSKRIT POEM; BY KA'LIDA SA.

The pair like thought and speech *conjoined (that I may thought and speech obtain)

The world's great parents, I invoke,—Párvatí and the Lord supreme.
But what the sun-descended † race! the Poet's feeble genius what!
Ah! fondly, on a fragile raft, I tempt a wide and stormy sea;—
I can but prove a laughing-stock, aspiring thus to bard's renown,
As if a pigmy strained his arm to reach the high o'erhanging fruit.
Yet, since, by ancient bards prepared, a pathway to the theme leads on,
I pass, even as the thread may pierce the diamond-perforated gem.
I sing a race, unstained from birth, successful in each bold emprise,
Victorious even to Ocean's bounds, and borne on cars to heaven on high;
The sacred fire they duly kept; no suppliant craved their grace in vain;
Fit vengeance on the guilty fell; all watchful they in doubtful hour;
'Twas but to give, they gathered; still, their measured words to truth
were given;
Learning they sought for glory's sake; for offspring the connubial tie.
Learning in childhood; next in youth, each wordly task and joy were theirs;
Hermits in age; from bodily chains freed by devotion's power at last.
Even such was Raghu's lofty line; even such the poet's mighty theme,—
For why? their storied high renown impels me to the fond attempt.
Then be it heard, heard by the wise, 'twixt good and bad discerning well,
Even as the quality of gold is tried in the refining fire.
Vaivasvat, of the Manus seventh,—high-honoured by the wise was he,
The mightiest far of earthly kings, like Om the mightiest word of power.
Pure was his race; purest of all, Dilíp beheld the light of day,
Who shone the first of kings, as shines the moon within the milky sea.
Broad-breasted, shoulders like a bull's, like Shála boughs his long arms
reached;
As in its own peculiar seat, the Kshatri virtue in him dwelt.
With all-surpassing force endowed, with peerless splendour was he graced,
Towering o'er all on earth he strode, as Meru o'er the mountain towers.
Nor less his wisdom than his force, with aims that wisdom to beseem,
And bold his efforts as his aims, and like his efforts his success.
Stern and yet mild the monarch's mood, he stood before his subjects' eye,
Dreaded yet loved, like Ocean's depths at once with pearls and monsters filled.
And not one hair's breadth from the path, the path prescribed, of holiness,
His subjects swerved; his chariot tracks with vigilant eye they followed still.
'Twas for his people's good alone his royal revenues were ta'en,
As the sun drinks earth's moisture up to pour it back a thousand fold.
With care his martial force he kept; by twofold means his power preserved,

* Literally word and meaning.

† The well known *Súrya Vans'a*.

A mind much versed in holy books, and his good bow aye ready bent.
 Secret of purpose, self-possessed,—his thoughts ye gathered doubtfully,
 Till from the issue forth they shone, like quickening memories of the past.
 Him, bold in danger's darkest hour, unwearied in each noble deed.
 'Midst all his wealth no avarice swayed, nor pleasure 'mid his bliss enslaved.
 Modest, though wise; though powerful, mild; liberal, yet careless of display;
 Like a rich garland round him wreathed, his native virtues graced the king.
 Unhurt by pleasure's deadly power, with large capacious mind endowed,
 He saw his years steal on apace, yet vigorous was he as of old.
 He trained, protected, nourished all; his people's father he in truth,—
 Their natural parents gave them birth, all other duties he performed.
 Chastising guilt for order's sake, for offspring seeking marriage ties,
 His labour and enjoyment too became religion, righteousness.*
 Earth's best he gave in sacrifice,—Heaven's best poured Indra back again,
 And thus by mutual interchange, the two sustained the twofold world.
 Unmatched the peace in other lands that flourished in his happy realm,
 No robber's daring deed was known,—'twas heard of as an ancient tale.
 Virtue he honoured in a foe, (like medicine by the sick man prized,)
 Cast off the vicious tho' a friend, (even as ye would a poisoned limb.)
 Such was he,—sure, combined in him were all the mighty elements,
 For every faculty was bent on every side to scatter bliss.
 Earth, girdled by its sandy shore and circled by its ocean fosse,
 He swayed alone, and calmly swayed, as it had been a single town.
 Sprung of the line of Magadha, Sudakshiná his royal spouse,†
 (So from her gentle nature called) was sweet as holy gifts are sweet.
 Many within his palace walls the lovely dames that owned him lord,
 But Lakshmi ‡ and this fair alone his heart's devotion full received.
 Much longed of Sudakshiná to see another self produced,
 And still he wished, but vainly wished, for long delay had balked his hope;
 Until at last he went to prove the utmost power of holy rites,
 The burden of his state-affairs resigning to his counsellors.
 § First the sacred rites they rendered, then the pious king and queen
 Sought the sage Vasíshta's dwelling, by desire of offspring led.
 Seemed they, on the car ascending, (deep and pleasant 'was its sound,)
 Like the lightning and Airávat|| on the murky thunder-cloud.
 Lest the holy sage be burdened, small the retinue they chose,

* There seems a reference here to the Bráhmical opinion of the four grand objects of human pursuit; religion, power, enjoyment, final emancipation. The king's pursuit of enjoyment was as good as the pursuit of religion.

† There is here a play on the words, a thing pretty frequent in this poem. "Sudakshiná was as pleasing as the dakshiná."

‡ Lakshmi seems here to mean the Goddess Lakshmi, the wife of Vishnu, the goddess of prosperity.

§ The measure in the translation here changes to Trocheic. It differs from the former by the omission simply of one syllable at the commencement. It is a livelier measure than the former. The measure in the original is the same as before.

|| The elephant of India.

Yet their native port majestic looked a guard around them placed :
 O'er them played the blisaful breezes, breathing Shála odours round,
 Fell the fragrant flow'r dust o'er them, danced the rows of forest trees :
 Pleased they heard the peacocks' voices shrill resounding on the way,
 Still, as rolled the sounding chariot, lifting up their heads to gaze :
 Stedfast on the chariot looking pairs of antelopes they saw,
 In whose large and glassy eyeballs mirrored they themselves appeared :
 In a line the cranes were flying, gently murmuring, overhead,
 Like an arch* enwreathed with garlands, baseless, hanging in the sky :
 Softly swept the breezes with them, ominous of good success,
 Nor was face nor raiment blemished by the dust the steeds upraised :
 Sweet the fragrance of the lotas, sweet as their own breath was sweet,
 Wafted from the lakelet's bosom, where the cooling ripples ran :
 Offerings they received and blessings in the towns themselves had reared,
 Where the sacrificial column showed the recent holy rite :
 Each with present of fresh butter crowded the old herdsmen near,
 Whom the royal pair would question of the forest trees around :—
 Theirs was beauty, theirs was splendour, moving onwards clothed in white,
 Like the moon with Chitrâ† beaming in a pure and cloudless heaven :
 This and that the gracious monarch, smiling, showed his loving spouse,
 Nothing recked he of the journey long protracted though it was ;
 Till at last, with jaded horses, at the holy hermitage
 Of the Rishi, in the evening, late arrived the royal pair.
 From the forest depths returned and moving near the dazzling fire,
 Holy hermits there were bringing wood and fruit and kus'a grass ;
 Round the entrance deer were couching, fed on rice with nicest care,
 Seemed they like the Rishi's children, fearless crowding by the gate ;
 Here the sages' gentle daughters, watering quickly left the trees,
 Lest they scare the timid warblers from the little water-pools :
 Now the blaze of day was over,—and the ruminating deer,
 Where the ground with rice was sprinkled, lay at ease around the cell.
 By the sacred offering's odour, and the smoke the breeze conveyed
 From the holy fire there blazing they were purified anon ;—
 " Stop the car" exclaimed the monarch, and then, turning to his spouse,
 Gently helped her in descending, then himself alighted down.
 Lowly did the meek ascetics in obeisance faithful bend
 To the monarch great and gracious and to her his partner dear :
 When the evening rites were ended, they beheld the mighty sage,
 With Arandhat‡ there shining, like the Fire-god with his spouse :
 Reverently the mighty monarch and his queen their feet did grasp,
 While with accents kind and courteous greeted them the holy pair.
 Soon each hospitable office banished all the journey's pain,
 Then the sage the sage-like monarch questioned on his kingdom's weal ;
 He the all-victorious hero, graced with matchless eloquence,

* तारण The head of a gateway, perhaps whether arched or not.

Fitly answered thus the question of the reverend awful sage :—

“ * Since thou divine and human harm alike dost ward off skilfully,
 “ Success and all prosperity in every point my kingdom bless ;
 “ Resistless are thy sacred spells, they quell all enemies afar ;
 “ Superfluous lie my arrows by,—my darts that never missed the mark.
 “ Thou throw’st the offering in the fire, a sacrifice of solemn pomp,—
 “ ’Tis turned into a shower of grain, that banishes all want and fear :
 “ Safe and unharmed my people live the utmost term of human life,
 “ Thy holy merits are the cause, ’tis thou procur’st our happiness.
 “ O sage of heavenly lineage born, while thou remain’st my steady friend,
 “ Joy linked with joy must flow to me, and blessing heaped on blessing crown.
 “ Yet what is Earth to me with all its lovely isles, its precious gems,
 “ When never from thy daughter here a child—another self—has sprung
 “ The Manes of my fathers see the S’ráddha’s offering must expire ;
 “ Scarce can they now partake, but turn in sorrow from the sacred cake.
 “ And all the holy water too, which I have poured, must cease to flow ;
 “ Foreseeing this, they drink it now all tepid by their woeful sighs.
 “ Thus purged in soul by holy rites, yet darkened by a failing line,
 “ Splendid yet wrapped in gloom am I, like Lokíloka† the far mount.
 “ The righteousness of holy deeds is blessedness in worlds to come,
 “ But double bliss (’tis here and there) springs from a spotless progeny.
 “ Thus thou behold’st me desolate, and mourn’st thou not, O holy man ?
 “ Fast by thy door a cherished plant is barren all and sapless found.
 “ This greatest, crushing, load of grief, O mighty sage, I cannot bear ;
 “ Like a bound elephant am I, vain-struggling the cool stream to reach ;
 “ And thou must point the path to rest, the mode deliverance to attain,
 “ Who still in all distress hast proved the saviour of Ikshwáku’s line.”

The Rishi heard the monarch’s words, and wrapped in thought profound he stood,

With fixed eyes, a moment’s space,—so in a pond might fishes sleep.
 Through deepest meditation’s force his fixed mind beheld the cause
 Why failed the mighty monarch’s line, and thus the sage addressed the king :—
 “ ’Twas once, when thou hadst been to pay thy worship to the King of Heaven,
 “ And back wert speeding, Surabhi‡ beneath the kalpavriksha§ stood.
 “ To her all worthy of regard thou paid’st not veneration due,
 “ For eager wert thou pressing home to join thy spouse so well beloved.
 “ ‘Dost thou despise me?’ she exclaimed ; ‘ be without offspring, till thou learn’

* The measure in the translation is here Iambic again, and so to the end. In the original it never varies.

† Lokíloka is enlightened on one side, and dark on the other. The account given of it in the Vishnu Purána is as follows :

“ Beyond the sea of fresh water is a region of twice its extent, where the land is of gold, and where no living beings reside. Thence extends the Lokíloka mountain, which is ten thousand Yojanas (80,000 miles) in breadth, and as many in height ; and beyond it, perpetual darkness invests the mountain all round ; which darkness is again encompassed by the shell of the egg.”

Wilson’s *Vish. Pur.* p. 203.

‡ Or Kámadhenu, the cow of plenty ; who gratifies all the wishes of her owner.

§ A tree that yields everything desired.

" My offspring to revere ;' even so lighted on thee her withering curse.
 " Loud sporting were the elephants amid the Gang's heavenly stream,
 " And nor by thee, O king, the curse, nor by thy charioteer, was heard ;
 " Yet 'tis for that impiety that all thy hopes have blasted been,—
 " Pay worship wheresoe'er 'tis due, or bid adieu to happiness.
 " To yield the offering needed for Varuna's lengthened sacrifice.
 " Now deep she dwells in Pátála, whose doors fierce serpents strictly guard ;
 " But monarch, to her offspring here pay with thy spouse the reverence meet ;
 " If she shall but propitious prove, she too is Surabhí to thee."

Forth stepped the blameless Nandaní from out the wood while thus he spoke—
 The cow whose milk the sage employed to offer holy sacrifice.
 Brown was her hue, all beautiful, soft, polished, like the freshest spray ;
 Gleamed on her forehead a white mark, as the new moon in twilight gleams.
 Whene'er she to her young one turned, her warm milk streamed upon the ground.
 As from a fount,—'twas holier far than water in the sacrifice.
 The dust excited by her hoofs the body of the monarch touched,
 And gave a purity as if the king had bathed in holiest spot.
 Right joyfully the awful sage beheld the beautiful in form,
 And thus addressed his royal guest no longer doomed to blighted hope.
 " Know, monarch, thy deliverance comes, I see, I see it close at hand,
 " Since thus at once, when called by name, bliss-giving Surabhí has come.
 " Living on what the woodland yields, her must thou follow step by step.
 " As students science' footsteps track, even so must thou propitiate her ;
 " Move onwards, when she moves ; when'er she rests, rest thou beside her there ;
 " Recline, when she is pleased to couch ; drink, whensoe'er thou see'st her drink.
 " And to the border of the wood, let thy queen also follow her,
 " With punctual care, at noon ; and so, still meet her in the even tide.
 " Thus shalt thou yield her reverence meet, till she shall all propitious prove.
 " Success attend thee ! Be thou first of all who bear a father's name."
 " So be it." Humbly, with these words, the prudent monarch with his spouse
 Like meek disciple bending low, received his holy master's word.
 Then did the holy awful sage, when even's darkening hour arrived,
 Dismiss the monarch to repose, whom brighter hopes were cheering now.
 All boundless was that sage's power, yet lest the holy rite be marred,
 Thoughtful, he but the simplest means prepared the monarch to receive.
 He pointed out a hut of leaves ; soon entered it the king and queen :
 And while the sage's pupils there in holy studies passed the night,—
 Where kus'a grass bestrewed the floor, full sweetly slept the royal pair.*

* The last three lines correspond to two in the original, the last shloka of which is in a longer measure than the rest of the book. The addition of one or two longer stanzas at the end is frequent. It may be compared to the use of the Alexandrine in English metres.

VI.—*Botany of the Bombay Presidency.*

The following notice, by Sir H. J. Hooker, of the late Mr. Graham's Catalogue of Bombay Plants, extracted from the Journal of Botany for 1841, will interest such of the readers of this Journal as know that work, or who take an interest in Botany or in Agri-Horticultural improvement. Of no part of India is the Botany so little known, as of the Bombay territories; but it is hoped, that an improved and greatly extended catalogue will soon be published by a gentleman well qualified for the task, to whom much of the value of MR. GRAHAM'S work is due.—ED.

“*A Catalogue of the PLANTS growing in BOMBAY AND ITS VICINITY, spontaneous, cultivated, or introduced, as far as they have been ascertained.* By JOHN GRAHAM, Bombay, 1839.”

“ Besides the late John Graham, Esq., Deputy Post Master General of the Bombay Presidency, whose name stands as the author of this catalogue, Joseph Nimmo, Esq., of Bombay, has been long known as deeply interested in the Botany of Western India, and with both of them we have enjoyed correspondence. The MS. of this work in question was presented to the Agricultural and Horticultural Society of Bombay in 1838, accompanied by the following letter, addressed to James Little, Esq., Secretary to the Society.

“ SIR,—I beg to present to our Society a list of the vegetable productions of the Bombay Presidency, and to signify my willingness to see it correctly through the press, should the Society deem it worthy of publication. It has been drawn up with great care, through the assistance of Mr. Nimmo, and not a single plant is put down which has not been seen and examined by one or other of us. I need hardly say that such a list is much wanted by all who pay any attention to the study of botany, and will save much time and trouble in consulting books and figures.

I am, &c. &c.

JOHN GRAHAM,

Member of the Agric. and Hortic. Society.

“ The Committee of the Society promptly and liberally accepted the offer, and the printing of the catalogue had proceeded under Mr. Graham's superintendence, as far as the 200th page, when death terminated his labours. The remainder has been completed, the preface tells us, under the superintendence of Mr. Nimmo, who has been for many years

a zealous and successful labourer in the same field of science, and who has given the gratifying assurance, that he will continue to dedicate his time to the investigation of this hitherto neglected part of India, much of which still remains unexplored, and that he will print supplements to their catalogue from time to time, as additional species and additional information present themselves. Various have been the assistance and contributions received from different sources towards promoting the interests of this volume, but acknowledgements are more especially expressed to Mr. Law of the Civil Service, together with Drs. Lush, Gibson, Murray, and Heddle, of the Medical Establishment, with all of whom the author was in constant correspondence and from whom he received very important aid. With regard to Mr. Graham himself, we learn that he was a native of Dumfries-shire, and that he arrived in India in 1828, under the patronage of the late Sir John Malcolm, who was at that time Governor of the Bombay Presidency, and that he was honored with his friendship, and esteem, and resided in his family until he was nominated by him Deputy Post Master General, an appointment he held till the period of his death. He possessed a combination of qualities which peculiarly fitted him for that office. The performance of his arduous duties, indeed, left him little leisure for the prosecution of his favourite pursuit ; but the few and brief opportunities which were afforded him, were eagerly seized and improved ; and one of the objects he had most at heart, while Superintendent of the Society's Garden, shortly after its establishment, was to store it with an extensive assortment of rare wild, as well as useful Indian plants, chiefly collected by himself. He expired at Khandalla, the favourite scene of his botanical researches, on the 28th of May, 1839, at the age of 34, after only a few days illness. The intelligence of his decease was received at every station within the Presidency with an almost universal feeling of sorrow and regret, and his friends have testified their admiration of his character, and their grief for his death, by the erection of a handsome monument over his grave.

To Mr. Nimmo, this country, Britain, and the Glasgow Botanic Garden in particular, is indebted for the introduction of several rare and beautiful Indian plants, amongst them the singular *Impatiens Scapiflora* (W. and A.) in the *Botanical Magazine*, tab. 5387, the splendid *Habenaria Gigantea*, (Bot. Mag. tab. 3374) the *Habenaria Goodyeroides*, (Bot. Mag. tab. 3397) and many others.

The arrangement of the work under notice is that of De Condolle's *Prodromus*, and the number of species, including *Ferns*, is 1799, exclusive however of several new plants mentioned in the supplements, and some new genera. The book is much more than a catalogue; there are tolerably copious synonyms, references to figures, remarks on the uses, properties, &c. and frequent poetical and classical allusions and characters of the new species. That such a publication in the Presidency itself will tend materially to promote the study of the Botany of the Western side of India, we cannot for a moment doubt; nor that this stimulus will induce many, who have the inclination and the opportunity, to explore the great chain of the Ghauts, (which could not fail to yield an abundant harvest) and much interesting country to the north of Bombay, particularly Guzerat, Cutch, and the great sandy deserts bordering on the Sindy and on Moultan."

VII.—*Ehrenberg on the Formation of the Coral Islands and Coral Banks in the Red Sea.*—(Concluded from page 136.)

HISTORICAL ACCOUNT.

The most ancient accounts of corals being masses of rock, refer to those of the Red Sea, and to the dangers said to be incurred near them on voyages from North Africa to India, which attracted the attention of nations in very remote ages. It is, nevertheless, surprising, that there are no particular accounts of these coral banks even at the present day. It is true Forkal's exertions have thrown some light upon the subject, still he has not given us a complete description of these phenomena. He merely sketched with a few happy strokes the general appearance and the extensive distribution of the corals,* whilst both before and after his time, the animals which form the corals have been treated of with little detail, and without order.

* Desor. animal, p. xxix. Montes coralliferi aburbe. Tor usque ad Ghonfadam ripas muniunt submarinas densissime post hanc urbem versus meridiem rariores evadunt (an desinant plane nescio) ita nautae, quantumvis timidi et inexerti jam securis navigent velis nocturno quoque tempore. Suensia littora nesciunt Cotallia.

In Lord Valentia's map of the Red Sea and in other geographical and hydrographical papers, many coral reefs are marked ; thus some light is thrown upon their extent, but they require further illustration and should not be confounded with sand-banks. We had many opportunities of ascertaining, that they were often marked in wrong situations and in wrong directions ; we found also that their forms were generally given incorrectly. It appears that those who have been there and have given us an account of their voyages, sailed by these cliffs and islands at high water without stopping to examine them, sketching the places pointed out to them by the Pilots without perfectly understanding them. As only a few havens have been accurately examined and are perfectly known, they cannot give a clear idea of the whole.* As the interest excited by the description of the coral islands in the Pacific is now so great, we feel assured that an account of those in the Red Sea will not be unacceptable.

The stay of Dr. Hemprich and myself on those coasts, enables us to give a more perfect description of these banks. We stayed there eighteen months, nine months in 1823 and the beginning of 1824, and the other nine in 1825. We spent nearly twelve months on board a vessel in that sea sailing almost through the whole of its extent ; we saw a great number of islands and coral banks, and touched at forty-eight different points on the coasts for the purpose of examining them accurately. We observed about 150 different islands and places on the coasts, situated in various degrees of latitude, besides those which we examined, stretching along the coast of Sinaitic Arabia, nearly 200 miles in length. We also made a collection of the different species of coral animals which we found on the coral banks, nearly the whole of which we presented to the Royal Museum ; and which contains 110 different species, consequently nearly 3 times as many as those collected and described by Shaw, Forksål, Savigny and Rûppell together. The knowledge of the formation of corals in the Red Sea, thus gained by labour attended with considerable danger, is, I trust, sufficiently accurate, to render the following a just account of the subject.

General description of the extent of Coral Banks in the Red Sea.

The Red Sea if compared with the Mediterranean, Baltic, and North Sea, and the Atlantic ocean with their coasts, appears to Europeans to

* The chart of this sea by the officers of the Indian Navy was not published when those observations were written.—*Edit.*

differ from them in having all its shores encircled with flat rocky banks, which just rise to the surface of the water, but are almost always covered with it. They are sometimes found at a great distance from land, and as they are not easily discernible even when very near, vessels are exposed to great danger from them. These banks are always wet, even when they rise above the surface of the water and become visible; the Arabs call them *Shaebë*, in the plural *Shabeän* to distinguish them from islands which they call *Gesîre*, in the plural *Gesirât*. With the exception of Suez, Tor, and Yambo, there are very few havens in the Red Sea which allow even the Native craft to anchor near the shore, on account of the flat banks of rock which often stretch out a quarter to half a mile, and are covered with little water, or are quite dry at low ebb; it happens frequently that the crew cannot even go on shore in small boats owing to the shallowness of the water, but are obliged to leave the boats a great distance from land, making them fast to rocks and anchors, while they themselves wade a considerable distance through the water to reach the land. When we visited these shores the crew usually carried us, with our arms and luggage, on their backs, to the land and back for a mere trifle.

Besides this rocky beach which is evidently connected with the mainland, upon which there are occasional hills formed by the sand drifted from the shore, there are other flat rocks scattered at small distances in the sea; these being rather lower than the rocky beach, are covered with water, and between it and them there are channels containing one and sometimes two fathoms of water, formed by the waves which break over them; here small vessels may safely anchor. These rocks which rise from the bottom of the sea are covered with corals, they form indeed the coral banks of the Red Sea; they are sometimes found in one unbroken chain near the coasts, sometimes they run in parallel lines into the sea. In the most violent storms, vessels which are on the leeward side of these coral banks may be considered out of danger, as they may be secured in various manners with iron hooks, chains, ropes and anchors. These reefs are sometimes very long, and vessels which are driven by violent winds and sometimes by currents so near them that the rudder and sails are rendered useless by the force of breakers, are inevitably lost, the rising surf throwing them against the rocks and thus dashing them to pieces. I shudder when I remember the danger to which I was personally exposed when our ship was sailing from Suez to Jedda; we were driven in broad daylight on

one of these small reefs near Wush, notwithstanding the continued exertions of the crew ; three shocks which the vessel received by three waves carrying us over the bank, made us every moment expect certain destruction. Happily there was sufficient water on the reef to bear the vessel, so that the fourth wave carried us again into the deep water where we were kept in dreadful suspense for three hours, until it was ascertained that the vessel was merely shaken but not broken. Sheikh Imam Abdullah, a man with snow-white hair, who was on a pilgrimage to Mecca, received in solemn silence the blessings and the tears of gratitude of 50 persons who ascribed their deliverance to his presence.

These reefs are most numerous on the Arabian coast, half way down the Red Sea. From Tor in the Bay of Suez down to Camfuda in Arabia Felix, all we saw were of the same form; but this formation of coral banks becomes more rare both in the north part of the Red Sea from Tor to Suez, and in the south part from Camfuda to Mocha ; in the south we saw only one of this description a little north from Nakuhs. This the Arabs affirm to be the last ; they call it therefore Shaeb-el-Chassa. We could not ascertain for ourselves that there were, indeed, so few coral banks in the southern part of the Red Sea, but the seafaring men told us that they could sail day and night both from Suez to Tor and from Camfuda to Mocha, while no Arab vessel which keeps the coast in view, ventures to sail by night in the whole middle part from Tor to Camfuda. As sudden storms frequently rise, and there are but few secure places for casting anchor, broad daylight is required in order to put in to any port.

The depth of the middle part of the Red Sea is so great that an anchor cannot be cast there and this causes such tremendous waves to rise on a stormy day, that no vessel without a deck can resist them. I do not recollect to have seen such a rough sea and such high waves in any other sea with which I am personally acquainted, and which are the Mediterranean, the Adriatic, the North Sea, the Baltic and the Caspian Sea near Astrachan, although I have had many stormy days on the four first mentioned seas, and make full allowance for the small size of the vessels used by me on the Red Sea.

The highest waves I have ever seen, I found in the deep sea between Sherm-el-Sheik, the isle of Tiran and Ras Mohammed at the entrance of the bay of Akaba, where also according to seafaring men no bottom is found at a depth of 100 fathoms. We did not meet with such

high waves in the southern part of the Red Sea, although on my return from Abyssinia I had to endure a severe storm for three days.

I had also sufficient opportunity of ascertaining that there is no want of coral banks in those regions, for when we crossed the sea from the Arabian isle Camarã to Dhalac, we met with coral banks near every island and with several detached coral rocks, nearly the whole of which were covered with water, and consequently would be reckoned amongst the most dangerous in the Red Sea if they were situated in the track of vessels. I am, therefore, of opinion that the inconsiderable depth of the sea* and the want of high waves rather than the want of coral rocks are the causes, why seafaring men sail with greater security in Yemen. In this general description of the coral banks of the Red Sea, I cannot omit noticing that in the middle and deepest part of this large sheet of water from Djedda in Arabia to Cosseir in Africa, not a single coral bank is to be found. On my return from Yemen to Cosseir I was on board the large Egyptian brig *El-Kandil*, which, on account of its having a deck and being commanded by a Grecian Captain, sailed on the high sea out of sight of land. Contrary winds obliged us to tack for twelve days and nights, notwithstanding this, we did not meet with a single coral reef on this voyage, the captain steered the vessel toward evening in the direction of the Arabian coast, and during the night he sailed into the high sea in the direction of the African coast. The only rocks which we saw in the high sea was in the latitude of Cosseir itself; it was the isle Fennatir, consisting of two rocks; northward of this island more isles and rocks gradually make their appearance which allow the entrance of native vessels into the bay of Suez only at day-light. In a similar manner do the islands of Tiran and Barkan with other neighbouring coral reefs block up the entrance into the bay of Akaba; Fennatir however is no coral bank, but consists of two small rocks rising above the surface of the water.

If you look at the shores of the Arabian sea and compare with them the coral rocks and isles of the same, you will find that where the water is shallow, there coral banks and isles abound, but that not a single coral reef rises out of deep water. They are therefore in greater abundance in the neighbourhood of flat shores, or where it is apparent volcanoes have

* Don Juam de Castro in 1540 found the depth of the middle of this southern part only 10 to 11 fathoms. *Hist. Gen. des Voyages* I. 174; also Lord Valentia in 1804.

produced risings and fillings up of the bottom of the sea. The Arabian seamen of Tor told us expressly, that the bay of Suez, in the southern part of which there are many large coral banks at some distance from the shore, is nowhere very deep, as they have had occasion to ascertain by casting anchors, and more frequently by fishing with angles. According to their account, the greatest depth of the bay of Suez in the middle part, does not exceed 50 fathoms; it is often much less, only 20 to 12 fathoms; farther towards Suez it is only 10, and gradually near the city from 2 fathoms down to 1 fathom. South of Ras Mahammed a log line of 100 fathoms deep did not reach the bottom, and deeper measurements were not tried. The greatest depth in the large basin or bay of the Pharaoh's sea, Birket Firawn, which I myself have measured with a line of 50 fathoms, amounted to 45 fathoms. It is true, from the appearance of Naphtha near Gebel Setic (mountain of Olives) on the African coast, (I have seen such Naphtha in Tor and observed the rocks of Gebel Setic at a distance) which is in the same latitude as the numerous coral banks of the bay, the hot wells near Haman Firawn, and the warm wells near Tor, as also the mountainous region abounding with black rock, which Burkhardt says he saw near Ras Mahammed, but which we did not find, we have reason to conclude that there have been volcanoes, and may still be in the neighbourhood. It is probable that the reason of there being many more small islands and rocks scattered along the coast of Arabia than on that of Africa, is that the whole of the coast is of a more volcanic nature. That this is the case was an opinion entertained by Leopold Van Buch; and is mentioned at the end of his celebrated work on the Canary Islands, inferred from the works of former travellers, and which I had occasion to place beyond a doubt in a lecture which I delivered at Berlin in the year 1827, *On the character of the Libyan Desert*, by adding facts observed by myself to what was already known. It is true that the whole Arabian Peninsula presents evidence of former volcanic eruptions which may have produced it wholly, or altered its shape, while none of these signs have as yet been observed on the African coast from Cosseir down to Massava, although it has been frequently visited by travellers both by land and water. It is, therefore, probable, that the latter coast has fewer coral reefs, and what I saw in the neighbourhood of Cosseir, confirms this supposition. In the southern part of the Red Sea there is at the present time a focus of volcanic activity called Sebahn or Gebel Taer (mountain of

birds, mountain of the monastery). Many small coral reef islands are also found in the midst of the sea, the depth of which is not great. From the middle part of the Red Sea to Cosseir there being no volcanoes, the water is very deep and quite free from islands and coral banks. The coast near Suez has no coral reefs and is level.

On the formation and peculiar shape of the Coral Banks of the Red Sea.

All coral banks in the Red Sea have something characteristic. Their tops are flat and run parallel with the surface of the water. They never form indented cliffs above the level of the sea. Their tops lie from between $\frac{1}{2}$ to 2 fathoms below the surface of the water, and at low water one or more small points appear which, with every fresh wind are covered by waves. These points are but small loose masses of rock of a darkish colour; they are never corals but always fragments of a very hard limestone with a slaty fracture. They often appear to be beacons planted there on purpose, and often may be used as such; but we had opportunity to ascertain that the greater part of them were no artificial beacon, there being numerous similar points close by. The greater part of all such coral reefs, of which a few stones only rise above the sea, is a few feet below the surface of the water. We never saw local elevations of the height of a couple of fathoms; we never met with any thing like raised mountains except they were islands containing no corals whatever. I never could find any fragments of coral on the surface of all the many flat and elevated islands visited by me, neither could I see any meadows or fields of dead but well preserved coral animals, as Forster, Vancouver and Peron found in the South Sea, and which the latter ventured to describe, not as a volcanic product but as the production of a receding sea.

The shape of the coral banks in the Red Sea is not circular with a lake in the middle, as it has been observed in the South Sea. The peculiarity of Australian reefs which was first noticed by Flinders, namely, that the part exposed to the high sea and the breakers is always higher than that to the leeward, cannot be applied to the coral reefs of the Red Sea. It is true the sides of all coral banks are irregularly indented; but we found them almost always in straight lines; we never saw one side of them very remarkably elevated, although in the Red Sea too there is a certain regu-

larity in the winds, and the north winds are decidedly the most prevalent there. We never saw the outer edge of the reefs elevated even when exclusively exposed to breakers and stormy waves ; on the contrary I have often found this outer edge sloping and gradually deepening. This is partly the case with the coral bank which forms the haven of Tor.

The characteristic form of the coral banks of the Red Sea is rather long, fringe-like, and tabular. Generally speaking these coral banks form the edge of the coast, but they are also found in numbers at a distance of several miles from the shore, rising out of the high sea ; still as many as we closely examined, seemed to run parallel with the coast, and thus appeared to be connected with it at their basis. I do not remember to have seen a single reef among the number of those examined by us which runs at a right angle with the coast ; it is true we met with some whose banks differed little in length and breadth, but also these sometimes show their affinity with those of a fringe-like form, as they are placed together in rows and form, one fringe often broken but still retaining on the whole the same character as the others.

The Arabian coral banks besides their being flat, long and running parallel with the coast, have this peculiarity, that the water is extremely deep on the side towards the open sea, so that the depth of the sea sometimes exceeds a hundred fathoms. The coral banks forming the immediate edge of the coast so as to be united with the shore, have of course but one fall towards the sea, which usually is very deep close to the edge. The rocks which rise from the open sea have on account of their long and narrow shape, properly speaking, only two declivities, one towards the coast, the other towards the open sea. The declivity of the broad flat coral reef is often gradually sloping. The sea towards the shore is generally not very deep, so that larger vessels avoid as much as possible to sail between the reefs and the shore. However, middle-sized vessels and small craft prefer sailing between the coral reefs, as the sea being less agitated permits them often for many miles to make the best of every favourable breeze, and in case a storm should arise, havens are close at hand. On the other hand, they lose also in speed as they have to follow the windings of the coast, and in case of a contrary wind they can make but little progress by tacking. The depth of the water on the outer edge of the reefs is, generally, the greater the more distant these are from the shore, and sometimes even close to it, the bottom cannot be fathomed.

During a stay of seven months at Tor, I became well acquainted with the fisherman Maallem Ansaree, (Master Ansaree,) a very respectable and experienced old man, who was afterwards created presbyter of the little place. He has an excellent fishing apparatus, and I induced him to measure the bottom of the sea a second time. At some of his experiments I myself was present in his boat. The flat top of the coral reef which forms the haven of Tor is longer than broad, and is covered in the winter at low water with four feet, and at high water with eight feet, but in summer at low water often with eight feet, and at high water with twelve feet of water. It is obvious that the bottom is formed by a rock running from the northern end of the Bay in a southerly direction, because on that spot near the fort a modern limestone (*Tertiary*) is found, which also forms the edge of the coral bank. The haven or the sea within the reef towards the land, has in its greatest depth eight to nine fathoms of water. The reef is about three times as long as wide, has a gradual and no rapid fall towards the land, but its declivity towards the sea is generally very abrupt, and at a short distance the water is 50 fathoms deep. The reef falls in an oblique direction towards the shore, but there is no ridge on the side towards the sea, but above down to the middle there is a flat tabular plain, and although on the side towards the sea the depth of the water increases rapidly, still its declivity is not perpendicular. Near the southern point of the reef there is a heap of loose stones and fragments of coral, which rises above the surface of the water and serves instead of an artificial beacon.

*Of the influence of Geological relations upon Isles and Coral
Banks of the Red Sea.*

Wherever in modern times, a strict examination has been instituted, there it has been found, that the most intimate connection existed between the islands and the coral reefs, and this we found to be the case in the Red Sea. The whole of the coral reefs examined by ourselves, without one exception, owe their peculiar shape, not merely to the small petrifying animals which we call corals, but more particularly to the geological conditions of the coast and the bottom of the sea. We noticed everywhere, except where sand, corals and depth of water rendered all observation impossible, that the basis of all risings from the bottom of the sea, which, when islands were covered with sand, or when coral banks

with corals, consisted either of a volcanic product, or of a very hard, and sometimes a soft porous limestone, which was evidently formed from cemented fragments of small animals, but whose special ingredients it was impossible to determine. It was evident that these rocks had no direct connection with the shells and corals which lived upon them.

I describe first the islands of volcanic rock. We touched only at two islands which were evidently called into existence by volcanic activity, namely, at the Arabian island Ketumbul in the southern part of the Red Sea, between Camfuda and Gisan. The whole is one indented conic rock consisting of lava which is partly decayed, and appears to have formed the northern edge of a submarine crater which has long been extinguished. The other island we visited was the Abyssinian island Huakel, which is situated still more to the south and contains mountains. I examined them only on the north-west side; they consisted of rock something like burnt jasper without lava or basalt. From both I have brought specimens of rock. Ketumbul rises about 300 feet, and Huakel 150, from the level of the sea. Both are encircled by corals which do not appear to participate in the peculiarities of these islands. From a distance we noticed the volcanic island Gebel Taer or Sebahn, which is a mountain of inconsiderable height (only about 150 feet) without any distinguishing mark. Its centre rises in a peak sloping gradually on the west and north side. There are no other volcanic islands in the Red Sea, nearly the whole extent of which we have examined.

The more lofty islands were formed of a very white limestone or lime-tuff, which we found sometimes hard and sometimes porous; or of a tertiary sandstone; the former sometimes in strata as upon the islands Barkan and Sanafer in the north, and Cameran, Belhosse, Dhalac, Massava, and Farsan in the south of the Red Sea. Tiran, the largest of these islands, is situated at the entrance of the bay of Akaba, and consists of a singular and fantastic rock. The greatest mountain on the island is barren and very perpendicular towards the sea, rising about 800 feet. It contains a field of gypsum, covered with a coating of gypsum like Bergmehl,* which is found sometimes in very large masses, and sometimes in the form of a cracked and very soft crust, which gives no firm footing but crumbles into white powder. On the side towards the shore it is accessi-

* Mountain Meal.

ble and not very perpendicular. I managed to climb it as far as the middle, but on account of the rock being so soft I found it a difficult and rather dangerous task. The lower part of it is a conglomerate of sandstone, and on the east side there are very hard rocks of a tertiary compact limestone.

Respecting the numerous small and flat islands which scarcely appear above the surface of the sea, and which seem so very much like the coral banks, we found that many of those which we visited had a foundation of a very hard rock, which is almost constantly under water, while the upper parts of the islands were more or less elevated sand hills. We noticed this especially at Reman at the entrance of the bay of Akaba, at Samak north-west of Cumfuda, at Ras Kafil at the same place, at Ormuk and Badie between Loheie and Cameran, and at Sheik Said near Massava. On other islands these rocky places became visible and nearly dry at ebb tide. There is an almost innumerable multitude of similar islands on the Arabian Coast. Many of them we closely inspected: they vary so little in their nature from those we above described, that we did not think it worth the time, the trouble, and the danger always connected with it, to subject them to a particular examination.

I proceed to describe the shape of a few islands. It is for the most part roundish, and they rarely possess creeks; they generally extend in straight lines which meet at angles (forming tongues of land) or they have undulatory outlines, but others are longish; still we did not find the more elevated parts running in a parallelism with the coast, but, as is the case with the double island Hassani and Libbehn, they separate from the coast in right angles, while the submarine rocks which accompany the islands run in an opposite direction. The two groups of islands Farsan and Dhalac, appeared to me remarkable: they lie opposite each other and almost in the same latitude in the southern part of the Red Sea, but they are low and probably consist of a number of small islands round a larger, without the least vestige of volcanic rock. Again, there are three islands which have a semicircular or horse shoe-like shape, caused by deep inlets. Sanafer at the entrance of the bay of Akaba, and Badie not far from Cameran in the south, together with Havakel on the Abyssinian coast, appear to be the only ones which approach the shape of a ring. Perhaps the lava island Ketumbul may be counted among them, if a few small rocks which are in the neighbourhood are taken into the landscape. The

two last mentioned istands evidently contain volcanic rocks, and we therefore need not wonder at their kettle-like shape, which rather confirms the opinion that they have been formed by volcanoes ; but with regard to the islands of Sanafer and Badie, this shape alone certainly does not authorise us to infer that they owe their existence to similar causes. They do not contain the least trace of volcanic rock, although Badie on account of the small quantity of land, has a remarkable shape not very unlike that of a ring. I walked all over it, and saw in some places, at ebb tide, the flat limestone which is here so generally met with, but no other mineral ; the plain, which is raised and convex, is covered with drifts and fragments of the same decayed limestone. Sanafer has only one deep bay running from south to north, and the limestone rocks are more lofty and are divided into groups with gradual declivities, of decayed rock, without any other characteristic. If the number of circular islands in the Pacific were not greater, it is not likely that travellers would have been struck with the shape, and laid it down as a rule for the formation of islands and coral banks, and if their volcanic character were not evident, modern travellers would not have expressed themselves so decidedly in favour of it, as a different opinion was then generally prevailing.

The limestone of the flat and small islands which are often encircled by a comparatively very broad margin of submarine corals, differs not from that of the more lofty islands. It is often evidently nothing but cemented and hardened sand. The colour of this mineral under water, or a little above it, was generally ash-grey or blackish, but on all the somewhat higher islands, or even on those which were only a few feet above the surface of the water, the colour was brilliant, white and chalky. Sometimes horizontal stripes were seen in it, which seem to indicate a deposit from the water. I have deposited a specimen of this rock in the King of Prussia's Museum of Minerals. The larger islands Farsan, Dhalac, and Cameran,* consist entirely of this rock and a layer of drift sand, with a small quantity of mould. This rock loosened in flat slabs from rocky banks which are quite flooded only at high tide or from submarine coral reefs, which are never free from water, were covered with corals

* This description of Cameran is not very clear or accurate ; that island consists of a mass of recent shells of all sizes and of corals cemented into a hard rock, which rests on a red argillaceous limestone with small shells.—*Edit.*

but were by no means corals themselves. But these stones were often, even when of a thin flat shape, so hard that nothing could break them but continual and forcible blows of a hammer. But the rocks exposed to air and sun, though in their nature the same and connected with those described above, were generally very soft, or had retained their hardness only in a few places. The water has sometimes washed out these limestone rocks, so that they are perforated like a net and have very sharp corners, which together with the dark colour makes them look like lavastones, though this is not the case. On fracture the white colour is seen, and the fine fragments of shells, &c. clearly show their real nature, but large petrifications are very rarely found in them.

There is another characteristic connected with the formation of islands in the Red Sea, which is not without influence upon the formation of coral reefs. All islands which stood as firm rocks out of the sea, had no prominent coral banks on the sea side, but however different their geological character was, they were all perpendicular on the sea side, and on the land side there was a flat elevated piece of land annexed to it, around which corals formed a broad margin. This is the case with the island Tiran, which is formed of tertiary rock; this is the case with the lava island Ketumbul; this also is the case with the islands Barkan, Sanafer, Hassani and Belhosse, which are formed of "limetuff." The flat sandy pieces of land of the former islands run north-east in the direction of Arabia, but those of Belhosse run south-west in the direction of Africa. This seems to show that the sea, which is comparatively deep in the north-easterly direction, has completely washed away the upper part of the island, as far as the rock, which protects, as it were, the other flat part of the island to a certain distance. Such appearances should not be regarded as unimportant when the question is about the formation of coral reefs, as they show in a striking manner that their formation may vary considerably. With regard to the accumulation of sand, I could not help comparing these appendices of the Arabian islands with the sand fields attached to the Abyssinian rocks, which I have described in my pamphlet on the character of the African deserts. Just as in the Abyssinian deserts, the prevailing north wind causes the sand to accumulate in the southern part of the mountainous regions, so is the effect of the waves of the Red Sea, which cause the sand to accumulate behind the island, *i. e.* turned away from the prevailing breakers, as in the above case from the

direction of the prevailing wind. From this description it is clear that Geology has much to do with the formation of the flat islands, as well as of the coral banks of the Red Sea.

