

Feroze's canal, which was re-opened a few years since, in the neighbourhood of Dehli, is said to be an object of no little importance; and that its value is well appreciated, in the prospect of ample remuneration, which the revival of such a source of universal benefit and utility to the neighbourhood holds forth. A tolerably accurate professional opinion, it is believed, warrants the deduction, that occasional dis-appointments are reasonably to be expected, both as they respect the extent of the benefit and the scale of physical difficulties, which are said to be renewed annually.

The Chevalier de Buat did not write, or construct formulæ for Indian hydraulics; nor could any one of his calculations embrace the peculiar case of a torrid sun, and a soil so thirsty, as to reduce a vast column of water at its nether extremity, to an evanescent quantity.

The English Engineer will be entitled to all the honour, as he must submit to all the labour, to be encountered under such unparalleled difficulties. The Italian engineer has to deal with streams more susceptible of control than those traversing the plains of Hindustán; which Major Rennel informs us, have sometimes deviated more than two miles, in ten times as many years.

The British engineers have two magnificent rivers, the Ganges and Jumna, on which to bestow their ingenuity, and their labour; and these engineers will have the more to boast, when they place themselves in a condition to assert, that they have turned to good account the two noblest means of enriching a country ever presented by nature, and have restored to her a situation, not merely equal to what she enjoyed in former times, but even of raising her to a condition of prosperity unknown to any country on the face of the globe, not excepting even China, or the northern states of Italy.

H. D. E.

II.—Account of a Visit to the Biáns Pass in the Indo-Gangetic Range beyond the Head of the Kali* River.

[In a Letter from a Correspondent.]

I left Almora on the 27th September, in company with * * * * and * * * * and we arrived at Petara to breakfast on the morning of the 30th, a little after 8 o'clock. We had three good long marches, encamping, the 3d evening, near the Goorung valley. * * * * was to accompany us, but not being able to leave the post till relieved, we were obliged to halt till the 3d October, when we marched to Kandali China, a little beyond Dhaj. From thence we proceeded to Askót, a very fatiguing march, being compelled to send our ponies by another road, the greater part of the way, and the sun was very hot—with a steep ascent. The fatigue and exposure was too great for * * * * who was obliged to leave us, and returned to Almora. The next day we had hard work in getting our baggage across the Gári below Askót. The country about here is very pretty, but sadly infested by tigers, so much so, that the people bar their doors at night, and are afraid to venture out after nightfall. Some animal made a spring at a goat in our camp during the night, which roused us all up, and soon after we heard either a tiger or leopard at a short distance. We had chiefly limestone, till we approached the top of the range which is connected with Askót, where I found gneiss; in descending towards Askót, clay slate. I have said the next day we had hard work in getting our things across the river by a *Jaria*† (by which we had also to cross ourselves, as we did last year over the Rámanga); and if my companions and self had not put our hands to the rope, we should not have got over that day. We did in two minutes what the people took eight to perform, but it was hard labour. The 6th, we marched to Balúskot, our ponies having been left at Askót; the road through a thick jungle, about 500 feet above the Káli—rock not often visible—limestone—arrived at our ground between two and three o'clock, having breakfasted on the way, which detained us about two hours; the sun very powerful: 7th to Dobát a very long march, limestone, clay-slate, and si-

* One of the branches of the Gágra, and according to nomenclature ought to be the principal, being the name by which the Gágra within the mountains is known.

† A single rope stretched across the river, on which traverses a sliding block, to which the baggage or traveller is attached. From *larce*, string or rope.

liceous conglomerate* ; breakfasted near Darchála, and reached Dohát about sunset.

8th.—To Khélah, another long march ; rock chiefly gneiss ; arrived about sunset.

9th.—To Paliánsi in Chaodáns, being the furthest village—a steep descent to the Dharma Gúrit ; a violent torrent ; Sanga carried away during the night by the rise of the river 3 or 4 ft. occasioned by the descent of an *avalanche* higher up. Halted from 7.30 to 11 A.M. to allow of another being set up ; reached our encamping ground by torch light ; the latter part of the road being a very steep and continued ascent from the river,—the rock always gneiss. Chaodáns is a fine country, and the inhabitants are a fine race, similar in fact to the people of Jowahir—very fair and of athletic make.

10th.—To Gálahgar ; no village : rock small grained gneiss, mica-slate, and schistose quartz-rock. This was an unpleasant march, owing to heavy rain during the latter part ; we marched after breakfast, and did not arrive till dark. 11th.—To Nijangar ; halted to breakfast, and to allow our followers to cook a meal, as it was represented we should find no water on this side Nijungar ; a very long but gradual ascent (three hours) ; very little forest ; rocks as before mica-slate, gneiss, and quartz-rock ; on the top of the ascent quartzose mica-slate. To the Nijungar a very long and steep descent (four hours) along the most frightful precipices I have seen ; passed by flights of steps formed of small rough stones, 5 or 6000 ft. above the river, into which the slightest giddiness or uncertainty of the footing might have precipitated us. Encamped under a Wodar or overhanging rock about a mile above the Nijungar torrent, water some little distance ; it rained during the latter part of our descent, and we had a wet night.

12th.—To Budi the first village in Biáns, one of our longest stages. At the Nijungar we had mica-slate, but as we approached what I suppose the line of greatest elevation †, gneiss occupied its place ; granite also in blocks, but of small dimensions, and in no great number. Neither is the gneiss formation of much extent just here, and what is worthy of remark, we observed along the banks of the Káli in this neighbourhood secondary strata ; consisting of sandstones generally soft and incoherent, some of a fine grain, others of the conglomerate structure ; being composed of rounded pebbles imbedded in a basis. After passing what I considered the line of greatest elevation, we came to clay-slate again, with quartz-rock ‡, principally indeed varieties of the latter. These continue the whole way to the pass Lépu Dhúra.

