

LIBRARY OF PRINCETON

NOV 19 2002

THEOLOGICAL SEMINARY



Digitized by the Internet Archive
in 2016

JOURNAL
OF THE
ASIATIC SOCIETY

OF
✓
BENGAL.

EDITED BY
THE SECRETARY.

VOL. XIV.

PART I.—JANUARY TO JUNE, 1845.

Nos. 157 to 162.

NEW SERIES.

“It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of Asia will commit their observations to writing, and send them to the Asiatic Society, in Calcutta; it will languish if such communications shall be long intermitted; and will die away if they shall entirely cease.”—SIR WM. JONES.

CALCUTTA:
BISHOP'S COLLEGE PRESS.

1845.

Contents.

PART I.

No. 157.

	<i>Page.</i>
I.—Mr. Ivory's Tables of Mean Astronomical refractions, revised and augmented by Major J. T. Boileau, B.E. Superintendent Magnetic Observatory, Simla.	1
II.—An Eleventh Memoir on the Law of Storms in India; being the Storms in the Bay of Bengal and Southern Indian Ocean, from 26th November to 2d December, 1843. By Henry Piddington; with a Chart.	10
III.—Proceedings of the Asiatic Society for the month of January, 1845.	i

No. 158.

I.—Translation of the Toofut ul Kiram, a History of Sindh. By Lieutenant Postans.—(<i>Continued.</i>)	75
II.—Védánta-Sara, or Essence of the Védánta, an introduction to the Védánta Philosophy, by Sadénanda Parivrâjakâchârya, translated from the original Sanscrit. By E. Roer, Librarian to the Asiatic Society of Bengal.	100
III.—Note of the course of study pursued by Students in the Sanskrit College, Calcutta. By W. Seton Karr, Esq., B.C.S.	135
IV.—Memorandum on the Ancient bed of the River Soane and Site of Palibothra. By E. C. Ravenshaw, Esq., B.C.S., with a Coloured Map.	137
V.—Proceedings of the Asiatic Society for the month of February, 1845.	xvii
VI.—Officers and Members of the Asiatic Society for 1845.	xxxii
VII.—List of Members.	xxxiii

No. 159.

I.—Translation of the Toofut ul Kiram, a History of Sindh. By Lieutenant Postans.—(<i>Concluded.</i>)	155
II.—Notices and Descriptions of various New or Little Known species of Birds. By Ed. Blyth, Curator of the Asiatic Society's Museum.	173
III.—Observations on the rate of Evaporation on the Open Sea; with a description of an Instrument used for indicating its amount. By T. W. Laidley, Esq.	213

	<i>Page.</i>
IV.—On the Alpine Glacier, Iceberg, Diluvial and Wave Translation Theories; with reference to the deposits of Southern India, its furrowed and striated Rocks, and Rock basins. By Captain Newbold, M.N.I., F.R.S., Assistant Commissioner Kurnool, Madras Territory. With a plate. ..	217
V.—Proceedings of the Asiatic Society for the month of March, 1845. ..	xxxii

No. 160.

I.—Description of <i>Caprolagus</i> , a new Genus of Leporine Mammalia. By Ed. Blyth, Curator of the Asiatic Society's Museum. With two plates. ..	247
II.—Report, by Lieut. E. J. T. Dalton, B.N.I., Junior Assistant, Commissioner of Assam, of his visit to the Hills in the neighbourhood of the Soobanshiri River. From the Political Secretariat of the Government of India. With a map.	250
III.—Notes, principally Geological, on the South Mahratta country—Falls of Gokauk—Classification of Rocks. By Captain Newbold, F.R.S. &c., Assistant Commissioner Kurnool.	268
IV.—An Account of the early Ghiljáees. By Major R. Leech, C.B., late Political Agent, Torán Ghiljáees at Kálát-i-Ghiljáee. From the Political Secretariat of the Government of India.	306

No. 161.

I.—Report, &c. from Captain G. B. Tremenheere, Executive Engineer, Tenasserim Division, to the Officer in charge of the office of Superintending Engineer, South Eastern Provinces; with information concerning the price of Tin ore of Mergui, in reference to Extract from a Despatch from the Honorable Court of Directors, dated 25th October 1843, No. 20. Communicated by the Government of India.	329
II.—A Supplementary Account of the Hazarahs. By Major R. Leech, C.B., Late Political Agent, Candahar.	333
III.—Rough Notes on the Zoology of Candahar and the Neighbouring Districts. By Capt. Thos. Hutton, of the Invalids, Mussoorie. With notes by Ed. Blyth, Curator of the Asiatic Society's Museum. (<i>Continued.</i>) ..	340
IV.—On the Course of the River Nerbudda. By Lieut.-Colonel Ouseley, Agent G.G., S. W. Frontier. With a coloured Map of the River from Hoshungabad to Jubbulpoor.	354
V.—A Twelfth Memoir on the Law of Storms in India; being the Storms of the Andaman Sea and Bay of Bengal, 9th to 14th November, 1844. By Henry Piddington.	357
VI.—Some account of the Hill Tribes in the interior of the District of Chittagong, in a letter to the Secretary of the Asiatic Society. By the Rev. M. Barbe, Missionary.	380
VII.—Proceedings of the Asiatic Society for the month of May, 1845. ..	xxxix

No. 162.

	<i>Page.</i>
I.—Notes on the Religion of the Sikhs, being a Notice of their Prayers, Holidays, and Shrines. By Major R. Leech, C.B., Political Agent, N.W.F. From the Political Secretariat of the Government of India.	393
II.—Notes, principally Geological, across the Peninsula of Southern India, from Kistapatam, Lat. 14° 17' at the Embouchure of the Coileyroo River, on the Eastern Coast to Honawer, Lat. 14° 16' on the Western Coast, comprising a visit to the Falls of Gairsuppa. By Captain Newbold, F.R.S., M.N.I. Assistant Commissioner Kurnool, Madras Territory.	398
III.—On the Meris and Abors of Assam. By Lieut. J. T. E. Dalton, Assistant Commissioner, Assam. In a letter to Major Jenkins. Communicated by the Government of India.	426
IV.—Notice of some Unpublished Coins of the Indo-Scythians. By Lieut. Alexander Cunningham, Engineers.	430
V.—On Kunker formations, with Specimens. By Captain J. Abbott, B.A. ..	442
VI.—An account of the Early Abdalees. By Major R. Leech, C.B. Late Political Agent, Candahar.	445
VII.—Proceedings of the Asiatic Society of Bengal for the month of June, 1845.	lv

Index

TO PART I. VOL. XIV.

	<i>Page.</i>		<i>Page.</i>
Astronomical refractions, Mr. Ivory's Tables of mean—revised and augmented. By Major J. T. Boileau,	1	Kunker formations, with Specimens By Capt. J. Abbott,	442
Ancient bed of the River Soane and Site of Palibothra—Memorandum on the. By E. C. Ravenshaw, Esq.	137	Law of Storms in India: An Eleventh Memoir on the. Being the Storms in the Bay of Bengal and Southern Indian Ocean, from 26th November to 2nd December 1843. By Henry Piddington,	10
Alpine Glacier, Iceberg, Diluvial and Wave Translation Theories; On the—with reference to the deposits of Southern India, its furrowed and striated Rocks, and Rock basins. By Captain Newbold,	217	Law of Storms in India; A Twelfth Memoir on the. Being the Storms of the Andaman Sea and Bay of Bengal, from 9th to 14th November, 1844. By Henry Piddington,	357
Account of the early Ghiljáees. By Major R. Leech,	506	List of Members,	xxxiii
Course of study pursued by Students in the Sanscrit College, Calcutta; Note of the. By W. Seton Karr,	135	Meris and Abors of Assam; On the. By Lieut. J. T. E. Dalton,	426
Caprolagus, a new Genus of Leporine Mammalia; Description of. By E. Blyth,	247	Mergui Tin-ore; Report, &c. from Captain G. B. Trementheere,	329
Candahar and the Neighbouring Districts; Rough Notes on the Zoology of. By Capt. Thos. Hutton, of the Invalids, Mussoorie. With notes by Ed. Blyth,	340	New or Little Known species of Birds; Notices and Descriptions of various. By Ed. Blyth,	173
Course of the River Nerbudda; On the. By Lieut. Col. Ouseley,	354	Officers and Members of the Asiatic Society for 1845,	xxxix
Evaporation on the Open Sea; Observations on the rate of—with a description of an Instrument used for indicating its amount. By T. W. Laidlay, Esq.,	213	Proceedings of the Asiatic Society for 1845,	i-xvii-xxxix-lv
Early Abdalees; An account of the. By Major R. Leech,	445	Peninsula of Southern India, from Kistapatam; Notes, principally Geological, across the. By Capt. Newbold,	398
History of Sindh. Translation of the Toofut ul Kiram. By Lieutenant Postans,	75-155	Religion of the Sikhs, being a Notice of their Prayers, Holidays, and Shrines; Notes on the. By Major R. Leech,	393
Hills in the neighbourhood of the Soobanshiri River; Report of his visit to the. By Lt. E. J. T. Dalton,	250	South Mahratta country—Falls of Gokauk—Classification of Rocks. Notes, principally Geological, on the. By Captain Newbold,	268
Hazarabs, A supplementary Account of the. By Major R. Leech,	333	Unpublished Coins of the Indo-Scyrbians; Notice of some. By Lieut. Alex. Cunningham,	430
Hill tribe in the interior of the District of Chittagong; Some account of the. By Rev. M. Barbe,	380	Védánta Sara, or Essence of the Védánta, an introduction to the Védánta Philosophy by Sadénanda Parivrâjakâchârya, translated from the original Sanscrit. By E. Roer,	100

INDEX TO NAMES OF CONTRIBUTORS

TO PART I. VOL. XIV.

	<i>Page.</i>		<i>Page.</i>
ABBOTT, Capt. J. On Kunker formations, with Specimens,	442	NEWBOLD, Capt. On the Alpine Glacier, Iceberg, Diluvial and Wave Translation Theories; with reference to the deposits of Southern India, its furrowed and striated Rocks, and Rock basins,	217
BOILEAU, Major J. T., Mr. Ivory's Tables of mean Astronomical refractions, revised and augmented,	1	----- Notes, principally Geological, on the South Mahratta country—Falls of Gokauk—Classification of Rocks,	268
BLYTH, Ed. Notices and Descriptions of various New or Little known species of Birds,	173	----- Notes, principally Geological, across the Peninsula of Southern India, from Kistapatam,	398
----- Description of Caprolagus, a new Genus of Leporine Mammalia,	247	OUSELEY, Lieut. Colonel, On the Course of the River Nerbudda, ..	354
BARBE, Rev. M. Some account of the Hill Tribes in the interior of the District of Chittagong,	380	PIDDINGTON, H. Eleventh Memoir on the Law of Storms in India, being the Storms in the Bay of Bengal and Southern Indian Ocean, from 26th November to 2d December, 1843,	10
CUNNINGHAM, Lieut. Alex. Notice of some Unpublished Coins of the Indo-Scythians,	430	----- Twelfth Memoir on the Law of Storms in India; being the Storms of the Andaman Sea and Bay of Bengal, 9th to 14th November, 1844, ..	357
DALTON, Lieut. E. J. T. Report of his visit to the Hills in the neighbourhood of the Soobanshiri River,	250	POSTANS, Lieut. Translations of the Toofut ul Kiram, a History of Sindh,	75-155
----- On the Meris and Abors of Assam, ..	426	ROER, E. Védánta-Sara, or Essence of the Védánta, an introduction to the Védánta Philosophy by Sadé-nanda, Parivrājākachárya, translated from the original Sanscrit, ..	100
HUTTON, Capt. Thos. Rough Notes on the Zoology of Candahar and the Neighbouring Districts of the Invalids, Mussoorie. With notes by ED. BLYTH,	340	RAVENSHAW, E. C. Esq., Memorandum on the Ancient bed of the River Soane and Site of Palibothra, 137	137
LAIDLAY, T. W. Esq. Observations on the rate of Evaporation on the Open Sea; with a description of an Instrument used for indicating its amount,	213	SETON KARR, W. Esq. B.C.S. Note of the course of study pursued by Students in the Sanscrit College, Calcutta,	135
LEECH, Major. R. An Account of the early Ghiljáees,	306	TREMENHEERE, Capt. G.B. Report, &c.,	329
----- A Supplementary Account of the Hazarahs,	333		
----- Notes on the Religion of the Sikhs, being a Notice of their Prayers, Holidays, and Shrines,	393		
----- An account of the Early Abdalees,	445		

OFFICERS OF THE ASIATIC SOCIETY FOR 1845.

—o—

PRESIDENT.

Right Hon'ble Sir Henry Hardinge, G. C. B. Governor General of India.

Vice-Presidents, . . . { The Right Revd. The Lord Bishop of Calcutta.
The Honorable Sir J. P. Grant.
The Honorable Sir H. Seton.
H. W. Torrens, Esq.
Lieut.-Col. W. N. Forbes, B. E.

Secretary, H. W. Torrens, Esq.

Sub-Secretary, H. Piddington, Esq.

—

Committee of Papers.

Dr. J. Hæberlin,	|	S. G. T. Heatly, Esq.
Lieut. A. Broome, B. H. A.	|	W. Grant, Esq.
C. Huffnagle, Esq.	|	W. Seton Karr, Esq., C. S.
Baboo Prosonno Comar Tagore,	|	W. B. O'Shaughnessy, Esq., M. D.

—

Corresponding Members, Committee of Papers.

V. Tregear, Esq.	|	A. Sprenger, Esq., M. D.
Capt. Boileau, B. E.	|	G. G. Spilsbury, Esq., M. D.
Lieut. Phayre, B. N. I.	|	Lieut. Tickell, B. N. I.
Capt. Cunningham, B. N. I.	|	

—

Curator Zoological Department Museum, E. Blyth, Esq.

Curator Geological and Mineralogical Departments and Museum of Economic Geology, } H. Piddington, Esq.

Librarian, Dr. E. Roer.

Accountant and Assistant to the Secretary, Mr. W. H. Bolst.

Assistant Librarian, Mr. J. Tucker.

Taxidermist, Mr. J. Nicolas.

Treasurers, Bank of Bengal.

Agent in London, Professor H. H. Wilson, India House.

Agent in Paris, Major A. Troyer, 55, Rue de la Pepiniere.

Booksellers and Agents in London, Messrs. W. & J. Allen, Leadenhall street.

LIST OF MEMBERS

Of the Asiatic Society of Bengal, on 1st January, 1845.

- | | |
|------------------------------------|----------------------------|
| Alexander, Esq. Jas. | Cameron, Hon'ble C. H. |
| Anderson, Major W. | Campbell, Esq. A. |
| Avdall, Esq. J. | Cautley, Capt. P. T. |
| | Cheap, Esq. G. C. |
| Baker, Capt. W. E. | Christopher, Esq. A. |
| Barlow, Esq. R. | Colvin, Esq. B. J. |
| Barwell, Esq. A. C. | Connoy Loll Tagore, Baboo. |
| Batten, Esq. J. H. | Corbyn, Esq. F. |
| Bayley, Esq. H. V. | Cust, Esq. R. N. |
| Beaufort, Esq. F. L. | |
| Benson, Lieut.-Col. R. | Davidson, Esq. T. R. |
| ——— Esq. W. H. | Dunlop, Esq. A. C. |
| Birch, Lt.-Col. R. J. H. | Durand, Capt. H. M. |
| Birch, Capt. F. W. | Dwarkanath Tagore, Baboo. |
| Bishop of Calcutta, Rt. Rev. Lord. | |
| Bogle, Major A. | Earle, Esq. W. |
| Borradaile, Esq. Jno. | Egerton, Esq. C. C. |
| Boutros, Esq. F. | |
| Bowring, Esq. L. B. | Forbes, Lieut.-Col. W. N. |
| Boys, Capt. W. E. | Fulton, Esq. J. W. |
| Brandreth, Esq. J. E. L. | Furlong, Esq. Jas. |
| Broome, Lieut. A. | |
| Buckland, Esq. C. T. | Gilmore, Esq. Allan. |
| Bushby, Esq. G. A. | Grant, Esq. J. W. |

- | | |
|--------------------------------|--------------------------------|
| Grant, Hon. Sir J. P. | McKilligin, Esq. J. P. |
| ——— Esq. W. P. | Marshall, Capt. G. T. |
| Gladstone, Esq. M. | Mill, Esq. J. B. |
| Goodwyn, Capt. H. | McLeod, Esq. D. F. |
| Ganthon, Esq. R. | ——— Capt. W. C. |
| Grant, Esq. J. P. | |
| | O'Shaughnessy, Esq. W. B. |
| Hopkinson, Capt. H. | Ouseley, Lieut.-Col. J. R. |
| Hayes, Lieut. Fletcher. | Ommanney, Esq. M. C. |
| Heatly, Esq. S. G. T. | Owen, Esq. Jno. |
| Hæberlin, Dr. J. | |
| Huffnagle, Esq. C. | Prinsep, Esq. C. R. |
| Hannay, Capt. F. S. | Pourçain, Esq. J. St. |
| Houstoun, Esq. R. | Peel, Hon. Sir L. |
| Hill, Esq. G. | Prosonoo Coomar Tagore, Baboo. |
| Hickey, Lieut. C. E. | Phayre, Lieut. A. P. |
| Hodgson, Major-General J. A. | Pratt, Rev. J. H. |
| | |
| Irvine, Lieut.-Col. A. (c. B.) | Quintin, Esq. W. St. Quintin. |
| | |
| Jackson, Esq. W. B. | Robison, Esq. C. K. |
| Jenkins, Major F. | Ramgopaul Ghose, Baboo. |
| Jameson, Esq. W. | Ramnath Tagore, Baboo. |
| | Rustomjee Cowasjee, Esq. |
| Karr, Esq. W. Seton. | Rawlinson, Major H. C. |
| | Ravenshaw, Esq. E. C. |
| Laidley, Esq. J. W. | Ryan, Esq. E. B. |
| Lushington, Esq. G. T. | Radhakant Deb, Behadoor Raja. |
| ——— Esq. E. H. | |
| Loch, Esq. G. | Strong, Esq. F. P. |
| | Strachey, Lieut. H. |
| Maddock, Hon. Sir T. H. | Stacey, Lieut.-Col. L. R. |
| McQueen, Rev. J. | Storm, Esq. W. |
| Muir, Esq. J. | Seton, Hon. Sir H. W. |
| Mouat, Esq. F. J. | Sleeman, Lieut.-Col. W. H. |

- Sutchurn Ghosaul, Behadoor Raja. Willis, Esq. J.
Stirling, Esq. E. H. Withers, Rev. Principal G. U.
Spilsbury, Esq. G. G. Walker, Esq. R.
Shortrede, Capt. R. Ward, Esq. J.
Smith, Lieut. R. Baird. Wilcox, Major R.
Stephen, Capt. J. G.

Young, Lieut. C. B.

Tickell, Lieut. S. R.
Thomason, Hon'ble J. *Associate Members.*
Torrens, Esq. H.
Trevor, Esq. C. B. Blyth, Esq. E.
Torrens, Esq. J. S. Long, Rev. J.
Taylor, Lieut.-Col. T. M. McGowan, Dr. J.
Syud Keramat Allee.

Walker, Esq. H.

Oriental Publications for Sale, at REDUCED prices, by the Asiatic Society.