Of the influence of Coral Animals upon the Rocky Banks of the Red Sea.

Stone-forming coral animals cover the surface of all the rocks in the Red Sea, beginning at the middle part of the Bay of Suez, but are not found on the sands. The first impression of the traveller is, that these animals have built the whole of these rocks. In the first part of this work I have described the strikingly pleasing effect, which large fields of coralreefs have, when seen under favourable circumstances at low water and in a quiet sea ; how they appear like meadows covered with flowers, in the midst of which the bark is gliding along, without our knowing indeed which of these flowers to contemplate most, and of which to take a drawing and fix in colours, as the next often seems to be more brilliant than its neighbour ; and not rarely the most beautiful are beyond our reach, or, it is dangerous to get out, as the edges of the coral may break and you are precipitated into gaping clefts or at least seriously hurt. When disturbed, almost all of them are nothing but a brown, indented, leafed, or melon-like limetuff, the examination and contemplation of which is really tiresome, although the individual forms appear so wonderful.

Wherever we examined isolated coral reefs which were always covered with water, we found on their surface, which are flat, and have only holes and clefts here and there, but are upon the whole pretty even, trunks of coral animals and trees of branch corals all alive, mixed together like flowers in the field. Here also some forms always predominated, but never to the exclusion of the rest. In this sheet of coral there was nothing even similar to our heaths or pine forests. There were madrepora, heteropora millepora, astreae, favia, caryophyllia, mæandrias, pocillapora, and stephanocora, &c., alike large and plentiful, intermixed usually, with giant-shells, pearl-shells, fungia, sea hedge-hogs, fishes and holothuria ; and upon those that were dead we found a large number of zoanthinia actinia, xenia, and halcyonia, with an immense quantity of annulata and turbellaria. Round the foot of the coral trees there was often a white limestone sand.

Separate branches of corals were usually found so firmly adhering to

a hard rock or to other dead corals, that we required hammer and chisel to loosen them under the water ; often it was necessary to do this with all our might ; on all such excursions we wore bathing-dresses. But occasionally these branches of corals could also be moved and loosened without force, they were growing upon pieces of dead corals which were lying in the sand. I never found more than three generations growing one upon another. I have rarely found fragments of much decayed corals upon which were other fragments of corals which had grown after them and also decayed, and connected with these a third generation of an entirely different species in full vigour. None of these ever formed high masses, neither do they appear to have been adhering to any rock ; and this perhaps has been the reason that former generations have perished. I have never seen masses formed by the gradual growth of different generations one upon another reach weight, which might not be attained by a single branch of the same species without a foundation of any extraneous matter. But almost everywhere on knocking off branches of coral, I met with that limestone tuff which forms the bases and mountains of most of the islands, and is one of the general formations of the mountains on the earth. I have never observed in the Red Sea, masses of rock, which showed by entire coral branches imbedded in them in a perpendicular manner, that the sand washed by the sea between these coral branches had filled up their interstices, in consequence of which these coral branches remain unbroken, only covered with a cement, like petrified trunks of trees or like insects in amber. But yet if this process in nature, which is described to be so grand in the Pacific, is really true, I must have often seen it in the Red Sea.

Nor did I by any means find the outer edge of every coral reef, or the point which had to resist the whole force of the most furious surge, destitute of live corals, but just in these places this animal life was thriving in its most pleasing and grand form. But there were usually no corals to be found in the outer edge of rocky islands, rising perpendicular above the sea from a great depth, the rebounding surge being too furious ; whilst high waves generally flow over the coral reef and thus lose all retiring force.

There is no doubt that coral animals contribute to the growth of coral reefs also in the Red Sea ; but I am perfectly convinced that this is not done in masses and layers. This growth appears to be rather the

work of the individual animal and his family. The case of these corals is similar to that of dead plants and trees. The former do not actually increase the quantity of mould, nor the latter of decayed wood to the whole height of their bulk, so that new generations would grow upon the old ones. A few feet of mould indicate thousands of years and of extinguished generations: just so a few inconsiderable marks would show that hundreds of years had been required to increase the height of coral reefs. Besides, I am inclined to believe, that coral animals rather contribute to the protection and preservation of the islands than to their growth.

From accurate observation of individual coral animals, I have come to the conclusion, that every single coral branch is neither an individual animal whose life has a certain central point, nor a common dwelling for a number of animals whose age and decay could bring sudden destruction upon all. In both cases it would be possible that a coral branch should suddenly lose his common life and appear like a dead tree. This is contrary to what I have experienced, and consequently all that has been inferred from it is incorrect. The coral branch forms a whole, bound together by knots according to certain laws, whose parts are a great number of organic individual animals, which cannot separate themselves at will, but are connected together by parts not essential to their individual life. The blossoms of a tree are similar to a coral family in appearance, but in their nature there is a great and marked difference between the inseparate life of the individual blossoms on a tree, and the perfectly separate organic life of the flower-like animals in corals. Every individual animal blossoms in its perfect state, and in the event of a forcible separation can lose all the remaining parts of his family structure, and by the development of eggs and formation of knots become the author of a new structure. The stem of the plant is an essential part of the blossom, which, if severed from it, would fade and die, and on the other hand the blossoms are not essential parts of the stem, the life of which would not be destroyed in case of their being forcibly separated from it. But the life of coral animals is never destroyed when the stem is broken and separated, and the individual animals can continue to exist and propagate as was proved long ago by the excellent remarks of Cavolini, and as my observations of the anomalous forms wherever the coral branches were broken, have confirmed again and again. This is the reason why it is almost impossible to destroy live corals when under water, except when

they are loose and tossed about by the waves, which injure all the individual animals, either by grinding or violently knocking them against the sand ; or except when they are by an extraordinary accident suddenly and completely covered with sand, or left dry by the retreating waters, or are boiled by volcanic heat. These observations and inferences render it probable, that the opinion so frequently entertained that coral animals die in whole generations, in order that other generations may grow upon their ruins, is not according to nature, and therefore I cannot adopt it.

Here I must not omit mentioning a few other things respecting the nature of the coral animals which are by no means unimportant. I noticed upon the coral reefs of the Red Sea immense blocks of living *mæandra* and *fabia*. I could not examine them as they were too large to be removed, and as I was several times unsuccessful in my endeavours to knock off a piece under water, although I exerted myself to the utmost and called in the assistance of the natives. I could easily believe, that Pharaoh might have seen them, that they were ancient monuments of thousands of years standing, and of generations still more remote ; for many of them measured more than a fathom and some $1\frac{1}{2}$ fathoms in diameter, which considering that they are nearly as round as a ball, will make them immensely large masses.*

* According to Monsieur de Blainville (*Dict. des Sciences Naturelles Zoophytes* p. 94) Forskal is said to have met with still larger coral blocks namely, of 25 cubic-feet, but this is an error. Monsieur de Blainville translates l'on en tire des blocs qui ont vingt-cinq pieds et qui ne coûtent cependant qu'une piastre, but Forskal says, page 131, *Lapides 25 pedem (unum) cubicum aequantes et e litore transvecti (,) emuntur uno piastro reliq.*

But it appears that Forster has seen the largest coral blocks. Adalb. de Chamisso mentions p. 187, blocks of coral often one fathom long and from three to four feet thick, but Forster speaks distinctly of coral branches upon Tortoise islands, which are dead, and have been raised by volcanoes above the surface of the water, measuring fifteen feet wide. Forster's travels p. 125. Perhaps *Heteropora Palmata* is sometimes so large. I do not recollect to have seen them larger than nine feet in diameter, and those were *Daedalina*. *Madroporina* were only from four to five in diameter. Shaw says that he has seen pyramidal *Heteropora* near Tor, from eight to ten feet high, but I believe that he was deceived by the depth of water : *Voyage dans le Levant* II. p. 86. These colossal forms of the *Daodalina*, which are the most interesting of the species remain frequently quite unnoticed, because it is impossible to get at them for the purpose of examination. I myself believe that I was obliged to leave unnoticed many particular species, perhaps genera, of them.

These coral banks, which are undoubtedly very ancient, frequently formed on the outer edge of the coral reefs the uppermost masses, and prove, as it appears to me, that in the whole time which was requisite for their growth, the coral reef had not risen higher, as no succeeding generation of its species has covered them. It is very probable that the original stock continues to live in gigantic *family mansions*; as I at least convinced myself, that in very considerable blocks the inner regularly built and deserted chambers of the more concave stars, as for instance the *Astraea dipsacea*, reach down as far as the middle of the basis, whilst more flat stars drive themselves between these at acute angles, and thus prove them to be of a later date. I noticed sometimes in such large blocks a few curious hollow places which may have been caused by injuries and the death of individual animals, but sometimes such hollow places were again covered by knots of the next animals and anew called to life.

I am convinced that only this individual aggrandizement of the coral stock, or this extension of family can be called growth of the coral reefs of the Red Sea. The loose structure of the branchy heteropora, madrepora, and millepora cause these species to be less regular, and at a certain height they become less productive, especially in the formation of cells, as old trees grow more slowly than young ones. Perhaps the remotest generations of the gigantic Heteropora (madrepora) palmata of the Indian Ocean may be found in a quiet colossal whole, which remained undisturbed for thousands of years.

Farther, in the nature of the coral animals there appears to be something very unfavourable to parasitic forms of their own class. The largest coral stems, however old they may be, are free from all parasites of their own species, although they are often bored and molested by balana and annulata, and sometimes also by bivalve shells. I do not recollect to have seen a single instance where a live coral in the midst of another living coral stem has developed itself; therefore in museums the largest and most beautiful specimens of mæandra, pteropora, pocillopora, &c. may be seen in their perfect state. This unfriendly nature of the coral animals is certainly not a small objection to the opinion, that accumulated generations of them form islands in the Indian Ocean, as nothing of the kind takes place in the Red Sea.

If I express in a few words the general impression, which the observation of the influence of the coral animals upon the formation of islands in the Red Sea has left upon my mind, it is this: that there is not a single

island in a state of growth, but that all are in a state of decay, and that consequently the corals do not promote the growth of the island, but serve only as borders and covers to the submarine rock. Thus it appears that the corals do only delay or hinder the total destruction of the islands by waves, but do not produce new ones. To this may be attributed the opinion that coral animals build as high as the surface of the water; for I think that the corals only prevent the islands which are sunk and in a state of decay below the water, from sinking still deeper.

Concerning the formation of the fossil coral strata which are sometimes of an immense size, it is not probable that they are the work of these animals, but merely an aggregation of masses which have decayed after the death of the animals; for nowhere does such a stratum appear to be a compact, well preserved, coral reef. They are thus formed: the waves wash fragments of coral from the reefs and accumulate them in deep basins until they form thick strata; volcanoes may have raised these strata here and there, as it sometimes happens with shell fragments, and as they have raised whole coral banks of evidently a single layer high above the sea, and this in good preservation, as described by Forster and Vancouver.

Historical sketch connected with the growth of Coral Reefs in the Red Sea.

As mention is often made of the growth of coral reefs, and in the Indian Ocean, whole Archipelagos and thousands of coral reefs are believed to be built by coral animals, and finished by winds and waves, so also it is true that navigators and the inhabitants of sea ports of the Red Sea, talk of coral reefs growing and havens and straits becoming narrower. My experience respecting this matter is as follows. In Tor, where the south end of the coral reefs which forms the haven, was marked by a small heap of stones, I was assured by the old navigator Maallen Ansari, as well as by the oldest man in the small Greek colony, who soon after died, that during their life time, of which the latter, who was about 60 years of age, remembered full 50 years, that neither had the signal altered nor the coral reef grown higher, nor had any family tradition to this effect been handed down. I have also turned over the oldest accounts of sea-faring men respecting this very simple port, and found that a description of it given by the Portuguese Don Juan de Castro in the year 1541, coincides so fully with my own observations in the year 1823, that I am inclined to believe that the coral animals have not exercised

any considerable influence in that spot, although a space of nearly 300 years have since elapsed, and every opportunity and accommodation is afforded at Tor to the increase of these animals.

In the same way, the description given at that time of the anchorage of Cosseir which has also nothing peculiar, agrees fully with its form as seen by ourselves at the present time. I also find the description given by de Castro of the three islands near Massava, on the Abyssinian coast, and of the Port of Massava fully applicable to their present form and condition. I will not conceal that when I was at Djedda, the inhabitants of the place bitterly complained of the encroachment made by the corals, which were blocking up the port; also that I found it difficult, because of its complicated form, to compare historical accounts; but at the same time while I do not doubt the fact, I am rather inclined to ascribe it to the encroachment of sand and the inconsiderate throwing overboard of ballast which generally consists of coral blocks, and which is constantly done with impunity. The remarks which Forskal makes respecting the increase of land on the Arabian coast and near Suez, agree with the opinion of sand being accumulated. Near Suez there is no doubt that this is the case.

ART. VIII.—*On the occurrence of Quicksilver in the Lava Rocks of Aden.* By J. P. MALCOLMSON, M.D., Bombay Medical Establishment.

TO J. G. MALCOLMSON, Esq.,
Secretary R. A. S. &c., Bombay.

Dear Sir,—I have the pleasure of forwarding to you a specimen of a stone containing quicksilver in its metallic state. The stone was found at Aden about fifteen feet below the surface, about two hundred yards from the beach, by the workmen who were employed in making a road from thence through the centre of the projected new cantonments. You will observe the globules of the metal are deposited on the surface, adhering pretty strongly to what seems a coating of carbonate of lime: this would at first view lead to the conclusion that the mercury had been accidentally lodged there. On further examination with a glass it will, however, be found that small globules are also thickly disseminated in the interior of the stone,—almost every cell containing the metal adhering to its side. This induces me to believe that the mercury is not a foreign deposit but

has been secreted or separated from the stone, as other metals are supposed to have been. The stone is lava, and a large quantity of a similar description is found in the hills above the town.

It is a subject of some interest to have this specimen fully and minutely examined, it being a very unusual circumstance to find quicksilver in lava or in rocks which are supposed to be of an igneous origin. Its usual habitat being sandstone, slate, sand, &c.

I shall feel much obliged if you will examine and let me know your opinion regarding the specimen, which is quite at your disposal to use as you think proper.

Believe me to be,

Dear Sir, yours very truly,

JOHN MALCOLMSON, *Asst. Surg.*

Bombay Establishment.

Bombay, 24th August, 1843.

NOTE BY THE SECRETARY.

The occurrence of native mercury in the volcanic rocks of Aden, was first noticed by my friend and namesake Dr. J. P. Malcolmson of the Bombay Army, in an official report, an abstract of which was published in the *Bombay Times*. A short time after the appearance of this notice, an anonymous correspondent of that paper, stated that the quicksilver had found its way accidentally into the porous stones near the harbour, and that Dr. M. should have been aware of this.

When Dr. M. was in Bombay, he presented, at my request some specimens of the rock to the Museum of the Asiatic Society, with the above account of the locality from which they were procured. From that statement it does not seem probable that the mercury could have been accidentally introduced; still, as Dr. M. has returned to the spot, he should endeavour to place his interesting discovery beyond the reach of doubt.

The rock certainly does contain a little native mercury which runs out on its being broken. There are however brilliant metallic-looking particles which were nothing more than crystals of glassy felspar; and a white coating in some of the cavities which resembles horn mercury, is perhaps a variety of hyalite.

From the extensive mobility of this metal in its metallic state, there is very little prospect of its being found at Aden in sufficient quantity to justify attempts at working it, even should it be found in a greater quantity than it has yet been.

It does not appear at all improbable that mercury should be found in a porous volcanic rock such as that of which a great part of the southwestern corner of Arabia is composed.

The granites of Peyrot in France are said to be impregnated with native mercury, and in the following extract from a paper read before the Academy of Sciences of Paris on the 12th June last, it will be seen, that M. Leymerie ascribes to a similar source the native mercury discovered in the *detrital* or tertiary clays, resting on the *Jura* limestone of *Larzac* and also near Montpellier, where it was known to the peasants from the death of trees whose roots penetrate into it.

“ Il suffit de se rappeler à cet égard qu'à diverses époques, depuis le dépôt et la consolidation du terrain jurassique qui constitue le *Larzac* et une partie des Cévennes, la région dont il est question a été soumise à l'influence des actions souterraines, qui ont produit le soulèvement de plusieurs chaînes de montagnes. Dès lors, on conçoit sans peine qu'à une de ces époques, des bouffées mercurielles provenant directement des profondeurs du globe, ou que l'on peut encore attribuer à une distillation de gîtes déjà existant dans les terrains anciens qui supportent les couches secondaires du midi, ont pu venir pénétrer la masse préalablement crevassée et fissurée du *Larzac*, et ensuite s'y condenser. La plus grande partie du métal parvenu à travers les marnes jusque dans les calcaires aura bientôt coulé de fissure en fissure, jusqu'à la première couche marneuse qui, dans le plus grand nombre des cas, devait être capable de le retenir. Ensuite, ce mercure sera venu au jour avec une portion de celui contenu dans les marnes elles-mêmes, entre les tranches des couches qui composent le talus occidental du *Larzac*, où il a pu être poussé en partie, par exemple, par l'eau des sources si vives et si fréquentes le long de la ligne de contact des assises calcaire et marneuse. Quant au mercure signalé à la partie supérieure des marnes tertiaires de Montpellier, on peut faire deux hypothèses. Il peut résulter d'une action directe de l'intérieur à l'extérieur, comme celui du *Larzac*, et la présence du calomel natif semblerait le faire croire, et alors nous serions conduits à rapporter le phénomène à l'époque du dernier soulèvement des Alpes, lequel a exercé comme on sait, une certaine influence sur les terrains du S. de la France, où il s'est manifesté, notamment dans les Corbières et dans les Pyrénées, par l'apparition des ophites. On pourrait, en second lieu, supposer que le mercure de Montpellier aurait coulé après coup à une époque assez récente du terrain jurassique des Cévennes dans les sables, et,

par suite, dans la surface des marnes qui forment le sol fondamental de cette ville, et alors on pourrait faire reculer l'introduction des minéraux mercuriels dans le Larzac jusqu'à une époque plus ou moins ancienne, et la rapporter par exemple au soulèvement de la Côte-d'Or, qui s'est fait ressentir d'une manière si prononcée dans le massif jurassique dont il est question".....*L'Institut*. 15th June 1843 : Page 196.

JOHN GRANT MAI. COLMSON.

ART. IX.—*Note on a Set of Specimens from Aden*. Presented to the Museum. BY G. BUIST, LL.D.

These specimens were partly collected by Captain Yeadell, of the Artillery, and other officers of the Garrison—partly by myself in April 1840.

The glassy slag or obsidian is not of frequent occurrence; it appears in veins or streams running down from the summits of the volcanic peaks like recently indurated lava. Near the cantonments, these present fantastic and beautiful appearances,—the torrent of melted matter seeming to have encountered numerous obstructions in its course, and to have been split into a variety of cascades,—just as we see exemplified in cataracts, whose descent is not perpendicular, where the water has encountered breaks and irregularities of surface.

The greater part of the rocks of the Peninsula of Aden are more or less vesicular, presenting an amygdoloidal structure. Calcedony, such as that presented, is of abundant occurrence.

The volcanic ashes were found on the summit of the hill near Steamer Point, about 500 feet above the level of the sea: they were just under the surface, and occasionally mixed with shells.* They bear no resemblance whatever to the driftsand to be seen in abundance at the bottom of the rocks.

Decayed shells, such as are herewith sent †, are scattered everywhere over the hills near Steamer Point, to a height of at least 500 feet: the leisure of a single morning permitted no further examination. I was at first disposed to have believed that they must have been carried there by birds or wild animals for the sake of the Mollusk. The uniformity of their distribution was hostile to this view; and the extreme, but perfectly uni-

* These consist of a species of Pupa, a land shell.—*Edit.*

† *Murex Inflatus*, a common shell on the coast.—*Edit.*

form, state of decay in which they were found led to the conjecture, that most probably they were elevated from the bottom of the sea at the time the volcano itself emerged from it. The Peninsula of Aden, it must be recollected, corresponds, in form and magnitude, very closely with a section of one fourth or so of the upper portion of mount *Ætna*. The Sicilian volcano is 10,000, the Arabian one about 2,000, feet in altitude.

The cone of the former, which includes the crater, is about 1,100 feet, the interior of the crater about 600, in altitude. Aden, as now reached, may be regarded as a cone altogether; the circumference of sheet measured along the ridge of the Shum Shum range, is about four miles; that of *Ætna* very nearly the same.

Considering the length of time Aden has been occupied by our troops, and the abundance of leisure which the officers must enjoy, it is singular that up to this date we should know so little of its natural history. Of its Fauna and Flora, scanty as these are, we literally know nothing; and very little of either its Hydrography, Meteorology, or Geology. A list of questions on these subjects might probably elicit information, which does not seem likely to be spontaneously imparted.

Masses of oyster shells similar to that now sent for exhibition—for I have no duplicate—are strewed in abundance along the beach, some of them of very great magnitude. They appear to have become united while their inhabitants were alive. Masses of cockles are also plentiful; they have obviously been cemented after death by extraneous calcareous matter.

ART. X.—*Note on a Series of Persian Gulf Specimens.* Presented to the Museum. BY G. BUIST, LL.D.

The specimens laid before the Society were collected for me, partly by Commodore Brucks, I. N., and in part by Mr. Woosnam, Surgeon in the *Sesostris* Steamer. They are chiefly from the Island of Karrack and the north-western shores of the Persian Gulf: the precise localities of the greater part of them are unknown to me; but a large tract of coast is said to be composed of the same substances as those on the table.

The salt is not, properly speaking, rock salt, but a mineral found abounding in the crevices and hollows of the rocks where the sea-spray is driven up in high tides or stormy weather, and afterwards evaporated by the sun.*

* This salt is whitish, without the tinge of red so remarkable in rock salt from almost all parts of the world.—*Edit.*

The small portion of coral is from the summit of the island of Karrack which, at the height of 300 or 400 feet above the level of the sea, is said to be entirely composed of this substance. The present specimen appears to be a piece of the ordinary Madropore, which at this moment abounds in these seas. The rocks here seem to be for the most part volcanic. Karrack itself is described by Dr. Winchester as composed of coralline sandstone and limestone, plentifully mixed with fossil tubipora. In the limestone are numerous oysters, cockle, limpet and other shells. (Bombay Geographical Transactions, March 1838.) There are no Atolis or Lagoon Islands in the Persian Gulf; and the knowledge of a mass of recent coral, elevated by volcanic agency to such latitude as the summit of the Island of Karrack would be a curious addition to the stock of facts collected by Mr. Darwin, on the evidence of alternate subsidence and emergence of rocks in the ocean, furnished by the existence of coral beds, and an important instance of one more of the recent elevations of land in these parts, of which the shores of the Red Sea afford such abundance of examples:

The Selenite is said to be found in thin veins crossing through shells, gravel, and sand, impregnated with saline matter. These statements are given on the authority of gentlemen who have no pretension to Geological knowledge, and are, therefore, to be received with reservation. They are at the same time, in perfect conformity with appearances presented all along the shores of the Red Sea, especially around the Gulf of Suez. At this last place, the appearance of Selenite, such as that now exhibited, invariably indicates the presence of Sodalite, the surface of the ground crisping under the feet like wet soil after a severe frost. In no instance have I found this to fail in the Suez Desert; where the ground was highly saline, sulphate of lime invariably made its appearance in thin veins exfoliating where they cropped out; extending along to the length of from 3 to 20 feet, and seldom penetrating, so far as I could observe, without the means of making any very considerable excavations, more than a few inches into the ground. The veins generally consisted of parallel plates of Selenite, which might be sliced down to any degree of thinness that was desired. On some occasions, but these were of rare occurrence, its structure was fibrous like satin spar, the fibres being nearly transparent and horizontal, at right angles to the axis of the vein.

ART. XI.—*Eclipse of the Sun on the 21st December 1843; as seen from the Observatory, Colaba.* By DR. BUIST.

In both the Bombay Almanacs for 1843, the time of the commencement of the eclipse is erroneously set down:—the Calendar published at the *Courier* office gives 7 h. 54 m. as the hour, that of the *Times* 7 h. 26 m., the latter being only a minute wrong. The sun rose bright and fiery at half-past six—the sky was everywhere cloudless and clear; not a film of mist or streak of vapour, beyond a slight transparent haze, being visible down to the edge of the horizon. In making a fresh adjustment of the instrument, an altitude and azimuth circle 81 inches horizontal, and 12 of vertical diameter, the instant of primary contact was lost by a few seconds; it appears from calculation to have occurred at 7 h. 25 m. The appearance at first presented was as if a notch had been struck out from the sun's upper limb: the moon itself, the cause of this, being undistinguishable from the surrounding sky. The defective space was almost absolutely black, sharp, and perfectly well defined; the sky itself was of the deepest tint of blue. As the eclipse proceeded, the moon's disk was faintly illuminated—its figure being discernible, but barely so from the surrounding space. The sun was at no time sufficiently obscured to permit the moon to be examined without the interposition of a shaded glass. No inequality of light was perceptible, nor any spots upon its disk, which was indicated by a faint dimness of appearance barely discernible through a coloured glass. When the eclipse was at its greatest, the visible figure of the sun resembled the moon three days after change, only that its light was infinitely more intense, and its limbs perfectly well defined, without any faintness or irregularity: the cusps were sharp and clear, terminating in the finest points. Professor HENDERSON* states, in reference to the annular eclipse of the 15th May 1836, that "shortly before the formation of the annulus, the cusps were seen to approach and to be broken into several parts. When they were about 30 or 40 degs. from each other, an arch of faint reddish light was seen extending from the one to the other; this appearance lasted for several

* *Astronomical Observations, made at the Royal Observatory, Edinburgh, for the year 1836.* Published by order of H. M.'s Government.

seconds, when suddenly a small detached portion of the sun's limb like a string of beads, with dark intervals, appeared between them. At the dissolution of the annulus similar appearances were noticed in reverse order."

Though the eclipse of Thursday was scarcely of sufficient magnitude to entitle the observer to feel assured that this phenomenon would present itself, it was looked for with the utmost attention, and from the extreme acuteness and prolongation of the cusps, was at one time expected to have made its appearance. The expectation however was not destined to be realized: the sharp thin line of light bordering the moon at the period of greatest obscuration was unbroken to the end. It is somewhat curious, that in observing the total eclipse of the sun, visible in the South of Europe, on the 8th July 1842, Mr. BAILIE, Vice-President of the Astronomical Society, states, that the beads were as distinctly visible as in the annular eclipse seen at Edinburgh in May 1836—the black string described as generally preceding them not having been apparent: * while Professor AIRY, the Astronomer Royal, in observing the same thing, saw from Turin, "nothing whatever of the beads or other irregularity in either of the extremities of the sun's limb. The cusps were perfectly well defined till they met." †

The observations were made by three parties simultaneously—one with a 46-inch achromatic glass by DOLLAND—a second with a 30-inch glass by GILBERT—and the third with an altitude and azimuth circle of 9-inch radius, and an 18-inch telescope.

Observations were made from 6 till 11 A. M. every ten minutes with the standard barometer, the sympiesometer, DANIEL'S hygrometer—the wet and dry bulb,—the solar and terrestrial radiation, and standard thermometers, as well as with the actinometer. The table detailing these is subjoined; the barometrical readings are given without correction. The following are the general results: The barometer rose between six and eleven from 30·140 to 30·220, uncorrected for temperature. It reached its greatest altitude of 30·223 at forty minutes past ten, about an hour later than its ordinary average. The amount of its fluctuation was pretty nearly the same as is due to the present period of the year: but its actual altitude is considerably greater than it has been any time

* Report of the Astronomical Society, Nov. to Dec. 1842. Published in *Athenæum*, 7th Jan. 1843, No. 773.

† *Ib.*, 14th Jan., No. 774.

for 20 months past ; we have no regular hourly observations anterior to 1st September 1842. It fluctuated considerably betwixt 8 h. 50 m. when it reached a height of 30·202, and 11 h. when it stood at 30·220—having fallen to 30·200 at 9—it rose again and remained at 30·202, for the next three observations. From half-past nine to 20 minutes from eleven, when, as already stated, it reached its maximum of ·223, it continued to rise steadily and rapidly, and then, in the course of ten minutes, fell 00·003, and continued, as usual at this hour of the day, to descend till afternoon. The sympiesometer, as it generally does, attained its maximum of 30·62 more than an hour before the barometer culminated ; like the other, it fluctuated for a time, rising to the same height as that just named at 9h. 20m., 10h. 10m., 10h. 20m., and 10h. 30 m., and sinking back again, being from ·61 to ·63 at the intermediate periods of 10 min. By the system of observing six times every hour for eight hours a day at the culminating periods of these instruments, presently in practice at the Observatory, it is shown that there is nothing at all unusual in these phenomena, unless the extreme pressure of the atmosphere observable for nearly a week past, and the unusually late hour at which this on Thursday reached its maximum.

The thermometer which, in the shade, was 67·3 at 6 o'clock, had before 8 o'clock risen to 70 ; at this it continued stationary till 9 o'clock, when it began to rise steadily as usual, but with somewhat greater rapidity—at 11 it stood at 73·7. Much in this case is dependent on the position of the instrument ; another, in a somewhat more airy and elevated position than the standard, sunk by nearly two degrees. A black bulbed thermometer, exposed to the sun, stood, at 7 o'clock, at 85 ; by 8 it had risen to 113, when it began rapidly to descend, attaining its minimum of 87·8 at 8 h. 50 m. It pursued, with great exactitude, the course of the cclipse, having, by 10 o'clock, risen to 144, and by 11 to 162 : the latter of these is to be received with hesitation, from the too great closeness of the position where the instrument was placed permitting an undue accumulation of heat.

The solar-radiation thermometer pursued a totally different law, having stood at nearly the same point at 6 h. as at 10 h.—20°, *viz.* 62° 2' in the former, and 62° 6' in the latter case : it had fallen to 58° 1' at 10, it recovered after 7, but scarcely rallied from that till $\frac{1}{4}$ from 9. At 11, it had risen to 65° 6'. From 8 to twenty minutes past 9, the liquid in the actinometer was below zero. The dew point, as indicated by

DANIEL's hygrometer, receded from 65° to $62\cdot5$, being found at the latter at 6 h. 11 m., and at the former at 9 h. 40 m. The variation in the dampness of the atmosphere as indicated by this, as well as by the wet and dry-bulb thermometers, being extremely small—the latter instrument varying from 4 to 7 of difference, that is, of actual range; it followed with considerable accuracy the progress of the eclipse.

To the ordinary observer, the most remarkable of all the phenomena presented, was the appearance of the landscape around. The more conspicuous stars had mostly set before sunrise, so that there was no means of knowing whether they might or might not have been seen, if in the sky. Objects, particularly white ones, assumed a bluish-green appearance. The sea, especially towards Malabar Point and the entrance of the Harbour, had a strange melancholy hue,—and a large vessel, a few miles off, looked like a spectre ship. The Cathedral tower, Scottish Church steeple, and Colaba buildings seemed the ghosts of what they were by daylight. The atmosphere was peculiarly still, the land-wind having nearly gone to sleep, and the sea-breeze not having been awakened. The sky was so cool and the sun's rays so feeble, that to be out in the air from 8 to 9 uncovered occasioned no inconvenience. Shadows of objects appeared ill-defined and ragged towards the edges: this altered during the progress of the eclipse, the sides of the shadow towards the South and East being first impaired, that to the South and West becoming afterwards affected. The wind was throughout the day peculiarly faint and unrefreshing.

The amount to which light is diminished even in the case of an entire eclipse, generally occasions disappointment. In the total obscuration in July 1842, already referred to, it was in no case necessary to use a taper to read with, though stars were seen at Turin and other places in the neighbourhood. Dr. HALLEY observes, in reference to the total eclipse which occurred in 1715—the last which was visible in London—that no one saw more than Capella and Aldebaran of the fixed stars. The rapidity with which the iris of the human eye adjusts itself so as to compensate in a great measure for the withdrawal of light, when this is effected gradually, is such that we are scarcely aware of the amount of loss unless by instrumental observation.

Meteorological Observations during the Eclipse of the Sun, 21st December, 1843.

| Dombay Mean Time. | Standard Barometer, uncorrected. | | Standard Therm. | Hygrometer. | | Difference. | Symplesometer. | | Radiation. | | Difference. | Daniel's Hygrometer. | | Difference. | Actinometer. | Bombay Mean Time. |
|----------------------|--|--------------|--------------------|-------------|------|-------------|----------------|------|------------|--------------|-------------|-------------------------|------|-------------|--------------------|----------------------|
| | Barometer. | Thermometer. | | Dry. | Wet. | | Sr. | Thr. | Solar. | Terrestrial. | | Dew Point. | Air. | | | |
| | | | | | | | | | | | | | | | | |
| 4. M. | | deg. | deg. | deg. | deg. | | deg. | deg. | deg. | deg. | deg. | deg. | deg. | | | |
| 6 00 | 30.140 | 73.0 | 60.6 | 69.0 | 65.0 | 4.0 | 30.54 | 70.3 | 74.9 | 62.2 | 12.7 | 65.0 | 70.5 | 4.5 | | A. 00 |
| 10 | .142 | 73.0 | 60.5 | 69.0 | 66.0 | 4.0 | .56 | 70.3 | 74.4 | 62.3 | 12.1 | 64.0 | 70.0 | 6.0 | | 10 |
| 20 | .150 | 71.9 | 60.3 | 68.6 | 64.4 | 4.2 | .57 | 70.2 | 71.0 | 59.3 | 11.7 | 34.0 | 70.0 | 6.0 | | 20 |
| 30 | .156 | 71.7 | 60.3 | 68.8 | 64.6 | 4.2 | .57 | 69.9 | 70.0 | 58.9 | 11.1 | 63.5 | 70.0 | 6.5 | | 30 |
| 40 | .160 | 71.6 | 60.3 | 68.8 | 64.6 | 4.2 | .56 | 69.9 | 71.0 | 59.7 | 12.3 | 62.6 | 69.7 | 7.1 | | 40 |
| 50 | .167 | 71.6 | 60.3 | 68.7 | 64.0 | 4.7 | .56 | 69.7 | 77.1 | 58.2 | 18.9 | 61.8 | 69.9 | 8.1 | | 50 |
| 7 00 | .171 | 71.6 | 60.3 | 68.9 | 64.0 | 4.9 | .56 | 69.6 | 85.7 | 58.2 | 27.5 | 62.5 | 70.0 | 7.5 | | 7 00 |
| 10 | .175 | 71.6 | 60.3 | 68.8 | 63.8 | 5.0 | .56 | 69.7 | 93.1 | 58.1 | 37.0 | 62.0 | 70.0 | 8.0 | 22.31 | 10 |
| 20 | .178 | 71.5 | 60.5 | 69.0 | 63.5 | 5.5 | .58 | 69.8 | 101.7 | 58.2 | 43.5 | 63.0 | 70.1 | 7.1 | 20.02 | 20 |
| 30 | .181 | 71.5 | 60.5 | 69.0 | 63.9 | 5.1 | .58 | 69.8 | 108.6 | 58.5 | 50.1 | 62.5 | 70.5 | 8.0 | 21.88 | 30 |
| 40 | .186 | 71.6 | 60.6 | 69.0 | 64.0 | 5.0 | .58 | 69.8 | 113.4 | 58.4 | 54.0 | 63.2 | 70.4 | 7.2 | 22.61 | 40 |
| 50 | .188 | 71.6 | 60.6 | 69.6 | 64.1 | 5.5 | .58 | 70.1 | 113.2 | 59.1 | 54.1 | 62.9 | 70.6 | 7.7 | 23.71 | 50 |
| 8 00 | .190 | 71.7 | 70.2 | 69.6 | 64.0 | 5.6 | .60 | 70.3 | 112.2 | 59.0 | 53.2 | 62.8 | 70.8 | 8.0 | 17.03 | 8 00 |
| 10 | .192 | 70.5 | 70.5 | 69.3 | 65.0 | 4.3 | .60 | 70.5 | 108.7 | 58.9 | 49.8 | 62.7 | 70.7 | 8.0 | Liquid below Zero. | 10 |
| 20 | .195 | 71.6 | 70.5 | 70.4 | 65.0 | 5.4 | .60 | 70.7 | 103.6 | 58.5 | 45.1 | 63.0 | 70.5 | 7.5 | do. | 20 |
| 30 | .198 | 71.6 | 70.5 | 69.0 | 65.0 | 4.0 | .60 | 70.7 | 98.5 | 58.1 | 38.4 | 63.5 | 70.6 | 7.1 | do. | 30 |
| 40 | .200 | 71.6 | 70.4 | 70.0 | 65.5 | 4.5 | .62 | 70.5 | 89.7 | 58.3 | 31.4 | 64.2 | 70.5 | 6.3 | do. | 40 |
| 50 | .202 | 71.5 | 70.4 | 70.0 | 66.0 | 4.0 | .61 | 70.7 | 87.7 | 59.2 | 28.5 | 64.4 | 70.5 | 6.1 | do. | 50 |
| 0 00 | .200 | 71.5 | 70.5 | 70.3 | 66.1 | 4.2 | .61 | 70.8 | 91.2 | 59.1 | 32.1 | 64.9 | 70.8 | 7.1 | do. | 0 00 |
| 10 | .202 | 71.5 | 70.6 | 70.5 | 66.1 | 4.4 | .51 | 71.0 | 99.2 | 60.1 | 38.1 | 65.5 | 71.4 | 5.9 | do. | 10 |
| 20 | .203 | 71.7 | 70.9 | 70.6 | 66.0 | 4.6 | .62 | 71.1 | 108.6 | 60.6 | 46.2 | 64.0 | 71.7 | 7.7 | 14.84 | 20 |
| 30 | .203 | 71.6 | 71.2 | 71.0 | 66.0 | 5.0 | .61 | 71.3 | 118.2 | 60.8 | 57.4 | 64.2 | 72.2 | 8.0 | 20.93 | 30 |
| 40 | .210 | 72.0 | 71.5 | 71.5 | 65.0 | 6.5 | .61 | 71.4 | 127.5 | 61.0 | 66.5 | 63.5 | 72.3 | 9.8 | 25.50 | 40 |
| 50 | .212 | 72.2 | 71.7 | 72.0 | 65.9 | 6.1 | .60 | 71.8 | 137.5 | 60.8 | 76.7 | 64.1 | 72.9 | 8.8 | 30.11 | 50 |
| 10 00 | .210 | 72.5 | 72.2 | 72.4 | 66.1 | 6.3 | .62 | 72.0 | 144.1 | 61.2 | 82.9 | 62.9 | 73.1 | 10.2 | 33.17 | 10 00 |
| 10 | .216 | 72.6 | 72.8 | 72.5 | 66.3 | 6.2 | .62 | 72.4 | 148.4 | 62.0 | 86.4 | 63.6 | 73.2 | 9.6 | 34.56 | 10 |
| 20 | .216 | 73.0 | 72.8 | 73.0 | 66.1 | 6.9 | .62 | 72.9 | 154.7 | 62.6 | 92.1 | 62.8 | 73.7 | 10.9 | 36.80 | 20 |
| 30 | .220 | 73.0 | 73.2 | 73.5 | 66.1 | 7.4 | .61 | 73.1 | 158.2 | 63.1 | 95.1 | 62.0 | 73.9 | 11.9 | 36.63 | 30 |
| 40 | .223 | 73.5 | 73.4 | 74.0 | 66.5 | 7.5 | .60 | 73.5 | 180.2 | 64.0 | 96.2 | 63.0 | 74.4 | 11.4 | 38.81 | 40 |
| 50 | .220 | 73.5 | 73.7 | 74.5 | 66.6 | 7.9 | .60 | 73.8 | 182.2 | 64.7 | 97.5 | 63.7 | 74.2 | 11.0 | 39.29 | 50 |
| 11 00 | .220 | 73.7 | 74.2 | 74.9 | 67.5 | 7.4 | .60 | 74.2 | 182.2 | 65.6 | 96.6 | 64.4 | 74.7 | 10.3 | 39.70 | 11 00 |

1843.]

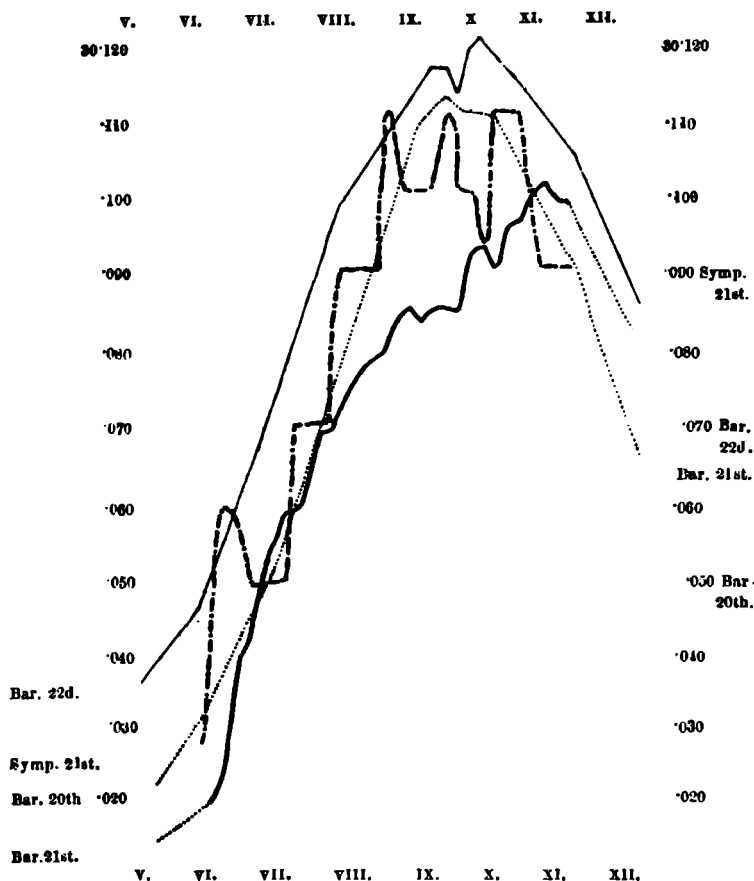
Eclipse of the Sun.