13th.—To Kawalék. Passed the village of Garbia about half way (six miles) from Budi. At starting is a steep ascent of one hour, and we considered ourselves fortunate in having procured *yaks*||, which were of no little service. On the top of the ridge we found mica-slate. From this to Garbia and onwards to Kawalék, the country is beautiful ; between the two latter places, the road runs through a nearly level district beautiful wooded along the banks of the stream, which, as already noticed, are of secondary formation. Two species of fir, one of juniper, the yew, beech, and, towards Kawalék, gooseberry bushes were noticed. Here the Káli proper, which is, however, the smaller of the two, joins the main branch. The latter appears to originate to the westward, the people say at a distance of three days journey, and that the ridge from which it springs separates the districts of Dharma and Biáns. The view extends a considerable way up in that direction, the river appearing to have nearly a straight course.

14th.—To the pass Lépu Dhúra, whence Taklakót, the Chinese station or factory, is only three hours' journey ; marched about half past six, stopping to breakfast at the place called Kálpáni, where a stream of clear water about 25 feet wide, but very shallow, issues from the neighbouring rocks, on the left bank of the larger stream. About a mile further on we left our baggage and servants, taking only a small *paoni*, our beds, and some firewood laden on *yaks*, not wishing to trust altogether to the information given us that we might return thence by nightfall. It was fortunate that we made this arrangement ; for after leaving them at two and a half hours' journey further on, we did not reach them on our return from the pass till two hours after dark ; snow falling all the way. The ascent is very gradual, and the road ex-

* Local, we suppose.—Ed.

† One of the branches of the Káli or Gágra, which drains the Bhotia Pergunnah of Dharma, trans Imáms.

‡ Budi is to the north of the line of greatest elevation.—Ed.

§ One of the most generally-occurring rocks in these mountains might be called argillaceous quartz rock.

|| The *chaori*-tailed bull of Thibet.

belient; but owing to the great elevation the exhaustion and distress consequent on using the least exertion were so great that we were glad to mount our yaks, which however moved very slowly. We reached the pass about five P. M. and I almost feared at one time we should not arrive in time to have an observation of the barometer, which stood as follows:

Oct. 14. 5 P. M.	15. 820	34°.	24
	Inch.	Attd. Th.	Det. Th.

We were very unfortunate in our weather; could see nothing but clouds, which indeed completely enveloped us: excepting the Bhotiahs only one native reached the pass with.

All the way from Kawalék we found nothing but varieties of quartz-rock and chert, with a small patch of clay-slate, the same in fact as I found at Uta Dhira*. We had no beds of snow to cross excepting some new snow, which had just fallen on the pass†, about twelve or eighteen inches in thickness. I was surprised to find this pass so high, having understood 14 or 15000 feet to be the greatest elevation attained by Captain Webb in his journey.

The people, however, say that he did not visit the pass; so that his elevation must relate to Kalapani, beyond which they say he did not proceed. I have not the account to refer to; so must leave you to ascertain the matter correctly. M

Remarks by the Editor.

The above observation of the barometer is to be corrected for the capillarity of the tube which was a small one. The value of the correction was determined by comparison with another barometer, which again was compared with the standard one in the Surveyor General's Office. It was found to be .281 inch additive to the instrument observed at the pass. Taking this corrected indication and the corresponding observation made in Calcutta, and published in the monthly register given in the Government Gazette, the elevation of the pass is found to be 16844 feet. Captain Webb's result is 17598 ft. In the above calculation we have not attempted to correct for the hygrometric condition of the air.

The writer of the foregoing letter has promised us his detailed journal of the excursion, from which we hope to make some interesting extracts.

III.—On the Velocity of the Wind.

It is the object of the present article to invite the attention of the numerous scientific navigators, who are continually traversing the wide ocean between Europe and India, to a subject well suited to furnish them with amusement for the many leisure hours which such a voyage affords.

Nothing can be less satisfactorily determined than the relation between the force and the velocity of the wind; the tables which are given thereof in works of physical science are almost entirely deduced from theory, and there is great reason to imagine, that they would not agree better with experiment than those of the resistance of fluids, for which new rules and theories have been frequently invented, founded upon elaborate experiments and inquiries. It has been often said that a ship could "vie with the wind in swiftness," but is not such an expression understood merely in a poetical sense, without the notion ever being considerably entertained that a ship could positively sail as fast as the wind. And yet there is nothing chimerical in such a supposition, and the facts which shall be presently stated, go far to prove, that with the wind on the beam a good sailer can even *outstrip* the subtle element in her course; but as such a proposition will hardly be received as a fact without the con-

* The pass in Jowahir at the head of the Garjis or Gúri, the main stream and most distant source of the Gágra.

† Compare this fact with European speculations on the elevation of the line of perpetual congelation. Professor Leslie, and the Quarterly Reviewers fixed it at 10,500 for the latitude of 30°, a statement which continues to be gravely copied into most works, without the slightest hint of its being contradicted by observation. See in particular Myer's Geography.

‡ In the 6th vol. Journal of Science and Arts, there is a table of Captain Webb's results, and some particulars of this journey, from which we would infer that he did not visit the pass; the height, however, is given in this table 17598 feet, we suppose from geometrical measurement.—Ed.