WORKS.	Rs.	Former Price.
Mahábhárata, vol. 1st, pages 831, vol. 2d, pages 868, vol. 3d, pages 859, vol. 4th, pages 1007, royal 4to.	40	48
Large paper do. do.	50	60
Index to the 4 vols. of the Mahabharat complete.	6	1
Harriwansa, 563 pages, royal 4to.	5	6
Rája Tarangini, 440 pages, 4to.	5	20
Large paper, do. do.	8	12
Naishada, 917 pages, 8vo.	6	6
Sausruta, 1st vol. 378 pages, 2d vol. 562 pages, 8vo.	8	8
Fátawé A'lemgiri, 1st vol. 763 pages, 2d vol. 759 pages, 3d vol. 565 pages, 4th vol. 759 pages, 5th vol. 697 pages, 6th vol. 667 pages, royal 4to., per vol.	8	10
Ináya, 2d vol. 690 pages, 3rd vol. 682 pages, 4th vol. 937 pages, 4to.	8	10
Kházánat ul Ilm, 694 pages, 4to.	8	10
Jawáme ul Ilm ul Riazí, 168 pages, with 17 plates, 4to.	4	4
Anis ul Musharrahín, 541 pages, 4to.	5	5
Sharaya-ool-Islam, 631 pages, 4to.	8	15
Tibetan Grammar, 256 pages, 4to.	8	8
Tibetan Dictionary, 373 pages. 4to.	10	12
Asiatic Researches, per vol.	10	12
Burnouf Memoire sur deux inscriptions cunéiformes, 4to. 199 pp.	3	0
Burnouf Commentaire sur le Yacna, with notes &c. 2 parts, pp 945.	10	0

Rs. As.

Burnouf et Lassen, Essai sur le Pali, ou Langue Sacrée de la presquîle au de là du Gange. Paris, 1826, pages 222, 8vo.	3	0
Elémens de la Grammaire Japonaise, par M. M. Rodrigucz et Remusat. Paris, 1825, pages 158, 8vo.	3	0
Ditto ditto Supplément. Paris, 1826, pages 31, 8vo. ... ..	...	...
Contes Arabes, traduits par J. J. Marcel. Paris, 1835, avec notes, vol. I. pages 484, vol. II. pages 496, vol. III. pages 508, 8vo.	3	0
Brosset, Elémens de la Langue Georgienne. Paris 1837, pages 122, 8vo.	5	0
Klaproth, Vocabulaire et Grammaire de la langue Georgienne. Paris, 1827, pages 232, 1st part, 8vo.	4	0
Cronique Georgienne, traduite par M. Brosset, Text and Translation. Paris, 1830, pages 370, 8vo.	3	0
Choix de Fables de Vartan, en Arménien et en Français. Paris, 1825, pages 96, 8vo.	1	8
Elegie sur La Prise D'Edesse, en Arménien. Paris 1828, pages 112, 8vo.	2	0
Chrestomathie Chinoise—Chinese Characters, 1833, pages 183, 4to.	5	0
Meng-Tsçu, texte Chinoise, pages 161v, 8o.	3	0

Oriental Publications for Sale, at REDUCED prices, by the Asiatic Society—(Continued.)

	Rs.	As.
Meng-Tseu, traduction Latine, par S. Julien. Lutetiæ Parisiorum, 1824, pages 593, 8vo.	6	0
Lassen, Institutiones Linguae Pracriticae. Bonnæ ad Rhenum, 1837, pages 167, 8vo.	6	0
Lassen, Anthologia Sanscritica. Bonnæ, 1838, pages 371, 8vo.	4	0
Lassen, Gita Govinda, Sanscrit et Latine. Bonnæ ad Rhenum, 1836, pages 180, 4to.	2	8
Chezy, Yajnadattabada, ou La Mort D'yadjnadatta, Text, Analysis and Translation. Paris, 1826, pages 142, 4to.	3	8
Chezy, La reconnaissance de Sacountala, Text and Translation. Paris, 1830, pages 665, 4to.	10	0
Geographie D'Aboulféda, Texte Arabe. Paris, 1837-40, pages 586, 4to.	8	0
The Travels of Ibn Batuta, translated from the Arabic Manuscript, by S. Lea. London 1829, 143 pages, 4to.	6	0
The Travels of Macarius, translated by F. C. Belfour. London, 1829, pt. I. 114 pages, 4to.	4	0
Memoir of the Emperor Jehanguire, translated from the Persian Manuscript, by Major D. Price. London, 1829, 141 pages, 4to.	4	0
History of the Afghans, translated from the Persian, by B. Dorn, part I. London, 1829, 184 pages, 4to.	5	0
Han-Koong-Tsew, or the Sorrows of Han, a Chinese Tragedy, translated by J. F. Davis. London, 1829, 28 pages, 4to.	1	8
Vocabulary of Scinde Language, by Capt. Eastwick.	1	0
Leech's Grammar and Vocabulary of the Baloochi and Punjabee Languages.	1	0
Points in the History of the Greek and Indo-Scythian Kings, &c. Translated from the German of Professor Lassen, by J. H. E. Roer, and Edited by H. Torrens, Esq.	5	0

 Separate articles of the Journal are also reprinted, and sold at proportionate rates.

JOURNAL
OF THE
ASIATIC SOCIETY.

Report, &c. from Captain G. B. TREMENEERE, Executive Engineer, Tenasserim Division, to the Officer in charge of the office of Superintending Engineer, South Eastern Provinces; with information concerning the price of Tin ore of Mergui, in reference to Extract from a Despatch from the Honorable Court of Directors, dated 25th October 1843, No. 20. Communicated by the Government of India.

SIR,—Agreeably to instructions conveyed in your letter, No. 3018, of the 7th of February last, I have the honor to subjoin such information as I have been able to obtain, concerning the probable cost of the tin ore of Mergui.

2. With the view of ascertaining its value in the home market, I transmitted, about the period of my first report on the tin of this province, a box of average samples of the ore, to a smelting establishment in Cornwall, (Messrs. Bolitho & Co.) having extensive connection with the tin mines of that country. In April 1843, Mr. Thomas Bolitho informed me, that—“The samples of once-washed ore produces about 70 per cent. of tin, and the twice-washed yields nearly 75 per cent. The metal is very good, being almost free from alloy; some of the samples which have been sent to me from the Malayan peninsula contain titanium.

“The ore appears to separate from the matrix very easily.

“The consumption of tin throughout the world increases so slowly, and the supply at present being more than equal to the demand, there is little inducement to speculate in tin mines.

“The produce of Cornwall is 6,000 tons per annum, and we calculate that the quantity produced at Java together with what is raised in the Malayan peninsula, will rather exceed the produce of Cornwall. The average price of tin in Cornwall has been about 72*s.* per cwt., but it is now as low as 56*s.*, which is the present price of the best Straits tin, and tin mines are suffering greatly from the depreciation in the value of their metal.

“It may serve for your guidance to know, that at this moment tin ore of the description of the sample twice-washed, would fetch in England about £ 46 per ton.”

3. The following calculations of the probable result of a shipment of tin ore, and of the metal, have been obligingly made for me by two mercantile gentlemen of Maulmain. They are based on the lowest prices which, according to Mr. Bolitho, were obtainable in the market in April 1843, and show a probable profit on tin ore of 7*s.* 8*d.* per cwt.; but a loss on the shipment of the metal of 12*s.* 4*d.* per cwt. in one case, and 4*s.* 9*d.* per cwt. in the other.

July 1843. *Tin ore* from Maulmain purchased at 45 rupees per hundred viss, equal to 365 lbs.

	£.	s.	d.
45 Rs. per $\frac{1}{100}$ viss = per cwt. 14 rupees, or		0	28 0
<i>Charges.</i>	£.	s.	d.
Duty,	0	3	0
Stout boxes and shipping charges in Maul- } main, }	0	1	0
Freight home £ 2 per ton,	0	2	0
Insurance $2\frac{1}{2}\%$ on 40 <i>s.</i>	0	1	0
Commission and London charges $5\frac{1}{2}\%$..	0	2	2
Interest commission 5 $\frac{1}{100}$ on purchase, ..	0	1	2 0 10 4

		0	38 4
Sale price per Mr. Bolitho,		0	46 0

Leaves a profit per cwt.		0	7 8

July 1843. Tin from Maulmain purchased at 77 rupees per hundred viss.

		£.	s.	d.
77 Rs. per % viss = 23 Rs. 14 annas, or				
per cwt.		0	47	9
<i>Charges.</i>				
Duty,		0	10	0
In Maulmain shipping, &c. per cwt. ..		0	0	6
Insurance $2\frac{1}{2}\%$ or 6%		0	1	6
London charges, viz. commission $2\frac{1}{2}\%$ } Ware-house and Dock dues $1\frac{1}{2}\%$ other } incidental expences $1\frac{1}{2}\%$ } $5\frac{1}{2}\%$ }		0	3	3
<i>Interest on Purchase.</i>				
Six months @ 5 per cent.		0	2	4
Freight @ £ 3 per ton,		0	3	0
		<hr/>		
			0	68
Sale price per Mr. Bolitho,			0	56
		<hr/>		
Leaves a loss of per cwt.			0	12
		<hr/>		

Another calculation of November 1844.

		R.	A.	P.
Usual cost of tin in Maulmain, Rs. 77-8 } per 365 lbs, on Rs. }		23	5	2
Freight to England @ £ 1-10 per ton,			0	12
Duty, @ 10s.			5	0
Shipping charges here and in London, ..			0	8
Commission in London @ £ $2\frac{1}{2}\%$ per cent. ..			0	13
		<hr/>		
			30	6
		<hr/>		
			0	60
Or,			0	56
Assumed price in London,			0	56
		<hr/>		
Leaves a loss per cwt. of			0	4

4. The assumed rate for the ore at Maulmain, 45 rupees per 365 lbs., would be I think subject to a reduction; but that for the metal,

is probably the lowest average. It will be observed also, that the London price of 56*s.* per cwt. is taken at a period of great depression in the value of the article which had averaged 72*s.* per cwt ; but it would nevertheless appear, that to send it to England in the state of clean ore would be by far the safest investment.

5. Many localities in the Mergui province in which the ore exists abundantly, have been already described and publicly made known ; but little or no attention has been given to the subject by merchants of Maulmain. Their business consists principally in timber, piece goods and hardware, and they have no inclination to embark in mining speculations. A small shipment of ore, being part of about 2½ tons collected by convicts and others at the Government expense, was made to England by Messrs. Bilton and Co. of Maulmain ; but the quantity was so small, that no result has been made known by their home correspondent. At Malewan in the Pak-chan river at the southern extremity of Tenasserim, between one and two hundred active Chinamen are engaged in collecting the ore in the streams described in my third report of 8th April 1843, *Journal As. Soc.* Vol. XII. p. 523. They have been very successful, but there is so little communication with that part of the coast that no accurate statement of the result of their annual labours can be obtained. They convert it into metal, which comes with Tacopah and other tin into the Maulmain market.

6. Other localities equally productive and available to the private speculator have been indicated in former reports, and more are becoming known. A specimen recently obtained by E. O'Riley, Esq. from Henzai, north of Tavoy, is forwarded. It is said to be plentiful there ; but, without multiplying instances, sufficient evidence has been recorded of the existence in the Tenasserim provinces of rich stores of the ore of this useful metal, and it has been also shown that there is no obstacle to its profitable production.

Mining or other operations of this nature supported by the Government, have generally proved unsuccessful in India ; but the time may perhaps arrive, when the attention of private capitalists may be turned in this direction.

G. B. TREMENHEERE,

Ex. Engineer, Tenasserim Provinces.

*A Supplementary Account of the Hazarahs. By Major R. LEECH, C. B.
Late Political Agent, Candahar.*

[Drawn up under circumstances of peculiar difficulty.]

A former account of the tribes inhabiting the Hazarajat, was furnished to Lord Auckland's government, and printed with the other papers of the late Mission to Cabool, (Captain Burnes's).

I had hopes of procuring a written history of this tribe which I have reason to suppose exists, when I was obliged to quit Candahar with General Nott's force in August, 1842. It was, if I remember, said to be in the possession of the Chief of the Dai Kundee Hazarahs, whose son was at that time a hostage in Candahar.

The Hazarahs claim brotherhood with Europeans, saying that both are descendants of Japheth, the son of Noah.

The Hazarahs are called Moghuls by the Ghiljyes.

I believe that the Hazarahs in former times were like the Afghans of a subsequent period, planted on the confines of India.

They, I believe, held the high road from Cabool to Candahar and Herat up to comparatively speaking a recent period.

Many of the names of villages in the immediate neighbourhood of Candahar prove a Hazarah founder; and the tomb of one of their progenitors, Choupan, is on the high road between Candahar and Herat near Greeskh: the place is now called Khah-i-Choupan.

In a paper on the history of Kalat-i-Naseer, I mentioned my opinion that the Hazarahs extended as far as Shawl Quetta, from the name Takatoo of the mountain bounding that valley towards Pishing and Candahar; and from Kuchlah (which means caves in the Hazarah dialect), being the first stage from Quetta towards Candahar.

The word "Shev" both in the Hazarah and Brahavee dialects (Koodd-gal) means below, lower; for we find the Shev Hassarrs or lower Hassarrs, distinguished from the Bal Hassarrs or upper Hassarrs.

There is in the neighbourhood of Candahar the shrine of an Hazarah saint, who has the title of Hai-taz, (the rush rider). I have mislaid the detailed account of the miracle that got the saint this title.

The Hazarahs' simplicity is proverbial, and it is probable that they were cheated by the Afghans and Ghiljyes out of quite as much land as they were beaten off.

They hold fire-arms in greater esteem than their rivals, and do not, as they do, trust to the vaunted Toora (sword) entirely. They make excellent powder, and are capital shots; and, strange for a people inhabiting a hilly country, are good riders.

They feel ashamed of their Tartar cast of countenance and want of beards; and I invariably observed that the higher in rank a Hazarah chief was, the less he resembled his race.

They call the Afghans, "Avghoons." Such is their aversion to the Tartar cast of countenance, that it is reported they ask no question of their wives for presenting them with children, the images of some of their Afghan handsome neighbours; and the opportunities afforded a passing stranger, even, by some tribes are said to be most shameless.*

As an instance of their want of polish, I instance the case of a Hazarah chief who visited me in the end of 1841 at Kalat i-Ghiljye. This man resided at so small a distance from town (Candahar), that had he been inclined he might have visited it once a week at least. As his services were required for our garrison, I made him a present of a shawl, and sent him round the fort to see the buildings and the commencement of our fortification. On his return, after signs of great uneasiness in his chair and sundry whisperings with his confidential attendant standing behind him, he at last confessed that he had a request to make before taking leave, if I would not be offended. This was, that in his tour round the fort he had been struck with wonder at a large copper *deg* (cauldron) used by the executive engineer to mix lime (the weather requiring warm water to be used), and that he hoped I would give it him instead (if I liked) of the shawl. It was of the common size used at cooks' shops at Candahar.

The vessel was accordingly purchased for him, and presented after being scrubbed as well as time permitted; and he left with it highly delighted, vowing he would make soup of a whole sheep in it and feast all the tribes. I never heard that the lime had any bad effect on the soup eaters. I have no doubt that this *deg* will after a generation or two have wonderful tales told of it in connection with the Faringees, who built Kalat in the autumn to destroy it in the spring.

* The Afghans give their Dutch build in the following couplet:

" Pushti koonash naghara darad,
Hazarah dumba darad,"

I propose that this account should consist of the different memoranda found in my journal connected with the Hazarahs, according to the order of dates.

Memorandum, 19th July 1839, Candahar.—To the north of the Arifkhanee Baloche of Kejran, (to the north of Teereen) are the Babalee Hazarahs under Husenee-khan, and his nephew Mahmood-khan; and to the north of the Babalee are the Chora Hazarahs; 2000 families under Allee Husen-khan and Mahammad Husen. They are taxed one sheep each house.

Mahmood and his uncle Husenee both live at Zarafshan. Mehdee-khan was the father of Mahmood. The Babalee Hazarahs are reckoned at 5000 houses, and they are said to be able to furnish 200 horse and 300 foot. The Sardars of Candahar collected yearly about 2 or 3000 sheep. The sister of Mahammad Husen-beg Dai-koondee is Mahmood-khan's wife, and Mahmood-khan's sister is the mother of Khairulla-beg Dai-koondee. Gizon, called the Cashmeer of Western Afghanistan, was originally a government post. It is now enjoyed by Mahammad Takee Beg, a Dai-kundee Hazarah. It was through the Hazarahs that the revenue called Sang-o-baz (the goat and stone) became known. When a tribe is next to independent, it is said to pay a stone-and-goat revenue; that is, the collectors of revenue are met with an old lean goat in one hand, and a stone in the other, as much as to say, if you do not put up with this shadow of tribute you shall have this (the stone) on your head.

Memorandum, Chapa-khanna Karabagh, 24th June 1841, and 1st September 1842.—The four Dastaks of Ornee are Tamakee Taltamoor, Doka, and Sagadee. These, with Aldye, Mahammad Khoja, and Meer Mahammad, are sons of Hajee. Their chiefs are Husen-khan, Hasan-khan, and Mahammad Takee-khan, sons of Meer Alee-khan, son of Zakee-khan. The Mahammad Khoja Hazarahs are under Mahammad Husen-khan the son of Gulistan-khan, the son of Abdul Masam-khan. These are the Hazarahs of Karabagh; they are at enmity with the Tarakees, which was amply verified on the approach of General Nott's force to Karabagh in 1842. The Ghiljyes had forsaken their forts from fear of the force, and on coming up to Karabagh the Hazarahs were seen hurrying across the plain on their beasts of burden with empty bags to sack their neighbours' forts. Some of the Hazarahs accompanied the force

one or two marches further, in hopes of getting the contents of the other Ghiljaee forts in advance.

Memorandum, 28th June 1841.—There are four *Dastaks* of Jagharee Hazarahs; Gara'ee, Baghochury, Izdaree, and Attak.

The three other *Dastaks* are Kalandars, Pashahee and Sherdagh. The seven are called Mama. Sultan Bakar is by tribe an Attak; his father was Augoobeg, son of Sufee Sultan: he has four sons, Sharhat-i-Alee, Jamshed, Bijan, and Ismail.

The Arghandah river rises in Malisthan, then comes to Fort Alee Gouhar-khan, then to the Fort of Bakar Sultan, called Sang-i-Mashak, west bank; thence Turgan, west bank; thence Gazah, west bank; thence Bal hassarr, west bank; thence Kunghaitoo, west bank; Shev hasarr, west bank; thence the Tokhees to Siya Sang of the Khan-khels, east bank; thence Mezan, east bank, to Dahlak.

Memorandum, 18th August 1841.—Karez-i-Salai is a Supzee, among the Dai Choupan Hazarahs, his residence is Shae: to the west he has Meerza Sultan Sohbat-khanee Hazarah of Karez and Chalakoor; to the east Uruzghan Gundah Hazarahs; to the north the Khojakais under Tamas-khan; and to the south the Khan-khel Tokhees of Bagh.

The Dai Choupan, in all 2,500 families, are divided into three clans.

Wachak, under Murtuza-khan.

Orasee, ditto, Murza Sultan.

Baintan, ditto, Zardad Sultan.

The Wachaks are divided into four.

Paindah Mahammad, Bubash, Daoozai and Sheerah.

The Orasee are divided into three: Isfandyar, Ghulam-i-Wakee, and Baitamoor.

Baintan had five divisions: Wuttee Murghans, Sherak, Malik Mahammad, and Mahammad Beg, of which are Sult Alee and Zardad Sultan.

The Dai Choupan are originally from Greeshk; the tomb of their progenitor is still in existence, (Khak-i-Choupan.)

Sadelchee was the first chief of Kalat-i-Ghiljye.

Paindah Mahammad, Daoozai, Sohbat-khanee, and Mahammad-zais of Shoee are all Akkaks.

The river of the Paindah Mahammad is Seran, of Meerza Sultan Baghoochar, and of Zardad Sultan Sousah.

Besides the revenue of the Dai Choupans (3,000 sheep, goats and lambs,) that of Chalakoa (a desirable place by all accounts to spend the winter, in preference to Kalat-i-Ghiljye) under Kongharee was 600 sheep, goats and lambs, and 12 Kharwars (120 maunds) of grain.

Memorandum, 15th October 1841 ; Kalat-i-Ghiljye. The boundary between the Kalandar and Jaghuree Hazarahs is at Oloom of the Salai Kalandar Hazarahs ; the place is not on the river Arghandah, it is near, and almost the same as Gardoon-i-Nungoo.

The boundary of the Kalandar Hazarahs and the Tokhees is at Avkhol on the Arghandah, which belongs to the Kalandar Hazarahs.

The places of the Kalandars are Mughailoo, Gardoni Kotal, Oloom, Gardoon-i-Murgo, Doom-i-Sago, Surkh Kol Ablecto, Gardo, Bayh, and Moklai. The chiefs, their titles and residences are Alee Bakheh, son of Ghulam Husen Khan, at Ablecto.

