This little area is interesting only as proving the former extension of the formation to which these rocks belong, but is economically, of no value whatever.

No. 334.

Copy of this letter and of its enclosure forwarded to the Asiatic Society.

On the quantity of Silt held in suspension by the waters of the Hooghly at Calcutta, in each month of the year. *By* HENRY PIDDINGTON, *Curator, Museum of Economic Geology.*

I some years ago (1842) collected for examination a set of two bottles of the waters of the Hooghly taken on the 1st of each month, at noon, at Calcutta and at Burisaul, with the view of obtaining a fair average of the actual amount of silt held in suspension by the waters of the Hooghly and the Burrampooter near their mouths. The time of tide was purposely neglected, as either high or low water, or any intermediate term between these would have given a result perhaps farther from a fair average than taking it at all times.

One set of these bottles I sent to professor Ehrenberg for his researches on the Infusoriæ. His reply did not reach me, but Dr. Falconer informed me that he had received them and spoke highly of the curious results he had obtained. A press of other matter prevented me from following out the enquiry I then proposed to myself, and the bottles remained in the Museum.

In the course of some private researches connected with questions arising in my mind as a member of the Hooghly River Committee, I was again desirous of ascertaining the average amount of silt, and I fortunately found that 11 out of 12 of the Hooghly-water bottles were yet forthcoming, but only seven of those from Burisaul; but the loss of these last was not so much to be regretted, as Burisaul is not favourably situated for the collection of specimens of water from the great Ganges. The results here stated then relate to the Hooghly only, at Calcutta.

The annexed table represents in columns the results obtained in each month from a given number of fluid ounces of water; column A being the contents of each bottle carefully measured, the mean of which is 25⅓ fluid ounces; column B represents the total amount of sediment of all kinds as found, varying from 29.25 gr. in June to 3.25 gr. in October!

Tabular statement of the amount of Silt in the water of the Hooghly at Calcutta for each month in the year 1842. *The water being taken at Noon, on the first day of each month.*

1842.	A Quantity of water.	B Total of sediment.	C Earthy matter.	D Carbonate of Lime.
	Oz.	Grs.	Grs.	Grs.
January, ...	22.¾	4.75	3.00	1.75
February, ...	26.¼	7.10	00.00	7.10
March, ...	28	24.00	6.25	17.75
April, ...	26.¼	27.75	11.15	16.60
May, ...	23.¾	18.10	6.45	11.65
June, ...	24 ½	29.25	21.00	8.25
July, ...	25.¼	11.00	6.40	4.60
August, ...	27.¾	13.65	5.50	8.15
September,...	26.½	11.65	5.90	5.75
October, ...	22.½	3.25	2.15	1.10
November,...	26	10.00	2.12	7.88
December,*	24.½	7.37	2.56	4.81
Mean, ...	Oz. 25.⅓	Grs. 13.99	Grs. 6.04	Grs. 7.95

No doubt the state of tide has to do with these amounts, but the average of 13.99 gr. for the whole year is perhaps not very far from the truth? Column C contains the weight of earthy matter

* December Intercalated between November and January.

only, when separated from the amount of Carbonate of Lime which, as will be seen below, it was both necessary, and of great interest to obtain. Column D shews the amount of Carbonate of Lime ; and herein a very curious fact, which is of much geological importance was disclosed, namely, that in some months so large a portion of Carbonate of Lime is held in solution by the waters of the Hooghly, that, as the Carbonic Acid evaporates, it is deposited in a crystalline crust at the neck and on the sides of the bottle, and in a few of these months it even forms a small cup-shaped stalactite on the apex of the bottom of the bottle ! adding thus very largely to the actual solid contents of the water when we come to consider them geologically.*

The table thus shews, as a mean result, that while the average of other earthy solid matters amounts only to 6.04 grains, the carbonate of lime amounts to 7.95 grains, or nearly one-third more in weight ; so that a rock formed of such silt would contain in round numbers 60 per cent. of carbonate of lime ! or be in other words a good *Kunkur !*

Reducing the fluid (apothecary's) ounces of water to cubic measure at 1.73296 inches to a cubic ounce, the average quantity of water 25.33 oz. will be equal to 43.89587 inches ; which, to save decimals, we may call 43.90 cubic inches of water, containing 13.99 grains of silt ; which for a cubic foot will give 550.677 grains or $1\frac{1}{8}$th of an ounce by weight of solid silt !