Zenith distance and Azimuth of the Sun and Moon, 21st December, 1843.

| Time. | Object. | Zenith distance. | Azimuth from the North. | Hour. | Wind. | Weather. | Remarks. |
|-------------------|-----------------|------------------|-------------------------|-------------------|--------|-----------------------|------------|
| A. M. H. M. S. | | Deg. Min. | Deg. Min. | A. M. H. M. S. | | | |
| 7 24 56 | Eclipse begins. | | | 6 0 | E.S.E. | Light Breeze. | Sky Clear. |
| 7 31 56 | ☉ Upper Limb. | 77 3 E. | 120 42 E. | 0 10 | " | | " |
| 7 41 15 | ☉ Lower Limb. | 75 40 " | " " | 0 20 | " | | " |
| 7 44 15 | ☽ " " | 74 43 " | 121 02 " | 0 30 | " | Sun rise at Gh. 31m. | " |
| 7 50 21 | ☉ " " | 73 53 " | 123 30 " | 0 40 | " | | " |
| 7 58 23 | ☽ " " | 72 37 " | 123 20 " | 0 50 | " | | " |
| 8 0 29 | ☉ " " | 71 53 " | 123 44 " | 7 0 | " | | " |
| 8 6 3 | ☽ " " | 70 36 " | 124 48 " | 0 10 | " | { Sun eclipsed at 7h. | " |
| 8 10 45 | ☉ " " | 69 53 " | 125 02 " | 0 20 | " | 25m. | " |
| 8 16 10 | ☉ " " | 68 51 " | 125 45 " | 0 30 | " | | " |
| 8 20 42 | ☽ " " | 67 55 " | 126 31 " | 0 40 | " | | " |
| 8 30 31 | ☉ " " | 66 08 " | 127 47 " | 0 50 | " | { Thick mist in the | " |
| | | | | 8 0 | E. | West | Sky Clear. |
| 8 41 46 | ☉ Upper Limb. | 63 31 " | 129 13 " | 0 10 | " | | " |
| 8 44 59 | ☽ " " | 63 00 " | 130 02 " | 0 20 | " | Faint sunshine. | " |
| 8 50 25 | ☉ " " | 61 58 " | 131 50 " | 0 30 | " | | " |
| 8 55 50 | ☉ " " | 61 07 " | 131 45 " | 0 40 | " | { Middle of the | " |
| 9 0 50 | ☉ " " | 60 08 " | 132 33 " | 0 50 | " | Eclipse at 8h. 40m. | " |
| 9 10 35 | ☽ " " | 58 40 " | 134 12 " | 9 0 | " | Faint sunshine. | " |
| 9 20 37 | ☉ " " | 56 47 " | 136 10 " | 0 10 | " | " | " |
| 9 30 2 | ☽ " " | 55 33 " | 137 49 " | 0 20 | " | " | " |
| 9 35 6 | ☉ " " | 54 29 " | 138 52 " | 0 30 | " | " | " |
| 9 40 16 | ☽ " " | 54 02 " | 139 50 " | 0 40 | " | " | " |
| 9 45 31 | ☽ " " | 53 15 " | 140 58 " | 0 50 | " | " | " |
| 9 50 1 | ☽ " " | 52 36 " | " " | 10 0 | " | " | " |
| 9 55 24 | ☉ " " | 51 30 " | 143 23 " | 0 10 | " | Eclipse ends. | " |
| | | | | 0 20 | " | | " |
| | | | | 0 30 | " | | " |
| 10 10 41 | Eclipse ends. | | | 0 40 | " | | " |
| | | | | 0 50 | " | | " |
| | | | | 11 0 | " | | " |

☽ The precise time of the beginning of the Eclipse could not be observed accurately to a second; therefore the time given may be a few seconds out. The end of the Eclipse has been correctly observed to a second.

Magnetic Observatory, Bombay, 21st December, 1843.



On the diagram the curves of the barometer and sympiesometer on the morning of the eclipse, and that of the former instrument on the day before and after, are laid down to thousandths of an inch—the readings being taken for the 21st, six times an hour throughout, and in like fashion from eight to ten on the 20th and 22d. Before and after this, where the movements are represented by straight lines, the readings are only made once an hour. The curves of the 21st present to the eye at once the singular fact formerly referred to—that of the barometer having continued to rise till within 20 minutes of 11 on the morning of the eclipse—that is, for nearly an hour beyond its ordinary time,—the maximum of the sympiesometer as usual preceding that of the barometer by about 50 minutes. On glancing over the observations made at the observatory since the 1st September 1842, I am unable to discover that, out of 400 days on which the barometer has been read hourly, this over

occurred before. My study of them has not been sufficiently careful to enable me to speak positively of the fact ; but my impression is, that the rise is, within the period specified, unprecedented. It will be interesting to know whether anything of a similar nature has ever been noticed at other stations similarly circumstanced. In the table the scale readings of all the instruments, save the actinometer, are given without correction—in the diagram the barometer is corrected for temperature : this has very little bearing on the present occasion on the mere form of the curve, as the thermometer only ranged four degrees in all throughout the entire course of the eclipse.

ART. XII.—*Meteorological Observations.*

The Meteorological report given in the previous number of the Journal consisted of a return of twenty-four hours' consecutive observations made on the term days,—the state of the Observatory in respect of the number of assistants then employed not permitting continuous observations such as to supply the average of the month. The term day observations of July and August 1842, were lost in consequence of the sickness of the only assistant who at that period remained attached to the Observatory. Government having subsequently sanctioned the employment of Native assistants in place of two of the Europeans originally employed, the observations have been carried on without interruption from the 1st September 1842 to the present time, and the abstracts now supplied present the means of the hourly observations for the month,—getting rid of casual variations and furnishing the elements of the mean directions of the barometric curve.

It was stated in the last number of the Journal that the Barometer by which the observations were noted from May to July 1841, was a standard by Adie of Edinburgh, and that its readings were 0·150 higher than the Observatory standard by Newman, subsequently employed, and assumed as correct :—so that in order to reconcile the observations recorded in the first number of the Journal with those subsequently published up to April 1843 (No. V.,) 0·150 must be subtracted from the former or added to the latter. An elaborate series of comparisons with other Barometers made in January 1843, and given at length in the previous part of the number, together with a comparison of the Bombay and Trevandrum observations with each other, led to the suspicion that air had been admitted into the tube when the Barometer was originally set

up. The instrument having been taken down and inverted, a bubble was discovered of such magnitude as to elevate the mercury on its re-adjustment 0.100. The tube was not boiled afresh and some slight vesicles still appear to adhere to it; from this circumstance and from the amount of discrepancy still existing between it and the other instruments with which, as already stated, it was compared, the total error appearing to exist in the present return, is .125. They have been given as copied from the Observatory records of scale readings corrected for temperature and capillarity, but it requires the addition of .125 to make them correct. The observations by Adie's Instrument given before June 1841, require 0.025 to be subtracted from them to render them correct—the instrument referred to is that marked No. VII. in the list of comparative observations. The returns which may be supplied subsequent to the adjustment of the barometer in June 1843, will require a correction of +0.25 only, this will be duly noted on the preface to the tables.

G. BUIST.

Magnetic and Meteorological Observatory, Colaba, mean hourly Observations for September, 1843.

| Bombay Mean Time. | Barometer. Corrected to 32 Fah. | Stand. Ther. | Thermometer. | | Differ-ence. | Remarks. |
|-------------------|---------------------------------|--------------|--------------|------|--------------|--|
| | | | Dry. | Wet. | | |
| A. M. | | 0 / | | 0 / | 0 / | |
| 0.0 | 29.636 | 80.6 | | 73.8 | 6.8 | This month is generally all cloudy, the sky being scarcely clear 1-8th. |
| 1.0 | 618 | 80.6 | | 73.8 | 6.8 | |
| 2.0 | 610 | 80.3 | | 74.3 | 6.0 | 22nd. A squall accompanied with rain and lightning at 2h. 45m. |
| 3.0 | 603 | 80.2 | | 73.9 | 6.3 | |
| 4.0 | 603 | 80.1 | | 73.7 | 6.4 | 23rd Another at 5 minutes to one A. M. accompanied with rain and distant thunder; ceased at 1 h. 15m. A.M. lightning continued in vivid flashes until 10 minutes to 2h. A. M. when all got calm and wind gentle. |
| 5.0 | 607 | 80.0 | | 73.1 | 6.9 | |
| 6.0 | 628 | 79.5 | | 72.3 | 7.2 | 29th. Squall accompanied with rain and lightning. |
| 7.0 | 644 | 79.4 | | 72.8 | 6.6 | |
| 8.0 | 666 | 80.6 | | 73.4 | 7.2 | Quantity of rain during the month 9.23. |
| 9.0 | 676 | 81.3 | | 73.5 | 7.8 | |
| 10.0 | 678 | 81.8 | | 73.9 | 7.0 | |
| 11.0 | 664 | 82.3 | | 74.2 | 8.1 | |
| 0.0 | 648 | 82.8 | | 74.7 | 8.1 | |
| P. M. | | | | | | |
| 1.0 | 626 | 83.0 | | 74.6 | 8.4 | |
| 2.0 | 603 | 83.3 | | 74.9 | 8.4 | |
| 3.0 | 560 | 83.2 | | 75.8 | 7.4 | |
| 4.0 | 582 | 83.2 | | 76.2 | 7.0 | |
| 5.0 | 587 | 82.5 | | 75.7 | 6.9 | |
| 6.0 | 606 | 81.9 | | 76.0 | 5.9 | |
| 7.0 | 620 | 81.3 | | 76.0 | 5.3 | |
| 8.0 | 632 | 80.4 | | 75.7 | 4.7 | |
| 9.0 | 642 | 80.8 | | 75.2 | 5.9 | |
| 10.0 | 649 | 80.0 | | 74.6 | 5.4 | |
| 11.0 | 644 | 80.6 | | 74.0 | 6.6 | |
| Mean. | 29.626 | 81.3 | | 74.5 | 6.9 | |

Magnetic Observatory, Colaba, mean hourly Observations for October, 1842.

| Bombay mean Time. | Barometer. Corrected to 32 Fah. | Stand. Ther. | Thermometer. | | Differ- ence. | Remarks. | |
|-------------------------|---------------------------------------|-----------------|--------------|------|------------------|--|---|
| | | | Dry. | Wet. | | | |
| A. M. | | o / | | o / | o / | | |
| 0-0 | 29-733 | 81-6 | | 77-0 | 4-6 | During all the days of this month the proportion of the cloudy to the clear sky, in its mean state, was not more than 3-8ths. | |
| 1-0 | 727 | 81-3 | | 76-8 | 4-5 | | |
| 2-0 | 720 | 81-2 | | 76-0 | 4-6 | | |
| 3-0 | 718 | 80-9 | | 76-5 | 4-4 | | |
| 4-0 | 720 | 80-7 | | 76-3 | 4-4 | | |
| 5-0 | 723 | 80-6 | | 76-2 | 4-4 | | |
| 6-0 | 720 | 80-1 | | 75-8 | 4-3 | | |
| 7-0 | 703 | 80-2 | | 75-4 | 4-9 | | |
| 8-0 | 723 | 81-4 | | 75-0 | 5-8 | | |
| 9-0 | 701 | 82-7 | | 76-2 | 6-5 | | |
| 10-0 | 701 | 83-9 | | 77-2 | 6-7 | 31st. The lightning struck the H. C. S. <i>Coots</i> , Bombay Harbour, at 8 minutes past 4 A. M., and shivered her foremast from top to bottom; no lives were lost. The thunder seemed more than an hour nearly overhead. | |
| 11-0 | 771 | 84-6 | | 77-8 | 6-8 | | |
| 0-0 | 745 | 85-0 | | 78-1 | 6-9 | | |
| P. M. | | | | | | | |
| 1-0 | 725 | 85-4 | | 78-1 | 7-3 | | Quantity of rain during the month. Inches 1-63. |
| 2-0 | 703 | 85-7 | | 78-0 | 7-1 | | |
| 3-0 | 689 | 85-8 | | 79-1 | 6-7 | | |
| 4-0 | 6-6 | 85-8 | | 79-1 | 6-7 | | |
| 5-0 | 605 | 85-1 | | 78-6 | 6-5 | | |
| 6-0 | 706 | 83-8 | | 78-0 | 6-9 | | |
| 7-0 | 725 | 83-2 | | 77-8 | 5-4 | | |
| 8-0 | 741 | 82-7 | | 77-6 | 5-1 | | |
| 9-0 | 746 | 82-5 | | 77-8 | 4-7 | | |
| 10-0 | 747 | 82-3 | | 77-6 | 4-7 | | |
| 11-0 | 743 | 82-1 | | 77-5 | 4-6 | | |
| Mean. | 29-742 | 82-8 | | 77-4 | 5-4 | <i>General Remarks.</i> —The troubled appearance of the sky and the depression of the Barometer manifested between the 20th and 31st, correspond with the setting in of the Coromandel monsoon, which commenced with a violent hurricane on the 24th day, when many ships perished. The Barometer had recovered its unaccustomed level before the severe fall of rain and lightning, which occurred on the 31st. | |

Magnetic Observatory, Colaba, mean hourly Observations for November, 1842.

| Bombay Mean Time. | Barometer. Corrected to 32 Fah. | Stand. Ther. | Thermometer. | | Differ- ence. | Remarks. | |
|-------------------------|---------------------------------------|-----------------|--------------|------|------------------|---|---|
| | | | Dry. | Wet. | | | |
| A. M. | | o / | | o / | o / | | |
| 0-0 | 29-931 | 80-0 | | 73-8 | 6-2 | During the month, the nights were generally clear, days about 3-8ths cloudy with circo stratus. | |
| 1-0 | 918 | 79-8 | | 73-8 | 6-0 | | |
| 2-0 | 908 | 79-6 | | 74-2 | 5-4 | | |
| 3-0 | 903 | 79-4 | | 73-8 | 5-6 | | |
| 4-0 | 903 | 79-1 | | 73-6 | 5-5 | | |
| 5-0 | 910 | 79-2 | | 73-0 | 6-2 | | |
| 6-0 | 924 | 78-3 | | 72-3 | 6-0 | | |
| 7-0 | 940 | 78-4 | | 72-6 | 5-6 | | |
| 8-0 | 967 | 80-0 | | 73-3 | 6-7 | | |
| 9-0 | 966 | 81-1 | | 73-4 | 7-7 | | |
| 10-0 | 945 | 82-3 | | 73-9 | 6-4 | From 10th to 10th, the days were all cloudy and light rain fell. | |
| 11-0 | 972 | 83-1 | | 74-1 | 9-0 | | |
| 0-0 | 940 | 83-9 | | 74-8 | 9-1 | | |
| P. M. | | | | | | | |
| 1-0 | 916 | 84-3 | | 74-6 | 9-7 | | Quantity of rain during the month. Inches 0-38. |
| 2-0 | 893 | 84-7 | | 74-9 | 9-8 | | |
| 3-0 | 886 | 85-1 | | 75-8 | 9-3 | | |
| 4-0 | 886 | 84-8 | | 75-1 | 8-7 | | |
| 5-0 | 894 | 83-9 | | 75-7 | 6-2 | | |
| 6-0 | 901 | 82-4 | | 76-0 | 6-4 | | |
| 7-0 | 884 | 82-2 | | 76-0 | 6-2 | | |
| 8-0 | 939 | 81-8 | | 75-7 | 6-1 | | |
| 9-0 | 947 | 81-2 | | 75-0 | 6-2 | | |
| 10-0 | 949 | 80-5 | | 74-5 | 6-0 | | |
| 11-0 | 949 | 80-3 | | 74-0 | 6-3 | | |
| Mean. | 29-827 | 81-4 | | 74-4 | 7-0 | <i>General Remarks.</i> —In the morning during the whole of the month, the mean direction of the wind was East by South when it was relieved by the sea breeze from N. W. | |

Magnetic Observatory, Colaba, mean hourly Observations made during the month of December, 1842.

| Hour. | Barometer. Corrected to 32 Fah. | Thermo. | Thermo. Wet | Difference. | Remarks. |
|-------|---------------------------------------|---------|----------------|-------------|---|
| A. M. | | ° / | ° / | ° / | |
| 0·0 | 29·839 | 73·2 | 71·8 | 6·4 | During this month, the days and nights were generally clear, only a few circo stratus prevailing. The days about the 20th and 25th were almost clouded by stratus. |
| 1·0 | ·830 | 77·7 | 71·1 | 6·6 | |
| 2·0 | ·821 | 77·5 | 72·4 | 5·1 | |
| 3·0 | ·812 | 77·0 | 70·7 | 6·3 | |
| 4·0 | ·814 | 78·7 | 70·6 | 6·1 | |
| 5·0 | ·821 | 78·2 | 70·7 | 5·5 | |
| 6·0 | ·844 | 75·4 | 69·1 | 6·3 | |
| 7·0 | ·863 | 75·1 | 69·1 | 6·0 | |
| 8·0 | ·889 | 76·6 | 69·7 | 6·9 | |
| 9·0 | ·888 | 73·3 | 70·3 | 8·0 | |
| 10·0 | ·895 | 79·5 | 70·7 | 8·8 | |
| 11·0 | ·872 | 80·8 | 70·5 | 10·3 | No rain during the month. |
| 0·0 | ·851 | 81·9 | 70·5 | 11·4 | |
| P. M. | | | | | |
| 1·0 | ·824 | 82·5 | 71·1 | 11·4 | |
| 2·0 | ·799 | 83·0 | 72·4 | 10·6 | |
| 3·0 | ·757 | 83·5 | 73·0 | 10·5 | |
| 4·0 | ·735 | 83·5 | 73·6 | 9·9 | |
| 5·0 | ·736 | 82·7 | 73·6 | 9·1 | |
| 6·0 | ·812 | 81·3 | 73·0 | 6·3 | |
| 7·0 | ·835 | 80·6 | 72·9 | 7·7 | |
| 8·0 | ·849 | 80·0 | 72·8 | 7·2 | |
| 9·0 | ·861 | 79·9 | 71·8 | 7·5 | |
| 10·0 | ·854 | 78·5 | 71·4 | 7·1 | |
| 11·0 | ·845 | 78·3 | 71·6 | 6·7 | |
| Mean. | 29·835 | 79·3 | 71·4 | 7·9 | |

ART. XIII—*Extracts from the Proceedings of the Society.*

At a Monthly Meeting of the Bombay Branch of the Royal Asiatic Society held in the Library rooms on Wednesday the 12th July 1843.

The Hon. G. W. Anderson, President, in the Chair.

A large and beautiful Map of the Rivers Jud and Haines in North Eastern Africa, lately partially explored by Lieutenant W. Christopher, I. N., was submitted for the inspection of the members by the President.

The Secretary laid on the table a copy of the fifth number of the Society's Journal, and it was resolved to continue the publication in the same form, as papers were received.

The Secretary then intimated that agreeably to the instructions of the Society, a case of Geological Specimens had been packed and were ready for transmission to the Museum of the Economic Geology of India, and that another case was nearly ready for the Museum of the St. Andrew's Society.

The following donations to the Library were then submitted to the meeting :—

1. By Government, Copy of 4th Edition of the Law relating to India and the East India Company, by Government.

2. By Do. through the Medical Board, Medical Topography of the Presidency Division of the Madras Army.

3. Do. of the Centre Division of the Madras Army.

4. By Lieutenant E. B. Eastwick, Copy of Easy Lessons in Chinese, by S. W. Williams.

5. By the Right Rev. Dr. Whelan, Copy of a work entitled *Aperçu Général sur l' Egypte*, par A. B. Clot-Bey.

6. Vols. 12, 13, and 14, Memoirs of the Royal Astronomical Society of London, from that Society.

7. By the Rev. J. M. Mitchell, in the name of Major T. B. Jervis. A copy of that gentleman's lithographed maps of the Islands of Bombay and of the Khanat of Bokhara.

At a Monthly Meeting of the Bombay Branch of the Royal Asiatic Society held in the Library rooms on Wednesday the 9th August 1843.

The Hon. G. W. Anderson, President, in the Chair.

The following papers were read :—

1. Further remarks on silk cultivation in Kattiawar, by Dr. B. A. R. Nicholson, Civil Surgeon, Rajcote.

Resolved, that, with his permission, Dr. Nicholson's paper be forwarded to the Secretary of the Agri-Horticultural Society, for submission to that Society.

2. * A Letter from Ball Gunghadur Shastree, Esq., forwarding an Inscription copied from a stone at Nagpore, with a Balbodh transcription and an English translation, together with remarks to illustrate the Genealogy of the Dynasty to which it refers. This Inscription which is dated in the Samvat year 1161, or A. D. 1105, was received by L. R. Reid, Esq., from Major Wilkinson, Resident at Nagpore.

3.* Observations on the Bactrian and Mithraic Coins in the cabinet of the Bombay Branch of the Royal Asiatic Society, by J. Bird, Esq.

This paper was illustrated by a copy and translation of an inscription from the Cave Temples at Nassick.

4. * A Chart of Observations made on nine different Barometers and one Sympiesometer half hourly, for twenty-four successive hours, with remarks in reference to the state of the weather at Bombay during the present season, by Geo. Buist, Esq, LL.D., in charge of the Magnetic Observatory, Bombay.

5. An Introductory Observation to a metrical translation of the first book of the Raghuvánsá, a heroic poem, by Kalidasa ; by the Rev. J. M. Mitchell.

6. * A Note accompanying a series of Geological Specimens from Aden, collected by the Author and Captain Yeadell, by Geo. Buist, Esq., LL.D.

7. * A Note accompanying a series of Geological Specimens, collected by Commodore Brucks, in the Persian Gulf, by Geo. Buist, Esq., LL.D.

8 * A Translation from the German of the 3rd part of Ehrenberg's celebrated paper on the coral banks of the Red Sea ; by the Rev. C. C. Menge, received through the Rev. G. Pigott.

Read a letter from the Secretary to the Geographical Society, dated 25th July, forwarding a further series of specimens of minerals, rocks, shells, &c. for the Museum, agreeably to the resolution of that body, dated 6th May, 1841.

The following books were presented to the Library :—

1. Transactions of the Agri-Horticultural Society of Western India, by the Society.

2. Memoire sur le lac Moeris, printed at Alexandria, by the Egyptian Society, through Messrs. Frith & Co.

3. Four papers on the Mineral resources of Southern India, by Captain Newbold, F.R.S., by the author.

4. Days in the East, a Poem, by Lieutenant J. H. Burke, Bombay Engineers, by the Author.

TO THE MUSEUM.

A further very valuable collection of Minerals and Geological Specimens, from Malwa, were presented through the Secretary, by the late Lieut. H. M. Blake, 7th Regt. N. I.

A collection of rock specimens from Aden, the Persian Gulf, Cabool,

and a few fossils from Lower and Upper Scinde, were presented by Dr. G. Buist.

A series of specimens from Egypt were also laid on the table by Dr. Buist.

The Secretary pointed out the form of a fossil crustacean from Scinde, and of those from Egypt, first taken to Europe by him, which would, with other specimens in his possession, go far to prove that the rocks of both these countries were posterior to the formation of the chalk.

At a Monthly Meeting of the Bombay Branch Royal Asiatic Society, held in the Library rooms on Wednesday the 13th September, 1843.

The Hon. G. W. Anderson, President, in the chair.

M. M. Etienne d' Quatremere, Member of the Institute of France, was proposed as an Honorary Member, by Jas. Bird, Esq., seconded by Jas. Burnes, K. H., and Col. T. Dickinson.

In accordance with Act. IX. of the Regulations, the meeting proceeded to an immediate ballot, when M. M. Etienne d'Quatremere was duly elected.

M. M. Chas. D'Ochoa, was proposed as an Honorary Member by Jas. Burnes, K.H., seconded by Jas. Bird, Esq. and the Rev. G. Pigott, and duly elected.

* Read a letter from Mr. John Murray, of Albermarle street, dated 2nd August, declining to undertake the republication of the Society's Transactions.

The Secretary was instructed to communicate with him or Messrs. Longman & Co., with a view to recover the copper plates.

Read a letter from the Honorary Secretary to the Royal Asiatic Society, stating that the 3rd number of the Society's Journal only had been received.

Duplicate copies were directed to be sent by the first opportunity.

* At the Monthly Meeting of the 14th June, the Secretary submitted to the meeting a proposal by Captain Le Grand Jacob that the Society republish many of the valuable papers in the Transactions.

It was resolved that the Secretary be directed to communicate with Messrs. Murray & Co. on the subject of republishing the 3 vols. of the Transactions in an octavo size, and that the further consideration of the subject be deferred till their answer is received.

The list of members referred to in this letter, was sent by the June mail.

The following papers were read :—

1. * A letter from J. P. Malcolmson, Esq., M. D., of the Bombay Medical Establishment, forwarding a specimen of volcanic rock from Aden, containing metallic mercury, with remarks.

2. * Chemical and microscopic examination of the rock salt of the Punjab, by H. Giraud, Esq., M. D., Bombay Medical Establishment.

The Secretary laid the following donations on the table, from M. M. Chas. D'Ochoa :—

1. Copy "Exercices Pratiques l'Analyse de Syntaxe et de Lexigraphie Chinoise," par S. Julien.

2. "Examen Méthodique des faits qui concernent le Thain-Tehn ou l'Inde," par G. Panthier.

3. "Vindicia Sinica. Dernière Réponse a M. S. Julien," par G. Panthier.

4. "Réponse à l'Examen Critique M. S. Julien, Inséré dans le Numéro de Mai 1841. Du Journal Asiatique," par ditto.

The thanks of the Society were voted to the authors of the papers, and to M. M. Chas. D'Ochoa for the works presented by him.

Copies of the "Vispárád" and "Yáçná," lithographed for the Society, were laid on the table, and it was resolved that copies of the work should be presented to the undermentioned Societies.

The Asiatic Society of Bengal.

The Literary Society of Madras.

The King's Library, Paris.

The St. Petersburg Academy of Sciences.

The British Museum.

The Dublin University.

The Asiatic Society, Paris.

The University of Bonn, through Professor Lassen.

The Berlin University Library.

The Royal Asiatic Society.

The Edinburgh University.

The University of Leyden.
The Cambridge University, and
The Bodleian Library, Oxford.

It was resolved that copies of the "Vandidad" sent to the Bodleian and Cambridge University Libraries, by two of the members, should be presented in the name of the Society.

The Secretary was directed to present the following works of the Society to Mr. Chas. D'Ochoa :—

A copy of each of the Society's numbers already published, and a copy of the "Vandidad," "Vispárád," and "Yáçná," lithographed by the Society.

At a Monthly Meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library rooms on Wednesday the 11th October 1842 :—

The Hon. G. W. Anderson, President, in the Chair.

The following papers were read :—

1. On the ruined City of Beejapoor, its Persian inscriptions, and translations of the latter into English, Part II., By James Bird, Esq.

2. On the derangement of the atmosphere between the tropics which occurred at the period of the late comet's appearance, by Captain C. Giberne, 16th Regiment N. I.

The following donations were made to the Library :—

By Government, Part I. Vol. III. Wright's *Icones Plantarum*.

TO THE MUSEUM.

1. A beautiful collection of minerals from an excavation in the lines of the Sappers and Miners within the Poona cantonments, by Captain F. Wemyss, Engineers, through Colonel Dickinson.

2. A large and beautiful slab of the sulphate of lime, by Col. G. R. Jervis, Engineers.

Laid on the table, a specimen copy of the *Collection Oriental*.

Resolved that the Secretary do order it, if not above 100 francs per volume.

Dr. Burnes then called the attention of the meeting to the approaching departure of Col. Dickinson, one of the *Vice-Presidents* of the Society, and proposed the following resolution, which was seconded by the Rev. G. Pigott :—

“ That at the next meeting, it be taken into consideration, how the Society can best mark its sense of Colonel Dickinson’s zeal and diligence in forwarding the interests of the Society .”

Resolved unanimously, that the above motion be notified in the usual monthly circular, calling the next meeting of the Society .

At an Anniversary Meeting of the Society held in the Library rooms on Thursday the 9th November.

The Hon. G. W. Anderson, President, in the Chair.

The following papers were read :—

1. Miscellaneous remarks on the observations now in progress at the Observatory, Bombay, in reference to Atmospheric pressure, accompanied by plans indicating the variation of the Barometer and Sympiesometer, in reference to this subject, by G. Buist, Esq. LL.D.

1. Memorandum on the Mahratta literature published at the lithographic presses of Bombay, by R. X. Murphy, Esq.

From the Private Secretary to the Honorable the Governor, transmitting a letter from the Secretary to the New York National Institution, proposing to open a correspondence with the Society.

Resolved, that the Society accept the offer of the New York Institution, and that the Secretary be directed to communicate the same to the Private Secretary of the Honorable the Governor, for the information of the Institution.

The Secretary called the attention of the Meeting to a report of the Proceedings of the Asiatic Society of Bengal, in which an application was directed to be made to the Supreme Government for copies of the Observations made at the Magnetic and Meteorological Observatory of Bombay, and suggested that a similar application should be made to the Bombay Government on behalf of the Society.

Resolved, that application be made for two copies of these papers, one for the Library, and one for more careful preservation, amongst the works of reference.

The Secretary submitted a memorandum on the progress made during the year in augmenting and arranging the Museum.

The new catalogue in a nearly finished state was laid on the table. It was stated that it contained all the details usual in Catalogues of Libraries in Europe, and that the old arrangement of the books had been as little altered as possible, consistently with finding space for the books of those departments which had been greatly augmented during the last few years, and with the adopted recommendations of the special Committee.

The Society directed that the best thanks of the Society should be communicated to Charles D'Ochoa, Esq., Honorary Member of the Society, for his great and disinterested exertions in the arrangement of the Library and the formation of the Catalogue.

The following motion, of which due notice was given, was then brought before the meeting :—

“That in consequence of the approaching departure of Colonel Dickinson, one of the Vice-Presidents of the Society, it be taken into consideration at the meeting how the Society can best mark its sense of Colonel Dickinson's zeal and diligence in forwarding the interests of the Society.”

It was proposed by Dr. James Burnes, K.H., Vice-President, and seconded by the Rev. G. Pigott :—

“That the Society cannot allow Colonel Dickinson to vacate his place as Vice-President, without tendering to him its best thanks for the great attention which during a long period of years he has devoted to its interests, and for the many useful suggestions he has at different times offered for the advancement of its objects.”

Resolved unanimously that the Secretary be directed to forward a copy of the above resolution to Colonel Dickinson.

The accounts of the Society were laid on the table.

The Society then proceeded to the election of Office-Bearers for the ensuing year.

The Office-Bearers elected were as follows :—

PRESIDENT.

The Honorable G. W. ANDERSON.

VICE-PRESIDENTS.

The Right Rev. LORD BISHOP of Bombay.

The Honorable J. H. CRAWFORD.

JAMES BURNES, K. H., F. R. S.

The Honorable Sir ERSKINE PERRY, Knight.

Committee of Management.

C. MOREHEAD, Esq, M.D.

The Rev. G. PIGOTT.

W. HOWARD, Esq.

J. HARKNESS, Esq.

G. BUIST, Esq. LL.D.

J. L. PHILIPS.

JAMES BIRD, F.R.G.S.

Col. G. R. JERVIS.

The Rev. J. M. MITCHELL.

S. S. DICKINSON, Esq.

J. G. MALCOLMSON, F.R.S, Esq., Secretary.

Messrs. FORBES & Co., Treasurers.

At a Monthly Meeting of the Bombay Branch of the Royal Asiatic Society held in the Library rooms on Wednesday the 13th December 1843.

The Honorable G. W. Anderson, President, in the Chair.

Read a letter from Lieutenant Colonel Dickinson, acknowledging receipt of copy of the resolution of the monthly meeting of the 10th November, relative to his retirement from the office of Vice-President.

Read a letter from Dr. F. Tanman, Junior, dated Berlin, July 6th, 1843, acknowledging the receipt of a box of Geological Specimens forwarded to him, and requesting to be supplied with a series of Zeolites from Poona, also offering to forward another collection of rare minerals for the Society's Museum.

Read a letter from W. Escombe, Esq., Secretary to Government, presenting 2 copies of the *Alif Laila* to the Library, by Government.

Read a letter from H. Torrens, Esq., Secretary to the Asiatic Society of Bengal, acknowledging the receipt of a copy of the *Vendidad*, and of a box of Geological Specimens, and presenting to the Library a series of Oriental works ordered by the Society through Messrs. Thacker and Co. Also a letter from these gentlemen mentioning their having received the books free of charge.

Skins of two species of bears, and a collection of skins, skulls, and

horns of various mountain sheep and antelope, were presented by Dr. Elliot, late of the Indore Contingent, through the Secretary.

A note from J. G. Malcolmson, Esq., was read by the acting Secretary, referring to a very fine silicified palm tree, and the lower jaw of a Mastodon discovered in February at Peermocha near Broach, and presented to the Society. They were found in a marine tertiary sandstone conglomerate which extends over a considerable part of the Broach and Rajpeepla districts.

The following works were presented by Manockjee Cursetjee, Esq., *Mémoires des Antiques du nord*, and *Ultimi progressi geographia*.

The thanks of the meeting were directed to be communicated to the respective donors.

The meeting then adjourned to Wednesday the 10th January, 1844.

JOURNAL
OF THE
BOMBAY BRANCH
ROYAL ASIATIC SOCIETY.

MAY—1844.

ART. I.—*On the ruined city of Bijapur, its Persian inscriptions, and translations of the latter into English.*—
By JAMES BIRD, Esq.

PART II.

As the interesting ruins of Bijapur in the Dekhan, have afforded matter for two papers already published, * it would be now unnecessary to revert to this subject, had there been nothing left to either add or correct. No sketches of the buildings, however, nor any copy of the Persian inscriptions to be met with, having accompanied the former accounts, the necessity for further detail still exists; whilst the Brahminical remains, within the citadel, which have almost escaped observation, and the Haly-Kanara inscriptions, until now undeciphered, being subjects of curiosity, naturally lead us to inquire into the condition of this part of the country, preceding the foundation of the Adil Shahy state: which, as the most powerful of the five Mahomedan kingdoms of the Dekhan, existed from about A. D. 1500 to 1685, and had its origin, in the distracted affairs of the prior Mahomedan dynasty of Bider, during the turbulent reign of Mahomed Shah Bhamany.

* The one is, by Captain Sydenham, in the 13th volume of the Asiatic Researches, p. 432, Quarto Edition; and the other is, by Captain Sykes, in the Bombay Literary Transactions. The latter professes to be only notes regarding the principal buildings, and a traditionary account of their origin.

The capital called Bijapur, or Vijayapur* meaning the city of victory, was subsequently named Bidpur, or Vidyapur, the city of learning. It stands in the midst of an extensive arid plain, in Lat. 17°9' north, between the Bîma and Krishna rivers; and, though now containing but few inhabitants, is visited and admired by many, attracted there by curiosity to view its extensive ruins and stately mausoleums.

It is nearly south-east from Poona, at the distance of two hundred miles, and is about one hundred and thirty from Satara. The road from either leads through a very uninteresting country, offering little or nothing that is worthy the attention of a traveller, and fatiguing the eye with the continued succession of trap rocks and barren heaths; while here and there narrow valleys and patches of scanty cultivation, barely supply food for the inhabitants, if not plentifully watered by the rainy season. The Satara valley is the most rich and fertile in the whole tract, and presents a pleasant diversity of tree and verdure in the plain, to relieve the barrenness of the surrounding mountains. Soon after leaving this, the country expands into undulating heaths, covered by stunted grass; and on the banks of the numerous water courses, descending from the distant hilly ranges on the right and left, the appearance of walled villages occasionally relieves the dreary sameness of the landscape.

The traveller, in approaching Bijapur from the westward, makes his last halting place at the village of Tikota, which is thirteen miles distant from the Mekka or western gate of the city wall. There is a large Mahomedan building said to be the sepulchre of Malik Sandal; who was, as appears, an officer at the Courts of Ibrahim and Mahomed Adil Shah, the fifth and sixth kings of Bijapur.

About ten miles beyond Tikota the first appearance of ruins commences, in the form of a broken down wall, or out-work, which is all that at present is remaining of the defences belonging to the village of Torgha, now called Torwah; and which was constructed by Ibrahim Adil Shah the 2nd, when, about the twenty-fourth year of his reign, Hej. 1011, A. D. 1604, he removed the seat of Government from the citadel of Bijapur to this place. The astrologers having pronounced it would prove unlucky for him to remain longer at the former, he removed the Court at their suggestion to Torgha, and caused palaces and mosques to be built there, giving it the name Naorispur, or the novel

* I have adopted Sir William Jones's system of orthography.

city. This event is placed by others, somewhat earlier, being Hej. 1006, A. D. 1597,* or the eighteenth year of his reign; but it seems probable that both dates are correct, and announce two different events; this referring to the commencement of the new city, and the other to the removal of the Court, on its completion. The new capital having been plundered, by Malik Amber of Ahmednagar, in Hej. 1031, † A. D. 1621, ‡ it was soon afterwards abandoned for the former residence of the Court; and when Aurungzeb took Bījapūr, in A. D. 1686, it is described by the journalist of Aurungzeb's transactions in the Dekhan "as quite depopulated, its ruined palaces only remaining, with a thick wall surrounding it, whose stately gateways were falling to decay." §

In viewing Bījapūr, from the neighbourhood of these ruins, and at a distance of three miles from the outer wall on the westward, we hail the first appearance of it as strikingly beautiful and magnificent. When I first saw it there happened to be a light haze overhanging the city; but as this gradually unrolled itself from the buildings, before the morning breeze, leaving the large dome of Súltan Mahomed's tomb partly exposed, at a time too when innumerable slender minarets, buildings, trees, and enclosures, burst into view, I here beheld a true picture of what the finest oriental cities have at all times been, and could scarcely persuade myself that this was not even then fully inhabited. Continuing to pass on, however, through heaps of mouldering ruins, the illusive idea of population soon vanishes; and though palaces, mosques, caravanserais, and streets of fallen houses, point out where it once existed, scarcely a single inhabitant is to be met with, until after having passed these remains of the suburbs, we terminate our journey of three miles, at the Mekka gate. Here, as in other parts of the East, the huts of slaves and traders were to be found in contact with the magnificent dwellings of the great and noble; but the extensive enclosures surrounding the palaces of the rich, diversified as they were by trees, gardens, and summer houses, with the numerous bazaars, now pointed out by the streets on either hand, and the

* In the Hindústani history of Bījapūr, Hej. 1000 is the date given for this.

† In the Hindústani history the date of this is Hej. 1033.

‡ The words commemorative of this event are *ویران شد آن نوری با ملک*
this new City was made a desert by Malik, giving the numerals Hej. 1031.

§ Scott's *Ferishta's Dekhan*. Vol. ii. p. 73.

public edifices of mosques and tombs, possessing all the magnitude and beauty of architecture that was in keeping with the spirit of the times, render this one of the most interesting of cities.

Arriving at the outer wall we enter the enclosed town, or *Petah*, by the *Mekka* gate ; and find that between this and the ditch of the citadel or inner fort, there is a wide space occupied by mosques, tombs, gardens, and tamarind trees ; leaving a sufficient open space, however, for a large encampment of horse and foot, when required in the event of a siege.

After this general description of a once celebrated city, it now remains for me to give some detailed account of the most remarkable of its edifices. I may here limit my observations to two heads ; the one illustrative of the buildings in the citadel and enclosed town, the other of those in the suburbs and city on the westward.

THE CITADEL AND ENCLOSED TOWN.

The wall of the enclosed town, which is many miles in circumference, is flanked by numerous semicircular towers ; and was, at one time, strengthened by a ditch and covert way, now in many parts destroyed and admitting cultivated fields to closely approach the curtain. It is strongly built of stone and lime with a parapet nine feet in height and three in thickness ; and was completed by *Ali Adil Shah the 1st*, in the era of the *Hej. 974*, A. D. 1566, or two years after he and his *Mahomedan* confederates had overturned the neighbouring *Hindú* principality of *Vijayanagar*, sometimes called *Bijauagar*.

The citadel, which is within this enclosure, and is placed more particularly to the west side of its irregular square, is defended by a rampart, round towers, and *fause bray*, having also a wet ditch about one hundred and twenty feet in breadth. The ditch, which was kept completely flooded in former times, is now nearly dry on the north side ; on the south, it is of considerable depth, and contains small fish ; but there are no alligators as mentioned by *Tavernier*. It would appear that the water of the ditch on the north side has been at all times deficient, there being a double wall and second wet ditch at that part. The only entrance to the fortification is on the east face, by two gateways ;* the

* There is another gateway, on the north-west side, leading through the

inner one of which has a door made of wooden planks clamped by iron plates, which are rivetted on the other side, by strong pegs of the same metal.

Having here passed into the citadel we come immediately to four pillars of polished black basalt,* three of which are situated on the right and one on the left hand side. They belonged to a Hindú temple, as would appear, and were made an offering, Captain Sydenham says, by the widow of Ráma Rája, to Súltan Ali Adil Shah the 1st, when the Bījānagar kingdom was ruined by the Mahomedan confederacy, at the battle of Telicotta, as before noticed. But in the absence of well authenticated information on this point, I may be permitted to doubt the truth of this report; and as similar pillars are to be met with among the Bráhmínical remains near by, it seems probable, that if not carried away from Bījānagar to be a vainglorious boast of victory and a triumph of the Mahomedan faith, they were formerly part of the Hindú temple now standing in ruins on either hand; and through which the present gateway was carried, on the first foundation of the citadel by Yúsaf Adil Shah, who according to Ferishta and others built the fort. †

Two other rows of pillars are to be seen a few paces further on to the right, and three similar ones to the left, which are the only remaining parts of the Hindú temple just alluded to. Though not uniform in shape, the pillars consist generally of a plain base, a rudely carved shaft with a square projection in the middle, and an overhanging capital. Many of them are inscribed at the base, to commemorate grants of land given to the temple by the Rajput families of Chalúkyā and

inner wall on that quarter, to a Hindú temple, yet kept in repair, and which may have been dedicated in former times to the ladies of the Harem who were of that persuasion.

* Not black marble, as stated by Captain Sydenham.

† The building of the Fort is placed by the author of the *Busatin-us-Sulatin* in Hej. 910, A. D. 1513; being three years after Yusaf Adil Shah's death—according to Ferishta, whose historical records bear, generally, every mark of fidelity and truth. The death of Yusaf Adil Shah, the first king of Bījapūr, is differently fixed in various histories. The *Tab-kati Akbary* places it in Hej. 913, A. D. 1507; the *Tarikhi Mir Ibrahim Asad Khany* in Hej. 927, A. D. 1519; and Ferishta in Hej. 916, A. D. 1510. The Chronogram given by the *Tharikhi Asad Khany* is *يوسف شاه جننے* and furnishes the numerals for its date; but as this history appears to be the same with the *Tharikhi Haft Kúrsy*, which was written in the reign of Ali Adil Shah

Yadava,* who were the reigning Hindú princes, in this part of the country, previous to the first Mahomedan invasion of the Dekhan, about the beginning of the 14th century. The oldest of the grants, which is written in Sanscrit, and in the Haly Kanara character, announces the appropriation of a gift of land to this temple of the deity Narasinha,† by Chalúkya Mula Devara, in the Shalivahan period 1114, or A. D. 1192.‡ There is a similar gift to the same deity, written in the name of Shankrapa Danda Nayk, the military prime minister of Yadava Narayana, a Chakrawarty Raja, during the forty-sixth year of that prince's reign, or in the 1162 year of the Shalivahan period, A. D. 1240, being forty-eight years later than the former.

The whole style of sculpture is here very similar to that of the Ellora excavations; and if not told by the inscriptions that this temple was a Vishnava one, we might conjecture that such had been its dedication, by simply forming an opinion from the subjects that have been represented on the square projections of the pillars. Among the mythological devices there is one of a cross-legged figure sitting with the hands joined, as if employed in devotion, whilst on the right and left there are two standing figures in attendance. It is intended, probably, to represent an ascetic, in the act of worship; but a Bráhmín who was with me conjectured it to be a Jain deity. There is a representation also of Ganesha on another pillar, and of Krishna killing the serpent Kalya, as related in the Bhagavata. The image of the elephant is also sculptured; and though diminutive like all the others, it is so far interesting that it shows how here, as in the excavations of the Dekhan, it held a conspicuous place in the mythology of the people, who, some centuries back, professed the Hindú religion in these parts.

the 2nd, it is not entitled to so much credit as Ferishta who wrote nearer the time, and with the best authorities before him.