The Kalandar revenue is payable at Ghuznee in hair carpets (palas) and sheep.

Korghushtoo is a place of the Myanishees of the divisions Shekho and Ghulam.

They may be 100 families ; they never regularly paid revenue to the Sardars of Candahar, but are assessable by the king.

The Shekhos are ryots of Zardad, who takes one lamb from each house.

Sheep won't live in their country, but goats will ; they die of rot in the livers immediately it reaches the gall. The cure is the gambelash.

Memorandum, 6th November 1841.—Kalat-i-Ghiljye ; the following is road to Mughaitoo Halan Rabat. Sebandee, Jijgah Gorgaran, Kasalghan on the Arghandah, Mughaitoo.

From Gorgaran Mughaitoo bears west, Hingai east, Bakhtoo north, and Karatash south.

The titles of the Hazarahs are Khan, Sultan, Ikhtyars, Wakee, Meh-tar and Turkhan.

The Kalandars have to their west Ghulam-i-Wakee and Bubash Hazarahs, to the north Uruzghan under Zoulee and Sult Alee, to the east Attah, and to the south the Jalalzai Tokhees.

The Hazarahs of Candahar are on excellent terms with the Parseewans, (I have also heard them called Parsus) those at Candahar were origi-

nally brought from Persia by Shah Abbas the Great; they are of the divisions Ruzbyanee, Zanganah, Burbur and Siah Mansoor.

During the early wars of the Hazarahs and Ghiljyes, the latter burnt the dead bodies of the former that came in their possession, and only discontinued the practice (disgraceful to both parties as men and Mosulmans) on the former retaliating. The system of offering indignity to dead bodies is a favorite one with the Afghans.*

The Hazarahs as well as Ghiljyes do not eat fish, although they agree it was made lawful food by their prophet.

In going down the river Arghandah we were struck with the fine fish in that clean part of the stream, and desired to have some; no one in the whole tribe could be found who knew how to catch them: at last a dyer who poached for his own use, (he was an inhabitant of Candahar, not an Afghan) volunteered his services with small pea-like balls of

* On the very first day that I entered Afghanistan (the Khyber Pass in the autumn of 1837,) I observed that all the bodies of the Sikhs who had been killed near the Pass, (in the battle of Jamrood between Mahammad Akbar-khan and Huree Sing) had been heaped together.

On the breast of the corpse of Goda-khan Momaod Afghan, they lit a fire; he having been killed in our service.

The grave of the first officer who was buried after the army reached Candahar (he was murdered) was being dug into, when the resurrectionists were disturbed by my gardener going to turn water off into the garden, and a repetition of the attempt was alone prevented by my making the owner of the field responsible for the preservation of the tomb.

During the siege of Kalat-i-Ghiljye, the fire that had been kindled to consume the corpse of a Hindoo native officer was extinguished by the besiegers, and the bodies of the camp followers they had cut up were the next day hacked with their spades by the cultivators who came to the spot to turn water into their fields.

The graves of those who were killed in 1839 at Ghuznee were in 1842 found defiled. It became at last necessary on the march to bury under cover of tents, and to use every ingenuity to conceal the spot which in many cases was of no avail, and no preventative against exhumation. I have lately heard that all the graves at Candahar have been opened by Umar-khan, the son of Sardar Kobudil-khan, who intended to burn the mouldering bones with horse litter; but the Mullas obliged him to content himself with scattering them about the plain.

Graves of Mohammadans in Afghanistan are opened for the sake of the shrouds, by a set who are thence called Cafan Kash, and great excitement was occasioned in the winter of 1837 in Cabool, by a young married woman of rank having opened a newly made grave. She had been persuaded that, if she succeeded in giving to her rival (husband's second wife) to eat halwah cooked on the breast of a corpse, she would become the *sufed-bakht* (white-fortuned) or favorite. Hog's lard rubbed in the hair is considered a specific for estranging affection.

flour mixed with gall and Marg-i-Mahee, (the fish-bone nut) which he threw into the stream, the surface of which was soon covered with floating fishes in a state of intoxication, (not dead). Bringing them to land was good fun for the boys who had assembled.

Observing in the crowd of spectators the village Mulla (who are generally half-read) who evidently regarded us as cannibals, I enquired why they did not eat fish; he replied, he could not tell me, but it was undoubtedly lawful food. A good stock of fine large fish being now laid before us, I begged the Mulla to make them lawful eating; this, he ought to have known, could be done by merely dashing the live ones thrice to the ground. He however looked disconcerted at my request, and hesitated. After a short time, during which we all kept our countenances, he called for a knife and was about to cut their throats, when I suggested that the bellies were the proper places; and he actually, after pronouncing his solemn "Bismillah Alláh Akbar," went through this first part of the cook's duty: and, as he looked after us as we departed to breakfast, I have no doubt he said to himself, "These Faringees are after all not such a dirty feeding set of Kafars as they are said to be."

The Hazarahs, notwithstanding the general enmity between the tribe and the Ghiljyes and Afghans, have their friends and allies among them; three Maliks of the Alee-khel Ghiljyes have gone over to Sultan Bakar, the deadly enemy of their tribe, having quarrelled with their brother Malik: their names are Mato, Natho, and Shahabudeen.

The Hazarahs have been driven out of part of their country by the Wardaks (from the stages of Haft Asya, Hyder-khel, Shashgou, &c.) These Wardaks are said to amount to 9,000.

The Hooree Wardaks, who now occupy this part of the road from Ghuznee to Cabool, are divided into three clans; Malee-khel, Badud (Bahadur) khel, and Hyder-khel.

The Malee-khels are divided into Hasan-khel, Hasrah, Muradee-khel, and Shadee-khel.

The Badud-khels into Panchpae Zeerak and Khaja Khidr, and the Hyder-khels into Tokur-khel and Eesa-khel.

The Hoorees are reckoned at 2,000 snookes, or houses.

In their hills there is a grass called Tabarghan that sheep feed on, which imparts a fine flavour to the ghee, milk, and its other preparations.

There is also a red flower, called Sursan, which is boiled, and the strained water used as a cooling drink.

The slaves in Afghanistan are chiefly Hazarahs, and the Afghans say it is as lawful to buy and sell them as negroes.

N. B.—I have, I think, a good account of the Hazarahs dependent on Cabool in my "Vicovitch's Cabool," a work which I hope some day to have time to translate. It is composed of accounts of the different districts of Cabool, drawn up at the request of that Russian agent, during his residence at Cabool in the latter end of 1837 and beginning of 1838.

Rough Notes on the Zoology of Candahar and the Neighbouring Districts. By Capt. THOS. HUTTON, of the Invalids, Mussoorie. With notes by ED. BLYTH, Curator of the Asiatic Society's Museum.

No. 1. *Vespertilionidæ*. Two species of Bats are common at Candahar, a large and a small kind; the latter I preserved in spirits and have sent you, though I fear they are spoiled.¹ This species is very common, and may be seen from February till towards the end of

1. They arrived in excellent condition, and may be thus characterized:

Pipistrellus lepidus, Blyth. Length three inches and one-eighth to three and a quarter, of which the tail measures one and a half; alar expanse eight and a half to nine inches: fore-arm an inch and three-eighths, or a trifle less; longest finger two inches and a quarter; tibia half an inch; foot and claws five-sixteenths of an inch. Ears smaller than usual among the Pipistrelles, measuring from lowermost antea base half an inch, and their tips spreading to an inch asunder; tragus subovate, and curved as usual. Sides of the face very tumid. General colour a light yellowish-clay, pale sandy or isabella-brown; underneath paler: the volar membrane light dusky, and the inter-digital at base towards the wrist, also the tip of the wing, and a broad border between the leg and proximate finger, with the fingers themselves, of the same light hue as the fur of the body.

Captain Hutton's large species is not improbably the *Noctulinia noctula*, v. *N. altivolans*, (White) Gray, common in Europe; for I doubt much the distinction of Mr. Hodgson's *Vesp. labiata* from the *noctula*, and a very closely allied species, if not the same, has been described by Mons. F. Cuvier from Sumatra.

The description of habitat resorted to by the third species is that of *Rhinolophus perniger*, Hodgson, v. *luctus* (?), Temminck, further to the eastward.

It may be remarked here that Elphinstone mentions Monkeys, as found only on the north-east parts of Afghanistan; a statement which does not appear to have been since verified.—*Cur. As. Soc.*

October, flitting about in crowds in the twilight hours of evening; they shelter during the day in holes of houses, walls, and rocks.

The larger kind I have only seen occasionally on the wing, and never possessed a specimen. There is said to be another large kind found in the limestone caverns which occur in the mountains, but I suspect it to be the same.

No. 2. *Felis tigris*. Is said to occur in the jungles of Bhawalpore along the banks of the Sutledge, but I saw no traces of it. In the lower parts of the country, towards Scindh, I do not think it occurs. It is not in Afghanistan.²

No. 3. *Felis leo*. Is said to occur in some parts of Afghanistan; but

2. According to Elphinstone, Tigers are to be met with in most of the woody parts of Afghanistan: and Mr. Vigne remarks that the Tiger is "said to be well known" upon the Sufyd koh mountain. Sir John McNeill saw one killed in Persia, at the foot of the Elboorz mountains, near the Caspian; and Morier states that it occurs in the vicinity of Tabreez, mentioning that he saw the skin of one that had been killed there a short time previously. Old Fournefort relates that the middle region, and even the borders of the snow limit, of Ararat, are inhabited by Tigers(?). He says that he saw them within 100 yards of him, and that the young are caught in traps by the people round the mountain, to be exhibited in shows of wild beasts throughout Persia. At Grusia, at the foot of Caucasus, a large one is mentioned by Kotzebue, and supposed by him to have been driven by hunger from the plain of Baghdad. Mons. Menetries (I think, for I have neglected to cite the authority in my note-book,) relates that—"During our stay at Lenkowa, I had the good fortune to obtain a Tiger that had been killed only fifteen versts off. It did not appear to differ from the Bengal Tiger, even in the skull. It appears, as I subsequently learned, that one at least is killed every year in the vicinity, having been pursued perhaps by hunters, till it sought refuge in the neighbouring forests of the Kour. It is not, I believe, found in Caucasus, the skins sent thence to Europe having probably been brought from Georgia, whence those of Leopards are also sent." Lt. Irwin states, that the Tiger is found as far as Tashkund, but in that temperate climate he falls much short of the Bengal Tiger in strength and ferocity. Burnes also speaks of "Tigers of a diminutive species," found in the valley of the Oxus; and Humboldt and Ehrenberg observed them so high as the latitude of Berlin: they are said to occur even on the banks of the Oby: and Du Halde speaks of them as common in Tartary and China. In Japan they are stated to be covered with a thick coat of long soft fur. In the Himalaya they reach to an elevation of 8,000 feet, but are rare as far north as Simla, and they are said to be smaller in the N. W. provinces than in Bengal. Dr. McClelland affirms that they are a great scourge to the inhabitants of Kemaon. Referring, however, to the more western portion of the range of this animal, and even to the northern, it is necessary to be on guard against the frequent misapplication of the name *Tiger*, which, in South Africa, for instance, invariably applies to the Leopard, and in S. America to the Jaguar; in Van Dieman's Land even to the marsupial Thylacin: and with respect to a remark above cited, referring to Leopard skins being brought from Georgia to the Caucasus, it may be noticed that Guldenstadt describes the Leopard to inhabit the rocky parts of Caucasus, chiefly to the south, about Tiflis; being of rare occurrence to the northward.—*Cur. As. Soc.*

I doubt it, as I never saw a skin nor any spoils of the animal, nor could I find any one who had seen it.³

No. 4. *Felis leopardus*. This animal is common in the mountainous parts of Afghanistan, and is destructive to flocks and cattle; it seldom attacks man, though the Afghans have a great dread of it. The skins are prized as saddle-cloths, and are thrown over the saddle, with the tail fastened behind to that of the horse.⁴

No. 5. *Felis chaus*, (vel *erythrotis*, Hodgson). This is not an uncommon species on the hills of Quettah and other parts of the country.

N. B.—“Seeah Gosh” is the name of a Lynx in Persia, *i. e.* “Black Ears.”⁵

No. 6. *Felis* — ? A spotted skin of a small Lynx, the only one I saw: it was brought in its present state from the Huzarrah hills.⁶

No. 7. *Felis catus*. The domestic Cat of the Afghans is very similar to that of the hill people in the Himalayan districts, running into all sorts of varieties as to colour, as they do with us, although the most general is a dark grey with black spots and stripes.⁷

No. 8. *Canis* ——. The domestic Dogs of the Afghans vary according to the climate. In the hilly tracts they are large and fierce;

3. Elphinstone remarks, that the only part of Afghanistan where he had heard of the existence of Lions, was in the hilly country about Cabool, and there they are small and weak as compared with the African Lion. “I even doubt,” he adds, “whether they are Lions.” The Lion is well known to occur, however, both in Persia and in Western India; and, according to Lieut. Irwin, some are found as far as Tashkund, in a northerly direction and an easterly. *J. A. S.* viii, 1007.—*Cur. As. Soc.*

4. A Candahar specimen forwarded by Captain Hutton is of moderate dimensions, with rather long fur, very pale in colour, and the spots a good deal ringed, including those along the back line.—*Cur. As. Soc.*

5. This is the *Felis caracal*, Schreber, of which the Society has lately received a specimen, killed at Jeypoor, from Captain Boys. It extends sparingly over the Upper Provinces, but appears not to occur in the peninsula of India: westward it inhabits Syria, and the whole of Africa from Barbary to the Cape of Good Hope. *F. chaus* is common throughout India, from the Himalaya southward; and extends even to Arracan.—*Cur. As. Soc.*

6. This seems to me to be the British Wild Cat (*Felis sylvestris*, Aldrovand, commonly referred, but very doubtfully, to *F. catus*, Lin.; the former not occurring in Scandinavia). Its tail, however, would appear to taper, so far as can be judged from the open skin; whereas the tail of the British Wild Cat does not taper. Judging from memory, of the figure published by Mons. F. Cuvier, I much suspect it to be his *F. torquata*: but the colour and markings are quite those of *F. sylvestris*.—*Cur. As. Soc.*

7. The domestic Cats of India are smaller than those of Europe, and are very commonly of a grey colour without markings, except on the limbs, and some more or less confluent black dorsal lines; the feet and tail being also black, to a greater or less extent. This is a style of colouring never seen in those of Europe (of unmixed breed); and the

and approach somewhat in appearance to the degenerate breed of Bhotan dogs, such as is found in the lower hills of the Cis-Himalaya. Others are not very different from the common village dog of India, except perhaps that the bark is more decided in its tones, and the hair longer. These appear to be the mere effects of climate. There are likewise Turnspits and Greyhounds : some of the latter are good and fleet, with smooth short hair ; others are large and clothed with long silky hair. At Cabool, Pointers are said to occur ; but in the more southern parts I saw none.⁵

true *tabby*, so common in Europe, is never seen in India : I mean the tabby with black ground and broad pale streaks peculiarly disposed ; for the grey with black tiger-streaks is found in both regions, only that the Indian are of a purer grey than the European. The long-haired Kashmir Cats, when dark, are often of the same unstriped grey with black dorsal streaks, feet, and tip of tail, as the Indian ; and, I think, I may add that the Indian are more generally partially or almost wholly white, than is the case in Europe. Wholly black Cats are certainly less common than in England. By the way, Elphinstone states that Cats of the long-haired variety, called *Borauk*, are exported in a great number from Afghanistan, but are not numerous in Persia, where they are seldom or never exported.—*Cur. As. Soc.*

8 Lieut. Wood, in his 'Journey to the source of the Oxus,' p. 396, mentions a breed of Dogs, at Kunduz, called *Tazi*, "which could not but have found favour in the eyes of an English sportsman : it is a breed which, for strength and symmetry, vie with our Greyhound, and in heauty surpass it." Also, he speaks of the "Spaniel, from Kutch, and others of mixed breed, but possessing keen scent, and some of the qualities of our pointers." Lieut. Wood also informs us (p. 374), that "the Wakhun Dogs differ much from those of India, and bear a general resemblance to the Scotch Colly. They have long ears, a bushy tail, and a frame somewhat slender, being better adapted for swiftness than strength. They are very fierce, make excellent watchers, and will fight dogs twice their own weight. Their prevailing colours are black or a reddish-brown ; the latter often mottled. The breed is from Chittrah, and so highly are their game qualities valued, that the Scinde Ameers have their packs improved by importations from this country." To my friend Mr. Vigne, we are indebted for a description of "the Scinde hound, as it is usually termed, which," he remarks, "is a race peculiar to the country, and considerable care, I believe, is bestowed upon the breed. It is a large and fierce animal, smooth-haired and usually white, and with sharp ears : a cross between a thorough-bred mastiff and a greyhound, would much resemble it. In general figure, but with a more savage expression, it is not unlike a large English coach dog : an animal which somehow or other, in the older hooks of Natural History, has obtained the name of the Harrier of Bengal. Although not probable, yet it is not actually impossible, that the original breed may have been brought home by the early European traders from the mouth of the Indus, and that the name may thus have originated in a not unlikely confusion of localities." 'Travels in Kashmir,' &c. II. 411. The same gentleman gives a description of the magnificent sheep dogs of Kashmir, (ibid, II. 149), which however would appear to be identical with the ordinary Tibetan mastiff. Of this race, many are annually brought to Calcutta ; and with them I have seen a dog very nearly resembling the Exquimaux dog, which is found likewise in northern Siberia, where, for purposes of draught, it is fast superseding the Rein-deer.—*Cur. As. Soc.*

No. 9. *Canis aureus* ?, var: I have no specimen. It is abundant along the course of the Helmund and Argandab rivers, at Girishk and Candahar, as also in the Bolan Pass, and appears to be identical with the variety found in the Himalaya. It may perhaps be the "*Oxygous indicus*," of Mr. Hodgson. It is found in packs, and cries at night like those of the plains of India, and in this it seems to differ from the Himalayan variety, for although I have often seen many of the latter together at Simla, I never heard them cry. May not a dread of the Leopard keep them silent in the hills?⁹

No. 10. *Vulpes* [*flavescens*, Gray.] The Fox of Afghanistan, or at least of the southern and western parts, is apparently the same as our Himalayan species, though somewhat less in size.¹⁰ My specimens are all females, and the measurements are as follow, namely:—Length from nose to insertion of tail two feet; tail seventeen inches, equalling three feet seven inches. Height at the shoulder fourteen inches. Another:—Length to insertion of tail two feet; tail seventeen inches and a half, equalling three feet five inches and a half. Height nearly fifteen inches at the shoulder. Farther description I omit, as you can supply it from the specimen sent. The species is numerous in the valleys around Candahar, hiding in burrows and holes in the rocks. The skins are soft, and are made into *reemchahs* and *poshteens*. The price is usually six annas a skin. Called "*Robur*."¹¹

9. Wild Dogs, in addition to Wolves, Jackals, and Foxes, are stated by Elphinstone to occur in Afghanistan. A Nepalese Jackal skin presented to the Society by Mr. Hodgson, appears to differ in no respect whatever from the Jackal of Lower Bengal.—*Cur. As. Soc.*

10. Since writing the above, I have compared the specimens with the Hill Fox, and there appears to be a deficiency in the white tip to the tail in Afghan specimens? T. H.