I had also collected a small quantity of the silt deposited in the tanks in which the river water at Chandpaul Ghaut is pumped up for the aqueducts of the town, which contains, I find, 10.85 per cent. of calcareous matter, and taking this to be the average of the silt, I found that a cubic inch of it, moistened and beaten hard, and

* In a paper "*On the fertilizing principle of the inundations of the Hooghly*," published in vol. xviii. of the Society's Transactions twenty years ago (1833) I shewed, page 224, that lime, and not vegetable matter, was probably the fertilizing principle of the silt of the Hooghly, in which it was found to exist to the amount of 6 per cent. I also shewed that the drainings from the mud were highly impregnated with carbonic acid holding lime in solution. Sir Charles Lyall, Elements of Geology ; page 89, vol. I. of edition of 1841, says in reference to this, that it throws great light on the mineralization of organic bodies.

dried to the consistence of a sun-burnt brick (a *kacha* brick as it is called) weighed 424 grains, so that each cubic *foot* of water contains 1.2988 cubic *inches* of solid matter; or in other terms, each cubic foot of water holds $\frac{1}{1330}$ (one thirteen hundred and thirty-third) part of its bulk of silt in suspension on an average of the year, opposite to Calcutta.

In the months of March, April, May and June, in which the largest amount of deposit is shewn, the average it will be seen is much higher, being as follows.

	Cub. Ins.
Average quantity of water, ...	25.50 oz. or 44.190.
of silt,.....	24.77 grs.
of carbonate of lime,.....	13.56 grs.
of silt, in each cub. foot,	1678.92 grs.

being $\frac{1}{436}$ part (one four hundred and thirty-sixth) of its bulk, of which more than one half or $\frac{135}{247}$ is carbonate of lime!

This is far higher than the Rev. Mr. Everest's result for the four months of the rains at Benares, of $\frac{1}{855}$ in bulk,* but it is evident that no parallel can be established between the waters of the great Ganges at Benares and those of an offset of it like the Hooghly, flowing through a vast extent of alluvial soil; depositing and receiving on its progress the detritus of both new and ancient alluvial soils, and of primitive and transition rocks from the country on its western shores; but the whole result now obtained here is a highly curious one, and I think well worthy of being placed on record.

I find that water taken on the 24th January, from the middle of the river is turbid, but nothing more, and cannot hold much more solid matter in suspension, than is shewn by our table. Upon testing it by lime-water the large quantity of carbonic acid gas which it holds in solution (and which indeed is seen rising from it in bubbles when the bottle has been carried through the heat of the sun) is immediately apparent,† as is also the lime by Oxalate

* See Rev. Mr. Everest's paper; Journal As. Soc. vol. I. p. 238 quoted by Sir Charles Lyall also, in Principles of Geology, p. 269.

† The absence of sulphates being first ascertained by Muriate of Barytes and the carbonate redissolved by Muriatic acid.

of Ammonia; both assays demonstrating clearly the perfect truth of the foregoing details.

POSTSCRIPT.

It was correctly remarked, I think by Major Baker, when this paper was read at the meeting of the Society, that water taken at the surface would hold less silt in suspension, as that at the bottom would hold more, than the true mean amount. Agreeing fully in this, I have contrived a plan for obtaining water at any moderate depth, and am collecting another series of specimens to include both the surface and the mean depth water. I have moreover obtained the assistance of Mr. H. Hiller, Commanding the H. C. Outer Floating Light Vessel, and have supplied him with directions so that I trust we shall be able to have this singular problem fully investigated in a year or two.

H. P.

Notices and Descriptions of various Reptiles, new or little known.— *By* EDWARD BLYTH.

(Continued from Vol. XXII. p. 655.)

CALAMARIA CATENATA, nobis, *n. s.* (*C. monticola?* Cantor, *P. Z. S.* 1839, p. 50).* No anterior frontals: the vertical plate broad, pentagonal, and almost as large as the occipitals: 13 rows of scales: scutæ 187; scutellæ 41 pairs. Predominant colour dusky above, formed by minute black specks upon a pale ground-tint; below pale buff with an iridescent lustre, and marked with lateral series of square black spots chiefly upon alternate scutæ. Four black lines throughout above, the upper bordering a pale medial streak, which is simple upon the tail, but along the body forms a concatenation of elongated oval spots. An imperfect whitish-buff collar, and similar marks before and behind the eye. Length of specimen 17 in., of which tail 2½ in. From Asám. Mr. Robinson.†

C. RETICULATA, nobis, *n. s.* Vertical plate hexagonal, angulated to the front, and not half so large as the occipitals: supra-orbital

* "*C. olivaceo fusca, collari, lætè flavo, lineâ dorsali albicante, abdomine citrino. Scut. abd.* 125; *scutel. subcaud.* 44. Hab. Naga Hills."

† This and other species sent by Mr. Robinson, we much suspect are from the Khásya hills, or other upland territory.