* The Chalúkya and Yadava tribes are two of the thirty-six races of Kshetryas, or Rajputs, enumerated in the Prithvi Rai Rayasa; which is a history of Prithvi Rai the last Hindú king of Delhi, and was written by the bard Chandra, about the date of these inscriptions. Some account of this work will be found in the September number of the Calcutta Oriental Magazine, where the origin of the mountain Abú, in Khatyawar, is detailed at length.

† Vishnú in his fourth avatar when he descended as a man-lion.

‡ This is the year in which Prithvi Rai, called Pithao Ray by the Mahomedans, fell in the battle at Tahnesar, fighting at the head of the whole assembled Rajput Princes of India to oppose the invasion of Mahomed Ghory.

Proceeding onwards from the temple we come to a yet more extensive Hindú building, which is situated to the left. This is an Agrahar, or Bráhmínical College, which the Mahomedans converted into a mosque, by placing therein a Mambar, or pulpit, and writing the confession of faith over the Mehráb, or arch of the altar, on the westward. It possesses a large enclosed space in front, which is entered by a vestibule; whose portico, being extended into wings, occupies the complete length of the Agrahar. On entering the area we find that the building consists of two stories, and that the lower presents a front of ten tall columns, each of a single stone, placed six or seven feet distant from the other, and deepening backwards at right angles in rows of six columns each. The style of the architecture is that which is common to the oldest Hindú buildings in the Dekhan, and exhibits massy pieces of quartz stone-rock,* passing from one pillar to another, in order to form the roof; these being laid along each other, in a similar manner, for the walls, without having been originally joined together by lime or any other cementing substance.† There are also one or two pillars of black basalt, which do not appear to have belonged to the original building; as all the others are of the quartz rock, which must have been brought from some distance, there being no appearance of this mineralogical formation in the immediate neighbourhood.‡ A smaller, though in other respects similar Agra-

* It might be classed without much impropriety as a species of sandstone.

† This is the Cyclopean mode of building, and is very similar to the style of the temples in Kashmir as described by Ferishta.

‡ The author of a modern history of Bijapur quotes the authority of the Tarikhi Mulhakat to show that this building was originally a mosque, and constructed by the Mahomedans. According to his account Aiz-addin Abur Jah, one of the nobles of Ala-ad-din Khilji, king of Delhi, was governor of the place in Hej. 601; and in 807 A. D. 1307, he erected a wooden mosque at the request of the Hindú minister of Raja Ram Deo of Devagarh. His son Karim-ad-din Abur Jah, in Hej. 716 A. D. 1316, caused a stone mosque to be constructed, and his name is accordingly mentioned by the following inscription, in the Balbud character, on one of the pillars. A curious admixture of corrupt Arabic with Sanscrit occurs in the inscription, and is a remarkable specimen of what must be considered the Mahratta language at that time.

The account of the building given on the authority of the above history, appears apocryphal.

har is to be met with on the north-east of what is called the Adawlat Khanah ; and both would indicate that there must have been a considerable Hindú town here previous to the time it was fortified by the first king of Bijapur. In answer to the numerous inquiries I made on this subject, I could only receive the unsatisfactory information that they were founded by a Hindú raja, named Bijan Rai, whose capital was Mangalbira,* and in whose time, it is said, a Búrj or round tower now standing was built. It is also traditionally related, that soon after this time, Pír Mabrit Khandayat,† the leader of a body of Mahomedan fakírs, having come here, expelled the Bráhmíns from the Agrahars, and propagated the faith of Islam, previous to any regular invasion of the Dekhan by an army :—and that when Yusaf Adil Shah founded Bijapur, this town was called Bijan Hully.‡ The tomb of the Pír's son

॥श्रीग.॥

स्वस्ति शके १२४२ रौद्रसंक्रमरे श्रियुद्धधुरोणनामविजयराज्योदयितततिर्पोनिमालिकू करीमदीनदक्षिणवाराणसीविजयापुरीवरीलमषितीकरविली. सालहौउटगेचासुतारुरैवैया णेमषितिकेलिमोलक्रेमासकरुन्धेविकरिशेतेवेतनचोवोसचावरचोवीसहातनिश्चितकरुनुदि- धली. मंगलमाहश्री.

In the fortunate year of the Shahn, or Shalivahan period 1242, and A. D. 1320 in the Raodra year of the Cycle, the hero and victorious ruler named Malik Karim-ad-din, who like the sun is all powerful, erected the upper part of the mosque. Revolya, a carpenter of the village of Saliódagé constructed the mosque ; and agreed to receive as the price of his labour a saleable freehold estate of twenty Charwar of land of twenty cubits, which was fixed and given. May it greatly prosper.

* Mangalbira, or Mangalivira, is a hill-fort near the Maun river, which flows into the Bims, and is about fifteen miles S. S. E. of Panderpúr.

† The Kshetryas, or Rajpúts of Orissa, who are the feudal lords of the soil, and hold it on condition of service, are called Khandayats ; (see A. R. Vol. xv. p. 222,) and if any such occurrence, as above related, ever took place, it may have been caused by a body of converted Rajpúts, driven southward in the progress of the Mahomedan arms on the north.

‡ Meaning the village of Bijun, and I am disposed to think that this was inscribed by order of Malik Kafur, who was the general of Alla-ad-din Khiljy, the first Mahomedan conqueror of the Dekhan. The style of the architecture is more Hindú than Mahomedan, though this certainly might arise from the circumstance of a Hindú workman having constructed the building.

which is within the open area of the largest Agrahar, is built of lime and stone, and is covered with Arabic sentences from the Koran, now much defaced. His own burial place is to the eastward, at some distance, and his descendants who yet reside there, possess some rights in the village of Tinié Hally, not far from Bijapur.

The Mahomedan buildings in the citadel are completely in a state of ruin, if we except a small mosque called the Mekka Musjid, which was built by the 1st Ali Adil Shah. It is also named from having a representation of that celebrated place on its Kaba, and is a small chaste building, consisting of twelve arches, supported by an equal number of finely cut stone pillars, disposed in a square. Behind this, and to the north, stood the Adaolat Khanah, where the kings usually received the congratulations of the multitude and the petitions of the poor. It consisted of two stories, with wide verandas, elevated on large wooden pillars, and was standing when I first visited Bijapur; but, in consequence of the building falling quickly to decay, the Raja of Sattara has lately taken down the whole; and the only remaining parts now to be seen, are the ruined fountain in the garden, and the terrace where people were usually allowed to present themselves. This building was erected by the 1st Ali Adil Shah.

On the right of it, and adjoining, was the Sona Mahal, or gilded palace, which was burnt down. A little to the westward, and in front, we observe the Ananda Mahal, or Harem, which fronts the south. It consists of three stories, each story having a middle hall and smaller apartments, at either end, communicating with it through narrow arches, which may be shut up by curtains when necessary. It had formerly two wings, towards the north, similarly built; and all parts of the building communicated by means of narrow staircases. The whole is crowned by a board terrace, and a wall nine or ten feet in height, surmounted by many small minarets to give the buildings a finished appearance.

To the west of this place is the Dhobí Mahal; and to the south the Sejadah Mahal, or Sath Khandí.* The walls were formerly covered with fresco paintings, and portraits of people belonging to the court, most of which are now defaced. I observed, however, an elegant por-

* It was named the Sejadah Mahal from being a place of retirement for the princesses to pay their devotions; and took the appellation of Sath Khandí from being seven stories high.

trait of a Mahomedan priest, whose features were Turkish, and complexion very fair. There is also a drawing of Mahomed,* the sixth king, in company with his favourite dancing girl Rhamba. He is seated on a cushion, near which are laid his Sehtar, † a basket of flowers, and a Persian book. The expression of his countenance is that of good nature, and much kindness of disposition; virtues for which he is yet celebrated among the people, and has been frequently praised by historians.

The only other thing that formerly attracted notice, at the citadel, was the stone representation of Rama Raja's head. It was on the right of the gate at entering; but, having been removed from thence by the Raja of Sattara, was lately thrown into the ditch.

The Pettah, or enclosed city, was formerly divided into numerous quarters; each being distinguished by the appellation of the different bazars, or market places, in its immediate neighbourhood. Some of the divisions yet known are the Khizanah, Jamaa Masjid, Chauk, Karinja, and Padshapur bazars; there being many others of inferior note that have lost their title, or are little remembered.

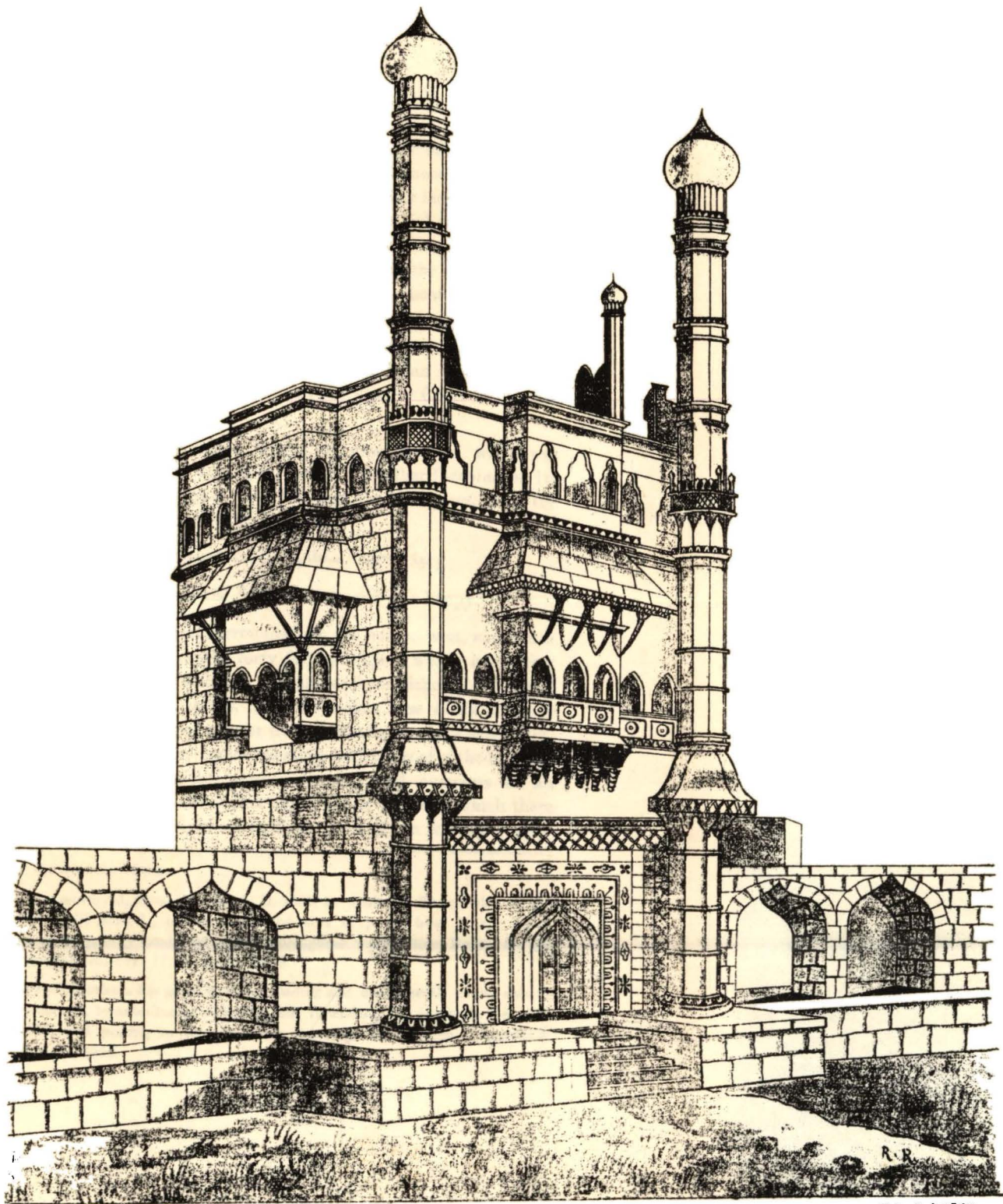
Proceeding directly eastward, along a broad and handsome street, leading from the entrance of the citadel, we come immediately to a row of small arches on the right. These were once used as shops; and from having then served for the foundations of a treasury, palace, state prison, and other buildings, were known by the name of the Khizanah bazar. ‡ Somewhat further on, and on the same side is the site of the Mehtry Mahal; § concerning which an absurd story is in circulation, among the vulgar, and has been retailed, without examination, by others, that it was built by a sweeper, or Halalkhor, who had become unexpectedly the possessor of considerable wealth, in consequence of being the identical person who met Ibrahim Adil Shah the 1st, when, in his sickness, he had made a vow, to present a certain sum of money to whomsoever he should first see on a certain morning, and which resolution was adopted, at the suggestion of a crafty astrologer who insured his recovery, and intended to profit by the remedy. This idle tale has no foundation but what the

* Captain Sydenham says Ali Adil Shah.

† The three stringed gultar.

‡ The treasury market.

§ The princely palace.



B. E. S. PRESS.

THE MEHTRY MAHAL AT BIJAPUR.

ignorance of the vulgar has given it : for the difference of meaning in the Persian and Hindústaní word *Mehtar* not being known to them, they have affixed the appellation of a sweeper, in the latter language, to that which designated a lord, or chief, in the other, and which was the title too of this building from its original foundation. It is a small but elegant structure, of three stories high, having minarets at the corners and in front,* with ornamental carving, in soft claystone, about its windows.

On the left, and almost opposite to this, four large Gothic looking arches draw our attention. They formed the gateway leading to the palaces of Mústafa Khan Ardistany,† and Ewaz Khan ; the former of whom was a distinguished nobleman at the Bijapur Court during the reign of its 4th king.

We next come to the *Jamaa Musjid*, or great mosque, which was built by Ali Adil Shah 1st, during the life of his father Ibrahim the 1st and the following Chronogram, which is near the altar piece, gives the date of the structure, Hej. 943, A. D. 1536.

‡ بيا بمسجد سلطان عاقبت محمود سنه ٩٤٣

“Enter the mosque of the Súlтан whose end was happy.”

It is an extensive edifice, surrounded on the north, west, and south sides by a high wall of nearly forty feet in height ; which concealing the dome gives the whole a clumsy appearance from without. The wall has a lower story of false arches, raised on a plain base of six or seven feet in height, and an upper one, or narrow arcade, opening externally, along which runs a passage, communicating with the roof of the mosque. We enter by a door on the north side, and find ourselves in an extensive court raised about six feet high ; in the midst of which there is a fountain, and on the right a raised pavement of two feet high, front-

* See the drawing of this.

† He was murdered, about the year A. D. 1581, by Kishwar Khan ; who, on the death of Ali Adil Shah I., having seized the reins of power from Kamll Khan, (a nobleman frequently mentioned by the Portuguese writers, then Regent for the minor Ibrahim Adil Shah II.) ruled the State.

‡ Captain Sydenham has given a wrong reading and consequently wrong date of this Chronogram, by substituting *بنا* for *بيا* thus furnishing the numerals Hej. 991 A. D. 1583, and placing its foundation in the reign of Ibrahim II. instead of Hej. 943, A. D. 1536.

ing the mosque on the east. The body of the building consists of a magnificent arcade, two hundred and forty feet broad, by one hundred and thirty-eight. The pillars are all equi-distant, something more than twenty-six feet from centre to centre, and elevated twenty-five feet. From them spring arches, of the usual pointed shape, common to musjids, which support a flat dome resting between every four pillars. In the centre of the floor below, there is a clear space of 75 feet, over which rises the large external dome of an egg shape, and whose span of fifty-four feet is raised eighty feet from the pavement. On the north and south walls there are two handsome piazzas, that consist of seven large arches and run from the body of the mosque, to about one hundred and eighty-six feet.

The Mehrab, or altar on the west, is elegantly gilded, and displays above its centre the following inscription :—

الله محمد ابوبكر عمر عثمان حيدر

“Allah, Mahomed, Abúbikir, Omar, Osman, Hydar,”——* which informs us that Mahomed the sixth king, by whose orders the ornaments were made, was of the Súnni sect† of Islam, though all the others, excepting Ibrahim the 1st, was of the Shía persuasion.

There are several other inscriptions among which are the following :—

این محراب سلطنت یاد دارم زینت یافتہ سلطان محمد عادلشاہ

“I remember that this royal altar was ornamented by orders of Mahomed Adil Shah.”

برقصر عمر تکیہ مکن استوار نیست در دار بیقرار کسی را قرار نیست

“Place not reliance on this life because it is not steadfast, and in this house of inquietude nothing is at rest for any one.”

خوش منزایست دنیا رونق بچشم ما خوش دولتیست عمر ولی پایدار نیست

“Pleasant is the stage of the world now sparkling in mine eye ; and happy is the lot of my life, but it is fleeting.”

* The name of Ali, the son-in-law of the Prophet.

† The Turks are of this faith, acknowledging the three first Khalifs ; and the Persians are of the other, acknowledging Ali and the twelve Imams.

بنده در کاخ غلام سلطان محمد شاه خلدالله قله اعالي ياقوت دابولي
سنه ۱۰۴۵

“Yakúti Dabeúly* was the servant of the mosque and the slave of Mahomed Shah, whose shadow may God continue to support. Hej. 1045 A. D. 1635.”

The aggregate height of the dome, from the ground to its apex, may be about one hundred and twenty feet. The floor below, which is chúnamed,† is divided by black lines into numerous square portions, or *musallas*, made agreeably to the order of Aurangzeb, when he took Bijapur and carried away the velvet carpets, along with a large golden chain, and other valuables, belonging to the mosque.

After leaving the *Jamaa Musjid* and going northwards, we come to the *mausoleum* of Mahomed, the sixth king. It is chiefly remarkable for its dome being of equal extent to that of St. Paul's of London, but being composed of brick and lime, and built out of all proportion to the other parts of the edifice, it ceases to be an object of much wonder, and can bear no comparison in point of beauty with the other.

The tomb itself, a heavy looking building of a quadrangular form, has an octagonal minaret at each corner, ascending from below, and is built on a terrace of six hundred feet square and two high. Each face of it presents three elevated false arches, of a Gothic appearance, rising from the pavement, and supporting several feet of plain lime work and plaster above; whilst the whole is surmounted by an ornamental cornice of grey basalt, and a balustrade, six feet high, terminating in small cupolas. The base of the middle arch is of grey basalt, and the two others of stone-work and plaster. The minarets at the corners consist of eight octagonal rooms, or stories, twelve feet broad, which lead into each other by means of winding staircases, which are terminated above by cupolas, communicating with the terraced roof of the building. Each of these stories has seven small arched windows, opening outwardly and looking into the court below; while the eighth one admits a passage for the circular staircase. From this, also, we

* The appellation for a tribe of Abyssinians known in India.

† This, except to those in India, requires explanation. The fine carbonate of lime, called chúná or chúnám in this country, is of such a nature as to take a polish little inferior to the smoothness of marble; and is generally used for the floor of buildings.

enter the large dome and arrive on a broad ledge surrounding its interior edge. It is large enough to admit of a carriage being wheeled round it, and rests on supports, that inclining inwards in curves, resemble half arches. The cupolas and dome communicate with each other by numerous niches; and the echo of the voice on the wall being thus broken, is rendered less distinctly audible than it otherwise would be. The whole height of the tomb may be a hundred and fifty feet. There is a commanding view of the town and surrounding country from its terraced roof, where may be seen the broad expanse of barren heath and falling ruin, stretching in melancholy grandeur before us.

We enter the body of the building by a lofty door-way on the south side where the first thing fixing our attention is the grave of the king. It is covered with cloth, and placed in the centre of the structure, under a wooden canopy on a terrace. To the left of it, facing the spectator, are the graves of his youngest wife and the son of Alí Adil Shah II. Those of his favourite dancing girl Rhamba, his daughter the Begam, and his eldest wife * who performed the pilgrimage to Mekka, are situated in succession on the right. On the inner side of the door-way, where we enter, there are several inscriptions, written in Toghra letters, to commemorate the year of the Súltan's death. The first is,

سلطان محمد جنت آشیانی سنه ۱۰۶۷

"Súltan Mahomed a dweller in Paradise," which words give the numerals, Hej. 1067 A. D. 1656.

The second,

عاقبت محمد محمود شد سنه ۱۰۶۷

* This is the lady spoken of by the traveller Bernier, in his notice of Bijapur. Bernier, who was in India from A. D. 1655 to 1667, says "Visiapoor (Bijapur) however, is verging towards dissolution. The Moghal has made himself master of Parinda, the key of the kingdom Bider, a strong and handsome town, and other important places. The death of the king, (Mahomed Shah) without male issue, must operate unfavourably on the future concerns of the country. The throne is filled by a young man, ("Alí Adil Shah") educated and adopted as her son by the Queen, sister of the king of Golconda, who, by the by, has been ill requited for her kindness. She recently returned from Mekka, and experienced a cold and insulting reception; the young monarch pretending that her conduct on board the Dutch vessel, which conveyed her to Mekka, was unbecoming of her sex and rank.—*Brock's translation of Bernier, II., p. 221.*

“The end of Mahomed was commendable,” giving the numeral, Hej. 1067 A. D. 1656.

The third,

دارالسلام شه محمد شد سنه ۱۰۶۸

“King Mahomed was in the house of peace.” This gives the numerals, Hej. 1068, A. D. 1657, thus differing by one year from the other. Such an occurrence, however, is thought of little importance among the orientals when the words of a *chronogram* appear appropriate. The true year of his death was A. D. 1657.

Opposite the east and west sides of the *mausoleum*, there are two ruined fountains; and at the end of a platform, on the west, there is a small but handsome mosque which remains in tolerable repair. The wall of the extensive enclosure belonging to the tomb has become a mass of rubbish, and the *Nakar Khanah*, or gateway on the southern face, where the large drum was formerly beaten, is the only part of it now left entire. The dwellings in this neighbourhood were known by the name of *Padshapur bazar*.

Returning westerly we come again to the fort ditch, where stands the palace of the Asari Sharif, so named from its containing a few hairs of Mahomed's beard, called the relics of the Prophet. It is a large and heavy looking building of brick and lime; whose magnificent verandah, thirty-three feet broad and one hundred and twenty long, has an elevated roof supported by four massy wooden pillars. We enter by a door on the south; and on our left find a stone staircase leading to the upper part of the palace; and to a hall of the same dimensions as the verandah, where are two large folding doors at the south and north ends. Having passed the latter, we come to a small closet, on the right, where the relics of the Prophet are deposited; but which are only shown once a year for the gratification of the faithful. These were formerly exhibited to the multitude from a small balcony which extends along part of the upper story. The building is accommodated with a fine reservoir of water, twenty-five yards long, sixty broad, and six deep, supplied from a distance, by several of the square towers called *Garj*.

This palace, which was built by Mahomed Adil Shah, contains a library of Korans and religious books, copied in the best style of oriental

writing, but no works of history. * It formerly communicated with the citadel by means of a bridge, of which nothing now remains excepting the pillars, † and succeeded to the honor of holding the precious relics of the Prophet, after another such building, within the citadel, had been burnt down.

Following the edge of the ditch, to the south-west, we come to a massy square tower called the Chatr Ganj; which is one of fourteen such that were built by the unfortunatè Afzal Khan, who met his death at the hands of Sivaji, the founder of the Mahratta empire. ‡ These, which are contrivances for giving impetus to the water of an aqueduct, were built, it would appear, in the time of Mahomed Shah for the purpose of supplying the city. The following inscription, on the one first mentioned, must be read, with some interest, by all who have curiosity to know the condition of one so intimately associated with the first Mahratta leader, as was Afzal Khan. The inscription on the original is written in Toghra character,

بر رای صنعت پیرای طراحان عجایب کار و نادره کاران نگارخانه روزگار هویدا
 باد که با صر جلیل القدر بادشاه صلیمان بارگاه آفتاب اوج صر فرازی سلطان
 محمد بادشاه غازی خن اقبال تومان سپه سالار دورن سرآمد نویان دهن
 دیندار کفر شکن مهبط انوار الطاف الهی افضل خان محمد شاهي کز غرض صیهر
 کنز اعلی فضل فضلا و فضل افضل از هر ماکی بجای تسبیح آواز آید که افضل
 افضل این نقب آب که موسوم به محمد ندامت از بهر آسودگی خلق خدا
 با هتمام تمام بظهور آورده تا تشنه لبان عالم ازین آب صیراب دل و آسوده
 خاطر گشته بدعای دوام سلطنت ابد پیوند پادشاه گیتی پناه رطب اللسان
 باشند سنه ۱۰۶۳

“Be it known to the executors of ornamental arts, the architects of important works, and to celebrated living workmen, that Afzal Khan Mahomed Shahy, a nobleman of good fortune, the present Comman-

* At the request of Lieut. Col. Briggs, the late Resident at Sattara, Mír Kheirat Ali, commonly called Mùsthak, the learned Persian Secretary of the Residency, made out a catalogue of the whole; but no historical works were discovered.

† See the sketch of this for which, as for most of the others I am indebted to the kindness of Mr. Robertson, and Lieut. Ash of the Artillery.

‡ This happened in the month of October 1659.

der-in-Chief, the first in rank of Dekhan lords, the religious destroyer of infidelity, on whom descends God's favour, whom heaven pronounces to be the most accomplished and excellent, and whose name like God's praise, is resounded from every quarter, saying it is excellence, did after much labour, and by order of Mahomed Shah Ghazy, (the exalted in dignity, whose court is like Súlyman's, (Solomon's) and whose glory is as the sun,) render this aqueduct conspicuous, (calling it by the name of Mahomed Nidda,) for the convenience of God's people, so that whosoever should have a thirsty lip might have his heart filled and satisfied at this water, whilst his tongue would be moist in praying that this sovereignty of the king, the asylum of the universe, may abide for ever; Hej. 1063, A. D. 1652."

The unfinished tomb of Ali Adil Shah II. is to be seen westward of the Asari Sharíf, and on the north of the citadel. It is a noble ruin of seven large Gothic looking arches constructed on a terrace fifteen feet high and more than two hundred square. Had not the death of the Súltan put a stop to its progress, and prevented the addition of an upper story, in conformity with the original design, it would have surpassed every other building at Bijapur, both in magnificence and beauty.

There are several other tombs and buildings within the circuit of the enclosed town, none of which deserve more than a passing notice. Those most conspicuous are the two tombs standing together on the S. W. of the citadel. They are those of a celebrated Fakir, named Sídí Rehan, and of his pupil Khawas Khan; who after the death of Ali Adil Shah II. was appointed regent and guardian to his infant son Sekander. His tomb is to the southward of his preceptor's. In a direction S. E. from these, we come to the tombs of one of Aurangzeb's wives, and that of Kishwar Khan,* whose father, Asad Khan, plays a conspicuous figure in the early Portuguese transactions, as related by themselves. The former of these buildings, which is within an extensive square enclosure, had formerly a terrace, paved with white marble and railed with panelled work done in red porphyry; but the whole of the former has been taken away, and only one small piece of the latter was remaining when I first visited the place. The mausolcum of Ali

* Kishwar Khan, who was taken and put to death by one of the Nizam Shahy kings, founded the fort of Dharrú in the time of the 1st Ali Adil Shah.

Adil Shah I. lies a little to the southward of these and near to the rampart of the outer wall. It is a low mean looking building, and, but for him who lies within, would not require a notice.

Besides these are also several round towers, which, according to the inscriptions on them, were built at different times by people belonging to the court. Of these the *Uperí*, or *Hydar Burj*, was built by Chanda Khan, Hej. 951, A. D. 1573, and is only remarkable for giving support to an extraordinary long gun that lies there.

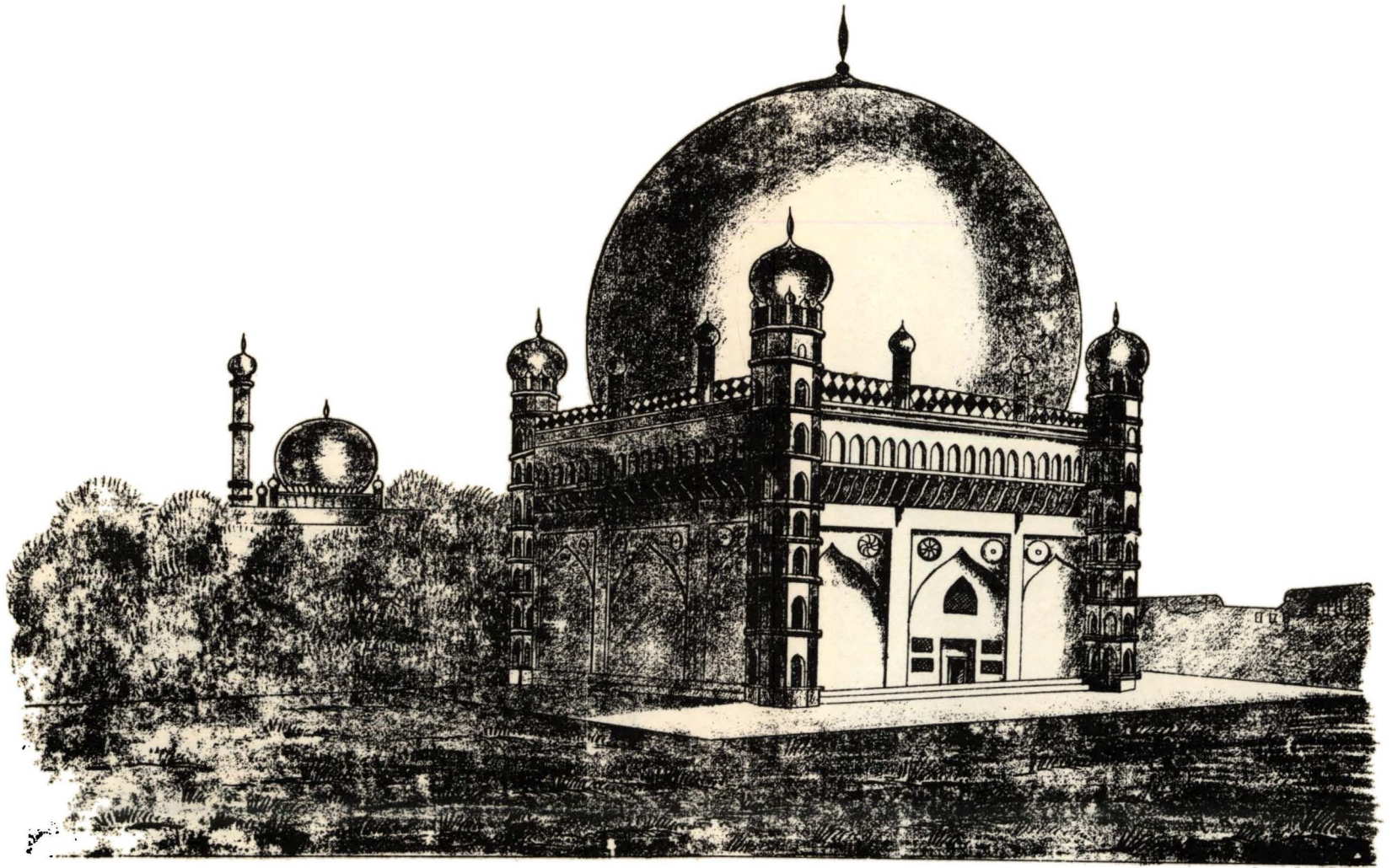
Besides the aqueducts, which supply the town with water brought from Torwah there are several large wells of which the Taj and Chanda Baorees are those best known. The former was the work of Senid-úl-múlk, the vizier of Súltan Mahomed; and the other was executed by Chand Bíbí, the heroic wife of Ali Adil Shah 1st, who has been deservedly immortalized by the Ferishta for her celebrated defence of Ahmednagar.

It only now remains for me, as connected with this part of my subject, to notice that the famed piece of ordnance, called the *Múktí Maidan*, is resting on a round tower of the outer wall on the westward, and that this bastion is known by the name of the *Búrjí Shírza*, or the lion bastion, from being ornamented with two lions' heads represented in stone. The following inscription, which is on the right hand side ascending the steps that lead to it, has recorded the date of this building:—

در زمان غازي خسرو علي عادل لقب آنکه داد داورز داد مرتضي فتح مبین
 از جهاد سعد منجهلي شاه شد در پنج ماه
 این چنین برجی قوی بنیاد چون کوه متین
 هاتف غیب از کمال خرمی تاریخ سال بی بدل شد برج ثرزه گفت از چرخ برین
 سنه ۱۰۷۹

“During the reign of the victorious king surnamed Ali Adil Shah, to whom by the favour of Múrtaza (Ali) God granted a distinguished victory, this bastion was, in the course of five months, made firm as the strong mountain through the fortunate endeavours of Mujly Shah; at which time an angel, in delight, gave the date of the year, saying that the Shirza bastion was without an equal.” The last words give Hej. 1079, A. D. 1668.

The large gun of this bastion has been often the subject of panegyric; but has been no less frequently than erroneously described. It is



D. E. S. PRESS

MAHOMED SHAH'S TOMB AT BIJAPÚR.

smooth and polished externally; and on being struck emits a sound like that of a bell. It is composed apparently of the same kind of alloy as is employed in manufacturing gongs* and hookah bottoms, but with some variation, probably in the proportion of the metals. The muzzle is wrought into a representation of the nose, eyes, ears, and extended jaws of some ravenous animal, probably that one called Shirza,† which appears to hold, in Mahomedan imagination, an equally fabulous existence as the *Húma*. The proportions of this piece of ordnance are as follows:—

| | | | |
|---------------------------------|----|----|---------|
| Diameter at the breech, feet | 4 | 10 | inches. |
| Ditto..... muzzle..... | 5 | 2 | ditto. |
| Ditto..... bore..... | 2 | 4½ | ditto. |
| Length..... | 14 | 3 | ditto. |
| Diameter of the touch-hole..... | ¾ | | nearly. |

The horrors said to have followed the firing of this gun in the time of Aurangzeb, the traditionary tale of which kept possession of the imagination of the Bījapúrians for upwards of a century, were falsified by the test of sober experience on the 5th of January 1829, when this gun having been charged by the Raja of Sattara's orders, with eighty pounds of coarse powder, was fired without any remarkable event following.

The people, on learning the Raja's intentions to try the experiment, left the city in alarm; but were soon relieved from their unnecessary terror by the report of the explosion, which though loud came not near their exaggerated ideas. Even had the powder been better than was used on this occasion, the effect would have been nothing wonderful.

It has been erroneously stated, by former writers, that Aurangzeb cast this piece of ordnance when he captured Bījapūr: and on the faith of the journalist of his transactions in the Dekhan, translated by Scott,‡ it has been asserted, but without being authenticated by other native writers, that he caused an inscription, in the name of Mahomed Adil Shah to be erased, substituting another in its stead. The purport of the former

* This has been ascertained by Dr. Thomson (See 'Annals of Philosophy' for September 1813, p. 208) to be an alloy of 80·427 parts of copper to 19·573 parts of tin. The instrument which is of tamborin shape, is used to announce the divisions of time by being struck with a mallet.

† Shirza signifies a lion or any other ravenous creature.

‡ Scott's Dekhan, vol. II. p. 72.

was to say that he obtained it from *Nizam Shah* by conquest, but it would appear, from the *Búsatin-ús-súlatin*, that it was obtained through fraud and not by force; and that, on the 10th of Moharram, in the year one thousand and forty-two of the Hej.* Agha Rizwan “delivered up the fort of Púrinda† to the king Mahomed Ghazy: at which time Morary Marah'ta, who had obtained command of that fort, brought the *Maidan* from thence to Bījapūr.” It had been cast by Rúmy Khan, a Turk in the service of the Nizam Shahy kings of Ahmednagar, and was obtained from them in the manner above related; which fact is rendered sufficiently evident by the inscriptions now on the gun.

These are:—

لا اله الا الله ولا مراد

“*There is no god but God, and none besides him.*”

ابوالغازي نظام شاه بادشاه خادم اهل بيت رسول الله وهي سنه ٩٥٦

Abul-ghazi, Nizam Shah, king, servant of the race of the Apostle (Mohammed), and of the house of God. 956.”

عمل محمد بن حسن رومي

“*Fecit Mohammed Ben Hasan Rumi.*”

شاه عالمگير غازي پادشاه دين پناه

انکه داد عدل داد و ملک شاهان را گرفت

فتح بیجاپور کرد و بهر تاریخ ظفر رونمود اقبال و گفتا ملک میدان را گرفت
في سنه ٣٠ جلوس والا مطابق سنه ١٠٩٧ هجري

* This date corresponds with the 19th July, O. S. A. D. 1632. It has been placed by Grant Duff in A. D. 1636, but the complicated method of reckoning followed by Mahomedan historians, in dating their facts from the personal era of the prince, and then adapting them to the years of the Hejirah, has occasioned great confusion and inaccuracy in their details; and most of our English writers, yet further the reducing the dates to the years of the Christian era, and only specifying generally the beginning of the Hejirah years corresponding to ours, have perpetuated the evil of anachronisms which are but too apparent in our Indian histories. In a future note, under the head of Aurangzeb's transactions before Bījapūr, I will endeavour to clear up the history of this time.

† This is an old Fort, on the eastern bank of the river *Sena*, about 70 or 80 miles from Ahmednagar.

*Shah Alumgir Ghazy, the asylum of religion, who granted the claims of the just, took possession of a kingly country and conquered Bijapur. For the date of the conquest good fortune came and said "he subdued the master of the field." **

In the thirtieth year of his exalted reign, corresponding to the one thousand and ninety-seventh year of the Hejirah.

The 30th year of his reign † corresponds to Hej. 1097, A. D. 1685.

The last words give the numerals Hej. 1096, A. D. 1684-5, being one year less than the true date of the capture. The inscription is written in Toghra character.

BUILDINGS OF THE SUBURBS.

The ruins on the west of the city wall stretch from thence as far as the village of Torgha; and part of them was called *Naorispuc*, as already mentioned. The communication between these and the interior is chiefly through two entrances on that side; one named the Mekka, and the other the Shahpur gate. The latter, situated northwards from the

* Instead of reading ملك ميدان (Maliki Maidan) it is sometimes read ملك ميدان (Mulki Maidan) with the word كندد understood, which would materially change the sense of this passage. I prefer the former reading of the text.

† The 29th year of Aurangzeb's *Jalus*, or reign, reckoning from the victory over his brother Dara Sheko, and adapted to the years of the Hejirah, terminated the 17th November O. S. A. D. 1685; and Bijapur had submitted about three weeks before; so that the inscription, having been subsequently executed, is dated the 30th year, or Hej. 1097, which commenced on the 12th of November 1685. If it be assumed that Aurangzeb dated his personal era, without adapting it to the years of the Hejirah, and from the period of his victory over Dara and subsequent ascension to the throne at Metbora, events that happened on the 8th and 15th of June 1656, (see Catrou, who wrote from the evidence of an eye-witness M. Manouchi,) then indeed the 30th year of his reign had commenced when he took Bijapur, but may not be reconciled to be the year of the Hej. 1097, as such would fall within the year Hej. 1096, or the latter part of A. D. 1685. Nor may these contradictions be obviated by dating the commencement of the reign, from Hej. 1098, when he was again crowned at Delhi A. D. 1657, and the whole is an evident error arising from the loose mode of reckoning the year of the *Jalus* and those of the Hejirah.

other, leads through a still well inhabited bazar, which was first peopled by the orders of Ali Adil Shah 1st, when in Hej. 965, A. D. 1556, he was crowned there. The other principal ones, leading from within, are the Bahmany, Alawal, and Fattah Darwazeh. The last, which is on the south side, and on the road to the village of Monguly, is that by which Aurangzeb entered Bijapur. It therefore received its present name, the gate of conquest.

The suburbs were divided formerly into different *Púrah*s, or quarters. Those now known are the Shah Púrah, near the gate of that name; the Yakut Púrah close by, and the Zohrah to the southward of both, sometimes named Ibrahim Púrah, from being in the neighbourhood of the Ibrahim Roza, or mausoleum of Ibrahim Adil Shah II. This tomb is decidedly the most chaste in design, and classical in execution of all the works which the Bijapur sovereigns have left behind them; and is distant about three hundred yards from the Mekka gate. On the north side, where we enter by an elevated gateway, the exterior of the inclosure presents a handsome front of eleven small hollow arches, and in its interior side there are numerous small cells intended as a caravanserai or place of lodging for travellers.

The building itself is situated on an elevated platform, on the west of which there is a mosque. It has a tasteful colonnade of seven arches, on each of its four sides, forming a verandah of 15 feet broad round the whole interior; to this there is a slightly elevated pavement and second verandah, the roof of which is beautifully carved, and the work displayed to advantage by being finished with a handsome cornice. The dome rising above the whole, surmounted by a brass crescent, is in much better taste and proportion to the rest of the building, than in any of the others before described; and is in keeping with the four slender minarets at the corners, which consist of four stories including the cupola. The whole body of the mausoleum is elaborately carved in Toghra letters, embodying extracts from the Koran; and which were formerly gilded and enamelled, as were all the other inscriptions in the city. Ibrahim Adil Shah II. and fifth of the dynasty, lies interred here, along with his wife *Taji Sultan*, otherwise named Taj Jehan Begam, who was the daughter of Saiyad Abd-ur Rehman, and mother of Mahomed Adil Shah, the sixth of his race. It would appear from the following inscription, written in Toghra character, over the northern door, that it was originally intended for the mausoleum of this lady.

در عجب ماند آسمان از ارتفاع این بنا سربر آوراز زمین شد گو مگر چرخي جدا
 روضه فردوس زين روضه طراوت برده وام
 هر ستونش در لطافت سروي از باغ صفا
 بهر تاريخش صلا داده ملك زواج فلک ياد گارتاج سلطان اين بناي دلفزا

Heaven stood astonished at the elevation of this building, and it might be said that when its head rose from the earth, another heaven was produced. The garden of Paradise has borrowed its beauty from this garden, and every pillar here is graceful as the cypress tree in the garden of purity. An angel from heaven above announced the date of the structure by saying, "This building, which makes the heart glad, is the memorial of Taji Sultan." The last words give the numerals Hej. 1036, A. D. 1626.

The next inscription, which is over the southern door, is her eulogium :—

| | |
|-------------------------|--------------------------|
| ازو زيبا سربر و تاج عفت | زيبده حشمت و بالقيس رفعت |
| بدار الملک جنت کرد رحلت | چو زين منزلگه خاكي غبرا |
| بگفتا تاج سلطان اهل جنت | چو پرسیدم زبیر عقل تاريخ |

In pomp like Zobaida, and in magnificence like Bilkis, † she was the ornament of the throne and crown of chastity, and when she passed to the capital of Paradise from this terrestrial abode, which is but dust, when I asked an old man the date thereof, he answered me saying, "Taji Sultan is among the people of Paradise." The words give Hej. 1043, A. D. 1633.*

The following is on the same door :—

| | |
|------------------------------|----------------------------|
| ملك صندل رسانيده بپايان | به حسن اهتمام اين کار روضه |
| که خلد اندر صفایش ماند حيران | بنا فرموده روضه تاج سلطان |
| ولي نهصد و گر ضم گشته با آن | نموده خرچ ان يکديم لک هون |

Malik Sandal, by expending one hundred and fifty thousand huns, ‡ with nine hundred more, caused this tomb to be finished after

* The wife of the famous Khaliff Harun-oor-Rashid.