11. In Afghanistan, according to the late Dr. Griffith, "a large and a small species of Fox appear to exist. The former, which is perhaps identical with the large Himalayan Fox, I procured from Quetta and at Olipore, at which place it is not uncommon. The small kind seems to resemble the Fox of the plains of N. W. India." Capt. Huton's specimen is evidently of the small Afghan species, which is *Vulpes flavescens*, Gray, *An. and Mag. N. H.* 1843, p. 118, and thus described:—"Pale yellowish, back rather darker; face, outer side of fore-legs, and base of tail, pale fulvous; spot on side of face, just before the eyes, the chin, the front of fore-legs, a round spot on the upper part of hind-feet [or rather legs], and the tips of the hairs of the tail, blackish; end of tail white. Hab. Persia." The winter fur is long and soft, and is of two sorts; a shorter and delicate under-fur, which on the back is darkish, passing to white on the sides and under parts, and pure white on the sides of the neck and shoulders in some, in others but partially so; and longer straight hairs, black-tipped, and yellowish-white along the hack, whiter on the sides: the breast and under parts, with the exterior of the limbs above the mid-joint, dusky: ears brown-black to near their base: face ful-

No. 11. *Vulpes bengalensis*. Is common in Cutchee, where, previous to the advance of our army from Shikarpore, I have coursed them with my friend Major Leech, late Political Agent at Candahar. It does not appear to pass the mountains into Afghanistan, or at least I neither saw nor heard of it. “*Loomree*” of India.¹²

No. 12. *Canis lupus*.—Wolves are common in the lower part of the Bhawalpore country, and likewise around Candahar. The dimensions of one from the latter place are thus:—Length, over all, four feet eight inches; height at the shoulder two feet three inches. The female is still larger. It appears to be the common Wolf of India. A pair of these animals crossed my path one morning in Scindh: they were going along at a smart hand-gallop, the largest, or female, leading. “*Bheyriah*” of India.¹³

No. 13. *Hycæna vulgaris*.—This animal is common in Afghanistan. Length to insertion of tail three feet three inches and a half; tail fifteen inches, equalling four feet eight inches and a half. This was a female, and apparently not full grown. I had an opportunity of comparing this specimen with a male from Neemuch, which my friend Dr. Baddeley reared from a cub, and took with him to Candahar. There was no perceptible difference except in size, the Neemuch specimen being the largest. Dr. Baddeley and one native servant were

vescent, with dark patch before each eye: and the tail very hushy, a little fulvescent, and white-tipped. In summer dress, the long hairs have more or less disappeared; and, in a male before me, the inner fur is considerably deeper-coloured than in Capt. Hutton’s female. A third specimen was received from Almorah, but the skin had doubtless been carried to the great Hurdwar fair. As a species, it is very distinct from the Himalayan Fox, and also from another, nearly allied to the latter, from Chinese Tartary, described in *J. A. S. XI, 589.—Cur. As. Soc.*

12. Mr. Elliot remarks of the Foxes of the Southern Mahratta country, that—“It is remarkable that though the brush is generally tipped with black, a white one is occasionally found, while in other parts of India, as in Cutch, the tip is always white.” In Bengal it is invariably black. This animal is identified by Mr. Ogilby with the *Canis corsac*, Pallas, and certainly it agrees with the description of the latter, despite the great difference of habitat.—*Cur. As. Soc.*

13. I believe Mr. Elliot to be right in identifying the Indian Wolf, *Canis pallipes* of Sykes, with the true *C. lupus*, which certainly runs into varieties in the wild state, not only according to climate, but even in the same locality. Those of Chinese Tartary are very pale fulvescent, and are densely clad with matted wool during the winter:—absolutely Wolves in Sheep’s clothing. Two specimens of the latter are in the Society’s collection.—*Cur. As. Soc.*

the only persons who could approach the brute with impunity. It was chained like a dog. I believe it effected its escape during Dr. Baddeley's return to Quetta on his way to Bombay. "*Laggerbagher*" of India.¹⁴

No. 14. *Herpestes griseus*?—Is this our Indian friend? It is very common at Candahar, with precisely the habits of *H. griseus*. The Afghans occasionally tame them, as do the natives of this country. It is called "*Moosh-khoorma*," by the Afghans. "*Nyool*" of India.¹⁵

No. 15. *Mustela [sarmatica, Pallas.]*—This occurs plentifully at Quetta and Candahar, where it burrows in the ground, and produces three or four young at a birth. I had three pairs of these beautiful little creatures living in the same box, and although occasionally a little bickering occurred, yet on the whole they were amicable enough. A few days before I left Candahar (February 1841), I killed and stuffed one of these animals, and the following morning, when a young friend of mine opened the cage for the purpose of taking out another, we discovered that the two remaining *pairs* had waged war during the night with the odd one, whose mate we had stuffed, and had killed and partly devoured it. This is a curious fact, for the three pairs had lived together nearly from their birth, without farther quarrelling than an occasional wrangle over their food; yet no sooner was one pair broken, than the others set upon and killed the odd one. The Afghans call it "*Gorkhus*," or grave-digger, from an idea that it frequents burial grounds for the purpose of feeding on dead bodies. They even suppose that it lives entirely upon human bodies, and that it digs down into the graves where it banquets in undisturbed solitude. This notion, as may readily be supposed, is an

14. According to Vigne, this animal is very rare, if found at all, in Kashmir. Very rarely, also, it occurs in the vicinity of Calcutta.—*Cur. As. Soc.*

15. *Mangusta pallipes*, Blyth. This species is quite distinct from *M. grisea* of India generally, (including Scindh,) having much shorter fur, and approaching nearly to *M. Edwardsii*, v. *auropunctata* of Hodgson, if it be not a mere variety of the latter. It is most probably, however, distinct, and may be known from *M. Edwardsii* by its paler colour, its white throat, breast, and under-parts, which are but faintly tinged with the hue of the upper parts, and also by the light colour of its feet. In form and dimensions, it appears altogether to resemble *M. Edwardsii*.—*Cur. As. Soc.*

absurdity, the animal possessing in every respect the same propensities as its European congeners. Its food consists of birds, rats, mice, lizards, beetles, and even snails, all of which it finds in abundance in the gardens around Candahar. The first I saw was brought to me by a gardener who had dug it out of a hole ; and a pair of these little savages was also found in another garden, where they had brought forth their young in a hole in the earth. The propensity to destroy life, and the thirst for blood, was soon manifested in those which I kept confined.

One of these animals refused to feed during a day and a night, although his cage was plentifully supplied with raw meat and beetles ; but on introducing four Wagtails (*Motacillæ*), he was instantly aroused by their fluttering, seizing and destroying them one after the other as quickly as possible, and then retiring with them into an inner part of the cage, where he regaled himself on the blood of his victims, and indemnified himself for his long fast.

He ate little of the flesh, however, but greedily licked up the drops of blood as they trickled from the wounds of his slaughtered prey. He also destroyed a couple of large Rats (*Arvicolæ*) in a similar manner, showing great skill in seizing them so as to preclude all chance of their either injuring him or escaping from his fierce attack. When the rats were introduced into his cage, he was coiled up asleep in one corner of the inner part, but hearing them bustling about he was soon on the alert, and, cautiously advancing to the small round hole which formed the entrance to his sleeping apartment, took a survey of his unsuspecting visitors. He then drew back as if to avoid observation, until one of the rats approaching his retreat, he suddenly darted upon him and pulled him, in spite of his squeaks and struggles, into his sanctum, where he soon despatched his victim.

After a short pause, he again placed himself so as to obtain a view of the remaining rat, which shortly fared a similar fate to its companion. With the latter, however, there was a severe struggle, and the ferret was obliged to leave his inner apartment ; yet although he rolled over and over in the scuffle, he never quitted his hold, and so dexterously had he seized his prey, that to bite or shake him off was equally impossible. He seized both rats precisely in the same place, namely,

immediately behind the ear, which at once secured himself from injury and soon rendered his foe helpless. When the rat ceased to struggle, he bit him once or twice sharply through the back of the skull, and as the blood flowed from the wound, the ferret lapped it up with his tongue. There was never any attempt to *suck* the blood of his prey, as is commonly but erroneously asserted of his tribe, though he continued both with birds and beasts to lick up the warm stream as long as it flowed from the wounds he had inflicted. One would have thought that the slaughter and the blood of the three birds and two large rats would have satiated his ferocity for a time, but although he made no attempt to devour the prey he had slain, his appetite for blood and murder was still as keen as ever, and scarcely had he finished his second draught ere he sallied forth to slaughter two young rats which had been introduced along with the old ones. These, being as yet blind, he seized by the nape of the neck, and having killed them with one bite, carried them also into his den, where he stored them up in a corner with their murdered parents, and the remains of the wagtails. In the evening, after nightfall, when all was getting hushed and dark, he came forth, and then regaled himself on the store of provisions he had laid up.

I was amused one day at the successful defence of a Shrike (*Lanius lahtora*). On introducing the bird into the box, it kept for some time twisting and turning itself about, and flitting its tail from side to side, watching the ferret with evident alarm. At last it flew so near that the ferret sprang at and caught it by the wing, and then lay with his fore-feet upon the bird, and began to peer sharply round to see that no intruder was near to interrupt his meal. As he turned his head back to begin the feast, the Shrike who had watched his movements, seized him so suddenly by the nose, that the ferret in astonishment and pain shook his head and jumped up, thus releasing the bird which I permitted to escape as a reward for his valour, and he flew away chattering, as if laughing in his sleeve at the trick he had played his enemy.

These animals are, strictly speaking, nocturnal, though not unfrequently on the move during the day; this however may probably be owing to bad success during the night in finding food, so that hunger may compel them sometimes to wander forth during the day time. Those

which I kept, having plenty of food to eat, slept almost throughout the day, seldom venturing abroad until nightfall, when they became very restless. They produce young about the end of March or beginning of April, when the winter has passed away and the warm weather is setting in, bringing in its train numbers of quail and other small birds on which the animal preys.

The Afghans assert that they are never seen during winter, and that although the summer is the season when they appear, they are never abundant. This latter assertion I can take upon myself to contradict, as they are far from scarce, for I have had during the summer months more than a dozen specimens brought to me.

If true that they are only found in summer, it is probably because they remain in a state of somnolency during the winter. The Afghans, however, are so little skilled in Natural History, and so addicted to lying, that it is a matter of much difficulty at any time to gather the truth from them. Some informed me that though the animal was not seen around Candahar during winter, yet that they were plentiful in the hills wherever there was good jungle cover, and that in summer they wandered down to the plains.

Now this assertion carries an error on the face of it, for an animal delighting in cold climates would not resort to the warm plains in summer, nor would the inhabitant of a warm climate seek the hills in winter. As therefore they only appear in the plains and valleys during the summer, the probability is (if they do not migrate to the south) that they remain dormant during the winter in holes and burrows. The latter is indeed the most probable, for to the southward the Candahar valley is bounded by the sandy desert which stretches away from the Kojah Anram range of hills to beyond Herat, into Persia.¹⁶

These animals emit the same disagreeable fetid odour which characterises the genus. The body is long, slender, and extremely supple; the loins appearing, as in the feline tribe, to be so loosely articulated, that the hinder parts actually shake and totter whenever the animal puts itself

16. The truth, I suspect, will prove to be that the *Mustela sarmatica* occurs at all seasons, like its various congeners. Among the true *Carnivora*, I know only of the genus *Ursus* which fairly hibernates.—*Cur. As. Soc.*

in motion. The tail is capable of being expanded into a good-sized brush, and in this state forms an excellent defence for the back.

I once put a large snake into a box with one of these ferrets; the snake at once withdrew to one corner and sought for a hole to escape by; while the ferret arched its back, kept the head erect, and spread the tail out like a thick brush, which it turned over its back. In this manner he approached and retreated from the snake several times, watching its movements in some alarm. The ferret often tried to seize the snake by the back of the head, and as often received a bite in return, until the little beast became quite terrified. The snake was harmless, but too powerful for the ferret to attack successfully.

The markings of this beautiful species are as follow, namely, through or across the face are three distinct and well defined bands; the lowest one runs across embracing the eyes, and is of a brown colour; above this is a second narrower band of a pure white; and a third of black passes across the forehead, along the anterior base of the ears, descending to join the same colour on the throat. The chin and muzzle are white, the nose brown. The fore part of the throat, neck, breast, fore and hind legs, are glossy black. The upper half of the ears is white, with long hairs like a fringe; the crown and nape are also white with brown spots; the hinder neck and all the upper parts of the back and sides, are yellowish-white with numerous brown or liver-coloured spots of indeterminate shape. The tail is greyish-yellow for two-thirds from the base, and the remainder to the tip black. Ears ovate, or rounded and open; eyes pale bluish or grey, by daylight. The head is broad, muzzle short, rounded and obtuse. Body long and remarkably slender, very supple, like the common ferret. The cry it makes when irritated resembles that of the mungoose (*Mangusta [pallipes]*).

No. 16. *Mustela*——? This is a skin which was given me by a Candahari, and came he said from the neighbourhood of Cabool. I suspect it to be the “Dil-kuffub” of Burnes’s Bokhara.¹⁷

17. This is lost; it was “sooty black with a white crescent or gorget on the throat.”
T. H.

No. 17. *Lutra* [*monticola*, Hodgson, *J. A. S.* VIII, 320; apparently¹⁸]. These animals are abundant in the larger rivers, such as the Helmund and Argandab. I could never obtain more than the dried skins, which are prepared for the Bokhara market, and sell for eight Candahar or six Company's Rupees each. They are made into dresses, and are so durable as to be handed down from father to son! So at least runs the fable!

No. 18. *Erinaceus collaris*? This species I found in the sandy tracts of Bhawulpore, but as I have only the description of it left, I am uncertain as to its identity with the above named species.

The animal was clothed with stiff quills on the upper parts of the body; these were white on the basal half and jet black on the upper half: the face and under parts of the body were clothed with sooty-black hairs: ears large, ovate, and ashy-gray: snout long and projecting over the under jaw: eyes round, black, and of medium size: tail short and obtuse, nearly naked: chin white.

Another, in all respects like the last, except that the quills on the sides have pale brown tips. This may be the effect of age or sex, as the specimen was a female.

These were found in separate holes beneath a thorny bush called "Jhund," in the desert tracts of shifting sand between Sundah Baidairah and Hasilpoor, on the left bank of the Garra, where they are numerous.

A third specimen seems to be distinct: all the under parts except the legs and tail are clothed with soft hair of a pure white, which passes also in a broad band across the forehead; immediately below this is a band of blackish hue across the face, embracing the eyes; and the rest of the face to the nose is greyish: nose naked: eyes round and black: ears large and ovate, ashy-grey: head rat-shaped: body and sides above armed with quills which are of a dirty white, or very pale shade of brown, for nearly two-thirds from the base; then a dark brown band, and the tips pale brown. This colouring gives the animal a pale brown appearance. The legs and tail are sooty or blackish, as in

18. *L. monticola* would seem to be the most common species of the Himalaya, and the Society has a specimen procured so low as near Moorshedabad, on the Hoogly. It is readily known by the comparative harshness of its fur.—*Cur. As. Soc.*

the foregoing: claws of moderate length, sharp and whitish. This specimen was smaller than the other two, and appeared to carry the back more arched than they did. It was found in the neighbourhood of "Shah Fareed," on the left bank of the Garrah. It is not unlike the European Hedgehog.¹⁹

The habits of all three were the same. They are nocturnal, and during the day conceal themselves in holes or in the tufts of high jungle grass. Their food consists of insects, chiefly of a small beetle which is abundant on the sandy tracts of Bhawulpore, and belongs to the genus *Blaps*. They also feed on lizards and snails. When touched, they have the habit of suddenly jerking up the back with some force, so as to prick the fingers or mouth of the assailant, and at the same time emitting a blowing sound, not unlike the noise produced when blowing upon a flame with a pair of bellows. When alarmed they have the power of rolling themselves up into a complete ball, concealing the head and limbs as does the European Hedgehog. On hearing any noise, it jerks the skin and quills of the neck completely over its head, leaving only the tip of the nose free, which is turned quickly in every direction to ascertain the nature of the approaching danger. If a foe in reality come nigh it, the head is instantly doubled under the belly towards the tail, and the legs being withdrawn at the same time, it presents nothing but a prickly ball to its assailant, and which is in most cases a sufficient protection. In this state it remains for some time perfectly motionless, until all being quiet and the danger past, it ventures first slowly, and almost imperceptibly, to exert the nose, the nostrils working quickly as if to ascertain that all is safe again. It then gradually uncoils until the eyes are left free, and if satisfied that its foe has passed on, it opens up and walks off with a quick but unsteady gait; or if again startled by the slightest noise near it, it is instantly entrenched within its thorny armour. They use the snout much in the same manner as the hog does, turning up the leaves and grasses in search of food, and shoving each other out of the way with it when angry. They make a grunting sort of noise when irritated. They are remarkably tenacious of

19. The description of this third specimen applies very well to other specimens, which I have referred to *E. collaris*, Gray.—*Cur. As. Soc.*

life, bearing long abstinence with apparent ease,—a provision of nature highly useful and essential in the desert tracts they inhabit. It is probable, too, that they remain during the cold season in a semi-torpid state, as the species which occurs in Afghanistan hibernates.

N. B.—From the forehead proceeds a powerful muscle, passing round the body along the medial line at the junction of the quills and hair; this enables the animal to protect itself in the following manner:—the head being bent downwards to the belly, and the legs tightly doubled under, the contraction of this muscle causes the edges of the skin, where the quills and hairs unite, (which is along the sides,) to be drawn together, by which means the limbs are shut in, and enclosed as if in a purse with sliding strings.

No. 19. *Erinaceus [auritus, Pallas, (nec Geoffroy),* or a closely allied species²⁰. This species is common from Quetta to Candahar. Length from tip of snout to base of tail about a foot; tail an inch and a half. Ears very large and rounded, cinereous; face, inside of ears and chin as far as the base of the ears, very pale cinereous, or nearly white; from thence all the under parts are sooty or rusty-black; head, limbs and under parts, clothed with soft hairs of a sooty black [or fuliginous-brown]; feet darkest; tail black, obtuse and nearly naked; toes five on all the feet; claws whitish. Quills banded with dirty straw colour and black. This is the description of an adult male taken at Candahar. They feed on slugs, and *helices* with which the fields at Candahar are overstocked; they also prey on worms, insects, and

20. The Siberian *E auritus* is described, in Pennant's Quadrupeds, to have the "*upper jaw long and slender; with very large open ears, naked, brown round the edges, with soft whitish hairs within; tail shorter than that of the European Hedgehog; upper part of the body covered with slender brown spines, encompassed at the base, and near the ends, with a ring of white: the belly and limbs clothed with a most elegant soft white fur.*" The statements here italicized do not apply to the great-eared Afghan Hedgehog, the ears of which measure an inch and a quarter long posteriorly, and seven-eighths of an inch broad; their colour white: the dorsal spines are a little grizzled at the surface, and radiate from the middle of the back, meeting those from the sides, which are disposed irregularly as in the British Hedgehog.

The muzzle is rather short and broad: the dentition presenting three subequal pre-molars above, anterior to the scissor-tooth; the first being largest, and the third scarcely inferior to the second, but having a basal inner lobe; the small hindmost molar is also well developed, and is placed much less obliquely than in the European Hedgehog. Should it prove new, I propose that it be termed *E. megalotis*.

lizards. They hide during the day in holes, and come out in the evening to feed. They retire to hibernate in deep holes in the earth in the end of October or beginning of November, according to the season, and remain in a semi-torpid condition till February, when they again appear.²¹

(*To be continued.*)

*On the Course of the River Nerbudda. By Lieut.-Colonel OUSELEY, Agent G. G. S. W. Frontier; with a coloured Map of the River from Hoshungabad to Jubbulpoor.**

The leading article of No. 151, of the Journal Asiatic Society for 1844, is headed "Note on the Navigation of the River Nerbudda," compiled from information afforded by a number of officers. The map that is given with it, is part of the one that accompanied my report, forwarded to Government, (Lord Wm. Bentinck,) 13th June, 1834.

I find that I have not a copy of that report, and have requested Capt. Spence, the Deputy Commissioner at Hoshungabad, to favor me with one; but from private memoranda, I am enabled to state that the expense would be too great to calculate on an uninterrupted navigation, or admit of such water carriage as would be safe, and profitable. The nature of the rocks, compact basalt, or granite, renders it almost impossible to employ the agency of gunpowder to clear away the obstructions, it would be too slow a process for the extent to be undertaken. Again, supposing the whole distance cleared, including all the greater obstacles near Hindia, Mundhar, Dhardree, the Suhashurdhara Burkhery, Herunphal, &c. the elevation of the country at Hoshungabad being about 14 or 1500 feet above the sea, the rapidity and shallow body of the current would consequently be totally inadequate for boats of any size; and would be followed by the continued cutting away of the earth, and

21. Hedgehogs are found in the very hottest parts of peninsular India, and I have been assured, on good authority, of the existence of a species in the Bengal Soonderbuns. Four species from this country have been named already; but I have great reason to suspect the existence of others, and recommend that all collectors should preserve as many species of these animals, as they may be able to obtain.—*Cur. As. Soc.*

* See Proceedings for February, 1845.

a renewal of obstructions. For the river is too large to be retained for any distance by banks or walls across it, so that if the inclination should here and there be moderate, as from Nursingpoor to Hoshungabad, Hoshungabad to Hindia, at Mundlaiser, &c., the descents would be still more precipitous at other places, between hills and rocks towering above one thousand feet on either side.

The country where these obstacles present themselves is mountainous, so that canals could not be cut from any given point above, so as to lead back into the river to a navigable part below, for the descent to the sea is, as it were, in steps. The possibility of making the river navigable of course exists, but the expense would be such as to prevent any attempt being made by the Government; nor do I think that the outlay could ever be made good. At Hoshungabad, the river is from 700 to 900 yards (and even more) wide; it often in the rains overflows its banks, which are at that place from 50 to 70 feet in height. What command could be hoped for, over such a body of water, running at the rate of six or seven miles an hour, *only*, increasing in size as it flows to the west, where the chief obstacles exist; at Dhardree vast trees are precipitated into the depths below, often coming up shattered into many pieces.

The native Surveyor in speaking of the rocks, said they were ironstone, alluding merely to their hardness. He mentioned the kindness of the Bheels who attended his party along the river, in carrying some of the sepoys and others taken ill, procuring supplies and game, but seemed to think the river could not be rendered available for navigation. His map was written in Nagree on a large scale, and from that I reduced it, and sent it in the rough, as I had not time from my other duties to do it more carefully. The chief coal discoveries were subsequently made in the tours of the Division that I undertook annually, and disclosed mineral resources that are unbounded.

The coal found at Bénar, in my opinion, must be that used for railway communication; it cokes, as the Welch coal does when piled in heaps of any length, about five or six feet in height, and nine or ten feet base, forming an angle, covering it with dust, and allowing it to burn slowly from end to end. The coal was tried on the Indus Steamer at Bombay, 100 maunds did what 183 of the best Glasgow coal was required

to perform, heating one of the boilers of the steam engine fifteen minutes sooner than the Scotch coal.

The iron found at the same place has already been proved to be of the very best kind. The late Col. Presgrave constructed an iron suspension bridge of similar iron (found at Tendoo Khera on the north bank of the Nerbudda) at Saugor, which is at this present moment in as good order as the day it was made, 10 or 15 years ago. Having such coal, iron, and lime (which abounds), furnaces and founderies should be erected at Bénar, rails made, and the whole of the material supplied for the rail communication of India.

The produce of the richest country in India, the Nerbudda valley, would then find its way into the market; the wheats and white linseed now so much admired, and justly appreciated, would be attainable every where for seed, or consumption, and a country paying about 10 or 15 lakhs of land revenue (I do not include more than the Nerbudda valley and Baitool) would give triple that amount without being felt. So long as the present inefficient mode of carrying away the produce of an extensive agricultural district remains in use, the value of the land must be low; but on the abandonment of Bunjarra bullock-carriage and the adoption of rail lines, the prices of wheat, boot gram, linseed, &c., would more than triple themselves. It often happens that wheat sells for from 90 to 110 seers (90 Sicca weight) for a rupee; gram, 110 to 120 seers; linseed, 80 to 90 seers for one rupee; all of which grains are of the most superior description, and unequalled in India. Cotton, sugar, &c. are also produced, of the best description.

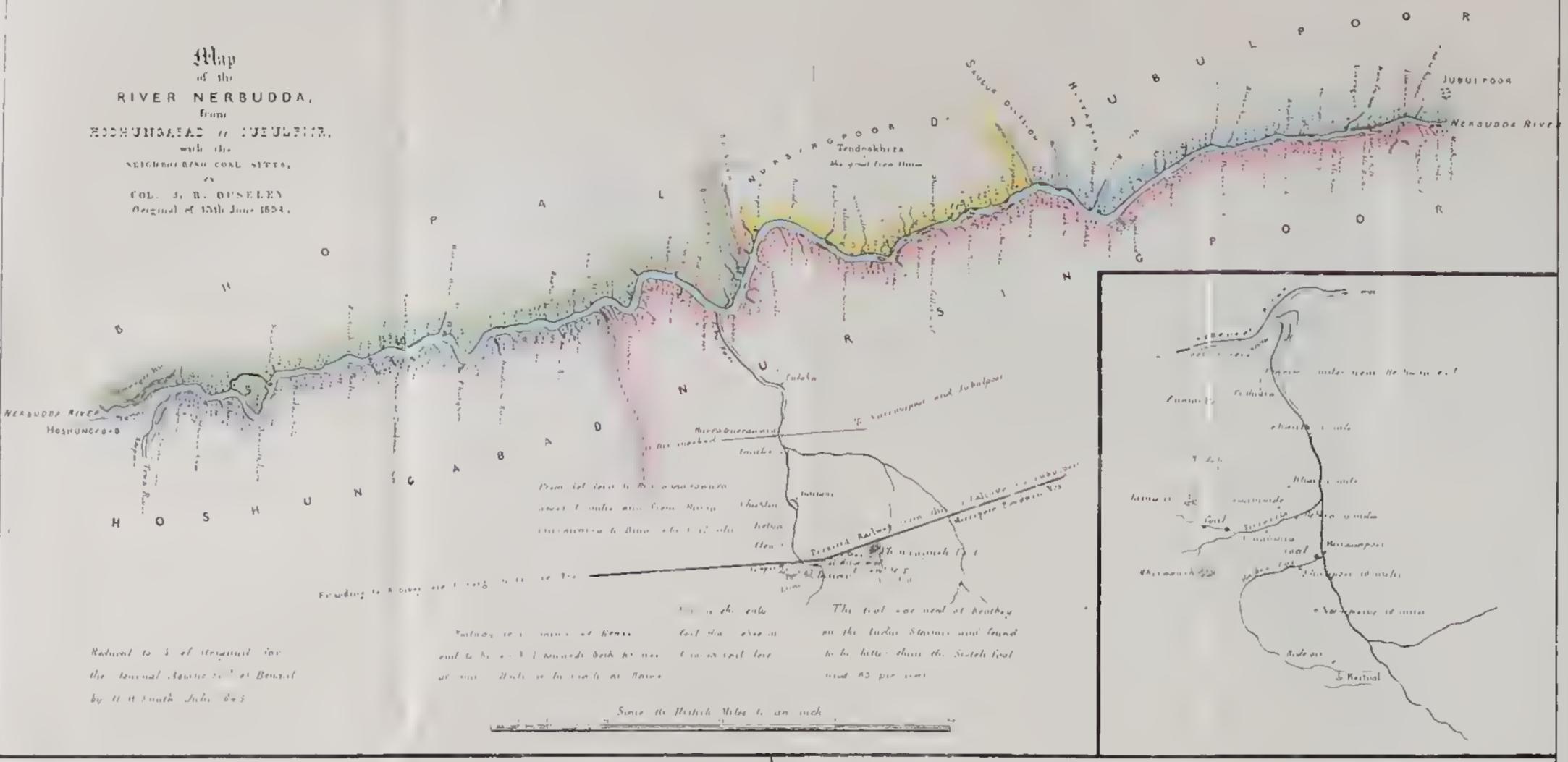
The part of the map I have now the pleasure to send, completes the course of the River from Jubulpoor to Hoshungabad; I have added the coal and iron sites, and trust that the information may be acceptable.

J. H. OUSELEY,

Agent Govr. Genl. S. W. F.

2nd August, 1845.

Map of the RIVER NERBUDDA, from HOCHUNGGAAD to JUBULPOOR, with the NEIGHBORING COAL SITES, by COL. J. B. OUSELEY, Original of 15th June 1854.



LEFT BANK NERBUDDA RIVER.

1. Mughaly
2. Vidyapuri
3. Bera
4. Bhamburda Nala
5. Jolpur
6. Chhamburda
7. Sauri
8. Lameta chauri
9. Barambura
10. Lameta
11. Rourkela
12. Pathar Nala
13. Chhamburda
14. Maslina Nala
15. Bhamburda
16. Bhamburda Nala
17. Pate Nala
18. Nagari Nala
19. Bhamburda
20. Nara Nala
21. Chhamburda
22. Birkhara
23. Bhamburda
24. Little Bhamburda
25. Bhamburda
26. Birkhara
27. Bhamburda
28. Bhamburda
29. Bhamburda
30. Bhamburda
31. Bhamburda
32. Bhamburda
33. Bhamburda
34. Bhamburda
35. Bhamburda
36. Bhamburda
37. Bhamburda
38. Bhamburda
39. Bhamburda
40. Bhamburda
41. Bhamburda
42. Bhamburda
43. Bhamburda
44. Bhamburda
45. Bhamburda
46. Bhamburda
47. Bhamburda
48. Bhamburda
49. Bhamburda
50. Bhamburda

51. Raha Nala
52. Bhamburda
53. Bhamburda
54. Bhamburda
55. Bhamburda
56. Bhamburda
57. Bhamburda
58. Bhamburda
59. Bhamburda
60. Bhamburda
61. Bhamburda
62. Bhamburda
63. Bhamburda
64. Bhamburda
65. Bhamburda
66. Bhamburda
67. Bhamburda
68. Bhamburda
69. Bhamburda
70. Bhamburda
71. Bhamburda
72. Bhamburda
73. Bhamburda
74. Bhamburda
75. Bhamburda
76. Bhamburda
77. Bhamburda
78. Bhamburda
79. Bhamburda
80. Bhamburda
81. Bhamburda
82. Bhamburda
83. Bhamburda
84. Bhamburda
85. Bhamburda
86. Bhamburda
87. Bhamburda
88. Bhamburda
89. Bhamburda
90. Bhamburda
91. Bhamburda
92. Bhamburda
93. Bhamburda
94. Bhamburda
95. Bhamburda
96. Bhamburda
97. Bhamburda
98. Bhamburda
99. Bhamburda
100. Bhamburda

RIGHT BANK NERBUDDA RIVER.

1. Bhamburda
2. Bhamburda
3. Bhamburda
4. Bhamburda
5. Bhamburda
6. Bhamburda
7. Bhamburda
8. Bhamburda
9. Bhamburda
10. Bhamburda
11. Bhamburda
12. Bhamburda
13. Bhamburda
14. Bhamburda
15. Bhamburda
16. Bhamburda
17. Bhamburda
18. Bhamburda
19. Bhamburda
20. Bhamburda
21. Bhamburda
22. Bhamburda
23. Bhamburda
24. Bhamburda
25. Bhamburda
26. Bhamburda
27. Bhamburda
28. Bhamburda
29. Bhamburda
30. Bhamburda
31. Bhamburda
32. Bhamburda
33. Bhamburda
34. Bhamburda
35. Bhamburda
36. Bhamburda
37. Bhamburda
38. Bhamburda
39. Bhamburda
40. Bhamburda
41. Bhamburda
42. Bhamburda
43. Bhamburda
44. Bhamburda
45. Bhamburda
46. Bhamburda
47. Bhamburda
48. Bhamburda
49. Bhamburda
50. Bhamburda

51. Bhamburda
52. Bhamburda
53. Bhamburda
54. Bhamburda
55. Bhamburda
56. Bhamburda
57. Bhamburda
58. Bhamburda
59. Bhamburda
60. Bhamburda
61. Bhamburda
62. Bhamburda
63. Bhamburda
64. Bhamburda
65. Bhamburda
66. Bhamburda
67. Bhamburda
68. Bhamburda
69. Bhamburda
70. Bhamburda
71. Bhamburda
72. Bhamburda
73. Bhamburda
74. Bhamburda
75. Bhamburda
76. Bhamburda
77. Bhamburda
78. Bhamburda
79. Bhamburda
80. Bhamburda
81. Bhamburda
82. Bhamburda
83. Bhamburda
84. Bhamburda
85. Bhamburda
86. Bhamburda
87. Bhamburda
88. Bhamburda
89. Bhamburda
90. Bhamburda
91. Bhamburda
92. Bhamburda
93. Bhamburda
94. Bhamburda
95. Bhamburda
96. Bhamburda
97. Bhamburda
98. Bhamburda
99. Bhamburda
100. Bhamburda

101. Bhamburda
102. Bhamburda
103. Bhamburda
104. Bhamburda
105. Bhamburda
106. Bhamburda
107. Bhamburda
108. Bhamburda
109. Bhamburda
110. Bhamburda
111. Bhamburda
112. Bhamburda
113. Bhamburda
114. Bhamburda
115. Bhamburda
116. Bhamburda
117. Bhamburda
118. Bhamburda
119. Bhamburda
120. Bhamburda
121. Bhamburda
122. Bhamburda
123. Bhamburda
124. Bhamburda
125. Bhamburda
126. Bhamburda
127. Bhamburda
128. Bhamburda
129. Bhamburda
130. Bhamburda
131. Bhamburda
132. Bhamburda
133. Bhamburda

A TWELFTH MEMOIR ON THE LAW OF STORMS IN INDIA; *being the Storms of the Andaman Sea and Bay of Bengal, 9th to 14th November, 1844.* By HENRY PIDDINGTON.

The present memoir will scarcely need, at least for readers in India, any introduction; for the intense interest excited by the wrecks, and wonderfully providential escape of the troops and crew, of the *True Briton* and *Runnymede*, must yet be fresh in their minds. For those however in other countries who may honour it with a perusal, I may say that on the 9th November 1844, the barque *Dido* was dismasted in a hurricane in the Andaman sea, *into* which also the transport ships *Briton* from New South Wales, and *Runnymede* from England, both bound to Calcutta, the two together having in European troops and crews nearly 700 souls on board, were then running; and that being caught in it they were partially dismasted, and finally at about one in the morning of the 12th both ships were—wonderful to relate—thrown high and dry on the shore of the small or inner Andamans, the provisions of the one serving most opportunely for the support of the people of the other, and the whole being well able, by the troops, to defend themselves against the savages: They were taken off by assistance obtained from the British settlements on the Tenasserim Coast. I refer to the Summary at the conclusion for details, as to the highly instructive lesson in our science to be drawn from those storms; which in brief words amount to this—that the lives of a whole European Regiment were perilled to the utmost possible extent, short of destruction, by the ships not heaving to for six hours! As far as loss of life can be weighed or counted, the loss of a European Regiment in India would be equal to the loss of an average, or a first-rate, battle!

Abridged Log of the Steamer ROYAL SOVEREIGN, Capt. MARSHALL, from Penang to Calcutta.

On 9th November, 1844.—P.M. Light breeze SSE. and clear weather. 8 P.M. abreast of Seyer Island, altered course to North. Midnight “fine steady breeze with drizzling rain.”

10th November.—A.M. At 1 breeze increasing; at 2 heavy gale WNW. Ship hove to under balanced main-trysail. 4 A.M. gale in-

creasing, ship hove on her beam ends, stowed the trysail; 10 squally with heavy rain; 11 A.M. began to clear up. Noon, strong gale and clear weather. Distance run from noon 9th, 138 miles. At noon centre of St. Matthew's Island East $\frac{1}{2}$ N., distant 20 miles, Lat. Obs. $9^{\circ} 50'$ N.

P.M. Stopped steaming for repairs; course having been always NNW. At 2.30 heavy gale NNW.; by 8, wind SSW. hard gale and heavy squalls; all hands at the pumps. At midnight gale moderating, and the wind shifting to the SE. made all sail to get off the lee shore, course NNW.

11th November.—2 A.M. Squally with heavy rain. 4 A.M. clearing up, and fine breeze from the SE. noon Lat. Obs. $11^{\circ} 6'$ N. centre of Clara Island EbN. $\frac{1}{2}$ N. distant 28 miles. Distance run from noon 10th to noon 11th, 58 miles.

*Abridged Log of the Dutch Barque FATTEL HAIR, Capt. ————
from Batavia bound to Calcutta, reduced to civil time.*

7th November, 1844.—Lat. noon $8^{\circ} 48'$ N., Long. $96^{\circ} 48'$ E. P.M., to midnight, light and variable winds from the NNE. and NE.

8th November.—A.M. to noon, the same; wind NNE. and with light squalls. Noon Lat. $10^{\circ} 3'$ N. Long. $95^{\circ} 56'$ E. P.M. wind NbE. squally. By 7 P.M. ship had stood $14\frac{1}{2}'$ to the EbN. and had then the wind NW. with squalls, increasing to midnight, up to which time she stood $16'$ to the NNE.

9th November.—To 8 A.M. wind marked NW. and squally, 9 A.M. wind NNW. Noon increasing, preparing for bad weather. Lat. $10^{\circ} 50'$ N. Long. $96^{\circ} 25'$. Barometer marked as "still standing at 29.6. P.M.* blowing fresh, increasing squalls and sea rising fast. Wind WNW. At 2 wind shifted to SW., kept away under the main top-sail and ran to 6 P.M. about 32 miles." Sea rising fast. At 6 P.M. wind SSW. increasing to a heavy gale, hove to. At midnight blowing furiously.

10th November.—A.M. Increasing, boats blown and washed away. Wind SE. and to noon the same; "wind coming round from East to

* From this time the Log is in the form of a narrative.

due North. Barometer as before. P.M. wind increasing, Barometer beginning to fall at 1 o'clock." At 6 P.M. wind NNE. Barometer down to 28.5. At 9h. Barometer beginning to rise fast, a heavy squall, wind NW. At 9-30 gale beginning to moderate. Midnight, gale had moderated considerably.

11th November.—A.M. Wind SW. coming gradually round to the Southward, squalls continuing, but on the whole moderating. At 11 A.M. Barometer "up to fair again (about 30.00 in the usual Barometers), as usual." Noon, sea going down, Lat. 13° 6' N. "N. B. this gale went round from North to SW. SE., East and North again twice."* P.M. wind SSE. run from midnight to noon being 27 miles North.

On the two following days wind moderate from the SSE.

Abridged Log of the Schooner CLOWN, Capt. J. TALBERT, from Penang towards Calcutta, reduced to civil time.

8th November, 1844.—2 A.M. a heavy squall from the North, and at noon squally appearances with winds variable from the North. Noon Lat. account 9° 58' N. Long. 96° 26' E. P.M. winds N. Easterly and Northerly with a heavy rising sea.

9th November.—Winds variable from the Northward and towards noon veering to the Westward. Noon "fresh gales with a tremendous heavy sea," Lat. account 10° 41' N. Long. 95° 56' E. P.M. wind westerly, hauling to the South with heavy sea throughout. 10 P.M. hove to; when up West and off NW. Wind therefore about SSW.

10th November.—A.M. increasing gale. 9 A.M. wind marked SSW. Noon strong gales, no position given. P.M. Strong gales S Westerly to midnight, when more moderate.†

11th November.—A.M. Wind Southerly, daylight out all reefs and fine. Noon, no position given. Wind S. Easterly; a 6-knot breeze. P.M. fine weather, wind S. Easterly 6 knots.

12th November.—Daylight saw Narcondam, bearing NbW. Noon Narcondam SWbS. 6 or 7 leagues. Winds SE. and ESE. 6 and 7 knots throughout.

* The paragraphs marked by commas, are literal extracts.

† Vessel drifting to the N. Eastward, and storm moving to the Westward?

13th November.—Winds steady S. Easterly throughout. Noon Lat. account $15^{\circ} 27' N.$, Long. $92^{\circ} 37' E.$ Noon and P.M. squally with a heavy sea, 6 to 8 knots.

14th Nov.—S. Easterly breeze of 7 and 8 knots throughout. Noon Lat. account $17^{\circ} 53' N.$, Long. $91^{\circ} 00' E.$ P.M. to midnight wind N. Easterly.

15th Nov.—1 A.M. Lat. by star Rigel $19^{\circ} 12'$ Wind NNE. Noon Lat. $19^{\circ} 33'$, Long. $89^{\circ} 45' E.$

Extract from the private Journal of Commander VYNER, R. N. late of H. M. S. WOLF, passenger in the Brig Dido of Calcutta, from the Straits of Malacca to the Sandheads.