† The eastern name for the queen of Sheba.

‡ A hun is equal to three and half rupees.

great exertion. It was erected, according to order, for Tiji Sultan, at whose purity even Eden was astonished.

The mosque, which is on the same terrace with the tomb, is about one hundred and five feet long and sixty-six deep; presenting a front, on the east, of seven tasteful arches. In the open space between it and the tomb, there is a ruined fountain and reservoir.

In former times the *mambar*, or pulpit, was surmounted by an ornamental representation of a mosque, regarding which an anecdote of Aurangzeb, is mentioned, very characteristic of his extreme punctilio in matters of religion. The ornament was not thought orthodox; and having been removed by his order accordingly, part of it is now laid near the steps as you ascend from the area, or court, to the platform of the mosque.

The only remaining building in the suburbs to be noticed is the Idgah. It was built by Aurangzeb.

ART II.—*Continuation of Ehrenberg's Paper on the Coral Banks of the Red Sea, from page 341.*

Summary of our discoveries respecting Coral Animals as masses of rock.

(1.) The coral banks of the Red Sea are always found in shallow water: there, especially in the neighbourhood of land, and in proportion as they approach land both their number and extent increase. We met them in deep water only where evident signs of volcanic activity were seen in their neighbourhood.

(2.) These coral reefs are never shaped like rings or funnels; they are always tabular, often elongated like tape, or in rows running parallel with the coast, with which they are evidently connected in a geological point of view.

(3.) The coasts of the Red Sea consist, on the Arabian side, sometimes of marl and gypsum, as near Hamam Firaun in the north, and near El Gisan in the south; sometimes of sandstone, as near Nakhus; or of the sandstone conglomerate of quartz and felspar with dolomite-cement as near Ras Mohammed; seldom of lava as near El Wassem, in the south of

Gunfude ; they often also consist of a tertier modern white and soft limestone ; in horizontal strata, with diminutive, scarcely visible, fragments of fossil shells ; which as inclined plains, often 15 to 20 miles broad, of considerable elevation, form the declivity, towards the sea, of the lofty porphyry, sienite, and silicious schistus mountains, that run through the length of Arabia, and very rarely approach the sea itself. The greater number of the flat islands, as well as of those which rise 300 feet above the surface of the sea, consist of a tertier modern very white limestone, which often resembles baked sand. Others again have high mountains, which consist of the abovementioned dolomitish conglomerate and of gypsum—not of marl and bergmehl (Tiran) or of lava (Ketumbul), and correspond with the mineral of the neighbouring coast, as is clearly proved by specimens I have brought with me. *

(4) All coral banks, which could be examined, had for their basis a modern limestone in horizontal strata, which nowhere owes its existence to the sticking together and hardening of corals, or distinct fragments of them ; for nothing of the kind is seen in them, but it consists almost wholly of nearly microscopic, small, much dissolved organized fragments, or cemented sand, and sometimes appears to be evidently formed at an earlier period than the colonization of corals took place. This limestone may stand sometimes in the same relation to the corals as mould to the forest ; but where it forms rocks, rising 100 to 300 feet, above the surface of the sea, without containing a single vestige of corals, either enclosed or lying upon it, there it is probable that it is older than the formation of corals.

(5.) Living as well as dead coral stocks form nowhere, in the Red Sea, high layers and rising one upon another ; they give only the simple coating of most submarine rocks. The height of the coral stocks was often only 1 to 2 feet ; nowhere, as far as could be ascertained, more than $1\frac{1}{2}$ fathom according to the magnitude of the several masses of rock. Thus it appears that the magnitude, generally ascribed to coral stocks, by Ruoy and Gaimard, of 25 to 30 feet exceeds those of the Red Sea by double.

* The grains of the dolomitish conglomerate, of which, together with gypsum, consists the elevated island Tiran, which forms also mountains on the neighbouring coast, near Sherm el Sheik, not far from Ras Mohammed, are in the latter place covered with a thin black coating of manganese, wherefore the colour of the mountain near Ras Mohammed is black. Is this the spot which Burkhard considered volcanic ? Moreover the mineral contains iron ore.

According to Forster there are a few coral stocks in the South Sea which rise 3 fathoms above the surface of the water ; this may serve as a scale for the possible height of such layers in the Southern Ocean.

Just as one forest does not continue to grow upon the other, even when the first trees die, and are left to themselves, or disappear in sand as is the case with primeval forests, and as the vegetable earth is little when compared to the forest, just so appeared to me the natural relations of corals and their soil.

(6.) Only rocky soil was covered with a thick coating of corals, and we found no corals in sand, except a few paltry ones which were washed upon it by the waves. Magazines of live corals, which I had established on the sandy coast near Tor, died in a couple of days.

It is true we often found thin layers of a white sand, upon the coral reefs, between the several coral blocks ; but the corals which were lying upon them loose were not many. It is likely they were broken off, either by the decay of their basis, or by the motion of the waves, or they were developed upon dead fragments. This sand is not stirred by the waves, and appears to be a slight precipitate of the sea water, after much agitation of great storms : it is perfectly harmless, because it is inconsiderable, and cannot easily be stirred up by the waves on account of the surrounding corals. Many *fungi*, *Holothuri*, and sea-fishes, are found in these places.

(7.) We noticed 110 different species of coral animals in the Red Sea ; the number of all the various species, which are hitherto discovered there, amounts to 120, consequently nearly a third of all living coral animals of the earth which are accurately known.*

* (a) Respecting these various forms I have given, in a former treatise, on the coral animals, more accurate communications, and there I have endeavoured to elicit, and to confirm, by the most particular examinations, the more general results communicated in the present paper. The whole family of the proper coral animals (with one mouth,) which were gradually divided into 158 different species, and had been mixed up with totally heterogeneous animals and plants, I reduced to 80 species, after a minute examination and comparison of their structure and development ; they might perhaps be reduced to less, if some species were made sub-species. Still I thought it more important to distinguish the families, where they represented a distinctly developed whole, than to endeavour to prove and show thoroughly the oneness of the principle of division. In a historical point of view, everywhere nature is not developed by the reason of man, but human reason is enlarged and unfolded by nature, whose foundation is deeper and stronger than all its systems. Thus it

(8.) Accurate observation of the peculiar structure of the several forms of coral animals, makes it evident that all those, that principally

appeared to me more correct, and more advantageous, for science, not to sketch a logical scheme, and arrange under it the natural objects, whose groups in that case would fall asunder without any bond, in a later necessary alteration of that scheme, and would offer no firm basis for future investigation; but to form small groups of families, according to logical principles, which were arranged from several minutely examined forms, and which might afford a firmer basis for future systematic experiments. Thus the systematic view, which is given by me in their individual parts, is most accurate and to be depended upon; and the above divisions are mere characters taken a *potiori* of gradually larger and more comprehensive groups. They might be altered, in the progress of science, without the material, which they contain in themselves, falling to the ground being unsupported, as is the case if the Actinia are placed near the Echinoderma, and the Tethya, Spongi, &c. near the corals, or the Cellepora and Millepora are united.

(b.) The segregation of limestone from coral animals is, where it forms something like regular leaves, small sticks, &c; a support of the muscular system with its sinews, and a separation of its vessels, just as in all other animals. Thus are the bones of men and mammalia, the broad shells of the multimuscular Bivalva and the Columella, together with the spiral shell of the unimuscular univalve, which is connected with it. Sometimes, but very rarely, it is a secretion of the system of the skin, as the scales of fish, without having any direct connection with muscles and sinews. The inner Lamella, which, in the cross-cut of the Actinia, form the rays, are evident long muscles with long fibres, which, in their position and relation to the body, perfectly correspond to the *stone lamella* of the stone corals, which are covered with thin fibrous skins, and consequently appear to give the supports of such musculous skins. The axis of the Teidea and Gorgonina stands in the same relation with the cover of the univalve snails, which, as Oken already observed, seems to contain the germs of the other half of the bivalve shells. In bivalves I am inclined to consider every simple thorough going muscle as two directly opposed to each other, which meet on account of their common vessels in the centre of the animal. I shall not further enter upon this field of speculation, which must be more cultivated, by farther direct observations of the particulars of the vessels; but I thought that, by placing together these resemblances, I could lead to some causal relations of the phenomena in the segregation of limestone, which it would be desirable still more accurately to examine and correct. Of course I cannot presume to predict, whether a more intimate knowledge of the process of the separation of limestone, may be more easily obtained by a more minute observation of it in mammalia, or whether the coral animals might not be preferable for this purpose. But as the greatest success may be expected, where necessarily the most intense attention is directed towards the minutest parts, I am inclined to believe that the coral animals, or shells, will solve the riddle sooner than the larger mammalia, which bewilder the observer.

form masses of stone, are quite incapable of erecting strong walls, in order to defend themselves against the breakers, as Forster imagined. The coral animals do not live in stone pipes, and do not build like termitæ[?] or wasps, a common house, or nest, * in order to protect themselves.

They are also not like oysters defended by stone covers ; all genuine and influential stone corals have outwardly the soft animal body, and the dendritical or spherical stone-scaffold forms the inner bones, or the lower foot. In order, therefore, to erect walls for coral basins, a few species of the coral animals would be obliged to expose their homogeneous naked body to the whole force of the breakers ; and, as it were, to sacrifice themselves for the rest. The homogeneous soft quality of the body leads us rather to infer, that the pernicious influences will also produce, in all, homogeneous effects. It is true the organ corals, on account of their stone-epidermis, live as it were in stone cases ; but even these are not fond of great breakers, and are also more delicate and brittle than many others of inconsiderable size.

(9.) Conflicting opinions are found among travellers, that according to some, coral animals shun the breakers, according to others delight in them, or that certain forms are fond of them ; and it is according to our observations that in general, living coral animals do not shun but love the breakers. In very calm basins we found more Tange, (sea weed,) than coral, but less beautiful and in less numerous forms than on lofty rocks and reefs ; in protected sandy places we met with more sea weed : (their forms were similar to the *Zostera* and *Thucagrostis* of the European seas, but often peculiar, viz. the species of *Barkania*, not unlike the *Halophila* of the South Sea, and *Schizotheca Hemprichi*, a form quite peculiar to the Red Sea, with a large case divided into many parts containing generally four seeds ; and with leaves resembling those of the *Thucagrostis*. Delile's singular *Loatera brillata* of the Red Sea is included in the *Barkania*.)

We saw the largest and most beautiful corals always on the outer edge of the coral reefs, but they were rarely branchy, mostly *Daedalina*.

* It is true, Ellis, the first accurate observer, defends himself against Baster, by asserting that he has not imagined nests but skins ; but the one comparison, as well as the other, does not apply to coral animals in general. It appears, in fact, that Ellis imagined the coral stock to be a Convolut of Serpula pipes, an arbitrary aggregate of many individual animals, among which also oyster banks are to be reckoned. But the coral stock is something altogether different from these things.

Close to the perpendicular outer edge, which is quite flooded by breakers, we found branchy forms in greatest perfection ; at a short distance from the outer edge, the specimens were much smaller.

Rocks that rise perpendicular, from the bottom, above the surface of the sea, on which the surge beats violently, have no coating of corals ; but, however perpendicular they may rise from a great depth, all those that do not reach the surface of the water, and consequently allow the waves to break over them, are covered with corals. This latter circumstance no doubt must much diminish the intensity of the agitated water ; but this appears by no means to inconvenience the coral animals, which seem on the contrary to like it, as it prevents the stagnation of decayed matter.

(10.) The coral animals are by no means soft, while in the water, or when young, and grow hard as they get older, or when exposed to the air ; though there are some forms which are always soft, and never grow hard, and there are others which, on account of a certain inner formation of bone, are always hard and have never been soft, except in embryo. These two classes of coral animals resemble each other very much in their outward form, so that inexperienced people continually confound them. Still all hard corals, with the exception of the organ-coral, (a single genus of 86 genera containing 3 of the whole 386 species) have a soft coating, which alone properly speaking constitutes the animal itself, or at least its essential part. This soft, very thin, and jelly like animal body, which forms the coating of the stone corals, often extends itself to a great length, and shows feelers like threads and fringes, capable of withdrawing themselves, though sometimes these are wanting altogether. Further, this soft animal, which is variously organized, is capable of withdrawing itself into the starlike cavities of its inner scaffolding of bones, and may outwardly lie so close as to appear like a very thin, scarcely perceptible, slimy coating of the stone. Other forms are altogether without any stone kernel, but possess still greater capability of contracting and expanding themselves, so as often to excite admiration ; and may, in regard to this strange and wonderful phenomenon, be called metamorphosis, although not in the strict sense of this word ; consequently all accounts of the metamorphoses of corals are only erroneous or fabulous.

(11) Living corals of the Red Sea do not exist at great depth. Already, in a depth of 6 fathoms, we found often not a single coral, though the less deep border of the island, or reefs close by, contained a great many. Also the pearl fishers of Yemen and Massava assured me, that

in a depth of 9 fathoms, there were no corals, in fact nothing but sand. We could not enter into more particular inquiries. It is true Ellis tells us that the *Greenlandish Umbellularia Encrinus* was caught in a depth of 236 fathoms, and where it is probable that it did not live alone. Repeated observations must show whether these whale-fishing accounts of Captain Adrian were not somewhat inaccurate.

(12.) The opinion of a natural dying off of whole generations of coral animals, at certain periods, in order to serve as a basis for fresh-developing generations, agrees no less with their physiological condition, and our experience, than the belief that they continue to grow when covered with sand, and that their growing one upon another is without the death of those that lie below. The latter is sometimes the case, but only with moss animals, and *Sertularina*.

(13.) It is evident that, perhaps with the exception of a few sands, the surface of the islands of the Red Sea is rather in a state of decay than of growth. We found nowhere, in the Red Sea, coral walls accumulated by the surge and resembling the sands in their existence, as said to be so common in the Indian Ocean.

(14.) The coral animals, which encircle, like a garland, the submarine foot of the islands, appear to spread over them where wind and waves gradually diminish the smaller islands; and thus hinder their further decay, where such has taken place a little below the surface of the water. Thus the coral banks of the Red Sea rise not from the bottom till a little below the surface of the water, as generally believed of the coral reefs of the Indian Ocean; and all coral banks appear to have been small flat islands; whose upper parts were partly decayed, partly blown away, and at last flooded, till on account of corals gradually covering them in a single layer, like plants in sands, they preserved an almost equal height. If the foundation of these islands had been a hard *granite* or *gneiss*, in place of a soft modern limestone, which may often be called nothing else but sand cemented, and raised by volcanic agency, I have no doubt but that, in similar formations, they would, instead of forming submarine coral banks, have continued lofty rocks, which the farther such extend into the sea become more isolated, (as I had a short time ago an opportunity of observing to my surprise in the Norwegian rocks, which in their appearance wonderfully resemble those coral banks). Add to this the tabular shape of the coral banks of the Red Sea evidently appears to be the result of the horizontal stratification of their soft foundation (the Norwegian rocks, which are not stra-

tified, but hard and indented, are merely rounded) ; on the other hand the numerous small funnel-like volcanoes of the South Sea appear, according to many existing observations, which agree in the main, to be the foundation of those coral rocks, and to have contributed to their circular shape.

If every gale of wind filled with sand the middle part of the circular coral reefs of the South Sea, most favourable to corals, the coral animals would die, like a forest overwhelmed with sand ; but, from what I have observed, it does not appear consistent with the nature of coral animals to suppose that these middle parts are filled up by more than one layer of corals.

The corals never seemed to like places where sea water has been rendered muddy by loose sand ; they always preferred places where the water was clear and transparent. And as far as I am aware there are no direct observations made, proving the existence of evidently preserved strata of corals being cemented and standing one on another, which, in undisturbed growth, at a former period have covered either a plain, or filled up a hollow place, and afterwards become accessible, by being raised through volcanic activity.

Thus it appears that the corals do not produce new islands but preserve them in a wonderful manner ; and that they are ornaments to those already in existence, exhorting to caution, exciting admiration, affording instruction, and giving proof of much life and activity in the sea.

The sea may collect, in immense heaps, at its bottom, the earthy remains of sea animals, shells, pricks of sea urchins, serpula-pipes, coral stones, and small fragments of them, forming out of them sand and masses of rock, which are raised here and there by volcanic activity ; while live corals may also, comparatively speaking, occupy the first rank among animals which secrete limestone, and, in regard to this process, may be worthy of very particular attention, as they no doubt exercise to a very high degree, by indirect operation, that influence on the surface of the earth which excites our wonder and admiration in the formation of limestone. But according to what laws it is possible, that such small organized bodies, containing but very little limestone-earth, (according to Vogel about 0.02 per cent.) should secrete such immense masses of carbonate of lime is a question not yet solved by the efforts which have been hitherto made.

Repeated researches in those regions may develop whether the low edges of craters, formerly higher than the numerous groups of small vol-

canoes in the South Sea, would not, without the covering of live corals, have been long ago entirely swept away by the sea; and whether the proper activity volcanoes would occasionally not have filled up the middle basins, and, by after decay, rendered them fit for vegetative and animal life, but oftener left them, for ages, unfilled up, and quite at the disposal of corals to build upon.

On the additional knowledge of great organic life in the smallest space obtained by the improvement of the Microscope.

Already, in former lectures, I have endeavoured to illustrate the organization of *Infusoria* as the smallest animals, and have expressed my conviction that these small moveable bodies, scarcely visible to the naked eye or quite invisible, and which, up to the present time, people were inclined to consider as gradually decreasing in structure, though capable of organization, are in themselves nothing but matter either organized in the most simple manner, or altogether exempt from organization. These small bodies, I say are distinctly and without any exception, very much complicated and organized.

These relations of organic life, proved to exist not only in *Rotatoria*, but also in all the principal forms of those that are designated, by Otto Frederic Mueller, *Animalcula Infusoria*, made it even necessary to divide these *Infusoria*, by thorough going physiological characters, into two distinct and separate classes, and in quite a different manner from what has been attempted by some Naturalists. I did not like to place a class of *Infusoria* in juxtaposition of a class of *Rotatoria*, but rather preferred to retain the term *Infusoria* in both lists of forms, distinguished by me on account of the similarity of their manner of living, both being observed in infusions. It is true the term *Infusoria* does not now appear to be suitable for either, but it is no doubt a convenient term for the whole, as Mueller found it, and nature pointed out.

The characters by which both classes of animals, formed of Mueller's *Infusoria*, have been organically distinguished, consisted according to my former observations, of the following relations to each other:—

Rotatoria.

Polygastrica.

(Mueller's *Trichoda*, *Vorticella*, *Brachiona*, &c.)

(Mueller's *Trichoda*, *Vorticella*, *Kolpoda*, *Monada*, &c.)

1. Particular whirl organs, with-
1. No particular whirl organs,

out the whirl faculty in the rest of and altogether exempt from the whirl the body, or the simple rim of the faculty of the whole body, or of a mouth.

few not farther distinguished spots, or of the simple rim of the mouth.

2. Simple gut with, or without, a stomach ; always with a mouth and a peculiar backside, sometimes with false guts, mostly with evident chewing apparatus, and teeth.

2. A gut divided into many stomach-like cells, without a peculiar backside, (*i. e.* many stomachs in the mouth without a gut,) or a gut covered with many stomachs, in the shape of bunches of grapes, with a mouth, and a peculiar backside, without any chewing apparatus.

3. One to four red points on the forepart rather more or less.

3. Points rare, often wanting altogether.

4. Propagation only by distinctly large but not numerous eggs, with shells without self-division.

4. Propagation by inner, very small, and numerous grains (eggs?), and (sometimes threefold) self-division : *viz.* spontaneous length and cross division, and formation of blossoms.

5. A complete, according to organic nature, possible and most probable, Gynandrisms.

5. No distinct Gynandrisms, still evident periodical formation of grains, in the inner part of all individuals (eggs?), and their secretion (bringing forth) Anandrisms.

The above mentioned observations have made it, undoubtedly, most probable, that the organization of animal bodies, and in the direction of the smallest space, within the limits of human comprehensiveness, dwindles by no means quickly down to inorganic matter, as it has been hitherto generally thought ; but demonstrates a very clear and distinct character, even in such small animal forms, which, on account of their diminutiveness, are perfectly invisible to the naked eye. I indulge the hope that a more recent observation, in which I have been eminently successful, will be particularly interesting at the present time, as it opens up a new circle of organs in the smallest animal forms, while it confirms the results which have been formerly come to.

Mr. Chevallier's microscope, which is very excellent, and which I have hitherto used, afforded me, at 8 inches visual range, and without inconvenience, only a magnitude 245 times in diameter, which might be increased by elongation of the tube however; but it is inconvenient and renders observation fatiguing at an equal visual range of 380 times, or in measuring the objects in their true horizontal situation, *i. e.* at a longer visual range to the linear magnitude of 800 times. It then occurred to me that still stronger and more convenient magnitudes would lead to a more accurate knowledge of the physiology of the smallest organic bodies. I tried whether I could use, for these observations, the microscope of Mr. Ploessle of Vienna, which was lately purchased here by the Academy, and which is somewhat clearer than that of Chevallier's, and far excels it in magnifying power; but I found an invincible difficulty in the minute, almost evanescent, focal distance of the *lens* of the objects in its greatest magnitude, and in which I was particularly interested. Neither by small pieces of glass, nor of mica, could I make an imprint of very small objects; and it was quite impossible to observe through it *Infusoria* in water; because the *lens*, which touched the water drop, necessarily a little convex, attracted the water to the rim of its enclosure, and too flat uncovered small surfaces of water evaporated too rapidly. In consequence I made no fresh discoveries with the improved microscope of Ploessle, which proved very useful in observing other objects.

At last on my repeatedly expressed desire of making such observations, and probably also at the request of other friends of this cause, the mechanic work-shop here of Mr. Pistor, well known by its scientific accuracy, offered under the personal direction of its head, to make *achromatic microscopes*, on Selligie's principle of combining several object lenses, which is the same upon which the microscopes of Chevallier and Ploessle are made; and Mr. Shick, by his highly distinguished technical skill, succeeded, after accurate and attentive experiments, in producing a microscope, the first of its kind, according to certain rules of combining lenses calculated upon the refractory power of glass. I found this microscope of such excellence, that I was obliged to confess that among all with which I was acquainted, this was the most suitable for the purpose of examining the smallest organic parts. In its regard was paid to a suggestion of mine that it would be necessary to make it of a convenient size, neither too small nor too large, with a focal distance of at least near $\frac{1}{2}$ line, in its greatest magnifying power, (in order to be able to apply both pres-

sure and water upon the smallest bodies). The construction of the instrument being convenient and light, and for this reason not very expensive, several oculars, without an extension of the *tubus*, allowed a magnitude of little less than 1000 times in diameter at a visual distance of 8 inches; which by the application of a still more powerful ocular glass, or *tubus*, or both together, might be more than doubled and extended so far, that the light, verging to obscurity, might still permit one to distinguish the adumbrations of small bodies. The terminus of twilight, in optic appearances, with the present apparatus, does not appear to exceed by much a linear magnitude of 3000 times, at least not to reach the double, whilst the terminus of light lies between 1000—2000 linear magnitude.

At the same time Mr. Shick made a more powerful ocular glass to fit my microscope of Chevallier; which, at the visual distance of 8 inches, and without extracting the *tubus*, increased its magnifying power to 525 times in diameter; but with extracted *tubus* and equal visual distance, 800 times; when measured in the level of the objects, the linear magnitude of the microscope exceeded a thousand times.

The result of several experiments, made with this new optic power, on the smallest organized bodies, was, as I have good reason to hope, quite astonishing. By looking through this improved microscope, I discovered immediately, in the *Infusoria* which happened to lie near me, distinct indented organs of mastication, as in the mouth of the *Kolpoda Cucullus* of Miller, which is one of the most common small *Polygastrica*. This discovery was the more interesting as it formerly appeared that the *Polygastrica* possessed a certain greater simplicity in their organic formation than the *Rotatoria*, and the power of the system of nourishment, indicated by evident warts and teeth, was not a small argument for the more intensive organic formation of the *Rotatoria*, than of the *Polygastrica*. This notion has not only been removed by the discovery of teeth in *Kolpoda*, but in this respect the case is quite reversed, as there are now *Polygastrica* which possess several teeth, and consequently in one respect more developed organs of mastication than the *Rotatoria*. While the greatest number of teeth, observed in the *Rotatoria* is only 12, *Kolpoda Cucullus* has evidently 16 teeth, which are placed in the form of a hollow cone, growing narrower invertedly, or like a net, and form the entrance of the mouth. It may also be compared to an open *Mossperistom*. Thus

in this respect, the above-mentioned character, which has been given also to the whole class of these animals, is to be altered.

At the same time I found another result which was in similar respects interesting. I clearly discovered, even in very small Monades, as I have already mentioned in former communications, regular red spots which are never wanting in the forepart of many *Infusoria*, which are, we have reason to believe eyes. The smallest Monades, which I have hitherto examined, had in their diameter a length of 1.92 of a Parisian-line. With the aid of the new discovery of magnifying power, I immediately discovered two species in a new class of *Polygastrica*, of which the larger is only 50½ lines in diameter, but the less not more than 1,500, and consequently belongs to the smallest of all Monades, which can be observed, but which still evidently show the mark of such eyes. (*)

ART. III.—*The History of the Kalthora family of Sindh, descended from Abbas, the uncle of Mahomed the Prophet, and commonly called Abbasides.* By the late Captain JAMES MCMURDO. Presented by the Secretary.

INTRODUCTORY NOTICE.

The posthumous papers of the late Captain McMurdo, hitherto published, will be found in the Journal of the Royal Asiatic Society of

* Other discoveries have been made quite recently. A large number of *Polygastrica Infusoria* have a mouth armed with 20 teeth. In *Paramecium Auralia* and also in many other species, I have discovered two large starlike and contractile organs in the inner part of the body, which again lead to a new circle of organs in *Polygastrica Infusoria* and in many *Rotatoria*; also in *Hydatina* I observe two inner rows of small finlike, tremulous organs, which were hitherto quite unknown; again I discovered, by stronger magnifying power, in *Euglena Viridis* and some other forms, a long proboscis (almost as long as the whole length of the body) which before I never could observe, because the magnifying power, which was then at my disposal, was not sufficient to make it appear. A more detailed account of these relations of organic life have been laid before the Academy, and forms a third paper, on the knowledge of organic life in the smallest space, with plates, which has been considered worthy by the Academy to be inserted in the next volume of their publications.

Thus it appears that these fresh discoveries confirm the opinion that the limit of the strongest organic life, in the direction of the smallest space, is both to be looked for, and to be admitted in much narrower spaces than could be hitherto observed by the human eye.

Great Britain and Ireland, and in the Bombay Geographical Transactions. Among the many subjects of interest, to which the energetic mind of this enterprising and intelligent officer was early directed, none appear to have occupied more of its attention than the ancient and modern history of Sindh, embracing the resources and productions of the country, with the state of the river Indus. About the year 1812, and soon after our author had been appointed Agent for Kach affairs, he began to collect all the Persian books procurable on the history of Sindh ; while several tracts, on the *parganahs* and towns of this province, and the different tribes of inhabitants, were expressly written for his information. Most of these Persian books and tracts, after Captain McMurdo's death, came into the possession of Mr. Norris, late Chief Secretary at Bombay, who presented them to the present Editor : and as no authentic information, on the state of ancient Sindh, beyond what these contain, seems to be now procurable, it may be useful to enumerate the several works from which may be collected the history of Sindh. Captain McMurdo was sanguine, in his anticipations, that if the libraries and records of the families at Bhakkar were open to research, a considerable addition might be thereby made to our stock of knowledge on this subject. No good reason, for such expectations being ever realized, seems to exist : for since the conquest of the country by the English, Captain Postans and others have vainly endeavoured to recover the lost authorities, if indeed such were ever in existence. Those which have come down to us were chiefly compiled in the reign of *Akbar* ; and among them, that most esteemed, is the *Tarikhi-Sindh* by *Mir Maasúm*, a native of *Bhakkar*, and the well known able associate of *Nizam-ad-din Ahmad Bakhshi* ; who compiled the excellent general history of India, called the *Tabkati-Akbari*. On the subject of the ancient history of the province, and its early conquest by the *Mahomedans*, (A. D. 712,) *Mir Maasúm* borrowed from a book called the *Chach Nama*, written by *Ali-bin-Hamid*, the son of *Abibikr* of *Kufa* in Arabia ; and those following him have imitated his example, without adding to our information. Besides this history, used by Captain McMurdo in compiling his account of Sindh, there was another, quoted frequently, to which it seems he had been much indebted, namely the history, called *Thofat-al-Ikram*. It was missing at his death and not found among his books ; but since the conquest of Sindh, and consequent plunder of *Hydrabad*, the Editor has been fortunate enough to obtain an excellent copy of this history, which appears to

have belonged to the library of the *Amirs*. Should leisure admit, he intends at no distant time to present, in the pages of this journal, the ancient history of the country, during the period it was connected with, or ruled by, Bactrians, Parthians, and Indo-Scythians, connecting such with the age of the first Mahomedan invasion ; where he will have recourse for information to the Persian works now mentioned, and to the papers of Captain McMurdo.

The portion of Sindhian history here given to the public is modern, and appears to have been in a great measure compiled from a book called *Wakeiati Sindh*, being an account of the family of Kalhora, who ruled the country previous to the rise of the *Amirs* of the Talpura family. It was written by a *Fakir* and relates the actions of *Miyan Mahomed Múrad Yab Khan*, otherwise entitled *Sirbúland Khan*, who and his other brothers, then struggling for power, were sons of the Kalhora, otherwise entitled *Khúda Yar Khan* II. Its narrative commences with the year of Hejirah 1166, and month of Zelhijah, being the end of September and beginning of October A. D. 1753, at which time Sindh was invaded by *Ahmad Shah Abdalli*, king of Afghanistan : an account of which will be found in Mr. Elphinstone's *Kabul*. Any information on the site of Mansúra or statistics of Sindh, by officers now in the province, will be gratefully acknowledged by the Asiatic Society.

JAMES BIRD, *Sec.*

Before pursuing the general history of Sindh, from the period when *Khúda-Yar-Khan* assumed the Government of the province, it becomes necessary to trace the annals of the family from its origin ; as it cannot but be interesting to know the events, which gradually led to the aggrandizement of the *Kalhoras*. It is to be regretted, that on this subject, the early *Mahomedan* writers have not left historical materials, sufficient to gratify curiosity ; but the following pages contain all the incidents connected with the founders of the family, that I have been able to discover.

A descendant of Abbas, named *Miyan-Odhanna*, appears to have resided in *Mekran*, where he was held in great estimation for his virtuous and religious life ; and in a manner not uncommon in the annals of the *Mahomedan* faith, attracted numerous followers ; some of whom from ignorance, and others perhaps from less innocent motives, represented

him in the light of a superior being. The adherents of the *Miyan* increasing, became in due time a distinct body of men under the appellation of *Odhanna*; and were perhaps proprietors of land in *Mekran*. The temporal authority of the *Miyan* was handed down from father to son as an inheritance, which, in proportion as the branches of the family increased, became less valuable, and more open to litigation. It is accordingly ascertained that in the fifth generation from *Miyan-Odhanna*, a descendant named *Gor Thall*, separating from the original stock, passed to the eastward, accompanied by a horde of followers, and established himself in *Kahi abela*, * upon the ruins of the *Gufar* tribe, whom he expelled.

Gor Thall was succeeded in his rights and privileges, whatever they might have been, by his son *Bhill*, whose memory is still preserved in the fort of *Birlas*, and a celebrated mausoleum called the *Moti Makbiraah*; both of which are works of considerable extent, and from which we may presume that this chieftain was vested with the civil government of a tract of country adjoining *Kahirabela*. On the death of *Gor*, the succession was disputed by several brothers. *Jhunia*, who is connected with the subject of this memoir, having attached to his person a numerous train of followers, resigned his claim; and penetrating still further east fixed his abode at the village of *Kambatha*, where his holy descent and the celebrity of his ancestors procured him a reception among the *Odijah* † tribe. Here *Jhunia* married the daughter of a *Samma*, named *Dhera Pallah*, who was the independent chieftain of *Debil-Kangira*, a connexion which probably added to the influence of the holy man, and by which he had a son named *Mahomed*, from whom the sovereigns of the *Kalhora* dynasty derive their direct descent.

Mahomed, who succeeded to the fortunes of his father and family, A. H. 600. lived in the year 600 of the Hejirah, and the time when A. D. 1204 *Nasir-ad-din Kabachi* governed in the north of Sindh, and would seem to have acquired a greater degree of influence and repu-

* At present the capital of a *Mekran* chieftain styled *Jam*. *Gujar Rajputs* are still known in Kach and Sindh; and there is besides a description of *Gujar* among *Mahomedans* in Kach.

† This tribe is still known in Sindh. They resided in the *Sammawathee* Parganah.

tation, than had yet been enjoyed by his family. Several tributary chieftains, noticed in the history of this period as powerful zemindars of the country, give their daughters in marriage to *Mahomed*, who was thus introduced to the Court of *Multan*, where he was held in high respect, and received grants of land with other immunities in the *Bheralú* parganah, * adjoining that of *Lahiri*. Here he fixed his *Jhunia* adherents in a town which he named *Jhunabela*, but ultimately died and was interred at *Kambutha*. *Mahomed* left eighteen sons by different wives, all of whom had numerous progeny; and from the branches named *Daud* and *Lashar*, the two powerful tribes of *Daud Putra* and *Lashar* have their origin.

From this period the members of the *Jhunia* family appear to have sunk into comparative obscurity, and it was not until the ninth generation that it was revived in the person of *Adam Shah* A. H. 965. about the year 965 † of the Hejirah, from which date the A. D. 1558. fortune of the *Kalhoras* rose by progressive steps, and in A. D. 1557. two hundred years elevated them from the prayer-carpet to the throne.

Adam Shah found himself by inheritance the leader of a numerous sect of holy mendicants, established by his ancestors, and Miyan Adam matured, in particular, by a religious fanatic named *Mi-Shah. ran Mahomed Mehdi*, ‡ to whose patriarchal chair the subject of these pages was heir by a maternal claim. This sect resided in the *Chandúka* parganah, where in *Adam Shah's* time they were joined West of Bhakkar. by the neighbouring tribes, who, enrolling themselves under the holy banners, surrendered, for the common benefit, a tract of land which they had before wrested from the *Chandoi* zemindars. In a few years the sect was so much extended that it became necessary to adopt some means of maintenance more adequate to their wants than the precarious and limited contributions of the charitable, or of the chiefs in the vicinity; and the first step to independence was the gift of the *Chan-*

* This occupies a tract of country to the east of the *Indus*, where the *Sutlej* and *Attock* unite.

† 1st *Miyan Mahomed*, 2d *Miyan Ibrahim*, 3d *Miyan Shah Mahomed*, 4th *Miyan Rana*, 5th *Miyan Tahir*, 6th *Miyan Khan*, 7th *Miyan Sahib*, 8th *Miyan Gogar*, 9th *Miyan Shah*.

‡ See account of the *Mehdivis*; *Bombay Transactions*, Vol. II., page 28.

duka parganah to these mendicants by the *Khan Khanan*,* when he sought the *Shah's* blessing.

The Saints probably were sensible of the comforts attending worldly acquirements, and they devoted all their energies to extending their landed property. Whether with foresight of the future greatness of the family, or perhaps by a natural consequence of the effect of religion on uncultivated minds, the natives of Sindh, of all classes and descriptions, as if by common impulse, flocked to the beggars' standard, contributing their money, lands, or goods, to the wealth and importance of the general body. These advances to power were made at the expense of the surrounding Zemindars; who, naturally inimical to the further progress of such neighbours, excited the jealousy of the governor of *Multan*, and with the aid of his troops, the fakirs, as yet not hardened to warfare, were dispersed; and the venerable *Miyán Adam Shah* put to death.

The *Shah* appears to have been confined in *Multan* for some time, and his adherents, like a proscribed race, sought refuge in remote parts of the country where they were unknown. When the *Miyán* was executed, however, a friend in the capital conveyed his body to *Sakhar*,*

where, agreeably to his last request, it was committed to the dust. The same friend, proceeding to the retirement of his family, drew them from privacy and established *Miyáns Ibrahim*

Miyáns Ibrahim and *Daúd*, the two sons of the deceased, in the chair and *Daúd*.

of their father, whilst the re-assured *fakirs* rapidly assembled in their former dwellings. It is highly probable that the renovation of the sect was allowed by the government of the country, because the principal agent in the transaction was a civil officer of *Multan*; the chieftain of which perhaps regretted the death of *Adam Shah*, although the peace of the province and the existence of the government might have been subverted, unless some such severe example had been made.

Daud was succeeded by his son *Miyán-al-Yas*, who died universally regretted; and his brother *Miyán Shah Ali*, commonly called *Sahib Mahomed*, ascended the temporal throne of the family. Under this leader the *fakirs* not only increased in numbers, but, by his prudence and judgment, their resources were multiplied in proportion. The *Miyán* encouraged his followers to cultivate the sur-

* The Commander-in-chief of the *Delhi* army in the time of *Akbar Shah*.

rounding lands, and took a warm interest in every thing regarding this branch of government. He was aware that landed property would tend much to preserve the influence which his flock already possessed in the country ; whilst it would secure them the means of subsistence, under circumstances of adverse fortune. In pursuance of this policy a body of stout fakirs, having attacked the Zemindars of the *Abra* * and *Song* † tribes, deprived them of their rights, and having driven them from the country, divided the land amongst themselves. The acquisition was followed by the cutting of the canal, known by the name of the *Larkhana Nalla*, a work executed by the industry of the sect who laid both banks under rich cultivation.

The *Abra* Chiefs, who were *Mahomedans*, having in vain endeavoured to recover their inheritance, had recourse to the *Moghal* governor of *Bhakkar*, who once more punished the fakirs and slew their leader. On this occasion, however, many actions were fought, in which the religious fanatics were sometimes successful ; and, although ultimately defeated, they were inured to war and hardships, the benefit of which they afterwards experienced.

Miyún Shah Ali was slain, and succeeded by his son *Nasir Mahomed*, in the year 1068 of the Hejirah, under whom the sect assumed the character of a military bevy ; and the famine and pestilence, which raged about this period in the province, perhaps facilitated the encroachments which they continued to make as opportunity offered. The Zemindars again appealed to the *Subahdar* of *Bhakkar*, who marching a force into the *Chanduka* district, compelled *Miyún Nasir* and his adherents to seek refuge in the sandy desert ; where, being in want of every necessary of life, he ventured from his retirement and dwelt on the borders of the inhabited country. The *Moghal* government continued to threaten and overawe the fakirs. As the territory subject to the mendicants yielded

* A tribe originally inhabiting Sindh. It forms a member of the great *Samma* family. Some of the *Abras* became *Mahomedans*, whilst others adhered to the *Hindu* religion, and are met with in *Kach*. The district of *Abrasa* in the latter country derives its name from the chief *Abras*.

† This tribe I believe to be extinct. I have, however, met with individuals styling themselves *Song*. It was numerous before the *Mahomedan* conquest, and a tract of country took its name from them. The *Song* are perhaps the *Asangi* of the ancients.

no public revenue, the government was of course averse to their re-establishment, and this dislike being in unison with that of the *Bhúmiás* in general, a respectable army was detached to oppose the re-establishment of the fakirs.

A negociation was opened, and *Miyán Nasr* was induced to place his person in the power of the royal governor; who sent him prisoner to the Court of *Alamgir*, whilst the unfortunate fakirs, deprived of their Chief, were attacked, and after some resistance dispersed to places of concealment and security. In the meantime the *Kalhora* was a prisoner in *Hindustan*; in which state it is probable he would have spent the remainder of his life, had not fortune favoured his escape; and which having effected he reached the residence of his family in safety. *Nasr* again led his followers into Sindh, and succeeded in establishing them as before; but having placed the former capital *Tehri* at the disposal of one of his trusty men, he founded the town of *Khari* in a strong natural position, in the *Bhowar** district, where he in person fixed his abode.

From this time, he successfully opposed the troops of *Bhakkar*, under the *Súbahdar* in person; but the ambitious and aspiring disposition of the *Miyán* brought upon him the jealousy of all his neighbours; whose intrigues for his overthrow were, however, generally defeated by his foresight and prudence. Whilst he continued, in this manner, by force to extend his territorial possessions, he farmed the parganah of *Lakhawát* from the governor of *Sehwan*, which being followed by other acquisitions of a similar nature, the patriarchal authority began to assume the appearance of an organized government.

Miyán Nasr enjoyed the satisfaction of having founded, on a firm basis, the fortunes of his family; and after five or six years departed this life at an advanced age.

Miyán Dín Mahomed, the son of *Nasr*, succeeded his father; but advantage of the change being taken by the *Zemindars* of *Mahomed*. *Bhowanir*, whose capital, *Fattahpúr*, had been occupied by the *Kalhoras*, the new chieftain found himself involved in a war before he was well seated in authority. The governor of *Sewí* led his troops to dislodge the fakirs, but after repeated defeat and disgrace, was superseded in command by an *Amír* named *Sheikh Jehan*, who was sent from India expressly to extirpate a sect, against which complaints

were constantly submitted, to the great annoyance of the royal Court. *Sheik Jehan*, though aided by the *Súbahdar* of *Bhakkar*, was still more unfortunate than his predecessor ; for having advanced indiscreetly, his camp was surprised in the night, and his troops being dispersed, were pursued by the *Kalhoras*, who slew the *Sheikh*, and harrassed the hasty retreat of *Allah Yar Khan*, the governor of *Bhakkar*. This action occurred at the village of *Kurela*.

Not long subsequent to the foregoing event, a sudden and unexpected irruption was made by the force of *Kabz Khan Barrohi*, who gaining considerable advantages over the *Kalhoras*, the latter sought and effected an accommodation, and the *Barrohis* retired to *Kelat*. The *Bhowanir* tribe, in whose country the *Kalhoras* were settled, always uneasy under the yoke, and encouraged by the late disaster, rose in arms but were suppressed. The relict of their independence was subverted, and their lands entirely occupied by *Dín Mahomed*, who was preparing to decide a quarrel with the *Afghan* governor of *Shikarpúr*, when he was arrested by intelligence of the approach of prince *Moaz-ad-dín* from *Múltan* to revenge the death and defeat of *Sheikh Jehan*.

The *Kalhora*, who was not wanting in foresight, deputed his brother with a respectable mission to make his peace with the prince. This embassy was completely successful, and *Moaz-ad-dín* commenced his retreat, when a headstrong and ignorant fakir, supposing the forbearance of the prince to proceed from fear, made an irruption into the *Mattilla* and *Ouch* districts, some villages of which he destroyed. This act, which was unauthorized by the *Miyún*, brought upon the whole sect the vengeance of the *Moghals* ; who, countermarching, passed without opposition into their territory, and laid the capital *Khari* and other principal towns in ruins. *Dín Mahomed* had retired with his followers before the prince's arrival ; and during the six months which the latter spent in the neighbourhood, found means to procure a pardon, and surrendered himself in the royal camp.

Although the *Kalhora* had submitted his person and cause to the mercy of *Moaz-ad-dín*, his followers, led by his brother *Miyún Yar Mahomed*, persisted in opposing the royal arms. A force was detached against them, which was defeated in a desperate and bloody conflict on the banks of the river *Roj*.* The royalists on this occasion lost

* This is perhaps some obscure stream.