6th November, 1844.—A.M. Fine weather, light winds from the Northward. P.M. towards midnight, fresh breezes and rainy.

7th November.—4 A.M. More moderate; noon, light winds from the Northward and Eastward, sunset fresh breezes and hazy.

8th November.—2 A.M. Squalls, with strong breezes and drizzling rain, which lasted throughout the day.

9th November.—A.M. Light breezes from the NNE., at 4 squally dirty weather, barometer going down fast, commenced reducing sail; at 8 wind increasing furled the courses, and close-reefed the top-sails, split the main top-sail in a squall, down royal yards; 9 a heavy squall, put before the wind, and unbent main top-sail; it was now blowing very hard, and a heavy turbulent sea running; at 9-20 the mainmast went close under the hounds, and fell forward in an oblique direction over the larboard bow, gale still increasing; at 9-30 the fore-topmast went by the board, and fell over the larboard bow. The ship was now in so lumbered a state from the wreck, that it was difficult to move without being hurt by some or other of the gear fetching way. From 9 to 11 the hurricane was at its height, and blew the whole time with unceasing violence; at 11 it suddenly fell calm, and in about $\frac{3}{4}$ of an hour the gale again commenced from SW. and W. and blew as hard as before. Lat. at noon $11^{\circ} 6' N.$, Long. $96^{\circ} 12' E.$, at 1 P.M. the weather began to assume a better appearance; but the sea was running immensely high.

The wind at 3 P.M. began to veer to the Southward, and blew moderately. The Barometer did not fall below 29° 30' during the hurricane.

The wind from SE. continued until the 15th, when it ended in a very heavy gale, drawing round to SW. the violence of which lasted from 10 A.M. until 3-30 P.M. and here ended our disasters.

ARTHUR VYNER.

Abridged Log of the Brig Dido, Capt. SAUNDERS, from Penang to Calcutta, civil time.

The *Dido* left Penang on the 4th November, 1844, and had variable, baffling, light winds from the North and between NE. and NW. so that by the 7th, at 8 A.M. she had the great Seyer Island bearing ENE., distance 24 miles, which would place her at the time in Lat. 8° 30' N., Long. 97° 23' E.

On the 8th November.—The same winds and weather A.M. At noon, no observation; P.M. light winds from NNE. to NW. with drizzling rain.

9th November.—Winds from NW., NNW., and at 8 A.M. North, with very dirty appearance. At 9, hard gales, obliging her to run to the South, the wind not marked but, as by Commander Vyner's note, NE. At 10, carried away mainmast head, and by noon when Lat. by account is 11° 6' N., Long. 96° 12' E. nothing but foremast and bowsprit standing. Shortly afterwards the wind is marked South.

10th November.—A.M. hard gales South to SSE. noon gale still keeping up and drawing to the SE. P.M. wind SE. 8 P.M. E. terrific gales and increasing, ship labouring dangerously, losing boats &c. &c., and in distress. No position given at noon; 10 P.M. gale decreasing a little; midnight wind SE.

11th November.—Gale moderating, wind SE. throughout, no observation. Clearing the wreck.

12th November.—A.M. moderate SE. breezes, at noon Lat. 13° 39' N. wind marked S. Easterly throughout.

13th November.—Wind marked SE. throughout, light breezes and fine. Noon Narcondam SbW. 30', Lat. 14° 04'.

14th November.—Wind SE., 5 and 6-knot breeze throughout. Noon Lat. $15^{\circ} 07'$; P.M. squally and heavy rain.

15th November.—A.M. wind SE. fresh breezes with heavy rain and cross confused sea. 8 A.M. to noon, wind marked South to SSW. and SW. 8 fresh gale and dirty weather. 1 to 8 P.M. wind marked West to NW. and West; at 8 gale increasing; hove to at 4 P.M.; 8 P.M. wind falling light, and sea with it; at midnight fine.

16th November.—Wind marked W. 4. A.M., when NW. weather marked fine; noon Lat. $17^{\circ} 50'$ N. from which to midnight 19th calms; noon 19th Lat. $18^{\circ} 58'$, Long. $89^{\circ} 50'$ E.

Extract from the Log and Chart of the Ship BRITON, Capt. HALL, from Sydney to Calcutta, with Troops on board, reduced to civil time.

Capt. Hall having favoured me both with his log-book and chart, I note here the position laid down upon the chart, as presenting a summary view of her track into the storm, and her drift in it according to Capt. Hall's estimate at the time.

				Lat. N.		Long. E.
8th November.	..	..	..	$8^{\circ} 25'$	..	$96^{\circ} 55'$
9th	„	Noon,	..	$9^{\circ} 10'$	..	$96^{\circ} 30'$
„	„	6 P. M.	..	$9^{\circ} 43'$	..	$96^{\circ} 12'$
10th	„	..	..	$11^{\circ} 00'$	..	$95^{\circ} 12'$
11th	„	..	..	$11^{\circ} 33'$	..	$94^{\circ} 55'$
12th	„	Would have been in,		$12^{\circ} 04'$	..	$93^{\circ} 56'$

On the 8th November.—The *Briton* was at noon in Lat. $8^{\circ} 25'$ N. Long. $96^{\circ} 55'$ E. or about abreast of the Seyer Islands, with very light baffling winds from the N. Eastward: and cloudy weather, which to midnight freshened gradually to a 4-knot breeze. Wind at 1 P.M. marked North, and for the rest of the Log, “variable from SW. to NW.

9th November.—1 A.M. course is marked WbN. to noon, the wind being from the NbW.; at 3-30, strong breezes. At noon, light and fine, Lat. Obs. $9^{\circ} 10'$ N., Long. $96^{\circ} 30'$ E. P.M. wind freshening fast from SW. and becoming SSW. at midnight, an 8-knot breeze; run $83'$ NWbN. from noon. At 6 P.M. dark gloomy weather,

and Simpiesometer 29.30. At midnight strong gale and squally, making preparations for bad weather.

10th November.—4 A.M. Simpiesometer 29.20. To 6 A.M. ran 38' NWbN. when "blowing terrifically with awful squalls," hove to with head to the NNW. 9 A.M. gale still increasing, took in the main top-sail and lashed a tarpaulin in the mizen rigging; 9-30 A.M. top-masts blown over the side, and all the sails from the yards. Simpiesometer fell from 4 A.M. when at 29.20, to 28.10. At noon gale lulled off with showers of rain, and dark gloomy weather. Lat. by account 11° 1' N., Long. 95° 12' E. Simpiesometer not rising. P.M. ship lying to with head to the WN. Westward, the gale having again come on from the SW. at 0.30 P.M., and blowing with more violence than ever. 2 P.M. terrific hurricane, boats blown to pieces. In the log, wind marked "variable from NE. to ESE.," at 11 P.M. head "up North off N.W." Midnight hurricane still increasing.

11th November.—A.M. Head as before to noon, the same wind from 1.30 A.M. P.M. terrific hurricane. 2 P.M. saw a Barque about $\frac{1}{4}$ of a mile to the Eastward with only her lower main and mizen masts standing.*

At 10 P.M. hurricane lulled off with an awful swell, and dark gloomy weather. Simpiesometer at 27.2. At 10-30 P.M. wind veered round to the NE. blowing with more violence than before, and starting the front of the poop. Throughout this sea log (from noon) ship is marked "Heading from SE. to North," and "Wind blowing all round the compass."

Fearful of the poop being blown away altogether, took the chronometers, sextants, charts, &c. below. Midnight hurricane still blowing terrifically.

12th November.—1h. 15m. A.M. struck, and at daylight the ship was found high and dry in a mangrove swamp; the *Runnymede* being close to them. Their Lat. was 12° 2' N., Long. 93° 12' 40" East. They were taken from the Islands by ships sent from Moulmein.

After the ship was on shore the remainder of the gale was from ENE., at which point it fell to fine weather. Capt. Hall estimates the rise of the sea, (the storm wave) on the shore as at least thirty feet! He, farther, does not estimate the ship's *apparent* average, drift (such

* This was the *Runnymede*.

as seamen usually allow for in a gale) at more than four miles per hour, having once hove the log to ascertain it.

—

Abstracts of the Log and Chart of the Ship RUNNYMEDE, Captain DOUTTY, from England to Calcutta, with Troops on board, reduced to civil time.

As with the Briton's Log, I have thought it also best here to set down the Latitudes and Longitudes from the chart at first.

				Lat. N.		Long. E.
7th November.	..	..	..	8° 36'	..	96° 51'
8th	„	..	..	9° 32'	..	96° 35'
9th	„	..	..	9° 52'	..	96° 27'
10th	„	..	..	11° 6'	..	96° 0'

Friday, 8th November.—Heavy squalls with unsettled weather nearly through the whole 24 hours; winds variable NE. and N. West-erly; Lat. noon 9° 32' N., 96° 35' E. At 7 A.M. more moderate, sun obscure.

Saturday, 9th November.—Winds variable, at 5-30 wind NNW. squally, in 2nd reefs of the topsails; at 9-30 A.M. wind backing to the Westward, tacked to the Northward. Noon, sun obscure, Lat. 9° 52' N., Long. 96° 27' E. wind WSW. strong breeze; rainy and squally; P.M. increasing, making preparations for bad weather.

Sunday, 10th November.—Barometer falling, strong gale WSW. with heavy squalls; at 5 A.M. in courses and close-reefed the topsails. At 6 A.M. wind SW. blowing very heavily, in fore topsail and brought ship to the wind under close reefed main topsail and main trysail.

Noon no observation, Lat. by account 11° 6' N., Long. 96° 0' E. Hurricane of wind, Bar. 29.00, and falling. At 1 P.M. ship under main trysail only. At 1-30 P.M. the fore and main top-gallant masts were blown away. Wind South blowing very severely, the main trysail blown to atoms, ship under bare poles, and laying beautifully to the wind, with helm amidships and perfectly tight. The hurricane accom-panied with a deluge of rain. At 4 P.M. wind SE. blowing terrifi-cally, hatches all fastened down, starboard quarter boat washed away. At 6-30 P.M. nearly calm, wind backing to the SW. Sea went down. Bar. 28.45, kept ship away NbE. and got the top sails re-secured, portions of them having blown adrift. At 8 P.M. Wind SW. hollow

gusts; brought ship to wind on larboard tack. At 8-15 hurricane as heavy as before. At 8-30 the larboard quarter boat was torn from the davits and blown across the poop, carrying away the binnacle, and crushing the hen-coops on its passage. At 9 P.M. wind if possible increasing, the foremast broke into three pieces carrying away with it the jibboom, main and mizen top-masts, starboard cathead, and main yard, the main and mizen masts alone standing. At 10 P.M. the wind and rain so severe that the men could not hold on the poop, bailing the water from between decks which is forced down the hatches, but the ship is quite tight, and proving herself to be a fine sea boat. The pumps attended to, drawing out the water forced down hatches, mast coats, and top-sides forwards.

Monday, 11th November.—Hurricane equally severe; wind SE. Bar. 28.0; the gusts so terrific mixed with drift and rain, that no one could stand on deck; advantage was therefore taken of the lulls to drain the ship out and clear the wreck. The starboard bower anchor hanging only by the shank painter and the stock (iron) working into the ship's side, the chain was unshackled and the anchor cut away. Noon Lat. account $11^{\circ} 6' N.$, Long. $95^{\circ} 20' E.$ No observations since the 7th. Bar. apparently rose a little. Hurricane equally severe in the gusts, the ship perfectly unmanageable from her crippled state, but riding like a sea bird over a confused sea running apparently from every point of the compass. A large Barque with loss of top-masts and main yard drifted ahead of us, and a Brig was seen to leeward totally dismasted. At 4 P.M. Bar. fell to 27.70, and Cummin's mineral Simpiesometer left the index tube. Hurricane blowing terrifically, the front of the poop to leeward, cabin door and sky-lights torn away, and expecting every moment the poop to be torn off her. *The severity of the wind is beyond description, there is nothing to compare it to, for, unless present, no one could conceive the destructive power and weight of wind crushing every thing before it as if it were a metallic body.** At 1 P.M. no abatement, every one, sailor and soldier, doing all in their power to keep the ship free of water, could not stand at the pumps; the water being principally in the 'tween decks it was bailed out by the soldiers as much as possible.

Tuesday, 12th November.—Midnight, hurricane equally severe, the

* This is a very remarkable passage, which I have put in italics, as conveying an excellent idea of what the force of these terrific hurricanes is.

gusts most awful, and rudder gone. At 1-30 A.M. felt the ship strike, and considered the destruction of our lives, as well as ship, sealed; but it pleased Almighty God to decree otherwise, for although the ship filled up to the lower beams with water, she was thrown so high on the reef that the water became smooth, and the bilge pieces keeping her upright, she lay comparatively quiet. Not knowing our position, the ship being bilged, and fearful of her beating over the reef into deep water let go the larboard bower anchor and found the water leaving her. All hands fell asleep.

Day-break, hurricane breaking, much rain, wind ESE. Bar. rising rapidly until it stood at 29.45; we then, thank God, saw the loom of the shore to leeward, the ship being nearly dry abaft; on its clearing away we saw inside of us, up among the trees, a large barque with troops on board; one officer and twelve men were sent over the stern to communicate with her. At 7 A.M. the tide now rising, orders were given for the men to land at next low water, and if possible to get something cooked, as no fires could be kept in during the hurricane, the crew and troops merely having biscuit and a glass of spirits during the time it lasted. 3-30 P.M. the tide having fallen sufficiently to wade on shore, ensign Dabernt returned on board, and stated the vessel in shore of us to be the "*Briton*," from Sydney, with three hundred and eleven men, thirty-four women, and fifty-one children, of H. M. 80th Regt. under the command of Major Bunbury, with a crew of thirty-six men, bound for Calcutta, and short of every thing.

N. B.—Captain Doutry informs me that the Thermometer at the lowest of the Barometer was at 84°, and that he considers the average drift of the vessel not to have exceeded three miles per hour. On shore nearly all the trees had fallen to the S. Westward, shewing that there the gale had been about NE. at its greatest height.

*Ships BLUNDELL and APPOLLINE. Between 9th and 18th
November.*

The *Blundell* was between the parallels of 2° and 12° North, and the meridians of 90° 32' and 92° East, with nothing but calms and light airs.

Between the 9th and 19th.—The *Appolline* was in from Lat. 4° 48' to Lat. 15° 1' with light winds and fine weather. On the 12th only

in Lat. $8^{\circ} 21'$ N. the Bar. fell from 29.2 to 29.00. Long. on that day not obtained.

Abstract translated from Log of the French Ship LA PETITE NANCY, Captain DUFOURG, from Bourdeaux to Calcutta, reduced to civil time.

On the 10th November, 1844.—*La Petite Nancy* was in Lat. $8^{\circ} 2'$ N.; Long. by Chro. East of Paris $89^{\circ} 52'$ or of Greenwich $92^{\circ} 12'$ Bar. F. 28.00 or 29.85 English* Wind West, course NNE. 4' per hour; slight squalls and rain at times. P.M. fine, a slight swell from the North; at 9 P.M. wind SW. to SSW. to midnight.

11th November.—A.M. cloudy, and a swell from NE. and to noon variable winds SSW. to West and fine; ship running 7 to 9 knots to the NbW. At noon a heavy squall Lat. $9^{\circ} 53'$ N., Long. P. $89^{\circ} 49'$ G. $92^{\circ} 09'$ Bar. F. 27.10 or 28.29 E. P.M. to midnight run 77' to the NNWrd.; winds West to SW. squally, and wind rising and falling (*brise inégale et variable*) at 6 sharp lightning with thunder; midnight finer weather and strong head sea.

12th November.—A.M. to noon run 66 miles to NbW. and NNW. Wind WSW. to SSW. heavy sea. 9 A.M. heavy squall; noon Lat. $12^{\circ} 25\frac{1}{2}'$, Long. $88^{\circ} 55'$ P. or $91^{\circ} 15'$ E. Gr., Bar. 27.8 F. or 29.64 E. wind SSW. P.M. cloudy, wind WNW. to WSW. to 8 P.M. and SW. to SSW. to midnight. P.M. ship's run 41' North a little Easterly; at midnight finer weather, carrying a top-mast studding sail.

13th November.—A.M. to noon run 102' to the NNW. Winds from WSW. to SSW. 9 A.M. heavy squalls and head sea; noon Lat. account $14^{\circ} 25\frac{1}{2}'$ Long. $88^{\circ} 8\frac{1}{2}'$ P. $90^{\circ} 28\frac{1}{2}'$ G. Bar. 27.8 F.; 29.63 E. P.M. Run $107\frac{1}{2}'$ North a little Westerly. Winds SSW. to SW. and at midnight South. 9 P.M. sharp lightning, high irregular sea.

14th November.—A.M. to noon, made $104\frac{1}{2}'$, North to NNW. up to 10 A.M. when she broached to; winds to 4 A.M. South to SW., from 4 to 8 SSW. to South; 8 to 12 South, SSE. and a shift to SW. From 5 A.M. blowing heavily, preparing for bad weather. 10 A.M. Bar. 27.6. F. 29.41 E.; at $\frac{1}{2}$ past 10 wind *shifted*† to SW. heavy gale and sea, ship

* I give the French Longitudes and Bar. heights with the reductions, to avoid oversights. The correction used is $+2^{\circ} 20'$ to bring the Long. to the meridian of Greenwich, and for the proportional scales of the Bars. 1000 E. : 1066 Fr.

† The word is *sauté*, which is our "shifted."

broached to, (the rudder head it was found afterwards had split) and was laid on her beam-ends, mainsail main top-sail, boats, &c., blown or being swept away, the sea being up to the hatchways. At 10.45 hurricane increasing, and vessel always on her beam-ends, cut away the mizen-mast. Bar. falling to 26.7 F. 28.46 E. At 11 A.M. cut away top-masts, when the ship righted a little; Bar. having been at 10 A.M. 27.6 F. 29.41 E.; at 10h. 40m. 27.00 F. 28.78 E.; and at 10h. 50m. 26.7 F. 28.46 E. (a fall of nearly an inch in two hours! and this note is from Captain Dufourg's private memorandum), Lat. by account at noon was $15^{\circ} 47' N.$, Long. $88^{\circ} 12' P.$ $90^{\circ} 32' G.$ At 3 P.M. the wind shifted in a heavy gust with torrents of rain to the SE. with the same violence,* and being then to starboard, righted the vessel completely; but she did not lie over to port, which confirmed the opinion of the Captain and officers that the cargo had shifted.

At half-past 3 the wind suddenly fell, but the Barometer always remaining at 26.7 F. (28.46 E.) a renewal of the storm was expected. At 5 P.M. the hurricane began again more violent than before, from the SW. and continued till 9 P.M. the ship always heeling to starboard. From 9 P.M. it was moderating.

15th November.—P.M. Weather moderating fast; at day-light saving and clearing the wreck, Lat. noon by account $16^{\circ} 40' N.$ Long. P. $88^{\circ} 37' E.$, G. 90.57 E.; Bar. 27.00 F. 28.78 E. P.M. moderating to light airs SW. and S. and heavy sea continuing.

16th November.—Daylight calm with a heavy sea, saving and clearing wreck. Noon Lat. Obs. $17^{\circ} 00' N.$, Long. Obs. $88^{\circ} 49' E.$ P. $91^{\circ} 09' E.$ Bar. 27.8 F. 29.63 E. to midnight calm.

17th November.—Calms which continued to 5 A.M. on the 19th November. Noon Lat. Obs. $17^{\circ} 6' N.$ Lon. Obs. $88^{\circ} 58' F.$ $91^{\circ} 18' G.$ P.M. Bar. 28.00 E. or 29.85 E.

The ship made no water, and arrived safely at the Pilot station on the 25th. November.

I now give a tabular view of the positions of the ships on different days beginning with the 9th, as on the 8th we may say that there was no bad weather, the *Clown* having it only a little squally, all the others with light baffling winds and slight squalls from the North.

* The ship having drifted to the NE. and the hurricane passed on to the WNWward.

Tabular View of the Winds and Weather in the Andaman Sea and Bay of Bengal 9th to 11th of November, 1844.

Date.	Name of Place or Ship.	Wind and Weather.	Lat.	Long.	Barometer.	Simp.	Ther.	Remarks.
Noon. 9 Nov.	Steamer Royal Sovereign,	Fine SSE. Abreast of Seyer Islands,	0 /	0 /			0	
	Barque Fattel Hair,	WNW. increasing gale, 2 P.M. shifted to SW. ..	10 50	96 25	29.6	..	..	6 P.M. hove to. Wind SSW., heavy gale; midnight hurricane.
	Schooner Clown, ..	Variable, and at noon veering to westward, fresh gale, and tremendous sea.	10 41	95 56	..	..	..	P.M. Wind westerly, and hauling to the south. Vessel hove to at 10 P.M. Wind about SSW.
	Brig Dido,	A.M. Light breezes NNE. and NNW. dirty; 9 A.M. hard gales NE..... ..	11 6	96 12	..	..	..	By 11 A.M. dismasted, 11 A.M. calm, and at noon hurricane from SW.
	Briton,	Light and fine weather, 6 P.M.	9 10	96 30	..	6 P.M.	..	P.M. Freshening fast from SW. and SSW. at midnight.
	Bunnymede, ..	WSW. Rainy and squally,	9 52	96 27	..	29.30 ..	..	Making preparations for bad weather.
Noon. 10 Nov.	Brig Dido,	Hard gale SEbS. P.M. SE. terrific gale, .. ..	..	..	..	..	..	10 P.M. gale decreasing; midnight, wind NE.
	Briton,	Noon SW. gale lulled off, P.M. renewed,	11 1	95 12	..	29.20to 28.10	..	1 A.M. hove to. P.M. hurricane NE. to ESE., midnight increasing.

Date.	Name of Place or Ship.	Wind and Weather.	Lat. N.	Long. E.	Barometer.	Simp.	Ther.	Remarks.
Noon. 10 Nov.	Runnymede,	Hurricane SW. At 2-30 S. 4 P.M. SE. 6-30 nearly calm, 8-15 hurricane, SW.	0	0	29.00 28 45 6 P.M.	..	0	Ship hove to.
	La Petite Nancy, ..	West slight squalls and rain, veering to SW. at midnight,	8 2	92 12	29.85	..	..
	Steamer Royal Sovereign,	2 to 10 A.M. heavy gale WNW. at 11 clearing up, noon strong gale. 2-30 P.M. heavy gale NNW. by 8 SSW.	9 50	..	..	..	..	Noon; centre St. Matthew's Is- land E. $\frac{1}{2}$ N.
	Barque Fattel Hair,	A.M. SE. Noon, North; 6 P.M. NNW. 9 NW. mid- night moderating, .. ..	..	..	6 P.M. 28.5	..	..	9 P.M. Barometer beginning to rise.
	Schooner Clown, ..	9 A.M. SSW. increasing gales; P.M. SWesterly, at midnight more moderate,	..	..	..	..	..
Noon. 11 Nov.	Dido,	SE. gale throughout, ..	..	..	..	10 P.M. 27.2	..	10 P.M. another lull, and renewed again from the N.E. 2 P.M. saw the Runnymede. At 1.15 A.M. 12th struck.
	Briton,	Terrific hurricane, .. ..	..	..	..	..	..	At 2 P.M. saw Briton. At 1.30 A.M. of 12th struck.
	Runnymede,	Hurricane SE.	11 6	95 20	28.0 27.70	..	84	At 2 P.M. saw Briton. At 1.30 A.M. of 12th struck.
	La Petite Nancy,* ..	West to SW. rising and fall- ing,	9 53	92 09	28.89	..	..	At midnight finer, but strong head sea.

* For the dismasting of this ship on the 14th, and the connection between her storm and the *Dido's* second bad weather, see the Summary.

Date.	Name of Place or Ship.	Wind and Weather.	Lat.	Long.	Barometer.	Simp.	Ther.	Remarks.
Noon. 11 Nov.	Steamer Royal Sovereign,	Fine weather, and breeze from SE.	0 1	0 1				
	Fattel Hair,	Noon. Wind Southerly, and weather becoming fair, ..	11 6	..	..	..	..	Centre Clera Island EbN. $\frac{1}{4}$ N.
	Schooner Clown, ..	Noon. Fine, and wind S. Easterly and 6-knot breeze, ..	13 6	..	..	..	..	11 A.M. Barometer at "fair."

SUMMARY.

I have already remarked that on the 8th of November the weather was fine for all the ships, none of which were to the North of Lat. 10° , and we find on the 9th that the *Dido* was dismasted about the centre of the hurricane, at 11 A.M. on that day, and by noon the calm centre had passed her, and she was again in a hurricane at SW. This vessel's position therefore, and we have it most accurately fixed, (having fortunately in Commander Vyner, R. N. who was passenger on board of her, an independent observer, who would make every allowance in his notes for what might escape the Captain and officers,) gives us the place of the centre of the storm on that day as being a little to the N. West of her. The storm circle at this time must have been of extremely small extent, for it had but just reached the *Clown*, which vessel was only twenty miles distant from the *Dido*, which would make the circle less than 40 miles in diameter; but the *Clown* had the usual warning of a rapidly veering wind, and a tremendous heavy sea, and the *tornado*, for so we might almost call it for its size, was fortunately moving rapidly on, so that by her heaving to at night with the SSW. gale she fortunately escaped running into the worst part of the tempest. I have thus given the circle for this day a diameter of sixty miles only, which will just include the *Clown*. The hurricane for this day indeed remarkably resembles that of the *Cashmere Merchant*, described in my Second Memoir, *Journal Asiatic Society*, Vol. IX, p. 433, which also occurred near the Preparis, and some of those which (see Tenth Memoir, *Journal Asiatic Society*, Vol. XIII, page 113,) also arise off the coast of Ceylon. For the centre of the storm circle on the 10th, we have the estimated position of the *Briton*, which ship after running up 121 miles to the NWbN. *the exact course upon which she should have CHASED the hurricane if she had meant to do so*, found herself obliged, at 6 A.M. to heave to close to the centre, into which she had drifted at noon; having sunk her Simpiesometer from 29.20 at 4 A.M. to 28.30 at 6, her estimated position at noon being $11^{\circ} 1' N. 95^{\circ} 12' E.$ and the lull occurring just at this time. The *Runnymede*, which vessel had also been tempted by the treacherous fair wind, and run up 80 miles to the NWbN. though with a falling Barometer, was about fifty miles to the

Eastward of her, and had it also blowing a hurricane from about South, judging from the log abstract, in which it is made to be SW. at 1. A.M. or after midnight up to Noon, and South at 2h. 30' P.M. The *Dido* whose exact position this day I could not obtain, has a hurricane at SE. being in the NE. quadrant. The hurricane had thus no doubt extended on this day from a circle of 60 miles to one of 130, and apparently was still doing so, for the *Fattel Hair*, farther to the Eastward than the *Runnymede*, seems to have ran up skirting the SE. quadrant of the storm and to have had the true storm wind at SW. when it "shifted at 2 P.M." to that point. The *Royal Sovereign*, close in with the land, appears to have also had a separate small storm veering with her in a few hours, but not of any very great consequence, or at all connected with the *Briton's* and *Runnymede's*; though, as I shall subsequently shew, it may probably have been so with the remarkable double veering of the *Fattel Hair's* winds. On the 11th we have the above two ships always lying to and drifting, as well as they could estimate in the hurricane, to the points marked on the charts, which are about forty miles NNW. and SSE. of each other, but there is no doubt that the ships saw each other at 2 P.M. on this day; the *Runnymede* also saw a brig, but this was not the *Dido*, which vessel had her foremast standing, and was not at this time in the heart of the hurricane.* We shall also find that the two ships *Briton* and *Runnymede* struck just after midnight of the 11th-12th, (or between 1 and 2 in the morning of the 12th) so that they must have been now much farther to the Eastward than they supposed themselves. We have no fixed positions of any other ships also from which to guide us as to the extent of the hurricane circle on this day, and in short our only *datum* is that both ships having the wind to the Eastward, *i. e.* the *Briton* between NE. and ESE. and the *Runnymede* about SE., both must have finally drifted over to the Northern quadrants of the hurricane, though always close to its centre.

We must then therefore consider that (throwing away the odd hour or two after midnight of the 11th-12th) the hurricane travelled, and carried the ships with it from the place of our centre on the 10th, to

* Probably one of the native coasting craft which run across the Bay to the ports of the Straits.

near that at which the ships were wrecked on the inner Andamans as marked; which is a distance of about 140 miles in 36 hours, or from noon of 10th to midnight 11th-12th, and we can only estimate this also on a direct line. Hence by noon of the 11th then, or in 24 hours, it would then have travelled two-thirds of this distance, at which point I have placed its centre for the 11th, which the reader will observe is wholly irrespective of the supposed positions of the ships as marked on their charts. I have made a dotted line to shew what *may* have been their drift, if we have, as I presume, approached the true place of the centre of the storm at noon on the 11th.

The *Petite Nancy*, which on this day was opposite to the opening between the Little Andaman and Nicobars, appears, though at 150 miles from the centre, as we have laid it down, to have felt some of the effects of the storm, for we observe that with a NE. sea and squally weather, her Barometer had fallen nearly an inch! (0.96) in the 24 hours from the 10th. And that she had the rising and falling wind which I have so often pointed out as indicating the approach or vicinity of a storm. I defer the consideration of the storm which dismasted her to its proper place in the order of time. Between 1 and 2 A.M. on the 12th, the *Runnymede* and *Briton* were both thrown high and dry on shore on the inner Andamans, by a gale between ENE. and East; and Captain Doutry of the *Runnymede* informs me that most of the trees had fallen to the S. Westward, showing clearly that the centre of the Hurricane had passed to the South of this spot. The storm wave I shall presently consider; but return now to the *Royal Sovereign* on the opposite Coast.

We find that within a short distance of the Islands fronting the coast, on the 10th November, the *Royal Sovereign* had at 2 A.M. a heavy gale at WNW. when the vessel was hove to, and at 4 A.M. she was on her beam ends. At 11 it began to clear up, and noon was but a strong gale and clear weather.

Now from 2 A.M. to noon are 10 hours, and in this time a Steamer in such weather, when hove to, might drift at least fifteen or twenty miles to leeward, though keeping to with her steam; and the wind being to the Northward of West she might drift out of the edge of the storm circle, or as she seems afterwards to have steamed on to the NNW. have again ran into the vortex on its western side if it was one;

so that the gale was renewed with her at NNW. veering, as she was close to the centre,* by 8 P.M. to SSW. and moderating at midnight of this day, when she was about in Lat. $10^{\circ} 20'$ N. and at noon on the 11th it was fine.

We see, first, by the chart that on the 9th, the *Sovereign* was only abreast of the *Seyers* in $8^{\circ} 30'$ N., and on the 10th the whole of the ships, except the *Fattel Hair*, were at nearly two degrees distant from her; the *Runnymede*, the nearest of them, being at 110 miles off, and both the *Runnymede* and the *Briton* close to the centre of their storms, with which therefore the *Royal Sovereign's* has no sort of connection; for if it had, it must have been a steady gale from WSW.

It was then an independent (and perhaps an imperfectly formed) vortex, and we have now to see whether it had any connection with the double veering of the *Fattel Hair's* storm.

This vessel, we have seen, hove to at 6 P.M. on the 9th, being then about in Lat. $11^{\circ} 20'$ N., Long. $96^{\circ} 37'$ E.† with a gale at SSW., and this, by the way, *proves* that up to that time the centre of the principal, or great storm, had really travelled about West, as we formerly deduced. The storm was also probably expanding at this time.

The *Fattel Hair*, gradually drifted up with the SSW. gale and sea, so as at 1 A.M. or in 7 hours, when her drift might have been about twenty-five miles North, to have the wind SE. and at noon on the 10th the wind was "coming round from East to due North!" with her so that, as she could not be now near the centre of the principal (*Briton Dido* and *Runnymede's* Hurricane,) she had been overtaken by another one, or another one had *formed* with her, for we can easily conceive how a S. Easterly gale may by the effect of a new vortex come round, as is here described. Her position on this day at noon is not given, but I take it to have been—as she must have drifted to the NW. West, and even WSW. with the winds given—about Lat. $12^{\circ} 03'$ N. Long. $96^{\circ} 19'$ E. and as she had the wind North or Northerly at noon, she was moreover now to the Westward of the centre

* Or it may be that it was only just *forming*, and interrupted on one side by the neighbouring land? The log extract sent me is not very clearly detailed.

† This is deduced from her Latitude and Longitude at Noon, and her "keeping away (which I take to have been about NNE.) 32 miles," before she hove to.

of this new vortex, which seems I think to be evidently one thrown off from the great one, of which the centre as we have placed it for this day was now at ninety miles to the SW. of the *Fattel Hair*, and we cannot be *very* far wrong in her position or in *its* place also. If she had had any part of the great storm, she must have had a steady gale from the S. *Eastward*.

This is an instance then of a smaller and less intense vortex following, or being thrown off from, a large one, and it was certainly much smaller, for we find that with the wind North at Noon on the 10th, the *Fattel Hair* had it at a little past midnight at SW. or it had veered 12 points in, say, 13 hours, and was then moderating. I have thus marked it as a small circle, only to shew its independence of the main storm. I need not add that it had no connection with the *Royal Sovereign's* storms.

We have no farther data for tracing this storm within the Islands, and we have now to consider if *it* could have been the storm which dismasted the *Petite Nancy*.

I think decidedly not. We see that, presuming that it was travelling on from the 10th, and not breaking up of itself there, it must, to have reached the *Petite Nancy*, on the 11th first, have run faster than the *Fattel Hair*, which it did, since it left her with the winds from SW. at midnight 10th-11th, to SSE. at noon of the 11th, and then have overtaken the *Dido* again with another storm, from NE. or NW. striking her with its Western quadrants. The *Dido* had her second storm only on the 15th from the SE. and SW. so that she was skirting the Eastern edge of a storm already to the Westward of her. All this makes it probable that the *Petite Nancy's* storm was rather, if not a separate storm also, the *Briton* and *Runnymede's*, which must have been upon the Great Andaman, on the 12th, and probably between that day, and the 14th, forced its way over the mountain chains of that island, and travelled up or re-formed itself in the Bay.* The winds which the *Petite Nancy* had on the 12th when she was at 90 miles only from the body of the Great Andaman, and but a little to the Northward of the wrecked ships, were

* For an example of a storm forcing its way over high land and re-forming again, see Journal, Vol. XII. Eighth Memoir.

from the WSW. to SSW. and fine enough to allow her to carry a top-mast studding sail at midnight, while, had any effect of the storm been felt by her at this time, it must have been in Northerly or N. Westerly winds. On the 13th she had the winds from WSW. to SSW. and finally at midnight South, with sharp lightning at 9 P.M. and irregular sea, with a falling barometer about this time, showing that she was now just running into the vortex.

Her hurricane appears to have been of small extent, or to have been moving rapidly to the WNW. for it lasted with her not more than from 5 A.M. to about 10 P.M., or 17 hours, during five of which, from 5 to 10 A.M. when she broached to, she was running into, and with it, and we have no data for tracing it any farther. The circumstance of its being followed by so many days of dead calm is very remarkable, and has not hitherto occurred in any of the storms which we have traced in the Bay of Bengal. We must now go back to the *Runnymede* and *Briton* to trace from their logs and positions so far as we can do so the effect of the storm wave.

We find that on the 18th, when the ships, though then in the hurricane, had not been so long enough to make their positions *very* uncertain they were at 70 miles distance, and about East and West of each other. Taking the mean of this to be an average position, and the two ships as one, since they were both cast on shore at the same place, they will then be at this time,—noon of the 10th,—in Lat. $11^{\circ} 4' N.$ Long. $95^{\circ} 38'$; and the spot on which they were wrecked bearing from them about WNW. 150 miles, which represents their drift made good, from noon of the 10th to about 1h. 30m. A.M. on the 12th, or in $37\frac{1}{2}$ hours.

Now Capt. Hall of the *Briton* estimates his drift at not more than four miles per hour, and Capt. Doutty of the *Runnymede* his at three miles. Their *mean* drift (as we have taken the *mean* positions) would then be $3\frac{1}{2}$ miles per hour, which for the $37\frac{1}{2}$ hours gives a distance of 130 miles, and leaves only 20 miles to be accounted for as the effect of the storm wave, which is therefore quite trifling.

Its rise on the shore, which must have been immense to throw the ships so high, has already been noted. It would appear that all ships when blown over so far as to lay with their lee gunwales in the water

drift much more rapidly to leeward than is supposed, and seamen in these extreme cases would do well to make large allowances, which will at least place them on their guard.*

The fact that in so narrow a sea as that between the Andamans and the Mergui Coast, which is only five degrees, or 300 miles across from Islands to Islands, a true rotatory storm of such terrific violence and yet of such small extent may arise, is also new and most instructive, and it is equally remarkable to find it making about the average track from ESE. to WNW. and travelling at about the average rate of the slow classes of our hurricanes in the Bay. It would have been of high interest to have ascertained if the storm was formed in the China sea, and crossed over the Peninsula, which is here only sixty miles broad, and so low that there is almost a water communication,† or if any signs of its formation were noted on shore; but unfortunately the British territory terminates at the mouth of the Pak-Chan river, in Lat. 10° 00' North, and the first European residents on the coast are to be found only at Mergui, two and a half degrees to the North of that point.

CONCLUSION.

If we had endeavoured to *invent* the most instructive lesson we could have devised for shewing the truth and utility of the Law of Storms, we could scarcely have imagined one better calculated for that purpose than this. The reader has only first to satisfy himself that the two storm circles of the 9th and 10th *must* have been nearly what they appear in the chart, and then to follow with his eye the tracks of the *Petite Nancy*, *Runnymede* and *Briton*, noticing what is said at

* As to the average rate of motion and track of the storm, we have its centre well marked at noon on the 9th, from which to midnight of the 11th-12th are 48 hours, and the distance from the centre of the 9th to the place of the wrecks, is about 184 miles; or not quite 4 miles per hour, on a course of, from point to point, N. 72° West. It however travelled from the 9th to the 10th not more than 60 miles, and thus did not make three miles per hour on that day.

† It has been roughly surveyed by Capt. Tremenheere, B.E. who found the greatest elevation to be about 450 feet; Journal Asiatic Society, Vol. XII, p. 520.



Chart
 TO THE TWELFTH MEMOIR
 on the
Law of Storms
 IN INDIA
 BY HENRY PULDINGTON
 THE BRITON AND RÜNNYMEDE'S
 HURRICANE in the ANDAMAN SEA. —
 Nov^r 9th to 14th 1844
Henry Puddington

88 90 95 100

pp. 363 and 364 of their falling Barometers and increasing bad weather, to be clearly satisfied that this was clearly a case in which the last two ships in a narrow sea, with a hurricane crossing their track, and in the face of every indication ran headlong into it; being tempted no doubt by the fair Westerly and S. Westerly winds, heaving or broaching to only when they could run no longer. Both commanders, indeed, when I had, by means of the transparent horn cards in my little publication, "The Horn Book of Storms," shewn them upon their own charts that they did so, fully agreed with me that had they better understood their position between the 9th and 10th they should not have run on as they did, but have hove to.

Now when we recollect what the value of the two wrecked ships with two-thirds of a European regiment on board *might* have been in India, had they been totally lost in time of war,—if there is any money value to be set on human life—it is impossible I think to rate too highly the lesson it conveys, severe as it must have been to the sufferers.

And finally when we bear in mind that this same predicament may yet occur to a whole fleet, either in the East or the West Indies,* or in any part of the world, and that a defeat from the elements may be as disastrous as one from the enemy, and by the failure of succour, involve even farther losses, I shall not I trust be thought over-earnest when I urge again on every man the intense importance of this science to Englishmen, above all other nations of the globe; and this storm is also in another light an undoubted proof of it; occurring as it has done in a sea where such hurricanes were before unknown!

* It *did* occur in the West Indies to the fleet under Admiral Rowley, and to that under the Spanish Admiral, Solano, in 1788. See Col. Reid's Work, 2nd Edition.