Raja Gaj Sing, by caste a *Bhattia*, and *Raja Surúj Mal*, of *Udhipúr*, two officers of high rank and estimation. The prince, probably contented with having laid waste the country, or perhaps unwilling to risk the reputation of his arms with so successful an enemy, retired with his court to *Múltan*, where he placed *Miyán Din Mahomed* in confinement, and ultimately put him to death.

Yar Mahomed, unable to regain the lost territories of his family, led his adherents towards *Kelat*: where the *Barrohis* at first received them as enemies, and a battle ensued, in which the flower of both armies were slain; but an accommodation having been at length effected, the two sons of the *Miyán* were given in pledge for the peaceable behaviour of the emigrants, who were in return afforded an asylum. This arrangement took place in the year of the
 A. H. 1111. A. D. 1699. Hejirah 1111.

In A. H. 1113 *Miyán Yar Mahomed* was invited by the *Surye** chieftains to attempt the re-establishment of the family, an offer which was accepted by the *Miyán*, who having persuaded the *Barrohis* to second his efforts, joined his friends in the *Bhowanir* districts, with a reinforcement of that tribe. A camp was formed at the town of *Kakhan*, where the *Kalhora* with the heavy part of the equipment remained, until the *Suryes* conquered *Murgpúr* and *Fatahpúr* from the *Afghans*, when *Yar Mahomed* advanced to that quarter, whence he dismissed his *Barrohi* adherents. It is said, that the rapidity with which the natives of *Sindh*, (who are in general disciples of the *Kalhoras*) assembled round his standard, was truly surprising. Successes followed each other with such rapidity, that the *Miyán*, in a few months, was in possession of *Shikarpúr*, (afterwards called *Khúdabad*,) the capital of a vast tract of country in which he fixed his residence.

In the meantime the *Suryes* dispersed throughout the northern districts, several of which they forced the *Afghans* to resign; and their successes soon attracted the attention of *Moaz-ad-dín* who still governed in *Múltan*. The governor of *Sewi*, in particular, represented the progress of the *Suryes* as extremely dangerous to that prince's authority and detrimental to the revenues of the province. The prince proposed

* *Surye* is the name of those *Sindhians* who resided in the district of *Sirra* and who were most fervent in their attachment to the *Kalhoras*, whose consequent misfortunes and banishment they shared.

to march by a route which led through the *Afghan* territory, but being opposed by that tribe, he turned his arms from the original object, and having slain the *Afghan* governor, established his authority in *Sewi*.

Miyán Yar Mahomed, sensible of the folly of resisting so powerful an opponent, prudently deputed officers to the prince, and thus having made known the submission of their master, and his desire to become attached to the imperial government, the latter, after some hesitation, resolved by a regular *Firmán* to confer on the *Kalhora* the *Súbahdari* of the districts which were known by the name of the *Deras*,* and the capital of which was *Shikarpúr* alias *Khúda'ad*. In order to be invested, it was considered necessary that *Yar Mahomed* should proceed to court, and he had actually commenced his journey, when he was met by the royal officers, who presented the *Firmán* (with the distinguished title of *Khúda Yar Khan*) on the part of the *Moghal* government.

We have hitherto seen this family alternately rising and falling to the two extremes of fortune; one day possessing extensive territorial wealth and reputation, and the next reduced to the necessity of seeking the protection and aid of the neighbouring chieftains. Although *Miyún Nasir* and his successor had bravely struggled to secure independence and power, their views were constantly thwarted from the circumstances of their object not only being unauthorized by the supreme government of the country, but directly adverse to its interests. The period had, however, now arrived, when the *Kalhoras* were enrolled among the royal officers, and in virtue of that situation their authority became legitimate; and henceforward therefore they will be found to rise rapidly both in dignity and stability.

Khúda Yar Khan, uneasy at being surrounded by *Moghal* officers commanding in separate districts, privately revolved in his mind a plan to extend his authority. The *Dera* of *Sewi* was held by an officer named *Ghazi Khan* †, who was by no means a favourite of the supreme government, but which was perhaps not in a condition to enforce implicit obedience. The *Kalhora* deputed a *Balúchi* to *Múltan*, where he procured a *Firmán* for *Sewi*, which district he occupied after consider-

* This word I believe signifies a district, town, or even a house or tent in Sindh; it seems generally to mean a town or district. *Derah* or *Dera* is a word common all over *Afghanistan*.

† The capital of his district is sometimes named the *Dera* of *Ghazi Khan*.

able difficulty. The two young *Sahib Zadahs*, who had been left in hostage at Kelat, now joined their father at *Khúdadabad*, whence one of them was ordered to assume the management of *Sewá*.

The property of the government and the popularity of the *Kalhora* A. H. 1123. chiefs continued to increase. About the year of the Hejirah A. D. 1711. 1123, when *Nawab Shakar Khan* quitted the province of Sindh, *Khúda Yar Khan* farmed the parganah of *Rúpah*, and otherwise extended his rule by his success against the *Daúd Pútras*; a tribe, the origin and progress of which had been similar to that of the *Kalhoras*, to which it was at the time not inferior in any respect. A lapse of nine years now occurred without producing any event of importance in the annals of the family. The *Jagir* enjoyed a happy and beneficial tranquillity, which was only partially disturbed by a war with the *Jhokia* tribe of Zemindars, and which having been brought to a successful conclusion, *Khúda Yar Khan* departed this life after a reign of eighteen years, distinguished no less for activity and prudence than by the signal success with which those were ultimately crowned.

On the death of their father, his two sons, *Núr Mahomed* and *Daúd Khan*, struggled for the succession. In the life time of *Khúda Yar Khan* these *Sahib Zadahs* had imbibed a jealousy of each other, which was founded and matured by the imprudence of the parent evincing an affection for one of them in particular. This unnatural contest continued for three years, when *Daúd Khan* threw himself on the mercy of his brother, who secured to him an ample and honourable provision.

Núr Mahomed was not unmindful of the necessity of having his claim acknowledged by the Emperor, and succeeded so effectually, that, before the termination of the civil strife, he had procured from *Mahomed Shah* the title of *Khúda Yar Khan*, and renewal of all the sannads held by his father. Some lands and villages had been illegally occupied by the *Daúd Pútras*, and this tribe refusing to surrender the territory alluded to, the *Kalhora*, under the authority of *Mahomed Shah*, attacked and subdued them. The lands were divided into four parts, two of which went to the original *Jagirdar*, one to the *Daúd Pútras*, whilst the 4th and valuable division, bordering on his own districts, was retained by the *Kalhora*.

In the year 1139, *Khúda Yar Khan* detached a force once more against the *Daúd Pútras*, and succeeded in shutting up the families and proper-

ty of that tribe in *Derbela* ; to which place he laid siege and would finally have reduced the garrison to surrender, had not the *Saiyads* of the country interfered and concluded an adjustment of the dispute, by which the district of *Nhar*, which had before been occupied by the *Daúd Pútras*, was transferred to the *Kalhora*. The cession of the tract in question, opened a free passage into the province of *Múltan*, through many parganahs over which *Khúda Yar Khan*, in the two succeeding years, established his authority. *Sehwan* and its dependencies had about the same time been included in the *Jagir* through the kindness of the Emperor *Mahomed Shah*, who was peculiarly favourable to the interests of this enterprising family.

The western frontier was proportionally extended, and a variety of Chieftains and *Zemindars* reduced, the names of whom, and that of their possessions, as they are obscure and almost unknown in the general history of *Sindh*, I have considered it proper to omit. As sufficiently descriptive of the high place assumed by *Khúda Yar Khan*, it may be observed, that about the year now spoken of, with exception of *Bhakkar*, his control embraced the countries from the borders of *Múltan* to those of *Thatta*. In an eastern direction, it was bounded by the desert, whilst it extended over the *Balúchi* mountains westward, bordering on the dominion of the *Kelat Barrohis*, whose jealousy being excited, led to a war, in which much blood was shed.

Some acts of violence on the part of *Mir Abdullah Khan Barrohi*, (who according to a historian, entitled himself the eagle of the mountains,) probably committed in revenge for the attacks of the *Kalhoras* on *Balúchistan*, which was originally subject to *Kelat*, induced *Khúda Yar Khan* to take the field in person. The first fruit of the expedition was the conquest of *Kirta* ; a strong fort whence the *Kalhora* detached his troops into the *Kelat* territory, defeating those of that nation and slaying *Kakar Barrohi*, a relation of the chieftain. The same year peace was concluded, in which it was stipulated that the two *Sahib Zadahs*, sons of *Khúda Yar Khan*, should be allied to daughters of the *Barrohi* family, a circumstance which shows the ascendancy of the *Kalhoras*.

The ensuing year was distinguished by the bad faith of the *Barrohis*, who, unmindful of their recent engagements, made a sudden and destructive irruption into the neighbourhood of *Faridabad*. *Khúda Yar*

Khan moved to *Larkhana*, whence he detached a select body of Sindhi-ans under officers of reputation, to oppose *Abdúllah Khan*, who had encamped his forces at the village of *Chanderi*. An action was here fought, in which the *Barrohis* were utterly routed, and their chieftain slain. An adjustment was ultimately effected, and guaranteed by the marriages of the *Sahib Zadahs* with ladies of the *Barrohi* family.

In the year 1149 A. H. the fortress of *Bhakkar* and its dependencies were delivered over to *Khúda Yar Khan*, who the following year was regularly invested with the government of the *Súbah* of *Thatta*; which capital, as has already been related, was surrendered to the *Kalhora* by *Nawab Sadik Kúli Khan*.

The *Kalhora* dynasty has thus been traced from the prayer carpet A. H. 1151. and head of a sect of mendicant itinerants to the sove- A. D. 1738. reignty of Sindh. They were indebted for the rapid success which latterly marked their career, to the weakness of the Delhi government; which, under *Mahomed Shah*, was totally incapable of aiding, or supporting its officers in the distant provinces, of which perhaps Sindh was the most fickle. Rumours were at this time prevalent that *Nadir Shah* had in view the conquest of India; and it seems not improbable that, from the partiality expressed by *Mahomed Shah* for *Khúda Yar Khan*, he had in view the attachment to his person of a family, which, from the paramount influence it possessed throughout Sindh, was better calculated to consolidate and employ resources in his defence, than his Indian officers, to whom the people were strangers both in language and manners. Such were the chief springs of the *Kalhora* fortunes, although much must doubtless be attributed to the veneration in which the family was held on account of its holy descent. These religious opinions tending to awe the public mind, in conjunction with worldly power, produced a singular and evident effect on the government and general features of the province.

This new era of the Sindhian annals, as it may with propriety be styled, occurred at the moment when *Nadir Shah* threatened the eastern *Moghal* empire, about the time when the mighty storm, which, after lowering for two or three years, at length poured with resistless fury on the unfortunate throne of *Delhi*. The accession of the conqueror, to the throne of Persia, whose vast resources and ambitious mind had for some years been a subject of uneasiness to all the surrounding govern-

ments, having attracted from the first the attention of *Khúda Yar Khan*, he had assiduously courted the favour of *Nadir Shah* by regular and flattering correspondence. On the investing and subsequent reduction of *Kandahar*, it was reported that a body of Persian troops would enter Sindh, on the projected invasion of *Hindústan*; to meet any exigence that might occur, and for the security of his frontier, the *Kalhora* remained in *Larkhana*, whilst he intrusted the newly acquired *Súbah* of *Thatta* to the management of his son *Mahomed Múrad Yab Khan*, who assumed his charge late in this year.

In the Delta of the Indus, and near the sea shore, two Chieftains still enjoyed independence; namely, the *Jam* of *Kakralla*, a branch of the *Samma* family, and *Rana Ajmal* of *Dharaja*, by caste a *Najamra* and descendant of a family, which had preserved its inheritance through the many vicissitudes to which the province of Sindh had been subject for several centuries. These Chieftains had the command of the principal branches of the river Indus, in which their vessels exercised unlimited authority, and levied revenues arising from the trade passing up the streams. Whether the desire of adding to the revenue of the province, or, as is affirmed by some authors, to punish some acts of aggression which had been committed by the boats on the river, led to the attack of these Chieftains, is not very clear; but the *Sahib Zadahs* had hardly reached *Thatta* when they declared war with the *Kakralla* and *Dharaja* Chiefs.

The honour of his arms was at first tarnished by defeat; and the fleet of the enemy, sailing up the river, burnt and laid waste both shores as high as *Thatta* and *Nasirpúr*. On the Sindhian army preparing to penetrate into the Delta the expedition was suddenly postponed, and *Múrad Yar Khan* recalled to aid the arrangements of his father. *Nadir Shah* was now making rapid strides to conquest, while engaged in the expedition which placed the empire of India at his disposal. When *Khúda Yar Khan* heard of the cession by *Mahomed Shah* of all the countries to the west of the river *Attock*, including the *Deras* or division of *Shikarpúr*, *Bhakkar*, *Sewistan*, *Nasirpúr*, the *Súbah* of *Thatta*, and all which in fact composed the *Kalhoras'* dominion, he was overwhelmed with terror; and, having despatched his family and property to *Tehlar*, deserted his country, and took refuge in *Amerkot* (a fortress situ-

ated in the desert,) although the conqueror is said to have encouraged him to visit his presence by kind assurances of honour and protection.

Nadir Shah appeared before *Amerkot*, and compelled the fugitive to surrender his person. He was carried prisoner to *Larkhana*, where the *Shah* was pleased to reinstate him in his dominions, on consideration of his paying a fine of one crore of rupees. His Majesty, however, deprived the *Kalhoras* of *Shikarpúr* and *Sewí*, the former of which he restored to the *Daúd Pútras*, and the latter to the *Afghans*, whose possession it originally was; and having in this manner settled the affairs of Sindh, *Nadir Shah* commenced his return from *Larkhana* on the 11th Moharam 1153 A. H. carrying in his train the two *Sahib Zadahs*, *Mahomed Múrad Yab Khan*, and *Ghúlam Shah Khan*, as hostages for an annual tribute of twenty lakhs of rupees, which he imposed on the *Shah Kuli Khan* province; and in return for which acknowledgment, he bestowed on the *Kalhora* the title of *Shah Kuli Khan*.

During the stay of *Nadir Shah* on the frontier, the Persians had dispersed throughout the country; and, by their lawless and disorderly conduct, encouraged many of the mountainous tribes to commit excesses on the fertile and populous plains. To check this disposition and to punish the banditti, engaged the primary attention of *Shah Kuli Khan*; who, appointing *Sultan Samuttia* to the government of *Thatta*, instructed that officer to inflict a salutary chastisement, in the first place, on the *Shora* tribe of *Balúchis* of *Miyúni*, who had been foremost in the disturbances. Success attended the arms of *Sultan Samuttia*, who now directed them against the various troublesome tribes residing in the *Wangah* parganah,* subject to *Kachgaum* situated east from the capital.

An army of *Thamas Kuli Khan* approached the borders of Sindh, A. H. 1156. ostensibly to punish the *Daúd Pútras*; but the *Kalhora* A. D. 1743. taking the alarm retired to a place of security, having previously recalled his officers from their respective districts. A considerable interval now elapsed, during which there existed no government in the province, so that a system of anarchy and confusion spread through the country to its utter ruin. *Shah Kuli Khan* was at length once more induced to confide in the royal officers; and proceeding to the camp, was permitted to resume his authority, on leaving his third son, *Attar Khan*, an hostage.

* These tribes are *Tanachi*, *Togachi*, *Jhara*, *Sula*, *Kista*, and *Asow Sumrah*

The officer commanding in *Thatta* led a force to the southward, and

A. H. 1157. attacked *Jam Hothi*, the chief of *Kakralla*, who, being

A. D. 1744. slain, was succeeded by his relation *Jam Mohar* a protégé of the *Kalhora* family. The following year *Shah Kuli Khan*, in person, conquered the fort of *Sanchi*, which was situated in

A. H. 1158. the division called little *Kach*, and on the route to the

A. D. 1745. larger province of that name. The latter government, taking offence

A. H. 1159. at this attack, carried on a predatory warfare until it was

A. D. 1745. chastised in 1159 A. H.

The conduct of *Rana Ajmal of Dharaja*, during the confusion consequent to *Nadir Shah's* invasion, had been such as to draw upon him the wrath of the superior government, but the *Kalhora*, in person residing in the northern frontier, had hitherto been unable to detach a force

A. H. 1160. sufficient to call him to an account. In A. H. 1160,

A. D. 1747. however, the Rana, encouraged by the impunity which had hitherto attended his conduct, instigated some of the mountain banditti to join in an irruption which he made to the gates of *Thatta*, the government of which suffered a disgraceful defeat, under the walls of the capital. An act so bold and insolent called for immediate notice, and *Shah Kuli Khan*, having accordingly removed the authorities of *Thatta*, directed his son *Khuda Dad Khan* to proceed with a select force to subdue the *Dharaja* chieftains.

The *Sahib Zadhas* besieged *Dharaja*, which was naturally a place of some strength, and defended by skilful officers on the part of *Ajmal*, who had in person embarked with his fleet. The capital having at length been reduced, the Rana was persuaded to land for the purpose of negotiation, when he was treacherously slain by a *Jokia Baluchi*, employed for the purpose, and the *Kalhora* authority established throughout his districts.

The death of *Nadir Shah*, and the conquest of *Kandahar* by *Ahmad*

A. H. 1161. *Shah Saddozi* who founded the government of the *Dura-*

A. D. 1748. *nies*, rendered the province of Sindh tributary to *Kandahar*. *Ahmad Shah* bestowed on the *Kalhora* the new title of *Shah Nowas Khan* which superseded that given by *Nadir Shah*.

In 1162 Hej : the *Sahib Zadhas*, *Ghulam Shah Khan* and *Attar*

A. H. 1163. *Khan* returned from Persia ; and the following year ves-

A. D. 1749. sels were dispatched to bring home the other son *Murad*

Yab Khan, who had proceeded from Persia to *Mekka*, where he embarked and joined his family in A. H. 1164. During the absence of the *Sahib Zadhas*, in Persia, a brother named *Khúda Dad Khan*, who had been the executive officer under his father *Khúda Yar Khan*, now, however, assumed an active part in the government, and was intrusted, by his parent, with the exclusive charge of the public business; which exciting the jealousy of the *Sahib Zadhas*, *Khúda Dad Khan* quitted *Sindh* and retired to India.

The king of *Kandahar*, who in Hej : 1167 had failed in an attempt to subdue the empire of Hindustan, advanced at the close of that expedition to *Sewistan*, for the purpose of enforcing the payment of the *Sindh* tribute, which had been but partially realized during the recent employment of his army. *Shah Nowaz Khan* fled, and found an asylum in *Jesilmír*, where he departed this life.

Mahomed Múrad Yab Khan, fearful that his father might pledge his person as an hostage, as he had before done, fled to *Amerkot*; where, on the demise of *Shah Nowaz Khan* he was declared, by the Chief of the *Suryes*, to be the legal successor to the government. Previous to this event, the *Kalhora* vakeels had been sent to the royal camp; and by unqualified submission, had satisfied his Majesty. This instance of disrespect, however, induced the King to retract what he had promised, and to send a force into *Sindh*, for the purpose of overturning the self-created sovereign *Múrad Yab Khan*, who, afraid to leave his asylum in the desert, saw the country occupied by *Kandahar* officers; and as the last and only resource deputed persons to the camp, where, having made known the submission of the *Kalhora* and his acknowledgment of dependence, His Majesty, happy perhaps to bring affairs to a conclusion, carried away *Sahib Zadha Attar Khan* in hostage, and confirmed *Múrad Yab Khan* in the rank and power of his father, with the title of *Sirbúland Khan*.

This Chieftain fixed a camp on a pleasant spot near *Nasirpúr*, where he founded the city of *Múradabad*. The first act of his government was to attack *Jam Hojaji*, the existing chieftain of *Kakralla*, who defended himself bravely; but, overcome by numbers, was compelled to cede the greater part of his possessions, a stronghold of which called *Kach* was fortified by *Sirbúland Khan* as a safe retreat in cases of danger.

Sirbúland Khan had now been upwards of three years chief of the *Kalhoras*, when he evinced a disposition to oppress his subjects, and slight the *Surye* officers. But perceiving at length that his conduct had lost him the affection of his people, and fearful, lest the King should send an army against him, he formed the resolution of quitting the country; as a primary step to which he embarked his treasure and valuables for *Muscat*, whither he prepared to follow, as soon as he should have completed the plunder of the country. In defiance of his recent engagements with the Jam of *Kakralla*, he attacked the territories which he had two years before guaranteed; a proceeding that drew upon him the ill will of the *Surye* chieftains, who had been agents in making the arrangements with the Jam. These officers induced *Miyán Ghulam Shah* to

13 Zilhija
1170 A. H.
29th August,
1757.

dethrone his brother, who was accordingly seized, together with his family, and his authority assumed by the former.

Ghulam Shah was raised to the sovereignty whilst in the south of Sindh, and was compelled for some time to confine himself to that quarter, in consequence of the opposition of his brother *Ahmad Yar Khan*, who in *Khúdabad* refused to acknowledge his authority. In the meantime *Attar Khan*, a brother older than *Ghulam Shah*, who was then a hostage at *Kandahar*, hearing of the confinement of *Múrad Yab Khan*, applied for and procured a firmán from the King, appointing him to the government of Sindh; which province he entered with a body of *Afghan* allies, and was joined by some levies under his brother *Ahmed Yar Khan*. The officers and chieftain could not be induced to oppose the royal seal, and *Ghulam Shah* being deserted by them, retired to the desert, where the further de-

Miyan Ghulam Shah.

A. H. 1171.
A. D. 1758.

fection of his adherents, and the escape of the dethroned *Múrad Yab Khan* compelled him to prosecute his journey to *Jhodpúr*.

Attar Khan now assumed the government, and, contrary to the expectations of the people, confined his brother *Múrad Yab Khan* in *Khúdabad*. In return for its support, the *Afghan* court had been largely promised by *Attar Khan*, and a system of plunder and extortion now ensued to satisfy their demands. A few months however had scarcely elapsed, before the province was suddenly invaded by *Ghulam Shah*, who advancing from India left his son *Sar-*

Mahomed Altar Khan.

faraz Khan and the heavy baggage in Debalpur, and attacked his brother's forces in the environs of *Lohri*. During his abode in India, he had solicited and obtained aid from the *Rajput Rajas*; and although his numbers were inconsiderable, his attack was so successful, that the two brothers fled to *Kandahar*, leaving him in full possession of Sindh without another struggle.

Early in the year 1172 Hej: *Attar Khan* and *Ahmad Yar Khan* having laid their complaint before the King succeeded in procuring a new firmán for the province, and *Ahmad Shah*, in order to insure proper respect to his authority, furnished the elder brother with a contingent of troops, with which he invaded Sindh, leaving *Ahmad Yar Khan* in *Kandahar*. *Ghúlam Shah*, dubious of the result of the contest, retired to the fort of *Kach*, in the *Kakralla* districts, from the Jam of which he met with a kind and hospitable reception. The fort of *Kach* has been already mentioned as a place of great strength, chiefly arising from the nature of the country. Hither the population of *Ounenga* bunder had been transported and a new seaport formed under the name of *Shahghar*. In this retreat the family of *Ghúlam Shah* remained under the protection of *Jam Hajaji*, whilst the former led his adherents to oppose the *Afghans*; who, under the command of his brother, had advanced to *Chachgaum*, plundering and devastating the province. The dispute was about to be decided by the sword, when a negociation was entered on, which placed *Ghúlam Shah* in possession of one-third of the country; the rest being secured to the other brother. *Shahghar* and *Thatta* to the borders of *Nasirpúr* fell to *Ghúlam Shah's* share, whilst *Attar Khan* occupied the rest of Sindh.

Ahmad Yar Khan, who had been left at *Kandahar*, perceiving the turn which affairs were taking, obtained by bribes and promises a firmán in his own name for the government of Sindh: and leaving his son at court marched against *Attar Khan*. The wary and politic *Ghúlam Shah* no sooner learnt the supersession of *Attar Khan*, than he proceeded to dislodge him. Thus threatened on both sides, *Attar Khan* fled to the *Daúd Pútra* tribe, whilst the force of *Ghúlam Shah*, by a decisive and bold advance to the capital, deterred *Ahmad Yar Khan* from further progress.

The country once more under the control of a chief, who was a fa-

avourite of the natives, found time to recover from the effects of the late intestine disturbances and civil war in its most hideous form, which had ravaged Sindh for two years. During this period, three competitors struggled for supremacy; and to aid their views, had recourse to the ruinous alternative of introducing lawless and powerful allies. From the Afghan troops, the natives of Sindh suffered every evil which an avaricious and disorderly army could inflict, and it is said that so far from acting like allies, they treated the province with more severity than would an enemy.

The *Kosha* tribes, who inhabited the division of *Sewistan*, had been very troublesome during the late contest; and from the position which they occupied, in the pass from *Kandahar*, had been of essential service to *Attar Khan*. *Ghulam Shah*, as the first act of his government, inflicted on them an exemplary punishment. Their villages were reduced to ashes, their strongholds carried by assault, and their garrisons, with the families of the tribe, put to the sword.

Bahadur Khan, the chief of the *Daud Pútras*, had hospitably received *Attar Khan Kalhora*, and as the former prided himself on his prowess in arms, and was highly esteemed by the tribe, for his military talents, it was not a difficult task to induce him to espouse the cause of his fugitive guest. The preparations of the *Daud Pútras* were however not as yet matured, when their territory was invaded by *Ghulam Shah*, who attacked and slew *Bahadur Khan*, in a desperate battle, in

A. H. 1173. which the troops of the latter being totally routed, *Attar*
A. D. 1759. *Khan* fled the country, and this single action terminated
the war.

In the year 1174 Hej: the Jam of *Kakralla* was dispossessed of his lands and authority, in consequence, as it is reported, of
A. H. 1174. his conduct during the absence of *Ghulam Shah* in the
A. D. 1760. north; and was accused of having attempted forcibly to re-occupy those parganahs which had been ceded to the *Kalhoras* on a former occasion. But there does not appear any sufficient grounds for such treatment of a family which had adhered to the interests of this *Kalhora*, when he was surrounded by enemies. The Jam fled to *Kach*, and his son *Hir-durjee* having been included among the officers of *Ghulam Shah*, the *Kakralla* lands henceforth became dependent on the *Kalhora* family.

Miyán Ghulam Shah, although actually in possession of the govern-

A. H. 1175. ment of Sindh, was sensible of the flaw by which his au-
 A. D. 1761. thority was exposed to constant question and danger. He had been long intriguing at Kandahar to procure a firmán which would legitimize what he was conscious was as yet only an usurpation ; and the negociation of his ambassadors were this year crowned with success. The firmán, so anxiously expected, was transmitted to him with the honorary title of *Shahwardi Khan*, and accompanied by a present of an elephant.

This year was distinguished by a successful attack on the *Daúd*
 A. H. 1177. *Pútras*, after which *Miyán Ghúlam Shah* invaded the
 A. H. 1762. independent province of Kach. This expedition originated in the wanton spirit of plunder and rapine so common to Asiatic governments. *Rao Laka* (or *Lackpat*), who was at this time the chief *Jhareja* of the Kach aristocracy, had succeeded in releasing his person and authority from a disgraceful thralldom, in which they had been held by a rich and powerful civil officer named *Púnja*. On this dissolution of his power the latter fled to the court of *Ghúlam Shah* and was instigated by him to attack his sovereign.

The army of Sindh, which consisted of about 15,000 men, having conquered the frontier fort of Sindhri, crossed the salt run without difficulty, and entered the Kach territory. *Rao Lackpat* had directed his federal chieftains to assemble at the pass of *Jharra*,* in the mountains of which the women and children of the country were secured.

A battle was fought at this spot and is spoken of with wonder at this present day. The Sindhians surprised and attacked the *Jharejas* early in the morning ; and a thick fog obscuring the light of day until noon† both armies were intermixed with each other fighting, sword in hand, for a period of six hours. The Kach soldiers, according to an ancient custom of the *Rajpúts* determined on death, murdered the whole of their families ; and rushing among their enemies commenced a promiscuous slaughter of friend and foe. When the fog dispersed, the contending parties withdrew from the field, but such was their consternation, at the events of the morning, that each made a precipitate retreat.

The Battle of *Jharra* is said to have cost the Kach nation 2,000

* Twenty miles N. E. of Lackpat.

† In February and March the fogs are often so thick as to involve the day in total darkness.

lives, including the families slain. Scarcely a soldier of the army returned unwounded, and it is a common saying, expressive of the immense slaughter, that stones a pound in weight were moved from the side of the hill by the streams of blood. In 1812 there were three men alive in Kach who had fought at *Jharra*, and I have conversed with an aged man who received seven sabre wounds in this action. His description of the confusion, in which the armies were placed by the fog, was truly terrible. The Sindhians lost 7,000 killed and wounded.

The following year *Miyán Ghulam Shah* again invaded Kach, and penetrated, without opposition, to within a few miles of the capital; when he compelled the Rao to resign his claim to the seaports of *Basta* and *Lackpat*, which are situated on a branch of the Indus and on the borders of Sindh.

Miyán Múrad Yab Khan, the elder *Kalthora*, who had been dethroned by *Ghulam Sháh*, had died shortly after the first expulsion of *Attar Khan*. He had left several sons who were, about this time, cruelly put to death by their uncle; in consequence, it is said, of the traits which they evinced of an aspiring disposition. The fact is not recorded in the history of the times, but it is well known and generally believed in the country. *Ghulam Shah* was however a favourite of fortune, and his undertakings were generally successful. He had already received the

A. H. 1179. title of *Shahwardi Khau*, to which that of *Samsam-ad-*
 A. D. 1765. *dowlat* was now added. His mind was also at this time eased by a reconciliation with *Attar Khan*, who, failing in all his attempts on the government, threw himself on his brother's mercy, by whom he
 A. H. 1181. was kindly received and provided with a suitable *Jagir*
 A. D. 1767. under condition of remaining at all times in person at court.

The Government of the *Deras*, or villages, which had been conferred
 A. H. 1183. by *Nadir Shah* on the Afghans, was transferred to *Ghulam Sháh*, and in 1183 re-transferred to a *Kandahar* officer. The *Kalthora*, who had been employed in the north, arranging his recent acquisitions, now returned and took up his abode in Hyderabad, the foundations of which he had laid the preceding year.

The Rao of Kach courted the friendship of *Ghulam Shah*, by offering the daughter of one of his *Bahiyad* in marriage. The *Jharejas* of Kach practice female infanticide, but daughters are occasionally preserv-

ed. The *Rajpúts* have a custom of giving their daughters in marriage to *Hindus* or *Mahomedans*, if by the connexion, their inheritance can be preserved from danger. This is the only cause for which it is lawful to form such an alliance. It is common to adopt daughters of any caste for the purpose of being so disposed of, but this is done privately, and the imposition though known is not notorious. The lady given to *Ghulam Shah* is said to have been of this description. The alliance was accepted, which as the proposal had been voluntary gave rise to many reciprocal attentions. *Lackpat* and *Basta Bander* which had before been conquered, were on this occasion restored to Kach. *Ghulam Shah* survived this connexion but a short time; he died at Hyderabad in the beginning of

A. H. 1186. 1186 H. after two days' illness, attributed, by *Mahome-*
 A. D. 1772. *dan* superstition, to the wrath of the saints, whose graves had been disturbed, in founding the new capital.

Sahib Zadah Sarafraz Khan was placed in possession of his father's dignity by the universal voice of the country, and the se-
 Miyán Saraf- digni-
 raz Khan. tion was approved by the Kandahar government. The first year was employed in settling the affairs of the province and arranging the northern districts, which were at this time again transferred to the *Kalhora* authority. These measures having been concluded, the Sindhian army was led to Kach, through which it passed into Wagar on the borders of *Gújarat*. Having received the submission of the Chief *Jharejis*, *Sarafraz Khan* marched from Wagar through the *Chowan* territory, and thence crossing the desert by the route of *Parkur* returned to Sindh in the 1188 Hej.

The *Balúchi* tribe of *Talpúra* had long filled the most distinguished offices of the government, and they had, at different periods of the *Kalhora* fortunes, essentially aided in supporting them by their arms and counsel; and had acquired a degree of influence and power, which, under a chieftain of less vigour and talent than *Ghulam Shah*, would have been considered as extremely dangerous to the public peace. *Mír Byram Khan*, the leading person of the *Talpúras*, had possessed the confidence of *Ghulam Shah*, a circumstance which procured him many enemies, among such as fancied themselves better deserving of favour from an immediate connexion with, or from ancient attachment to the reigning family. On the accession of *Sarafraz Khan*, these were not wanting in their endeavours to excite in his mind a jealousy of the views of *Mír Byram*,

which feeling was, perhaps, sharpened by the respect in which the *Mir* was held by the province in general, and which combined with the devoted attachment of his tribe, placed him on a footing little beneath that of his sovereign.

Sarafraz Khan, on his return from the Kach expedition, caused the suspected nobleman and his son *Mir Sobhdar Khan* to be privately put to death. Whether this severity arose from the discovery of treasonable proceedings, on the part of the sufferers, or whether it was the result of an unfounded jealousy, is not well ascertained; but it is certain that the *Talpúras* had assumed a very high and alarming control in public affairs. This act of the government, although unattended at the moment by any extraordinary commotion in the country, nevertheless created a deep impression on the minds of the military tribes, (of which the *Talpúra* was among the most powerful) and led the way to those revolutions which, at no very distant period, placed the family of *Mir Byram* on the throne of Sindh, and sank that of *Kalhora* in poverty and distress.

So early as 1758 A. D. the East India Company had established factories at *Thatta* and *Shah Bander*, where their mercantile speculations were encouraged by *Miyán Ghúlam Shah*, with whom a friendly intimacy subsisted, productive of reciprocal advantage. The state of the society and government of Sindh, however, have constantly been unfavourable to the success of trade. The changes in the government have been so frequent that the merchant has never felt himself secure; a circumstance which, operating in conjunction with the hazard of transporting goods through various barbarous tribes, unrestricted by civilized control, has always obstructed this natural channel. *Sarafraz Khan* did not extend the same encouragement to the British factories as had been done by his father, and continued from time to time to obstruct their views and injure their interests, until it became necessary to withdraw them entirely.

Three years subsequent to this period, *Sarafraz Khan* was deposed by the *Balúchis*, who place his brother *Miyán Mahomed Khan* on the masnad. His incapacity rendered a further change necessary; and *Sadik Ali Khan*, a nephew of *Miyán Ghúlam Shah*, was selected. The object of their choice upon trial did not suit their views, and the *Ba-*

lúchi chiefs once more indulged their caprice by elevating *Miyán Ghúlam Nabiy Khan*, a brother of the late *Ghúlam Sháh*.

The period was, however, now arrived when the blood of *Mír Byram Talpúra* was to be revenged on the *Kalhora* family, A. H. 1187. A. D. 1773. The deceased had a son named *Mír Bejar*, who at the time of his father's death was absent on a pilgrimage to *Mekka*; and *Ghúlam Nabiy* had been a short time seated in his authority when this officer landed in his native country, and assembling his tribe publicly announced his design of opposing the government. *Ghúlam Nabiy* hoping, by a sudden and decisive battle, to check the spirit of defection which spread rapidly through the military tribes, attacked the *Talpúras*, but was slain in the action.

In the meanwhile *Miyán Abdúl Nabiy*, a brother of the deceased, shut himself up in the fort of *Hyderabad*, where he cruelly put to death *Attar Khan*, *Sarafraz Khan*, and *Mír Mohamed Khan Kalhoras*, who had at different times held the sovereign authority. His object in thus imbruing his hands in the blood of his nearest relatives, it is difficult to discover. It could hardly have been jealousy, because the victims were already prisoners; and as such, could not be dangerous to his projects. Indeed this atrocious conduct would appear to have been the effect of a naturally cruel and blood-thirsty disposition.

Mír Bejar laid siege to *Hyderabad*, but, finding his means inadequate to its reduction, he opened a negotiation which terminated in *Abdúl Nabiy* being elected sovereign of *Sindh*, whilst *Mír Bejar* was confirmed in the office of minister, which had been so long held by his family. This arrangement placed the active administration of affairs in the hands of the *Mír*, (with which his ambition was probably satisfied,) without incurring the odium and danger attending a total exclusion of the *Kalhora* dynasty, which was still an object of veneration among the people.

During the government of *Abdúl Nabiy* the province was invaded by an army from *Kandahar*, sent to enforce a sannad which A. H. 1195. A. D. 1781. had been issued by the king, placing *Izat Yar Khan*, a nephew of *Abdúl Nabiy*, on the throne. *Mír Bejar* defeated the *Afghans* in a battle near *Shikarpúr*, and the pretender having fled, the victor returned to the capital, where he continued successfully to guide the reins of authority.

The infatuated *Kalhora*, himself uneasy under the tutelage in which

he was held, notwithstanding the examples which had so recently passed before him, resolved to cut off his minister by assassination. Various attempts are said to have been made and failed; but he was at length successful, through the friendship of the *Raja* of *Jhodpur*. Two *Rajpúts* visited *Hyderabad*, and under a pretence of business were admitted by *Mír Bejar* to a private conference, when they stabbed him to the heart. The assassins were shot from the roof of the room, perforated for the purpose, none having courage to face them sword in hand. It is by no means uncommon for *Rajpúts* to devote themselves to death with a view of serving their master, and, among the *Rathores* of *Marwar*, in particular, there is little difficulty in finding agents of this description; but it must be remarked that it proceeds entirely from devotion to their chieftain, and the person who would assassinate at his simple command, would spurn any attempt to bribe him to the office. In 1814, there was an instance of two *Rathore Jemedars* thus sacrificing themselves at the request of the *Rao* of *Kach*.

Abdúl Nabiy attained his object, but, with a timidity characteristic of the abetter of such a deed, fled with precipitation to the court of *Kelat*, leaving his authority to be usurped by *Abdúllah Khan*, the son of the deceased; who, with his natural cousin *Mír Fattah Khan*, assumed the sovereign control of the province.

In the year of the *Hej.* 1196 the cause of the exiled *Abdúl Nabiy*
 A. H. 1196. was espoused by *Nasir Khan Barrohi*, who appropriated
 A. D. 1782. a select body of his troops under a relation named *Mír Zorak*, to reinstate the *Kalhora*. The attempt having failed, the *Talpúras* flocked to the standard of *Abdúlla*, and defeated the *Barrohis* in a bloody contest in which *Zorak* lost his life. *Abdúl Nabiy* despairing of further aid from *Kelat*, once more crossed the mountains of *Balúchistan* and fled to the court of *Jhodpúr*, where he met with a warm reception. The *Raja* retained the prince at court, whilst he detached an army to pave the way to the overthrow of the *Talpúras*. The *Rajpúts* were however defeated by the former, in a battle said to have been seldom equalled in the fury with which it was maintained; and the wretched *Kalhora* thus disappointed on all sides, repaired to the camp of the King of *Kandahar*.

Here he persuaded some of the courtiers to lay his prayer before His Majesty, who at length nominated *Maddad Khan*, a general of distinc-

tion, to command a formidable force on this service.* On approaching the Sindhian frontier, the *Afghans* were reinforced by a detachment of *Barrohis* from Kelat, and *Abdúllah Khan*, having laid the country waste, sent the women and children into Kach, and took refuge in person in the great desert. The *Afghans* finding neither friend to greet nor foe to oppose them in Sindh, called upon the *Talpúras* to acknowledge *Abdúl Naby* and resume their respective ranks and situations at his court; a proposal which was readily acquiesced in by *Abdúllah*; and the original system of government was once more established.

The calm was momentary, for *Abdúl Naby* again raised the flame of civil discord by unjustly and cruelly putting to death *Abdúllah Khan Talpúra*, a few days after the latter had renewed his allegiance. *Mír Fattah Ali*, the son of *Mír Sobhdar*, and grandson of *Byram Khan*, was unanimously elected chief of the *Talpúras*, and by a series of gallant exertions drove the *Kalhóra* from the throne, which he himself occupied. Over anxious however to remove those who had a more legal claim to the masnad, his conduct alarmed his nephews, *Mír Sobhdar* and *Mír Jharra*, the sons of *Fattah Khan*. These princes privately fled from Hyderabad, the former to *Lohri* and the latter to *Badban*, where they both finally established chieftainships, and where they still remain powerful federals of the Sindhian government.

One more effort was made by the deposed *Kalhóra* to recover his lost kingdom.† Aided by a powerful army from Kandahar and Kelat, he entered the province, where he was joined by a considerable body of partizans. According to custom, the *Talpúras* having secured their families in Kach, laid waste the frontier and avoided an action until having succeeded in purchasing the neutrality of the auxiliaries, *Mír Fattah Ali* attacked the troops of *Abdúl Naby*, who being defeated with immense slaughter, fled to *Sewistan*.

About the same period *Zeman Shah* ascended the throne of *Kandahar*, and led an army towards Sindh to enforce payment of the tribute which had been irregularly discharged since the separation of *Jharra* and *Sohrab*. The advance of the King was checked by a deputation from the three *Talpúra* chiefs, (who had caused Sindh to be deserted

* This expedition is mentioned in Elphinstone's *Cabul* II. p. 359.

† This expedition is the one probably mentioned by Elphinstone; *Cabul* II. p. 369.

and taken refuge in the desert,) apologizing in the most humble terms for their past neglect, and promising more regularity in future. *Fattah Ali* had a warm friend in the Wazir, who persuaded his master to desist from the expedition, and afterwards procured a firmán for the government of the province in the name of the *Talpúras*, an event which finally put an end to the dynasty of the *Kalhora* sovereigns. The wretched *Abdúl Nabiy* wandered from place to place until he fixed his residence finally at *Jhodpur*, in Marwar, where his family still hold a distinguished rank.

It is only necessary to add, that, when no longer threatened from foreign war, the *Talpúras* became jealous of each other. A strong party supporting the cause of *Mir Ghúlam Hussain* the son of *Abdúllah Khan*, who was ultimately placed in the government under the protection of *Mir Fattah Ali*, who in concert with his brothers *Mir Ghúlam Ali*, *Karrim Ali* and *Múrad Ali* continued to manage the affairs, whilst the independence of *Jharra* and *Sohrab*, in their respective territories, was regularly guaranteed.

The preceding pages record one continued struggle for greatness during a period of three centuries, and the object so ardently desired had scarcely been attained, when the same powerful hand which raised the mendicant *Kalhoras* to the throne, in the short space of ten years hurled them headlong to their original obscurity; destined to stand a memorable proof of the changeable nature of worldly affairs and the futility of human exertion.

It is remarkable that the nation of Sikhs originated much in the same manner and struggled at the same period of time as the *Kalhoras*, but in the issue with better success.

AET. IV.—*Anatomy of the Common Musquitoe (Culex Pipiens)*

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OF THE PROBOSCIS, ALIMENTARY, AND GENERATIVE ORGANS OF THE MUSQUITOE, CULEX PAPIENS.—*Linn.*

Distinguishing marks of the two sexes.

Before entering on the description of the internal organs of the musquitoe, it may be as well to notice the principal external points of differ-

ence that exist between the male and female of the species. These are the following :—

Body of the male much more slender than that of the female. Antennæ, though of the same length, much longer and more plumose than those of the female, and contain double the number of joints. Palpi in the male very largely developed, compared with those of the female, first joint extending nearly to the extremity of the proboscis. Two hook-like processes or claws inclined downwards from the upper part of the last segment in the male, which do not exist in the female, where they are replaced by two processes one on each side of the anus.