Some account of the Hill Tribes in the interior of the District of Chittagong, in a letter to the Secretary of the Asiatic Society. By the Rev. M. BARBE, Missionary.

MY DEAR SIR,—During my late trip to Chittagong I took advantage of the favourable state of the weather to visit the Hill tribes of that district, as a few months before I was amongst the Kookies I visited in my last trip the Bunzoo tribe. Having in my account of the Kookies described the banks of Chittagong river, I will not repeat here what has been mentioned before. I stopped one night at Rangunia, which is about 25 miles from Chittagong; and when there, I engaged the services of my old guide: this man had been of great use to me when I visited the Kookies. Having spent part of his life amongst the hill tribes, he is well acquainted with their habits; and I think that a person who is not a Government officer accompanied by him, might go with security to any of their villages. This Burman is a sportsman by profession, and consequently he can give correct information respecting the different species of animals which are found on those hills; but the characteristic custom of his nation being not to contradict persons whom they consider superior to them, when any question is put, the answer is not to be anticipated, because in every circumstance he will approve of it; so the only way to get the truth is to let him answer by himself, deducting of course something on account of exaggerations to which they are very much inclined. On the evening of my departure from Rangunia, I reached the east part of Sitacra hill, which is at two tides from Chittagong, and slept in a small village situated on the top of a hill, elevated from three to four hundred feet above the level of the river. The house in which I took up my abode belonged to an Arracanese who, having spent some years at Rangoon, spoke Burmese passably. The entrance to the house, which was elevated nine feet from the ground, was a spacious uncovered verandah; the building had several rooms: the hill being very steep on one side, the house was raised about fifteen feet on that side, and supported only by bamboos of small size. The old man received me with great kindness. He had with him eight children, one only being married. He said he was very anxious to see all his boys established; but as it was the custom to expend about 100 rupees for a bride, his means did not allow

him to marry them. Seeing the respect paid to the venerable old man and to his consort, reminded me of the life of the patriarchs.

On the morning we had a storm and heavy rain till 8 o'clock, so I could not begin the ascent of Sitacra hill before 10 o'clock ; at that time the thermometer was 82°. Ascending the hill I was scorched by the rays of the sun, but the effect of the elevation was marked on the temperature ; when I reached the top of the hill it was past 11 o'clock. I had the pleasure to enjoy a refreshing breeze ; and at 12 o'clock, the thermometer was only 78°. Sitacra is one of the highest hills of the chain, which extends from the east to the north-east ; its elevation is from twelve to fifteen hundred feet above the level of the river, and it affords the most magnificent sight I have ever witnessed. The view was extensive and charming—the sea to the S.W. ; to the W., Chittagong and Sitacoond ; to the N. W. the Ranee house, situated in a vast plain covered with water ; Chittagong river flowing in serpentine lines, and to the E. and N. E. a succession of peaks more or less elevated, clothed with vegetation, and appearing to draw closer together as they disappeared. The horizon was an immense circle ; and although the scenery was diversified, a single place could not be seen stripped of vegetation ; the most elevated spots were covered with shrubs, the hills have been crowned with *Jarool* and *Toon* trees, but they have been cut down by the different tribes, when they have cleared the ground ; all those places have been cultivated, with the exception of the narrow valleys which lie between the ridges of the hills. The humidity occasioned by five or six months of rain produces a vegetation full of vigour ; from the edge of the water to the top of the highest hill, the flourishing aspect of nature is a proof of the fertility of the land. Few of those hills are without springs. The air appears to be very good.

People living on those hills appear to be healthy and strong. I saw some persons above 70 years old ; and I was told that there was a woman whose age was 100 years. Last year many persons died of cholera. This disease was unknown to them fifteen years ago. Fever is the general complaint. I admired the idea of the Kookies, who believe that the greatest happiness of man after his death, consists in being placed on the summit of the highest hill to enjoy the pleasure of seeing the beauties of nature. The existence of a

Supreme Being who is to give a spiritual reward being above their conception, how can they imagine a greater happiness than the view of the most beautiful scenery?

Following the edge of the hill to the S. E., I passed through a village situated on the top of another hill, about 200 feet lower than Sitacra, whose inhabitants were Arracanese. I saw some Oolock and other monkeys on a high jungly jack tree, whose fruits are smaller than the common jack; they are good to eat, but have an acid taste: this tree grows very large; the wood is of a beautiful yellow color; the Burmese use it in building their boats.

When I reached the banks of the river it was four o'clock, the thermometer being at that time 88°; there I met several persons, who were waiting for me to get medicine: they begged of me to go to their village; but as it was too much out of my way, I declined their invitation. Some of them wished to accompany me; but as I knew that they were busy in sowing their crops, I would not accept their offer. These Arracanese are very hospitable, kind, and disinterested; I have been several times in their villages. They have accompanied me in my excursions, and I could never prevail on them to accept any reward for their trouble, nor for the different articles furnished during my stay amongst them. On the following morning I started from my boat, and crossed a plain for one hour in a southerly direction following a small path, and crossing several times a small stream and then ascended a hill elevated from three to four hundred feet above the level of the river, following the edge of that hill in an easterly direction. I saw at the distance of three or four miles the Bunzoo houses, situated on top of another hill called the Diamond mine; on another hill thirty or forty persons were busy in sowing paddy and cotton. It is the custom that all the people of the same village join in assisting one another for that purpose. When I reached the village it was past 10 o'clock, and the sun at that time began to be very powerful; the houses nearest to the creek were inhabited by Arracanese. The Bunzoo dwellings were on the summit of the hill; and hearing that no Bunzoo was at home, I went to the house of an Arracanese whose wife was from Tippera; she dressed like the Burmese women do, spoke a little of that language, and her features so much resembled those of the Burmese, that I took her for one of that nation. She offered me some

fruit, and a bottle of liquor distilled from rice; some time after, the house was filled with women and children: being the first European they had ever seen, their curiosity did not surprise me. In the evening the men came from their work, and the most respectable Bunzoo of the village asked me to take up my abode in his house. His dwelling being in a higher situation, I accepted with pleasure his offer; the house was elevated three or four feet from the ground, being twenty feet broad and eighty or ninety feet long, without any partition; to one side was a small room which he offered me. At the entrance of the house the heads of hogs, deer, and other animals killed in his hunting excursions were kept; a large fire-place was in the centre of the dwelling. Conical baskets, earthenware, and mats were all the furniture. The principal post of the house is considered by them sacred, and the head of the family is the only person who can touch it; should any other person do the same he becomes the slave of the master of the house. This Bunzoo was fifty-six years old, he stood five feet ten inches, and was well built; his hair was long, and tied after the fashion of the Burmese; he had projecting cheek bones, flat visage, scanty beard, and was of dark yellow complexion; his dress was a piece of cloth, one foot broad, round his loins. His wife and daughters were of middle size, but very stout; they had the Burmese dress, but the cloth was red and black; their breast was covered with another piece of cloth of the same color, one cubit broad and four feet long. His family consisted of four boys and three girls; he had two children from eight to ten years old, with black eyes, small lips, and displaying great intelligence. The other Bunzoos which I saw were not so tall as the men before mentioned, and the average is, I believe, from five feet two inches, to six inches. The women are, generally speaking, much stouter than the men. This tribe appeared to be grave and silent; this is remarkable in children, they shew no petulance, and partake of the character of their parents; six or seven of them were with me a part of the evening, and to my great surprise they paid as much attention to the conversation, as if the subject had been adapted to their intelligence. I was particularly struck with their civility, no one took a thing offered to him without previously saluting by joining his hands towards the person who gave, and the same ceremony was repeated by the donor: men, women, and children do the same; when spirits is offered,

the women dip their finger in the liquor, and then salute as before stated.

The Bunzoo food consists of rice, fruit, roots, vegetables, young leaves of trees, blochein, (which is prepared by the Mugs of Rangunia of shrimps salted and pounded,) and deer, hogs, fowls and goats. The Bunzoos admit the existence of a Supreme Being whom they do not worship, the reason being that "they have never heard about him nor seen him;" but it is not the same with the devil, whom they consider as the cause of all evil,—to him they attribute their diseases, the failure of their crops, &c., and to gain his favour they offer him pigs, goats, fowls, &c.; they believe in a place of torment, but what are the offences that deserve such punishment they don't know; they think that the greatest part of the dead come again into the world to animate other bodies, and persons who have been fortunate enough to secure the head of many wild animals are entitled to be rewarded in their future life: this is the reason for which they keep with the greatest care the heads of animals slain by them. The Kookies burn the dead, the Bunzoos do not. They hollow a piece of wood, deposit the dead in it, and bury it in the summit of some hill, putting in the same grave the heads of animals killed by them, spears, cloth, and money belonging to the deceased. On the Tenasserim coast the Kareans burn the dead, and keep one of the bones of the head for one year, and after feasting for some days, they take it with all the articles belonging to the deceased, on a hill where all articles are deposited which belonged to persons of the same caste. The Bunzoos never marry to persons of another tribe, and a wedding never takes place without spending much money. The father and mother of the young man apply for the bride, which is never promised unless she give her consent; should the young man be without parents the head of the village is to ask the bride's hand, the relations of the lady ask then a sum of money, from one hundred to one hundred and fifty rupees; if the young man has that money he pays it immediately; but if he has not, the bride's relations agree to receive it by instalments. The day of marriage being fixed, a feast is given to the relations and friends, and the young woman is taken by them to the house of the bridegroom, and without any further ceremony, the maid becomes wife. They have but one wife, and if she leaves her

lord's house without a just cause, her relations are obliged to give back the money received, but should the husband send her away he has no more claim. Should the Bunzoo, in his warlike excursions, capture any young women he generally sells them, but if he cannot he has them under his keeping without being considered his wives; their consorts are generally well treated, but they are far from paying them the same attention as the civilized people do. One of them asked me in the most serious manner if it was true, "that Europeans worshipped their wives." The chain of hills which separates Chittagong and the Tippera district from the Birman Empire is inhabited by a number of tribes differing little in appearance, but partly in habits and language; but the features of those tribes, particularly the flatness of the occipital bone, resemble the Burmese so much that I am not far from believing they have a common origin, and if the Bunzoos are not so strongly built, and so well made as the Burmese, it might be in consequence of their mode of living, which, as it has been observed by Cuvier, in few generations will deteriorate the physical character of the highest races of mankind. The Kookies appear to be the most numerous of all tribes; to the N. E. of Chittagong, not far from *Casalon* which is a branch of the Chittagong river is one of their kings, who rules over six or seven thousand houses; he has on his hill ponies, cows, &c. How far he takes advantage of his authority, I have not been able to ascertain. The Bunzoo tribe is chiefly centered towards the S. E.; having no annals of their own it is impossible to trace their origin, and to warrant an opinion on the subject, requires more information than I could get. According to them, formerly they were more powerful and numerous than they are now. The Kookies taking advantage of their number, subjected them to their yoke. Their language appears very poor, they have no word to express the days of the week, but borrow them from the Burmese. Their dialect contains many Kookie and Burmese words. They compute their years as the Kookies do by the number of their crops. Persons who build theories on the analogies of language, will find at the end of this letter a small vocabulary which will assist them. The Bunzoos distil from rice a fermented liquor, the drinking of which seems to afford them great luxury. They pour into a cup the spirit; which goes round the company, every person, not excepting the women and children, taking a draught, and they never separate till the liquor is finished; but how far

drunkenness prevails, or if they are addicted to intoxication, is more than I can tell. The Arracanese who live on the hills pay from three to four rupees of land-tax a year, but the Kookies and Bunzoo are rent-free; and should they be compelled to pay, being a wandering tribe free as birds, they would immediately leave their residence, and retire to the interior of mountains where no person could molest them. They are certainly the most independent people that can be seen: a no made life is for them the greatest happiness, and, as children of nature, their wants are few; and these wants they can supply in any place. They venture on hunting excursions when their agricultural labors are finished; spears and bows are their principal arms, and their dogs are always their faithful companions. Their exertions and agricultural labors are directed only to the growth of articles necessary for their subsistence, as paddy, yams, plantains, melons, tobacco, cotton, &c. They manufacture their own cloth, and exchange the cotton they do not require for salt, earthenware, &c. They plant a species of indigo growing about two feet high, the leaves which are large are employed to dye their clothes, which is done in the following way:—Taking a certain quantity of leaves, they put them in an earthenware vessel; when the water boils they dip in it the thread, mixing with it an extract of an astringent bark; they dry then the thread, and they repeat twice again the same process. The jungle affords them roots of trees or shrubs to dye green, yellow, &c.: salt is the only thing which they procure with some difficulty, but the hills contain several springs of salt water; two of those are found at Sitacoond, and there is another one in a creek on the opposite side of Sitacra. The greatest part of salt used by people living on the banks of the river was manufactured formerly there, and the spring is so impregnated with salt that it gives in weight half the quantity of the salted water; some of the tribes by burning trees procure an alkali, which supplies the use of salt.

The Guayal, *Bos frontalis*, is found amongst the hills, particularly to the south of Sitacra: there are two species, differing in size and little in color; the large one is of dark brown, and the male is nearly as high as a female elephant; the small one is of a reddish brown, it is the Tenasserim Bison, and the Arracanese call them by the same name as the Burmese do. Those Guayals are perfectly distinct from the Shio of the Kookies, which are smaller, have a projecting skin to their neck, and

differ also by the form and direction of the horns. Three species of wild dogs are found on those hills: the first species is known by the Burmese by the name *Oobe-looe*, and by the Bunzoos *Izenia*; this dog has pendant ears, from five or six inches long, muzzle from eight to ten inches, straight bushy tail fifteen inches long, length of the body three feet six inches, height from the ground two feet six inches; they are seen going alone or in pairs, and they never feed on animals killed the day before. The second species is called Mungui; they have the ears semi-pendant, going in packs from four to five; their color is white bay or spotted. The third species is *Tokooi*, they are small with straight ears, and go in packs from fifteen to twenty. The description of these dogs was given to me by my guide, and it was confirmed by the Bunzoos; I have no doubt of its being correct.

Returning from the Bunzoo villages, instead of following the same road by which I went there, I followed the course of a small stream protected from the rays of the sun by bamboos and other trees; another reason which made me choose this way was, that I had been informed that limestone was found in that creek; till now rocks of that nature are unknown at Chittagong, lime used in the district is carried from Sylhet, and purchased at the rate of thirty-five to forty rupees the hundred maunds.

It took me about three hours to get to Chittagong river; both banks of the creek were bordered either by rocks or by hills of various heights, presenting steep sides covered in some places with shrubs, the spring was not considerable, the water was fresh and clear as crystal; in some places the stream rolled gently down, and in others the water descended with impetuosity, forming basins of different dimensions according to the size of the defile: the place where the rock was mentioned is about a mile from the large river, it is from thirty to twenty-five feet high, and in a large cavity is deposited stalagmite, so I have very little doubt that the rock is a limestone; but as I expect a specimen of it, all doubts will be removed on the subject. At some distance from that rock was a bank of black clay, which the Burmese doctor recommends as a medicine to women who are in the family-way to strengthen them. I took some with me, the clay was then very soft, but the next day it was as hard as a brick.

This is, my dear Sir, all the information I could get about the Bunzoo tribe; had I remained longer amongst them, as I intended to do, this people would have given me other details which are desideratum in this imperfect sketch of their manners and customs, but my guide having taken ill with fever, I thought it was useless to prolong my stay amongst them, being imperfectly acquainted with the corrupted Burmese language spoken in the district.

V. BARBE.

Calcutta, 15th July, 1845.

<i>English.</i>	<i>Bunzoo.</i>	<i>Kookies.</i>
God,	Lookar,	Ngion mse.
Devil,	Krec,	Khasin.
Worship,	Mai-moo-roon,	Maimeck.
Person,	Mreiur,	Meiaur.
Man,	Mepa,	Mepa.
Woman,	Loo-now,	Noonoo.
Children,	Now-pow,	
Son,	Mepanow,	
Daughter,	Kemenow,	
Maiden,	Loogua,	Ar.
Husband,	Noo-pa,	
Wife,	Kamadoon,	
Head,	Loo,	Loo.
Forehead,	Mare,	
Hair,	Ssom,	Ssam.
Eyes,	Mhe,	Mut,
Nose,	Nhar,	Naar.
Ear,	Na,	Na.
Lips,	Mekka,	Noor.
Teeth,	Ah,	
Beard,	Mekkamoor,	
Neck,	Rhin,	King.

<i>English.</i>	<i>Bunzoo.</i>	<i>Kookies.</i>
Breast,	Atak,	Fsan.
Arm,	Keeb-an,	
Hand,	Coot,	
Finger,	Cootmatsar,	
Nail,	Cootmetee,	Coot.
Belly,	Madeer,	Madil.
Thigh,	Racoot,	Ell.
Leg,	Pai-ma-rai.	
Foot,	Pai,	Phai.
European,	Lhen,	Mengeaco.
Bunzoo,	Bom.	
Khookies,	Panguai,	Langet.
Shiamdu,	Koosak,	
Burman,	Ouksah,	
Arracanese,	Mareim.	
House,	Cur,	Teug.
Roof,	Curchun,	
Thatch with grass,	Phar,	
Bamboo,	Rhooar,	Kooe.
Ratan,	Kotoi,	
Posts,	Jurtoom,	
Door,	Ma kott,	
Window,	Wham kott,	
Dog,	Woee,	Hooee.
Cow,	Fswepai,	
Buffalo,	Fseloi,	
Guyal,	Tsar,	
Ditto Kooku,	Huesha,	Shio.
Pig,	Wai,	Wet.
Bird,	Wha,	
Peacock,	Oohdong,	
Snake,	Marooi,	
Hill,	Kamoor,	Toung.
Tree,	Teiu,	Thinn.
Ditto leaves,	Teiuna,	
Flower,	Par,	Paar.

<i>English.</i>	<i>Bunzoo.</i>	<i>Kookies.</i>
Grass,	Bair,	
Good,	Hatsar,	
Bad,	Hats-aloo,	
Heaven,	Van,	
Hell,	Hatsoopatee,	
Black,	Neekna,	
White,	Pooahklan,	
Red,	Pooahtsin,	
Green,	Pooahrin,	
Yellow,	Pooahapaal,	
Water,	Tooe,	Tooe.
Paddy,	Ts-am,	Tsan.
Rice,	Tsaksai,	Thathin.
Ditto boiled,	Boo,	Boo.
Oil,	Kersee,	
Brandy,	Arahani,	
Sick,	Hatchong,	
Fever,	Damloo,	
Vomit,	Mailoo,	
Evacuate,	Sun-yute,	
Fool,	Maremkloh,	
Cool,	Atakdye,	
Knife (table,)	Tsenzoon,	Tsur.
Fire,	Men,	
Silver,	Tongkha,	
Gold,	Guoon,	Gnoon.
Copper,	Dhar,	
Necklace,	Maisee,	Shal.
Bracelet,	Arkhoil,	
Handkerchief,	Beaar,	
Governor,	Kophoo,	
Bengalee,	Koar,	Lowoon.
Death,	Meetec,	
River,	Whaa,	Boo.
Firelock,	Tselei,	Thali.
Powder,	Tseleitsec,	Talaitse.

<i>English.</i>	<i>Bunzoo.</i>	<i>Kookies.</i>
Shot,	Tseleimoo,	
Bottle,	Pelan,	
Year,	Koomnee,	
Month,	Tsakkar,	
Day,	Neekar,	
Night,	Zytye,	
One,	Kakar,	Keaka.
Two,	Penakar,	Panika.
Three,	Toomkar,	Toomka.
Four,	Leckar,	Ta.
Five,	Raignakar,	Nga.
Six,	Rhookar,	Koo.
Seven,	Sreckar,	Sree.
Eight,	Raikar,	Rae.
Nine,	Khooakar,	Ko.
Ten,	Tswurkar,	Sunka.
Eleven,	Tswinlakakar,	
Twelve,	Tswinlanekar,	
Twenty,	Roobookar,	
One hundred,	Raizaaker,	Rasa.
One thousand,	Tsankar,	Sunka.
Man's dress,	Ram,	
Woman's dress,	Kyer,	

FOR LIBRARY USE ONLY.