Of the Proboscis.

This is a most complicated organ, compounded of all the parts of the mouth except one pair of palpi. The following is the order in which the different parts are placed in relation to each other. Externally is the proboscidian sheath; within this, a transparent horny sheath, and again within the latter three setæ, one of which is spear-pointed, and the other two saw-pointed at their free extremities.

The proboscidian sheath, which encloses all the other parts, is a membranous, cylindrical tube, arising from the inferior part of the head; it is about half the length of the whole animal, is covered externally with hairs and scales, and is open superiorly, by a longitudinal fissure, which extends throughout its whole length. Towards its free extremity it becomes contracted, and terminates in a bilobate portion, consisting of two hollow pouches, round externally and covered with hairs, and smooth internally where they are in contact with each other.

The internal sheath is not quite so long as the last. It is formed of a stiff, horny, transparent, cylindrical tube; is in continuation posteriorly with the pharynx, and is firmly fixed above to a rostrated process which projects forward from the anterior part of the head, just below the tubercles of the antennæ. From this point also it is reinforced by two distinct portions, one on each side, which soon become incorporated with it. Its free extremity bears a great resemblance to the point of a pen, and is extremely sharp and delicate. Posteriorly it is continued back through the head to the pharynx, where it dilates into a horny hollow bulb, and then becomes contracted again to its original calibre before joining it. On its inferior aspect, it is also open longitudinally, by a

fissure, which extends from the pharynx to its free extremity. Within it are enclosed three setæ.

One of these is spear-pointed and is fixed posteriorly on the median line between the proboscis and internal sheath, which it immediately enters and is continued to its extremity.

Below it lie the two saw-pointed setæ in close approximation. They are fixed posteriorly, one on each side the spear-pointed setæ, close to the inner edge of the palpi, and soon approaching each other enter the horny sheath, and in like manner are continued to its extremity, when their serrated edges are turned towards each other.

The pair of palpi are placed immediately above the base of the proboscidian sheath, at the base, and on the outer side of the saw-pointed setæ.

The following appear to be the analogies of the different elements of the proboscis :—

The proboscidian sheath is a prolongation of the under lip or labium.* The central spear-pointed setæ may be compared to the mandibles united, and the two saw-pointed setæ and the pair of palpi annexed to them to masellæ, and their palpi. The palpi of the labium may be considered to be incorporated with the proboscidian sheath.

During the act of puncturing the skin in search of food, the proboscidian sheath is retracted, and drawn towards the breast, so as to uncover the penetrating instruments. This takes place simultaneously with their insertion, and the juices are probably conveyed into the pharynx, and principally through the internal horny sheath.

In the male, the proboscis is very imperfectly developed, and from never having found any food in the stomach, it is probable that they bite less frequently, and are therefore far less troublesome than the female.

Alimentary Organs.

The pharynx, which is continued backwards from the horny sheath to the œsophagus, is short and narrow, and just before it joins the œsophagus, receives the ducts of three glandular bodies.

The œsophagus is large at its commencement, becomes gradually narrower towards the stomach, where it ends in a short, dilated portion, which after being slightly contracted, swells out again into a pear-shaped

* The internal sheath is an elongation of the upper lip or labium.

stomach with its large end posteriorly. The pylorus is contracted and narrow. The ileum short and straight, and ends in the colon, which is dilated at its cæcal extremity, and in its substance contains several cordiform glandular bodies attached to each other by small vessels having a cellular appearance internally. The colon is then continued straight to the rectum, where it becomes contracted again to form the anus.

Generative Organs.

In the Female. The ovaries consist of two delicate transparent sacs, one on each side the rectum, and contain round transparent ovaes. The oviducts are short, and both terminate together close to the anus.

In the Male. The generative organs consist of three pairs of glandular bodies; one pair of which are long and ovoid, and are placed close to the posterior end of the stomach; from each of them a delicate duct is continued back to two other glands, which contain a granular matter, placed side by side on the median line close to the anus. On each side of the latter are two other glands, containing a greenish yellow granular matter, they unite and terminate in the rectum close to the anus at the same point as the latter, to which they are attached.

Biliary Vessels.

The biliary vessels are six in number; they enter the duodenal end of the ileum close to the pylorus, and are convoluted round the large end of the stomach.

Explanation of the Plate.

Fig. 1. Musquitoe (*Culex pipiens*) magnified 3 times. Female.

2. Male.

a Antennæ.

b Palpi.

c Hook-like processes of the tail.

Fig. 3. Diagram of the elements of the proboscis magnified 16 times.

a Neck.

b Head.

c Antennæ.

d Œsophagus.

e Internal sheath or labium.

f Proboscidian sheath or labium.

g Spear-pointed setæ.

h Saw-pointed setæ.

c Palpi.

k Dilated portion of internal sheath.

Fig. 4. Magnified view of the extremity of the proboscis.

a Bilobate portion.

b Longitudinal fissure.

Fig. 5. Magnified view of the extremity of the internal sheath.

- a* Pen-pointed extremity.
- b* Longitudinal fissure.

Fig. 6. Alimentary canal.

- a* Internal sheath.
- b* Dilated portion.
- c* Longitudinal fissure.
- d* Pharynx.
- e e e* Œsophagus.
- f f f* Salivary glands.
- g* Stomach.
- h h h* Biliary Cæca.
- i* Ileum.
- k* Colon and rectum.
- l* Anus.
- m m* Processes at the oval extremity of the female.
- n n* Ovaries and their ducts.

Fig. 7. Glandular bodies found in the cœcal end of the colon.

Fig. 8. Male organs of generation.

- a a* Testicles.
- b b* Their ducts leading to vesiculæ seminales.
- c c* Vesiculæ seminales.
- d d* Two glandular vesicles containing a greenish yellow granular secretion.

Fig. 9. Magnified view of the free extremities of the elements of the proboscis exposed.

- a* Superior surface.
- b* Inferior surface.

I also send the Society a drawing of a species of musquitoe, which is very common in Lower Sindh, and is generally termed by the Europeans a sand-fly. Its bite is equally poisonous with that of the common musquitoe, though the swelling that follows it is not so extensive.

It differs from the common musquitoe in not being more than one third of its size, and is almost colourless, bordering upon white. The body and wings are covered with tufts of hair. The proboscis larger at its extremity than at its base, but not suddenly dilated, as in the common musquitoe, and the external or horny sheath is formed of four separate portions of equal size and length, concave externally and pointed in an obtuse angle at their extremities, and within them is enclosed a single stylette. The palpi, like those of the common musquitoe, are longer than the proboscis, and bent downwards at their extremities.

Fig. 1.

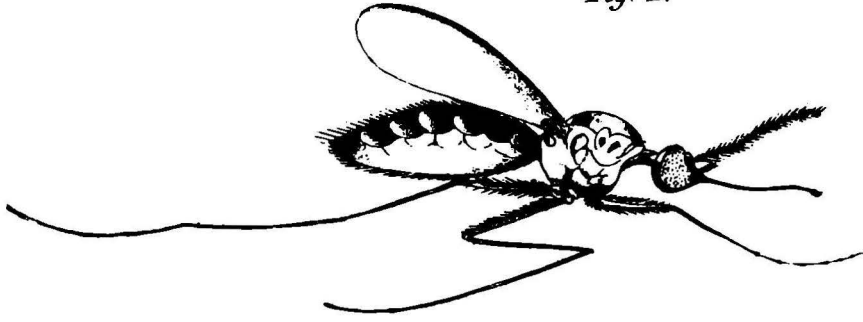


Fig. 8.

Fig. 2.

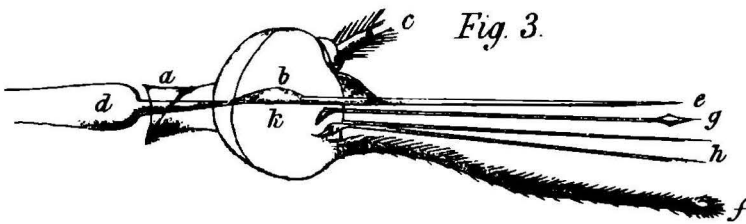


Fig. 3.

Fig. 4.

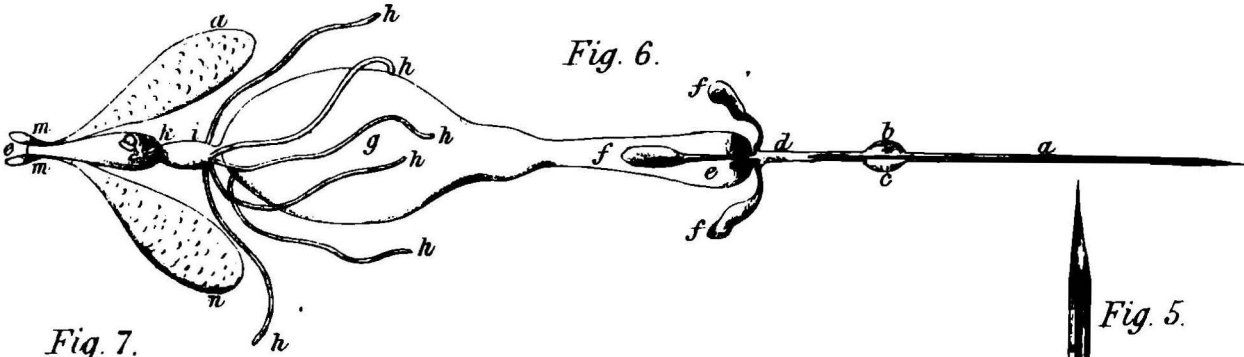


Fig. 6.

Fig. 7.



Fig. 5.



Fig. 9.



Sindh Mosquitoe. — *Culec pipicus.* Linn.

Fig. 1. Female, 8 times natural size.

Fig. 2. Magnified 16 times natural size.

ART. V.—*Note on a Specimen of Iron Ore from the vicinity of Malwan.* By BALL G. SHASTREE, Esq.

The accompanying is a specimen of the ore from which iron is extracted in the vicinity of Malwan. Though the laterite, in which this ore occurs, almost everywhere overlaps the basalt and other rocks, in the Southern Conkan the ore is generally found only in detached masses, on the tops of hills, not far from ground, its presence being indicated by the appearance of small ferruginous fragments on the surface. The following description of its mineralogical and chemical properties has been supplied to me by Bhaú Dají, the assistant to the Chemical Professor in the Elphinstone Native Education Institution, who examined it at my request.

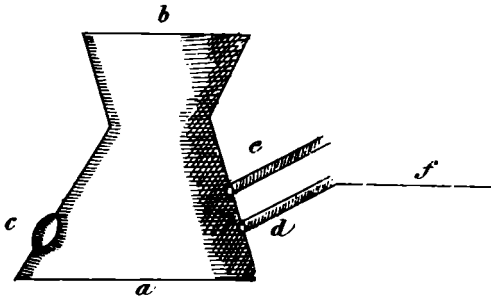
“It is massive, compact, externally brown or reddish brown, internally steel-grey, glimmering. Brittle, streak yellowish brown, fragments splintery, sharp, fracture flat conchoidal. Spec. gra. 3.32. Before the blowpipe, it yields a dark blue shining enamel, attracted by the magnet. Its constituents have been found to be water, the *black oxide* and *peroxide* of iron, *alumina*, *silica*, a *trace of manganese* and *magnesia*.

“A considerable portion of this mineral contains a shining steel grey lamellar powder, which is most difficult of solution both in nitric and muriatic acids. It is supposed to be the black oxide, which is regarded by many chemists as a distinct oxide—a mixture of the oxide and peroxide of iron in various proportions.”

Though the process employed at Malwan, for extracting the metal from the ore, is nearly the same as that adopted elsewhere in India, and described in Mr. Prinsep's *Gleanings of Science* (vol. 1st, p. 230, and vol. 3rd, p. 328, 330), the following details on the subject, literally translated from the letter of a friend residing on the spot, may be interesting for the sake of comparison.

“Equal measures of this ore and that of charcoal, reduced to fine powder, are intimately mixed by means of water, and smelted in a furnace which is represented in the following diagram.

“It is round and about three feet in height ; its diameter at the bottom is nearly a foot and a half, and at the top, about a foot.



c is a circular opening three inches from the bottom and about 9 inches in diameter, through which the half melted mass of iron is taken out. *d* and *e* are two apertures for the insertion of the pipe of the bellows. *f* the

place where the bellowsman sits, about two feet from the ground.

“The furnace is loaded with about 10 *paylies*, or about 80 lbs. of charcoal. A seer, or about 2 lbs. in weight, of the mixed powder is now thrown in together with charcoal sufficient to reduce the ore. The opening *c* is closed up by a stone and clay, and the materials in the furnace ignited. The bellows consist of single skins of goats worked by the hands.

“When the powder is formed into a mass (which may be seen from above), the furnace is again loaded with about 2 lbs. of the powder. The half melted mass is taken out, through the openings, by means of a paori or shovel, and is beaten by heavy hammers on an anvil. The iron is then ready for sale. If a large quantity of iron is to be prepared, fresh quantities of powdered ore are successively added to the melted mass, and allowed to be incorporated with it, until a mass of about 20 lbs. in weight is obtained.”

A process somewhat different from the preceding is more frequently employed. It is as follows :—

“The ore is exposed to sunshine for a week or two to deprive it of moisture. It is then carried to the place of manufacture and roasted, which renders it brittle and capable of being easily reduced to powder, in which no pieces larger than a pea are allowed to remain.

“The next operation is to put in about 2 *paylies* or 16 lbs. of fine charcoal powder, at the bottom of the oven described above. Upon this

are put cinders, and wood charcoal is thrown in up to the brim. The bellowsman begins his task, and when the ignited mass, in the inside of the furnace, subsides a little, about half a seer by measure, or 1 lb. in weight, of the powdered ore is thrown in with about two paylies or 16 lbs. of charcoal. When again the fire has subsided about 9 inches, the same quantity of ore and charcoal is thrown in. This is continued from 6 to 9 o'clock in the morning. No more powder is now employed, but the bellowsmen continue blowing for about 3 hours more. By this time a mass of iron is formed at the bottom of the oven, from which it is taken out through a hole made for this purpose, by means of a large pair of pincers, and placed on an anvil, on which it is beaten by heavy hammers.

“ Thus a piece of good iron about 10 seers in weight is obtained. It is called by the natives Madagé. A similar quantity is made in the afternoon. One piece is sold for about 8 annas, one half of which is given to the bellowsman.

“ The manufacture of iron is the exclusive trade of a class of natives called Dháwar. The agricultural classes are also acquainted with the process; but if they want to prepare any iron, they have recourse to a Dháwar. For if any person were to attempt to manufacture it at his house, he would be liable to be deprived of his caste.

“ The smelting of iron is carried on at Masará, Kholala, Vayangaon, and several other villages. There are generally 4 smelting furnaces in each village. As the operations of these require an immense expenditure of fuel, the principal men of the villages do not allow the Dháwars to settle in large numbers in their vicinity. No great quantity is therefore produced in any one of them. The charcoal used is from *soft* wood; that of Kháir (the Mimosa Catechu) is hard, and is said to produce no iron if employed. As iron bars and blocks have found their way here, the quantity of the metal now manufactured in this district cannot be worth more than about a thousand rupees annually; being one-half of what was produced under the former Government.

5th February, 1844.

ART. VI.—*A brief account of the minor Bauddha Caves of Beira and Bajah, in the neighbourhood of Karli.* Communicated in a letter, from Mr. N. L. WESTERGAARD, to JAMES BIRD, Esq., with translations, by the latter, of inscriptions found at both.

Some account of a cave at the village at Bajah, between Karli and Lohgarh, was sometime ago communicated by a member of this Society, Manockjee Cursetjee, Esq., and was accompanied by fac-similes of the inscription : but hitherto the more perfect excavations, at Beira, have not been noticed, and their existence seems scarcely known to Europeans. A rough sketch of the Beira cave, drawn from memory, accompanies this brief account of it, which I am enabled to give on the authority of Mr. Westergaard ; but while, in the absence of more extended information, this may satisfy the curiosity of some in such matters, a fuller and more perfect account would still be of interest to the members of the Society.

Mr. Westergaard writes—I have just returned from a visit to the caves in the neighbourhood of Karli, and I am led to suppose that the minor caves, at Birsa and Bajah, might possibly have escaped your notice. I take the liberty to send you a short description, with copies of the few inscriptions there ; hoping that you will not refuse this small contribution to your most important and interesting work on the Caves of Western India. The caves at Birsa, (or as it is called, in the map of the Poona Collectorate, Beira,) are situated about six miles S. W. from Wargam. The plan of the temple resembles Karli, but is neither of so great extent nor so well executed, and appears more modern. It contains a *Dehgop* ; * and its roof, which is ribbed, and supported by

* This is a stone spire, of an hemispherical form, placed at the extreme end of the arched Bauddha caves ; and is a type of the corporeal frame of the five elements, or the *Dhyani Buddhas*, being the same as the *Anushthana Sarira* of Kapila's philosophy, or vehicle of the subtle person or spirit.

That, at the cave of Karli, is named, in the inscription on it, *Sansar-ratha* ; or the worldly vehicle, and establishes a fact that it is meant as a type of a first cause, producing effects in the versatile world. It is in fact considered an aggregation of the elements, effected by the residence of spirit ; and viewed as a type of elemental creation, presents an analogy to the mundane egg, from which, according to the doctrines of antiquity, sprung the first born of the world.

**INSCRIPTIONS FROM THE CAVES OF BEIRA AND BAJAH,
NEAR WARGAM ON THE POONA ROAD.**

N^o I. Over a small Cell at Beira.

± ୧୮୩୪ ୫୬୭୮, ୯୦୧୨୩୪: ୫୬ ୭୮ + ୯୦

N^o II. Over a Water Reservoir.

୪୫ ୬୭୮୯ ୧୦ ୧୧ ୧୨
୧୩ ୧୪ ୧୫ ୧୬ ୧୭ ୧୮
୧୯ ୨୦ ୨୧ ୨୨ ୨୩ ୨୪ ୨୫

*N^o III. On the first of the nine Dehgopas
outside a Cave at Bajah.*

୧୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୧୦ ୧୧ ୧୨ From Copies by M^r L. W. Westergaard.

N^o IV. Over two Wells at Bajah.

୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୧୦
୧୧ ୧୨ ୧୩ ୧୪ ୧୫ ୧୬ ୧୭ ୧୮

DUPLICATE COPIES BY M^s D' OCHOA.

TEMPLE DE BODJA près KARLI.

Inscription placée dans un encadrement audessus d'une citerne à gauche du Temple de Bodja.

1^{re} Ligne:

୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୧୦ ୧୧ ୧୨ ୧୩ ୧୪

2^e Ligne:

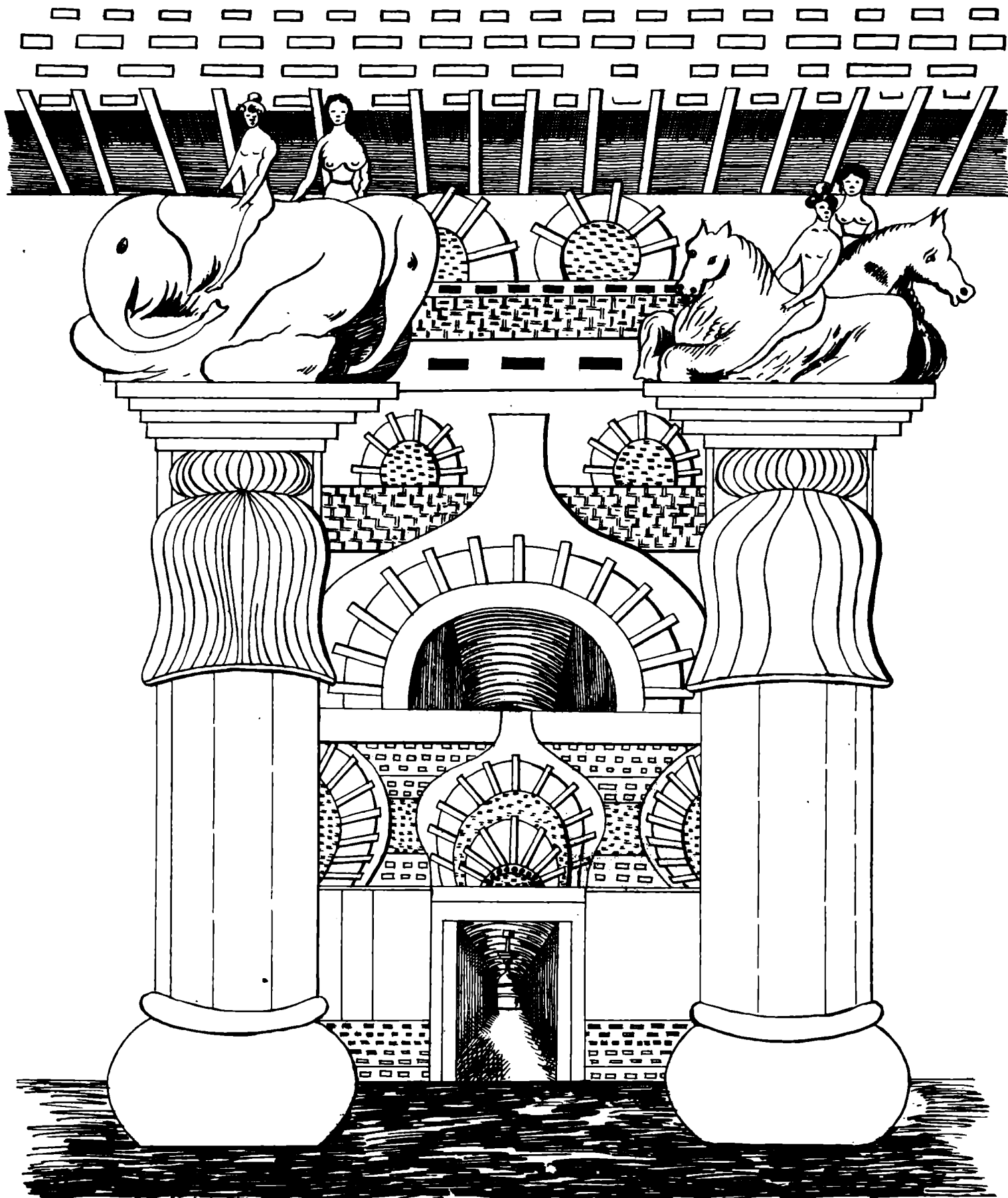
୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୧୦ ୧୧ ୧୨ ୧୩ ୧୪ ୧୫ ୧୬ ୧୭ ୧୮ ୧୯ ୨୦

*Inscription placée sur une porte latérale faisant partie d'origine ds Pretice dans
le Temple de Bodja.*

୧ ୨ ୩ ୪ ୫ ୬ ୭ ୮ ୯ ୧୦ ୧୧ ୧୨ ୧୩ ୧୪ ୧୫ ୧୬ ୧୭ ୧୮ ୧୯ ୨୦ ୨୧ ୨୨ ୨୩ ୨୪ ୨୫ ୨୬ ୨୭ ୨୮ ୨୯ ୩୦



*Karli.
Janvier 1844. Ch. d'Ochoa.*



B. E. S. PRESS.

PART OF THE PRINCIPAL ENTRANCE TO CAVE AT BEIRA 24 MILES FROM KIRKEE.

twenty-six octagonal pillars, about ten feet high, seems to have been covered with paintings, which are now, however, so indistinct, that nothing can be made out of them. There are four pillars, about twenty-five feet high, in front, surmounted by a group of horses, bulls, and elephants. The first pillar supports a horse and a bull, with a male and female rider; the next three elephants and one horse, two of the elephants having a male and female rider; the third three horses and one elephant, a male and female rider being placed on two of the horses; and the fourth pillar is surmounted by two horses bearing a male and female rider. The hall of instruction, which is of an oval shape, has a vaulted roof, and is situated close to the temple. It contains eleven small cells; and over the door of one of them there is an indistinct and partly defaced inscription, which will be immediately noticed.

The caves of Bajah are situated three miles S. E. from the village of Karli. The principal temple contains a *Dehgop* but no sculptures, and has its roof supported by twenty-seven plain pillars. Outside there is a group, executed in *bas relief*, now much defaced. On both sides of the chapel the hill has been excavated into two stories, corresponding with the height of the temple, and containing the usual halls of instruction with cells. But the most curious of the sculptures is a collection of fourteen *Dehgops*, five of which are inside and the others outside the cave. On the first of the latter there is an inscription.

Mr. Westergaard, in his interesting correspondence with me, entered into an elaborate examination of the probably correct reading of the inscriptions at both caves; and while I felt myself under the necessity of dissenting, in part, from his observations, I was infinitely obliged to him, as they enabled me to give a more accurate reading and translation in my second letter. Mr. Westergaard's objections to the reading, first sent, applied chiefly to the vowel points employed, to the substitution of aspirated for unaspirated consonants, and to the use of cerebral for dental letters. To these I replied, that the *Prakrit* of the cave inscriptions, which contains a large admixture of *Pali* and *Sanskrit* words, is employed by the *Jainas* for the composition of their scriptures, and admits of the changes objected to, while its grammatical structure approaches nearer the *Magadhi* or *Pali* than the *Sanskrit*, and may be more correctly interpreted after the model of the former, than through a *Sanskritized* medium. I have since obtained a copy of the Bajah

inscription by Monsieur D'Ochoa, which enables me to correct some points doubtful in Mr. Westergaard's copies.

The cave inscriptions, generally embody, religious and historical information, and strongly confirm, what the general principles of the *Bauddha* religion in various countries teach us, that this widely diffused system had its origin in *physical* and *metaphysical* opinions, on the subject of a *first cause*, made applicable to explain the phenomena of the world and of human nature; and was intimately connected, at its rise with the worship of the heavenly bodies, and the *Sabean idolatry*. Hence it is that the inscription on the obelisk at Karli is declaratory of its dedication to the sun; while many of those from the caves of *Junir* are more fully declaratory of the different deifications, celestial and human, which were objects of worship among the *Bauddhas*; hence also the explanation of a fact, that the coins of the *Afghanistan* and *Panjab topes*, which have been accurately named *Mithraic*, present the same mystical symbols as precede the cave inscriptions, and are indicative of the respect paid to the planetary bodies, and to fire. The group of horses, bulls, and elephants, on the four pillars in front of the arched cave at Beira, (*Birsa*) resembles what we find on the Indo-Mithraic coins of the North; and is evidence, were no other proofs procurable, that such belongs to the worship of the sun: for as *Proclus de Sacrificiis* observes:—
 “Animalia sunt Solaria velut leones;” and of the latter there are numerous sculptures in the *Bauddha* caves of Western India, accompanied by figures of the deer, tiger, &c.

The first inscription, from the Beira cave, described as executed over the door of a small cell, reads,

नासिकातपसिनोसासथपुतासपुवानाकमाह.

Nasika tapasino sa sathaputasa puvanaka maha :

and may be translated,

“By an ascetic of *Nasika* resembling the purified Saint (*Buddha*), the primeval heavenly great one.”

Here *Sattha*, the Pali name for *Buddha*, is spelt with the aspirated dental *tha*, and without the usual *ta*, which constitutes the correct modern spelling of *Sattha*; which is a *Prakrit* corruption of the *Sanskrit* word श्रेष्ठ *Shreshtha*, meaning preëminent, or most excellent, and the same

with *Seth*, an appellation given, by the Jainas and Parsees of Gujarat, to great and good men of rank and consideration.

The second inscription, from the same caves, said to be over a well, reads,

महत्पालकेयमनुवयमहारतनव्यसामिद्धिनकेयदयधमाउपादमनाकासशायकेय.

Mahatya palakaya manavaya maharatanaya samidhinakaya dayadhama upada manakasa vatyaya kaya :

and may be translated,

“A righteous gift of a small offering to the moving power, (body) the intellectual principle, the cherishing material body, the offspring of Manu, the precious jewel, the supreme heavenly one here.”

Mr. Westergaard proposed to read *Mahatuya palikaya*, which perhaps might be rendered, “for the preservation of a quantity of water,” but I prefer the original reading, as the cherishing principle of creation, alluded to in the inscription, is doubtless water; under which form, and which symbol the female divinity, *Adi Prajna*, or *Adi Dharma*, characterised by the *lotus* or *yoni*, is represented among the *Bauddhas*. The esoteric meaning of the inscription has reference to *Prajna*, who, as the active power of nature, is manifested, in Nepal, as *Jal-sa-rup*, or a form of water; and is represented, at the caves of Ajanta and Ellora, as a female, seated on the lotus, over whose head are descending streams of water.

Regarding the caves at Bajah, Mr. Westergaard observes, that the first of the inscriptions there, is on the first of the nine *Dehgopas*, outside the cave, and which have been already described. It reads—

पालन्न वसोभूचसाताना :

palanna vasibhutasatana :

and may be translated,

“The resting places of the preserver dwelling in the elements.”

Allusive, as would appear, to the influence of the sun, and his course amid the signs of the nine planets, of which *Rahu* and *Ketu*, or the nodes, form two; and are always inserted in *Bauddha* astrological diagrams, or systems of sidereal astrology, called in Ceylon *Baliah*;

which is the worship of the planetary powers, similar in many respects to the Syrian idolatry of worshipping and propitiating the *Balim*, or host of heaven, which protected and influenced mankind in health and sickness.* This part of the Bauddha system is connected with a belief in the efficacy of amulets and charms for averting the evil influence of the stars: and it is usual for both *Bauddhas* and *Jainas* to address their prayers to the *Dasa-Dik-Pals*, or ten regents of the heavenly quarters. One of the Bauddha astrological diagrams, showing the mode of prognosticating from the signs of the planets, may be seen at page 114 of Sangermano's description of the Burmese Empire: and a similar diagram exists in the temple of Kargone, on the road to Malwa. In illustration of the above inscription, and its connexion with the Bauddha religion, I may briefly notice, that the late Dr. Bramley brought from Nepal two coins, on the obverse of which there is a seated image, accompanied by the inscription, *Sama gana*, the Supreme Quirister, and on the reverse the representation of a lion, or symbol of the sun, called *Siho nana*, the wise lion.

The next inscription from the Bajah caves is said to be over a well, and reads,

महरथशाकशाकपुनसातानदातसादप्यादमापादः

Maharatha sakasakaputasa tanamdatusa dayadhamapada :

and may be translated—

“The righteous gift of a symbol and vehicle of the purified Saka Saka, (Shakra or Indra†) the resting place of the giver.”

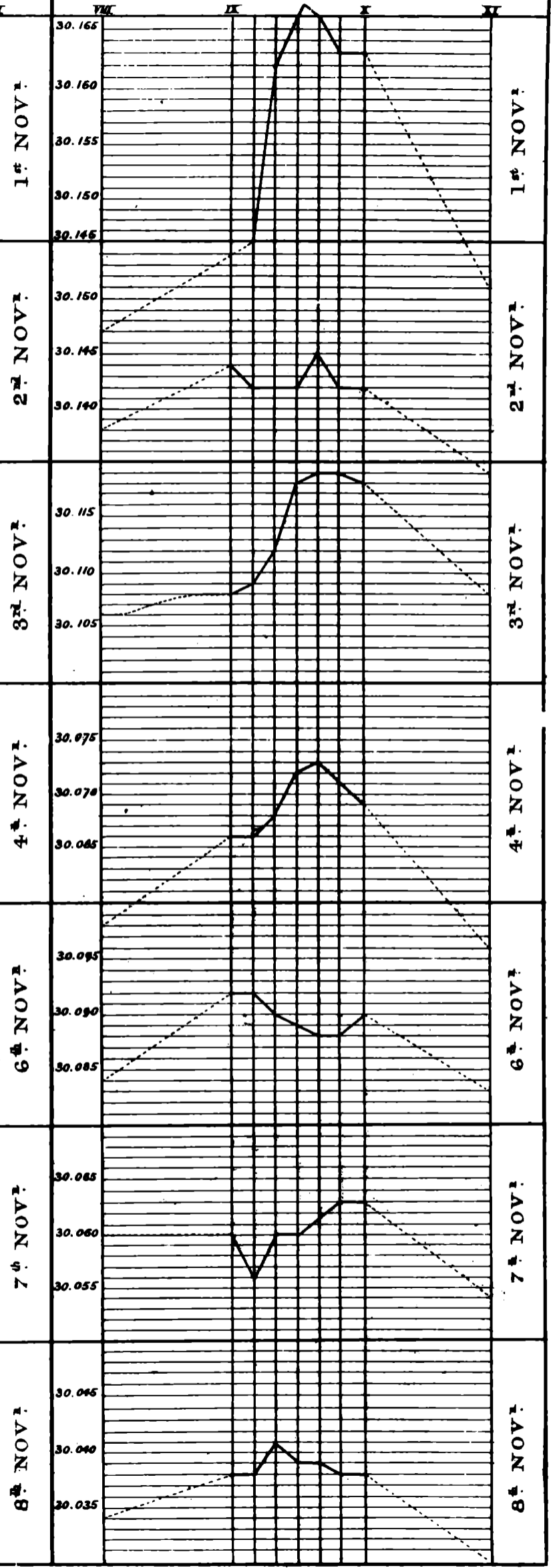
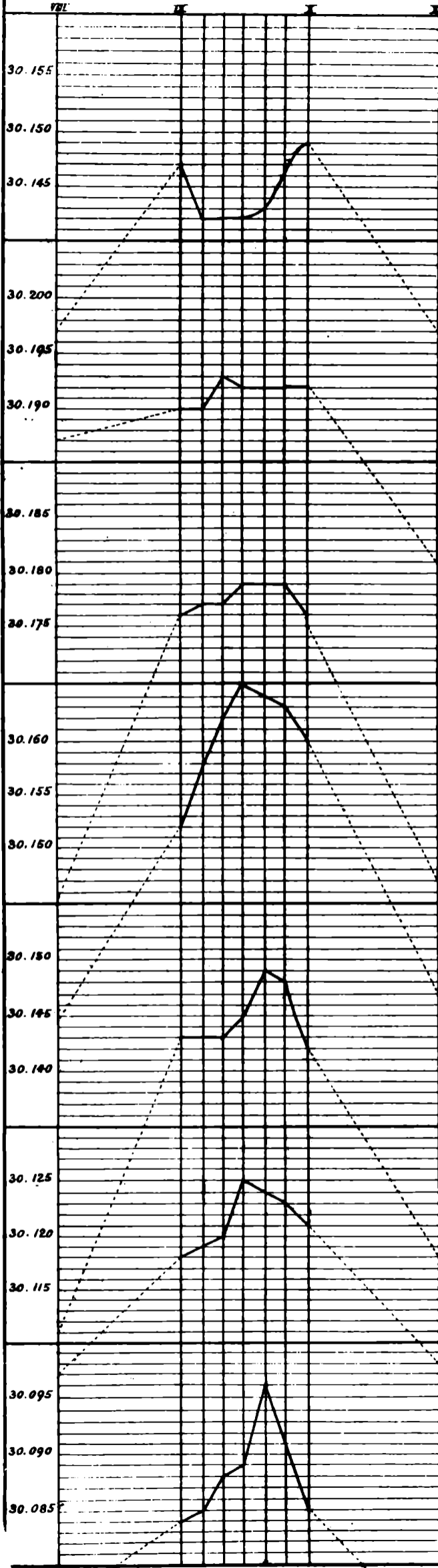
Saka in Sanskrit is the usual appellation for *Salivahana*, as *Sa.lya* is that for *Buddha*, being a title implying sovereignty: but in the present inscription *Saka-saka* is evidently intended for *Sakra*, the Sanskrit name for *Indra*, or the god of the firmament, who is named in Pali *Sakko*. Two copies of the above inscription are here given; and while Mr. Westergaard's would give the reading *Maha Raja*, I prefer that in Mr. D'Ochoa's—*Maha ratha* as being more consistent with the sense of the passage, and implying that water, over which it is inscribed, is the great vehicle of *Indra*: who, in the inscription from the Khandagiri

* See Mr. Upham's account of the Bali in Ceylon, chap. x.

† शक्र Shakra, a name for Indra, the ruler of Swerga or Paradise.

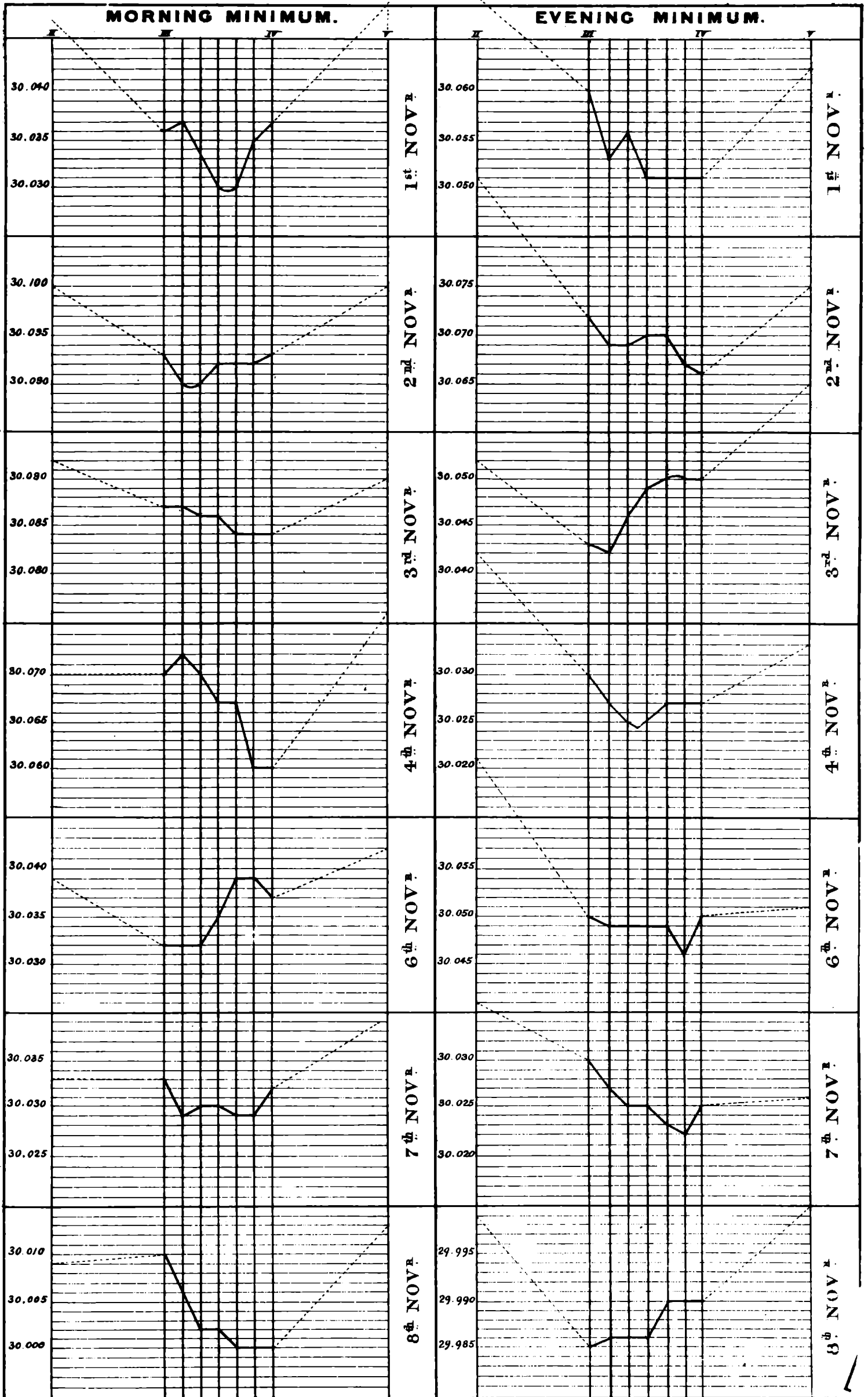
MORNING MAXIMUM.

EVENING MAXIMUM.



30.072

30.075



rock (Prinsep's Journal 1837, page 1080,) is styled *Maha-meghavahna*, or the great one borne on the clouds. This last title, according to the *Trantra* portion of the *Kahgyur*, or Bauddha scriptures of Tibet, (Prinsep's Journal, vol. I. p. 389) is also given to a *Buddha*, in subjection to whom the *Nagas*, or serpents, are assigned the charge of the rains.

Not many years since surprise was expressed that figures common to the Bauddhas and Brahmans should have been found in the *Indra Sabha* at Ellora ; but with our present extended knowledge of the principles of both religions, and the testimony of Bauddha inscriptions, that the latter system, like that of the Brahmans, admitted the worship of *Indra* and the elements, we can easily account for the ultimate approximation (as exhibited in the caves of Ellora,) of systems originally distinct.

The last inscription which is given by Mr. D'Ochoa's plate, and not inserted in Mr. Westergaard's, is not quite so distinct as the others, and I am therefore doubtful of its real meaning. It may perhaps be read,

Raddhasavahanya sntasattamsugata danam :

and translated —

“ A gift to the vehicle of Raddha (the perfect one) the Sugata (Buddha) eternally gone.”

ART. VII.—*Meteorological Observations.* By DR. BUIST.

Dr. MALCOLMSON, *Secretary to the Bombay Branch of the
Royal Asiatic Society.*

SIR,—I have the honour to enclose a paper of miscellaneous remarks on observations, now in progress at the Observatory, which seem likely to establish several laws in reference to atmospheric pressure, which have hitherto been mistaken or overlooked.

The first of these erroneous impressions is, in reference to the period of extreme pressure ; which seems to be at least an hour earlier than is generally supposed. The second, that the Barometer does not, as usually imagined, attain its extreme point of maximum, and then, after a pause of definite duration, return on its path ; but oscillates to and fro

for the space of nearly an hour before it begins steadily to return from the point of maximum or minimum range.

It seems likely to be made out, by further observations that those oscillations follow a definite law, connected with the various seasons of the year.

The observations extend over much too limited a period to permit me to lay down any general law, established by them beyond controversy, and as yet they are to be esteemed provisional only, and are little calculated for publication : and I have taken the liberty of troubling you with them now, because the uncertainty of my tenure of office at the Observatory, may by and by preclude me from having access to its records.

I have the honour to be, Sir,

Your most obedient Servant,

GEO. BUIST.

There are few points on which the opinions of mariners are more conflicting than on the subject of the absolute value of indications, which Meteorological instruments give, relative to atmospheric changes in the more tranquil portions of the tropical ocean, rarely visited by storms more violent than the gales attending the change of the monsoon, and which are more or less prevalent throughout the rainy season. Amongst the navigators chiefly voyaging to the north of the line, and betwixt the coasts of Africa and India, the Barometer itself is very little heeded. The most striking illustration of indifference to this subject is to be found in the fact, that while the ships of the Royal Navy are provided with meteorological instruments almost as invariably as with anchor or cable, a compass or charts—and no really well found merchantman ever goes to sea without them,—the Indian Navy, mustering thirty armed vessels in all, of which one-half are steamers, are (unless in the case of those which have been built and fitted up at home) almost totally destitute of meteorological instruments of any description : and those which have been provided with Barometers from the Company's stores had, considering their quality, almost as well be without them.

The reasons assigned for the general disregard of the Marine Barometer in these seas are, that its indications are not trustworthy—that it hardly seems to stir on the approach of a storm, unless this amounts to an actual hurricane. The Sympiesometer is put aside for purely the opposite reasons, that it is too sensitive ;—that it keeps the

mariner in a constant state of alarm ;—and that when it sinks most rapidly no such result as that which was apprehended ever ensues. The neglect with which this valuable instrument has been treated by the Committee of the Royal Society, on Physics including Meteorology, and who have excluded it from the list of instruments directed to be kept at all Magnetic Observatories, has unhappily given countenance to the disregard with which the Sympiesometer is treated within the tropics ; but I shall, I trust, be able to show that there is a strong probability that by its use, the best established, striking, and inexplicable facts in Meteorology,—the hour of the occurrence of the maxima and minima of atmospheric pressure, indicated by the semi-diurnal fluctuations of the Barometer, will receive, as to matter of time, a very material modification.

It is stated by the Baron Humboldt,* on the authority of Mr. Horsburgh,† that during the rains the indications of the atmospheric tides are occasionally interrupted altogether ; and, that, though manifest on the open sea, they vanish all along the coast. Our experience at the Observatory is so completely at variance with this, that throughout the monsoon during the past two years, when hourly observations have been most carefully conducted, we have found the atmospheric tides at all times as distinct and regular in their appearance, and nearly as considerable in their range, as during the steadiest weather in the fair season. At Poonah during the rains, I carried on a series of hourly observations for three weeks continually, during part of August and September 1841, and found the tides in a great measure independent of the weather.

The hours of maxima are betwixt 9 and 10 A.M. and P.M., and of minima betwixt 3 and 5 A.M. and P.M., and amongst the desiderata especially pointed to by Humboldt is the determination of the precise moment when the mercury reaches its maximum elevation, the length of time when it remains there, and the instant at which it begins to descend. In furtherance of this inquiry a series of observations, commencing 10 minutes before 9 and terminating 10 minutes after 10 A.M. and P.M., in like manner in reference to the hours of maxima and minima, has just been commenced, from which the unexpected fact has been elicited, that the Barometer, instead of attaining a definite point, and then, after a period of repose, returning on its path, oscillates for the space of nearly an

* Personal Narrative, vol. VI., Part II., p. 706—English Edition, 1826.

† Nicholson's Journal, Vol. XIII., p. 20.

hour backwards and forwards. These oscillations, in all likelihood, follow some definite law, which it will at all events require the observations of a twelve-month to demonstrate. The subjoined curves give the results of the last eight days' observations, corrected for temperature capillarity, &c., and read to thousandths of an inch. The remarkable fact to which I propose directing attention, refers to the indications of the Sympiesometer, which, in steady weather, invariably rates its maxima and minima at least an hour before the Barometer. To say that this arises from the superior sensitiveness of the instrument, is to conceal a most important fact under unmeaning commonplace. Of course it is from this the manifestation arises, but then the manifestation itself proves that the periods of greatest and least pressure, as assumed from Barometric observations only, have been set down an hour too late by meteorologists: that instead of the former being from two to three hours, they are from three to four hours before noon and midnight; and instead of the latter occurring from four to five hours, they happen within three or four hours after these periods respectively. Both of these statements are of course to be received with this much of caution—that as yet they are based on a very limited number of observations, though these, as far as they go, are in a great measure free from anomalies. I have now commenced a series of observations on the Sympiesometer, conducted with similar frequency to those on the Barometer; so that while throughout the day and night we shall have hourly observations without interruption, we shall for 8 hours out of the 24, have readings of both instruments taken with the utmost care every ten minutes.

Should the results of these be as hitherto, not only will an important fact be added to our stock of information on a subject which has of late been matter of special attention,—through the means of an instrument hitherto too little consulted on the more rigorous portions of research,—but the system of observation now commenced, may probably evolve in some definite and systematic form, the amount of interval generally intervening betwixt the pressure of the air as indicated by the mercurial column and the same thing as made manifest by the oil of the Sympiesometer.

To revert to the subject with which these observations opened:—the distrust, from opposite causes, manifested by mariners, in the eastern seas, in the two instruments under consideration, arises, in the first place,

from the extreme imperfection of the Barometers supplied on board of ships. Many seldom read, even by help of a vernier, lower than hundredths of an inch,—and that often so inaccurately that the vernier itself will hardly give precisely the same readings at any two points of the scale: they are destitute of all means of pointing out the neutral or zero point in the cistern, as well as for making corrections on account of expansion. Beyond the tropics these imperfections are comparatively little felt: there the casual range amounts to betwixt two and three inches, here it is seldom one-tenth of this; here, again, our daily range often exceeds a tenth, there, it rarely gets beyond a hundredth; here, our daylight range is about double, there, it is scarcely half that nearest the hours of darkness. The Barometer here, if properly constructed, may equally subserve the requirements of the mariner when its signs are understood, though these signs be different entirely from those which it elsewhere gives out. So with the Sympiesometer: it occasions alarm from the very circumstance of its sensitiveness, which ought to be considered its great recommendation. It is occasionally employed in place of the Barometer, and is always compared or contrasted with it—not with the view of attaining any sound result, but to show how little is to be got out of it, because the language it employs and the tones in which it speaks are different from those of its mercurial neighbour. When the Barometer whispers, the Sympiesometer shouts or screams; when the former is silent, the latter whispers: but what of that, if we know how to interpret them—if we avoid mistaking vivacity for folly, and take the indications in the shape they are given, and for as much as they are worth.

If these errors be avoided in coming to the conclusions desired to be attained, the two may form an invaluable combination, when a little careful observation shall have shown us the precise value of the indications of the one when converted into corresponding expression of the other.

With a view to assist in carrying out these latter ends to some practical available purpose amongst the shipping of our port, I some time since addressed one of the best of our meteorological instrument makers on the subject—Mr. Adie, of Edinburgh, by whom I have been very extensively supplied since my arrival here; and found that the very finest marine Barometers, free of all the defects above adverted to, with the means of obtaining all the requisite corrections for the most delicate ob-

servations, and with scales reading to thousandths of an inch, could be had in numbers betwixt five and six guineas—Sympiesometers of similar quality being procurable for like price.

ART. VIII.—*Bibliothæcal notices of important book collections in India and the East.* By THE SECRETARY. NO. I. MIYAN MAHOMED PANAH'S ARABIC AND PERSIAN LIBRARY AT KACH-BHUJ.

While much has been done to illustrate the civil and natural history of this great and extensive country, much yet remains for individuals to effect in bringing into one well digested summary of information the scattered subjects of knowledge we now possess relative to the Antiquities, Geography, Palæography, Philology, religious and civil History of this and the neighbouring countries of Asia. We can scarcely indeed fail to observe that wherever in the East we may be located by circumstances, abundant subjects of interest present themselves for investigation; and that the traveller, least learned in antiquities or languages, can, by copying inscriptions or obtaining lists of book-collections, supply abundant materials for the exertions of others. It is generally believed, and not without foundation, that while large and important collections of books on Sanskrit, Arabic, and Persian literature, have been carried to Europe, many now existing collections, in India and the East, pass unheeded by resident Europeans or are barely known. A rare and valuable collection of Arabic authors, particularly those relating to the crusades, is said to be kept in the mosque of *Omar* at Jerusalem; extensive libraries of books, on the subject of the Jaina faith, have been described by Colonel Tod, as existing at Jessalmir and Anhalwara Pattan; and like important libraries, relative to the Bauddha religion, are to be found in Tibet, Ceylon, and China.

In devoting part of this Journal to the head of *Bibliothæcal notices*, we trust the Society may be favoured with as many communications on the subject of Indian book-collections in Sanskrit, Prakrit, and Persian, as may be in the power of gentlemen, variously distributed over the country, to give. Such will supply the Orientalists of Europe with *desiderata* long looked for, and may prove of utility to officers in the

service, who devote their leisure time to the illustration of yet obscure points in the religious opinions and history of India. Should we be supplied with descriptive catalogues from various parts of the country, we will be happy to make known the labours of our correspondents on such subjects; and in the absence of better information, we now insert a list of the books composing the Arabic and Persian library of the deceased Miyan Mahomed Panah, which was kindly supplied many years ago by Captain Postans, and is well worthy the attention of those wishing to have copies of such books.

THEOLOGY.

A. Commentaries on the Kuran, chiefly Arabic.

No. 1 تفسیر کشاف — دو جلد

Tafsir Kashaf, in two volumes. Author's name is not mentioned, but this is a Persian translation and commentary on the most esteemed of Arabic commentaries on the *Kuran*, namely, the *Kashaf*, which was written at Mekka sometime about A. D. 1143, and the author of which was Imam Abul-Kasim, the son of Omar-al-Zamakhshary.

No. 2 حاشیه سید یمنی بر کشاف — ایک جلد

Marginal notes on the *Kashaf*, by Saiyad Yemani, in one volume.

No. 3 ایضا حاشیه کشاف — ایک جلد

Marginal notes as above; one volume.

No. 4 حاشیه سعد الدین تفتازانی بر کشاف — ایک جلد

Hashiya Kashaf Saad-ad-din Tuftazani, one volume.

The author of this well known commentary was Saad-ad-din, the son of Masaud-bin-Omar Tuftazani, who died A. D. 1389.

No. 5 تفسیر بیضاوی — چهار جلد

Tafsir Baizawy, four vols.—The light of revelation, being a Persian translation of, and commentary on the *Kuran*, according to the *Sunny* faith. The author of this work was Nasir-ad-din Abu Said Baizawy, Kazy of Shiraz, who died A. D. 1292.

No. 6 تفسیر مدارک — سر جلد

Tufsir Mudarik, in three vols. This is an esteemed Arabic commentary on the *Kuran*, by various authors.

No. 7 تفسیر معالم التنزیل — دو ربع

A commentary on the truths of the world above, as explained in the Kuran.

No. 8 تفسیر انوار التنزیل و اسرار الناول — ایک جلد

A commentary on the lights of revelation, and the secrets of dreams, in four vols., the author's name not mentionned.

No. 9 تفسیر جلال الدین کہنہ — ایک جلد

A commentary by Jalal-ad-din Kohnah; one vol. This, as would appear, is the commentary on the Kashaf, written in Egypt by the celebrated Shaikh Jalal-ad-din-as-Saiyuti.

No. 10 تفسیر و چیر — ایک جلد

Another commentary with additions on other subjects.

No. 11 تفسیر سعدي ربع آخر — ایک جلد

Another commentary not described.

No. 12 تفسیر اصمعي بر سورة يوسف — ایک جلد

Another commentary, and not described.

No. 13 تفسیر نیشاپوري تمام — ایک جلد

Tafsir Naishapuri, one volume, not described.

No. 14 تفسیر نیشاپوري — ایک جلد

Another commentary as above.

No. 15 قرآن مجید خوش خط — پنج جلد

The Kuran of the mosque in fine writing; five volumes.

No. 16 ترجمہ قرآن مجید نصف اول فارسي

The translation of the above into Persian; the first half completed.

No. 17 تفسیر حسيني — چهار جلد

Tafsir Hussiny. A Persian translation of, and commentary on the Kuran, according to the Shiah copy.

There are other nineteen volumes of various commentaries, which being of no great note need not be described.

B.—On the science of reading the Kuran. قسم دویم در علم قرأت

In this division there are ten small volumes and treatises of various

kinds on the science of reading the Kuran, performing the necessary prostrations, and pronouncing the *Khutbah*, or oration and prayer delivered every Friday for the reigning king.

C.—*Traditions.* قسم صیوم علم حدیث

No. 18 صحیح بخاری — ایک تمام و ایک نصف جلد

Sahih-al-Bokhary. This book, next to the Koran, is considered an authority in spiritual and temporal matters; and embodies the traditions, relative to the relations, actions, and sayings of the prophet Mahomed. It also enumerates the miracles, and relates anecdotes of the ancient prophets. One volume is complete, and of the other there is only one half. The author of this celebrated work was Abi Abdallah-bin-Ismail-al-Bokhary, who died A. D. 869.

No. 19 نصف اول صحیح مسلم — دو جلد

Sahih Muslim, in two volumes, being the first half of the work. This is a collection of traditions, by Muslim-bin-Hijay Naishapury, who died A. D. 874.

No. 20 مشکوٰۃ شریف تمام کمال ایک

Mushkat Sherif complete. This is a commentary on the *Masabih*, of Abu Mahomed-ibn-Masaud-al-Baghavi who died A. D. 1122. Besides the traditions relative to the prophet Mahomed, it embodies portions of ancient history. The author was Shaikh Wali-ad-din Abdallah, the son of Abdal Hamid of Tabriz.

No. 21 مشکوٰۃ شریف نصف نصف — چار جلد

About one-half of the four volumes of the above work.

No. 22 مصابیح بخط جدید

The *Misabih* of Abu Mahomed-ibn-Masaud-al Baghavy.

No. 23 شمایل نبوی — دو جلد

Shamail Nabuwi, in two volumes. These contain the memoirs of Mahomed.

No. 24 کنوز الحقائق

Kanz-al-Hakvik, or the treasurers of truths. This may be probably the same work as the *Kanz-al-Amil* of Stewart's Oriental catalogue, and if so, contains anecdotes of the ancient Arab tribes, and the descrip-

tion of several places in Arabia. Moeller, in his oriental catalogue of the Duke of Sax-Gotha's library, at number 133, describes a book called *Mifatih-al-Kanus* or the *Keys of the Treasurers*, which appears to be a commentary on the work described under the present number.

No. 25 حصن الحصين — شش جلد

Hisni Hussin, or the impregnable fortress, in six volumes. This is rather a book of prayer than traditions.

No. 26 خلاصة السير و چهل حديث

The *Chehel Hadis*, or the forty proverbs and aphorisms of the Prophet Mahomed.

No. 27 اربعين حديث بترجمه فارسي — دو جلد

A Persian translation of the above work.

No. 28 چهل حديث نووي و برهان الغافلين — در ايک جلد

The *Chehel Hadis*, and *Burhan-al-Ghafilin*, or the forty traditions and guide to the thoughtless in one volume. The last is probably the same work as the *Tunbih-al-Ghafilin*, or warning to the thoughtless, of which the author is Abu Leis Samarkhandy.

No. 29 مفاتيح الجنان شرح مصابيح

The keys of the Genii, or a commentary on the *Masabih*; author's name not mentioned.

No. 30 سراج الطالبين و منهاج الراغبين

This is usually known by the name of *Minhaj Al Talabin*, a work on scholastic theology, relative to religious duties, written by Muhye-addin Al Nawawi, with explanation of the names of places and words occurring in the book, by his son and commentator called *Siraj-ad-din Omar*, who wrote between 743—758 Hej. or A. D. 1342—1356.

No. 31 شرح فارسي حصن الحصين — دو جلد

A Persian commentary on the *Hisni Hussin*, already described.

No. 32 ترجمه فارسي حصن الحصين

A Persian translation of the last work.

No. 33 غرائب الحكايات

Gharaib-al-Hakuyiat, or extraordinary stories, which appears to be the same work as that called *Majmaa-al-Gharaib*, or the collections of

wonders, which contains the traditionary history of *Balkh* and the *Sassanides*, with the first conquests of the Mahomedans in Khorasan.

No. 34 لبالب الاخبار بترجمه فارسي

Lubab-al-Akhhar, being a collection of traditions, containing moral and religious advice to kings.

No. 35 جامع الحكايات خلاصة الاحكام — در ايک جلد

The first work in this collection has been already described, being, as would appear, the same with the *Gharaib-al-Hakayat*. The author was Hussain-bin-Asad, who dedicated it to Mahomed Taher the IV. of the Taherites of Khorasan, who lost the throne about Hej. 259 A. D. 872: and at a period when the history of *Balkh* and the *Sassanides* must have been well known to the inhabitants of these countries.

In the above division there are fifty-two other works of the same kind which we need not now describe.

II. JURISPRUDENCE. قسم دويم در علم فقه

No. 36 آداب المتعلمين امام محمد غزالي

Adab-al-Mutaalamin, or the duties of the learned, known as the work of Mahomed Ghazzali, a celebrated Mahomedan doctor of law. This is the same work described by Moeller in folio, No. 171, in the Duke of Saxe-Gotha's library; and again, by De Lacy, in the national library of France, (see *Chrestoniathie Arabe*, Tome III. p. 133).

No. 37 هدايه تمام — ايک جلد

Hedayah, complete in one vol. This work, which is generally used in the English Mahomedan law courts of India, was written by Shaikh Burhan-ad-din Ali of Marghinan, in Transoxiana, about the year A. D. 1135. It is a digest of the most approved works on Mahomedan Jurisprudence.

No. 38 بحر الدقايق — جلد اول و سيوم

Bahar-al-Dakaiyak, the first and third volumes of the work. This is a well known commentary on the work of Hanifah, commonly called *Kanz-al-Dakaik*, or the treasure of subtleties.

No. 39 معدن الحقايق شرع كنز الدقايق

Maadam-al-Hakrik, or the mine of truths. This is another commentary on the *Kanz-al-Dakaik*, similar to the above.

No. 40 فتاوى عبد الله از اول ناقص

Fatawah Abdallah, wanting the beginning. This is the work of Mahomed Abu Abdallah Badr-ad-din-Zerkashi, written in Hej. 873, A. D. 1468.

No. 41 فتاوى عالمگيري

Fatawah Alamgir, the judicial ordinances of Aurangzeb.

No. 42 فتاوى خلاصة الفقه نصف اول

Fatawah Khulasah-al-Fikh, the ordinances, or an abridgment of law ; of which there is only the first half.

No. 43 مجمع البحرين شرح قدوري

Majma-al-Bahrain, or the junction of two seas, being the same as the *Kitab-al-Bahrain* No. 119 of Moeller's catalogue. It is a commentary on the work of Ahmad-bin-Mahomed Kaduri, who died A. D. 1049. The work of the latter is called *Adab-al-Kazi*, or the duties of a magistrate.

No. 44 بدرالنير شرح جامع صغير

A commentary on the smaller body of traditions contained in the work of *Jalal-ad-din As Saiyuti*. It is the same as No. 71 of Moeller's catalogue.

No. 45 كنزالدقايق

Kanz-al-Dakaik, a copious digest of the Mahomedan law, according to the doctrine of Imam Abu Hanifah, one of the great law doctors of Mekka, who died A. D. 767. The author of this work was Imam Abdal-Barkat Ata Allah-bin-Ahmad Hafiz-ad-din-Nessafy, who died A. D. 1310.

No. 46 مجموعه رخناني — سر جلد

Majmui Khani, a treatise on the duties of prayer, purification, and alms, illustrated by quotations from the Kuran. The author was *Kamal*, who wrote during the reign of the Emperor Akbar.

No. 47 روضة الفايق

Rauzat-al-Faik. This is a law book, according to the doctrine of the Imam Shafai, written at Damascus by Kazi Zakaria about A. D. 1271.

No. 48 مقامات حريري

Makamati Hariri, a work containing oratorical and moral discourses

by Abu Mahomed Kasim, the son of Ali-bin-Osman Hariri of Bassorah, who died A. D. 1121.

No. 49 شرح كفايه

Sharah Kufaiyah.—This is a commentary on the *Hedayah*,—written by Imam-ad-din, the son of Amir Ali.

No. 50 شرح مرادب

Sharah Muahib.—This appears to be improperly included among the law books, as it is a commentary on a work which comprises a history of the first forty years of the prophet Mahomed's life, previous to his assuming the prophetic character.

No. 51 كتاب فقه در مذهب شافعي

A book of law agreeably to the doctrines of *Shafai*, one of the four learned doctors of Mekka.

No. 52 قدوري

Kadury.—This is the work called *Adab-al-Kasi* or the duties of a Magistrate, which has been mentioned under a former number.

No. 53 تحفة النمايح

Tokfat-al-Nasayah.—Another commentary on the work of *Kaduri*.

No. 54 شرح سراجه

Sharah Sirajiah.—This is a treatise on the law of succession and inheritance: by the author Sirraj-ad-din Sejawandi.

No. 55 مجموع فرایض

Majmuai Farais, or a compendium of law regarding inheritances.

No. 56 توضیح

Tausih.—This work is an illustration of the fundamental principles of the common law derived from the Kuran, and generally called *Asul*, or the roots.—Besides the books described in this class there are ninety-three other works on the subject of law.

III.—METAPHYSICS AND RHETORIC. . . كتاب علم معاني و بيان

No. 57 تلخیص

The *Talkhis.*—A celebrated work on Metaphysics and Rhetoric, by

Jalal-ad-din Katib Damashki, a native of Kazwin in Persia, who died A. D. 1338.—It is a commentary on the *Miftah-al-ulum*, or the key to the sciences, written about A. D. 1228.

No. 58 مطول

The *Matuwal*.—This is a diffuse commentary on the *Talkhis*, the work described under last number.

No. 59 حاشية مطول

Hashiah Matuwal.—Marginal notes on the above work.

No. 60 شرح تلخيص

Sharah Talkhis.—A commentary on the *Talkhis*.

No. 61 عبد الحكيم حاشية مطول

The marginal notes of Abdal Hakim on the *Matuwal*.

No. 62 هداية الحكمت

Hidayah-al-Hikmat; or the guide to Philosophy, by Ibn Asir, and containing essays on Logic, Metaphysics, and other branches of knowledge.

No. 63 حكمت العين

Hikmat-al-Ain, or the fountain of wisdom, an esteemed treatise on general Philosophy, written by Najam-ad-din Kazwini, who was the friend of the celebrated Nasir-ad-din Tusy, who lived about A. D. 1277.

No. 64 شرح حكمت العين

Sharah Hikmat-al-Ain, a commentary on the above work: author's name not given.

IV. MEDICINE, AND NATURAL PHILOSOPHY. كتابهاي علم طب و حکمت

No. 65 ميزان طب

Mizani Tib, or the balance of nature, containing treatises on heat, cold, drought, moisture, and pregnancy.

No. 66 مخدع الطب

Mukhtasir-al-Tib.—This is not described, but is probably an abridgment of the work of *Jalinus* or Galen.

No. 67 تحفة المومنين

Tohfah-al-Mominin, the complete science of medicine, compiled from Arabic and Sanskrit, by Mahomed Momin of Delim.

No. 68 قرابادين

Korabidin, or a dispensatory; author's name not mentioned.

No. 69 جامع الفوائد

Jamaa-al-Fawaid, or a compendium of Physic.

No. 70 كفاية منصورى

Kifaiyat Mansuri: being an exposition of the disorders to which the human frame, and particularly that of females is liable, with an essay on the management and care of children: by the author, Mahomed Mansur of Delhi; written about A. D. 1300.

No. 71 قرابادين و زخيرة خوارزم شاهى

Korabadia wa Zakhirah Khwarism Shahi.—A dispensatory and the Royal Treasury of Khwarism.—This is an esteemed general treatise on medicine, embracing the means of preserving health, and acquiring a knowledge of diseases. — It treats of fevers, local complaints, surgical operations, eruptions of the skin, poisons, and medicine.—The author was Ismail the son of Hussain, the son of Mahomed Jurjani, who wrote A. D. 1110.

No. 72 قانونچم عربى

Kanunchah Arabi; the canons of medicine.—This work is undescribed in the list sent me by Captain Postans; but it is probably the same as the *Kanun-fi-al-Tib*, or the canons of medicine, by Abu Ali Hussain, the son of Abdallah-bin-Sina, generally called Avicenna, who was born at Bokhara A. D. 980, and died at Hamadan A. D. 1037.

No. 73 راحت الانسان

Rahat-al-Insan.—A general treatise on medicine, containing prayers and charms for averting sickness.

No. 74 اختيارات بديع

Ikhtiarati Badia.—This work contains a list of medicines, simple and compound, and describes their various uses.—It was written by Ali-bin-Hussain of Baghdad.

No. 75 *مجموعه الصنایع*

Majmuah-al-Senaye, or the repository of arts; describing the manner of making artificial gems, colours, fireworks, dyeing cloths and silks, &c.

No. 76 *تجربات شاهي*

Tajirrabat Shahi.—This is probably the work of Mahomed Mehdi on practical medicine, written A. D. 1756.

There are fifteen other works in this class, of which we omit the description.

V. ETHICS AND SUFYISM. *کتاب علم تصوف و سلوک*No. 77 *چهل کتاب*

Chehel Kitab, or the whole duty of a Sufy student, in forty chapters, by the author, Shaik Mahomed.

No. 78 *شرح غوثيه*

Sharah Ghausiah.—Essays on the world, futurity, and approximation to the Divinity, according to the Sufy doctrines; by the author, Abdul Kadir Jilani.

No. 79 *کیمیای سعادت*

Kinia-i-Saadat, a general System of Ethics, by the author of the *Ahiya*. The author was the celebrated Imam Mahomed Ghazali, of Tus or Meshid, in Khorasan. This was one of the favourite books of the Emperor Akbar.

No. 80 *نشاط العشق*

Nishat-al-Ishk.—An exposition of the Sufy doctrines and regulations; by the author, Abdallah Ansari.

No. 81 *رساله عادل شاهي*

Risalah Adil Shahi.—This work is not described, but must be, from its name, the production of one of the kings of Bijapur, or was written under their reign.

In this class, books of prayer, fundamental principles of faith, and poetical works on Sufyism, have been ignorantly blended into one list: in which fifty or sixty works are enumerated, that need not be described.

VI. GRAMMAR, LOGIC, AND PHILOLOGY. کتاب صرف و نحو منطق و لغات

No. 82 جاربردي شرح كافيه

Jarbardī Sharahī Kafīah.—A commentary on the celebrated Arabic work on Syntax; by the author, Jamal-ad-din.

No. 83 مچمومر منطق

Mujmuai Mantik, or a compendium of Logic; the author's name not mentioned.

No. 84 ترجمه كافيه مير سيد شريف

A translation of the *Kafīah*, by Mir Saiyad Sharif.

No. 85 شرح شافيه

Sharah Shafīah, a very celebrated and scarce treatise on Arabic Grammar, by Nizam-ad-din bin Hussain.

No. 86 ميزان منطق

Mizani Mantik, or the balance of logic.

No. 87 كافيه

The celebrated Arabic treatise on Grammar called the *Kafīah*.

No. 88 حاشيه شرح

Hashīah Sharahī Mulla, or marginal notes on Jamī's commentary on the *Kafīah*.

No. 89 شرح ملا

Sharahī Mulla. Jamī's commentary on the *Kafīah*.

No. 90 حاشيه عبد الغفور

Abd-al-Ghafur's marginal notes on Jamī's commentary.

No. 91 واقيه شرح كافيه

Wafīah Sharah Kafīah.—A celebrated commentary on the *Kafīah* by Jamal-ad-din Amru Osman, the son of Amru, the son of Abubikr, the son of Yunis Almisri, of Egypt, commonly called Ibn Hajib, who died A. D. 1243.

No. 92 تهذيب المنطق

Tahzib-al-Mantik, or the quintessence of Logic, a celebrated treatise on this subject by Saad-ad-din, the son of Masaud-bin-Omar Tuftazani, and author of a commentary on the Kuran, already described.

No. 93 صراح اللغات

Surah-al-Loghat, an abridgment, with explanations in Persian, of the

Sehah-al-Loghat, which was translated, by Golius, into Latin. This is a most useful dictionary of the language, by the author, Abul Fazl Mahomed, the son of Omar, the son of Haled-al-Koraishi.

No. 94 صحاح اللغات

Sehah-al-Loghat, a very ancient dictionary of the Arabic language, and translated into Latin as just mentioned.

No. 95 شرح نصاب الصبان

Nisab-al-Sibyan, or an introduction to the study of the Arabic language, for the use of the young.

No. 96 فرهنگ رشیدی

Farhang Rashidi, a most useful Persian Dictionary, giving the correct pronunciation of each word. It was dedicated to the Emperor Shah Jahan, by the author Abdal Rashidi, the son of Abdal Ghafur-al-Husseni.

There are forty other works under this head, which cannot be now described, as they would occupy too much time and space.

کتابهای نجوم و رمل و هیاه

VII. ASTROLOGY, GEOMANCY, AND ASTRONOMY.

No. 97 ملخص در هیاه

Malakhas-dar-Hayat, or an abridged treatise on Astronomy.

No. 98 کشف الاسرار در رمل

Kashf-al-Asrar dar Raml, or the disclosure of secrets by Geomancy.

No. 99 کتاب در علم اسطرلاب

Kitab dar Ilmi Astarlab, or a book on the science of the sphere.

No. 100 مفتاح الرمل

Miftah-al-Raml, or a key to Geomancy.

No. 101 کتاب در ذکر افلاک

Kitab dar Zikri Afak. A book on the history of heavens.

There are three other works belonging to this class, not here enumerated.

VIII. HISTORY.—کتابهای تواریخ

No. 102 جذب القلوب

Jazb-al-Kalub, a history of the city of Medina, and of Mahomed's Tomb, &c., by the author, Abdal Hak.

No. 103 حبيب السير— نصف اول

Habib-as-Sair.—The history of Mirkhond, the first half complete.

No. 104 هفت اقلیم در دو جلد

Haft Iklim.—A geographical and biographical treatise, by Amin Ahmad Razi; in two volumes.

No. 105 روضة الصفا

Rauzat-as-Saffa.—This is the most esteemed history in the Persian language, and if complete is invaluable.

No. 106 قصص الانبياء

Kissas Al Anbia.—An account of the creation of the world, and a history of the prophets preceding Mahomed: Author, Ibrahim-bin-Ismael.

No. 107 نفحات الانس

Nafahat-al-Ans.—The celebrated abridgment of the Arabic *Tabkat-al-Sufieh*, or lives of the Sufy Shaikhs, by the poet Jami.

No. 108 مطالع الانوار— دو جلد

Mutlaa-al-Anwar.—Anecdotes of the prophet Mahomed, describing his mode of life, by the author Abdul Hak, who appears to have been a cotemporary of Ferishta. It is on the authority of this work, Ferishta asserts, in his introduction to the general history of India, that the Afghans are descended from a race of Copts.

No. 109 روضة الشهداء

Rauzat-al-Shohrda, or the garden of martyrs, describing the murder of Hussain, and the battle of Kerbela.

Besides the above works there are twenty in this class which have not been described; ninety-four different works of poetry and fables, and several books translated into the language of Sindh and the Panjab. In fine it is one of the most complete extant libraries on this side of India.

ART. IX.—*Extracts from the Proceedings of the Society.*

At a monthly meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms on the 10th January, 1844.

The Hon'ble G. W. Anderson, President, in the Chair.

It was proposed by the Hon'ble the President, seconded by Dr. James Burnes, K.H., F. R.S., Vice-President, and the Secretary, and was carried unanimously,—That the name of Sir Jasper Nicolls, K.C.B., one of the founders of the Society, be placed on the list of Honorary Members.

* Dr. James Burnes, K.H., Vice-President, read a paper, illustrated by drawings, on the Anatomy of the Musquitoe, by J. H. Carter, Esq., Assistant-Surgeon, a member of the Society.

A paper on the Tenets of the Armenians, by R. X. Murphy, Esq., was also read.

Dr. Burnes, K.H., Vice-President, presented a brass image, holding a club and bearing an inscription on its breast, which had been found at Babylon by Mr. Assistant Apothecary J. Anderson, of the Euphrates Flotilla. A number of engraved gems found at the same place, and transmitted by Mr. Anderson, were presented at the same time.

The Transactions of the Agri-Horticultural Society of Western India, from 1839 to 1842, were presented by that Society.

An extract of a letter from Mr. Westergaard, Honorary Member of the Society, dated Tehran the 15th November, was read, stating that he had been able, with the aid of a fine telescope, to make a copy of the *Nakhshi Rustam* inscription never before copied; and of which a facsimile had been sent to Major Rawlinson. The Secretary was directed to forward to Mr. Westergaard's address, at Copenhagen, a copy of the *Yaçna* and *Visparad*, as requested by him.

An extract of a letter from E. Blyth, Esq., of Calcutta, stating he had sent a skull of the *Gangetic Gariala*, for comparison with that of the Indus, was read: and several fossil specimens recently discovered at Perim Island in the Gulf of Cambay, were presented.

The meeting adjourned to Wednesday the 14th February 1844.

At a monthly meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms on Wednesday, the 14th February 1844.

The Hon'ble G. W. Anderson, President, in the Chair.

A letter was read, from Messrs. Longman and Co., stating that the copper plates of the three volumes of the Society's Transactions are in their possession, and mentioning the terms on which they are prepared to reprint the same Transactions, in 3 volumes 8vo. with a 4th volume of plates. It was thereon resolved—that the Secretary be authorized to enter into an engagement with Messrs. Longman and Co. for having the Transactions reprinted, in the form, and on the terms specified, provided subscriptions for one hundred copies, at 20 Rupees each copy, can be obtained : and that a subscription paper be accordingly circulated to every member of the Society.

A paper containing Observations on the Geological composition of the hills and alluvial soil from Hydrabad to the South of the Indus, by Assistant Surgeon J. H. Carter, was also read : along with a further notice and drawing of the Sindh musquitoe.

* A paper on the Iron Ore in the vicinity of Malwan, accompanied by specimens, presented by Bal G. Shastree, Esq., was also read.

Specimens of the wood of the Frankincense and Gum-arabic trees, were presented by Dr. J. P. Malcolmson, of Aden : also of the plant which produces Dragon's blood, brought from the mountains of Africa, situated twenty miles inland from the coast, where the Government steamer *Memnon* was lost. This interesting plant appears to belong to a new genus, allied to the *Dracænor* of the Cape-de-Verde Islands. Flowers and fruit of this plant, and of the Olibanum or Frankincense, would be important acquisitions to science.

The following works were presented to the Society, viz.—

By Charles D'Ochoa, Esq., Honorary Member, *Orationes et Epistolæ Isocrates*, Greek and Latin, Paris, 1521.

Raynard de Lally, Paris, 1758.

Copy of the printed report of the Botanic Garden at Calcutta, and three copies of the proceedings of the Board of Education for 1842, were presented by Government.

Letters from the Trustees of the British Museum, and the University-keeper of the Royal Library, Berlin, acknowledging the receipt of the *Vandidad* and *Yaçna*, were read.

The President announced his resignation of the Chair of the Society, in consequence of his being about to return to England ; and expressed his gratification at having been elected to the honourable position he

had occupied, and announced his readiness to further the objects of the Society in England, or in whatever way he might be best able to do so.

It was thereon proposed by Major General D. BARR, and seconded by James Burnes, K.H., Vice-President,—That a special meeting for considering in what manner the Society can best express their sense of the late President's valuable services, should be fixed, by public advertisement, for Friday the 16th instant.

The meeting then adjourned to Wednesday the 13th March 1844.

At a special meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms, on Friday the 16th February 1844.

PRESENT.

JAMES BURNES, K.H., F.R.S., Vice-President, in the Chair.
The Honorable Sir ERSKINE PERRY, Knight.

Members.

THE HON. L. R. REID.
J. P. WILLOUGHBY, Esq.
Lieut.-Col. P. M. MELVILLE.
Maj. Gen. D. BARR.
W. HOWARD, Esq.
W. H. HARRISON, Esq.
A. SPENS, Esq.
JAMES BIRD, Esq., F.R.G.S.

THE REV. G. COOK.
M. CURSETJEE, Esq.
G. BUIST, Esq., L.L.D.
F. SHEPPEE, Esq.
P. W. LEGEY, Esq.
W. ESCOMBE, Esq.
H. FAWCETT, Esq.

The Rev. GEORGE PIGOTT, *Acting Secretary.*

The minutes calling the meeting having been read over, it was proposed by James Bird, Esq., seconded by James Burnes, K. H., *Vice-President* :—

That the Society record their high sense of the obligations they are under to the late President, the Honorable G. W. Anderson, for the zeal and devotion manifested by him, on all occasions, in promoting the best interests of the Society ; and especially for the ability and courtesy with which he has presided over their meetings since his elevation to the chair.

Resolved—That the Acting Secretary communicate this resolution to the Hon'ble Mr. Anderson.

At a monthly meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms on Wednesday the 13th March 1844.

The minutes of last meeting having been read and approved, the following Gentlemen, Cursetjee D. Pestonjee, Esq., E. M. Suart, Esq., of the Civil Service, and Lieut. W. S. Suart, Engineers, proposed at the last meeting, were balloted for and duly elected members of the Society

Captain J. P. Saunders, I.N., was then proposed by Captain H. B. Lynch, K.L.S., I.N., and seconded by J. F. Morier, Esq., M.D.; A. Thompson, Esq., M.D., H. M. 14th Light Dragoons, was proposed by the Vice-President Dr. Burnes, and seconded by James Bird, Esq.

It was directed that in the next circular, calling a meeting of the Society, notice be given that a President will be elected in succession to the Honorable G. W. Anderson.

A letter from Major General Vans Kenedy, accompanying a stone with an Inscription in the Hamaiyaric, or Ethiopic character, from Aden, was read.

* The Secretary laid on the table the concluding portion of the Rev. Mr. Menge's translation of Ehrenberg's treatise on the Coral Rocks of the Red Sea.

A letter from the Honorable G. W. Anderson, in answer to one from the Society, thanking him for the offer of his services in England, was received and read.

The meeting then adjourned to Wednesday the 10th April next.

At a monthly meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms, on Wednesday the 10th April 1844.

The Vice President, James Burnes, M.D., K.H., in the chair.

The minutes of last meeting were read and approved.

A. Thompson, Esq., M.D., and Captain J. P. Saunders, I.N., having been balloted for, were duly elected members of the Society.

Captain H. James, 18th Regt. N.I., was proposed as a member by James Burnes, K.H., Vice-President, seconded by C. Morehead, Esq., M.D.

Dr. Osborne was proposed as a member of the Society by J. F. Morier, Esq., M.D., seconded by the Rev. G. Pigott.

The following resolutions being then proposed, at the meeting, by the Chairman, were seconded by James Bird, Esq., and carried unanimously.

1st. That the Bombay Branch of the Royal Asiatic Society, enter on their records an expression of deep and heartfelt regret for the loss of their Secretary, the late J. G. Malcolmson, Esq., M.D., F.R.S.G.S., a gentleman whose high integrity of character, generosity, warmth of heart, zeal in the promotion of science, and wide and varied acquirements, obtained for him the esteem and respect of all who knew him, and especially of the members of this Society, with whom he was in continual and gratifying intercourse.

2nd. That, with the view of perpetuating a record of these feelings towards the memory of that eminent individual, the Society accord yearly a gold medal, to be designated "The Malcolmson Medal," to the author of the best paper presented to the Society on the Natural History and Literature of India,—points on which the late lamented Secretary evinced the deepest interest.

3rd. That a fund be raised by subscription for the above purpose, among the members of the Society.

The Society then proceeded to the election of a President.

The amendment notified, proposing that the election be made by printed circular, having been rejected—

It was proposed by Dr. Bird, seconded by Colonel J. H. Dunsterville, and carried unanimously,—That the Honorable J. H. Crawford be requested to accept the office of President.

Proposed by James Burnes, K.H., seconded by the Rev. George Pigott, and carried unanimously,—That Colonel G. R. Jervis be requested to accept the office of Vice-President of the Society.

Proposed by James Burnes, K.H., seconded by A. B. Orlebar, Esq., and carried unanimously,—That Dr. Bird be elected Secretary to the Society.

Proposed by the Rev. G. Pigott, seconded by James Bird, Esq.—That A. B. Orlebar, Esq., be elected Secretary for the Museum.

Read a letter from the Curators of the Dublin Geological Society, tendering an exchange of published proceedings, and announcing the despatch of a box of fossils of the carboniferous limestone and other Irish

formations, and requesting to be favoured with such Indian duplicates as the Society may be able to spare.

Resolved.—That the exchange of proceedings be sanctioned, and the thanks of the Society be returned for the fossils despatched, and that the Secretary for the Museum be authorized to forward such duplicates as are available.

Read a letter from G. Buist, Esq., LL.D., in charge of the Magnetic Observatory, Colaba, forwarding, by direction of the Government, lithographed copies of the Meteorological and Magnetic Observations made under his direction, and suggesting that it would be advisable that one of the two copies granted by Government should in future be forwarded as issued monthly, and the other retained in the Observatory to the end of the year.

Resolved.—That the thanks of the Society be returned to Government, and the suggestion of Dr. Buist adopted.

Read a letter, forwarded by the Secretary of the Board of Education, announcing the sanction of Government to the exchange of rooms now occupied by the Board of Education for those in which the Museum is kept.

Read a letter from R. Kirk, Esq., forwarding a box containing varieties of Madrepore lava, from the islands of Jibal-Tor, and other mineralogical specimens from the coasts of the Red Sea.

Resolved.—That the thanks of the Society be returned to Dr. Kirk for the above specimens.

Read letters from Professor Lassen, and Dr. Pertz, Principal Librarian, King's Library, Berlin, thankfully acknowledging the receipt of the copies of the *Vandidad* forwarded by the Society.

The Society directed that notice be given in the next circular, calling the monthly meeting, of the change of the day of meeting, from Wednesday to Thursday.

Dr. Buist read and presented some observations by one of the assistants of the Observatory to the late Secretary, on the springs of Vizrahoy.

The thanks of the Society were voted for the above, and the meeting adjourned to Wednesday the 8th May next.

At a monthly meeting of the Bombay Branch of the Royal Asiatic Society, held in the Library Rooms, on Wednesday the 8th May 1844.

The Hon. J. H. Crawford, President, in the Chair.

The minutes of the last meeting having been read and adopted, Captain H. James, 18th Regt. N. I., and Assistant Surgeon S. Osborne, were balloted for and duly elected members of the Society.

The following resolution, of which due notice was given, was proposed by Dr. Burnes, K.H., Vice-President :—

That the day of the monthly meeting of the Society be changed from Wednesday to Thursday ; and being seconded by Dr. G. Buist, was unanimously agreed to.

Read a letter from Assistant Surgeon Malcolmson at Aden, presenting, on the part of Lieut. Cruttenden, I.N., specimens of limestone from Ras Asser, where the *Memnon* was lost.

Read a letter from the Secretary, to the Asiatic Society, Bengal, acknowledging the receipt of the Vandidad Sade, and offering the Society's services in any way calculated to forward the views, literary or scientific, of the Bombay Asiatic Society. The letter also announced that the Asiatic Society of Calcutta has been pleased to present to the Bombay Society the following works :—The Mahabarata, in Sanscrit, 4 vols. large paper. Harywansa, 1 vol. Ryl. 4°, Raja Tarangini, large paper, and the Naishada Charitra, 4°.

Read a letter from the Colonel G. R. Jervis, acknowledging the receipt of the Secretary's communication that he had been elected Vice-President of the Society, and expressing his high sense of the honor and his gratification in accepting the office.

The Society instructed the Secretary to forward to the Chief Engineer a copy of the letter from the Secretary of the Board of Education, relative to the exchange of rooms in the Town Hall, as sanctioned by Government, and to ascertain what would be necessary for carrying into effect the removal of the Society's Museum to the rooms now occupied by the Board of Education.

* The Secretary then presented and read a paper entitled, " A brief account of the Minor Caves of Beira and Bajah, in the neighbourhood of Karli," given to him in a letter from Mr. N. L. Westergaard, accompanied by copies of the inscriptions, which the Secretary had rendered into English. On the motion of Dr. Burnes, it was resolved to return thanks to the Secretary for the communication now presented, and that it be published in the forthcoming number of the Society's Journal.

The thanks of the meeting were also voted to Lieut. Cruttenden for the Geological specimens forwarded, and to the Calcutta Society for the generous offer of their services, and the valuable books presented.

The meeting then adjourned to Thursday the 13th June next.

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