

Explanation of the Elevations of places between Almorah and Gangri, given in Lieut. STRACHEY'S Map and Journal.

The elevations of places on my route to the lakes of Gangri, additional to the few that were already determined by the Trigonometric and Barometric operations of Captain Webb, have been deduced, in the way common with ill-equipped private travellers, from the observed temperature of boiling water.

My thermometer was small and bad, unfurnished with proper boiling apparatus (which is essential to correct observations), and lastly, it was broken before any comparisons could be obtained with a standard instrument to ascertain its error, for which purpose I had sent it to the Simla Observatory. The deduced heights are therefore liable to a wide range of uncertainty, for which I have been obliged to make arbitrary allowances, assisted only by a few boiling observations at or near places of known elevation on my route, which are inserted in the accompanying table. As my instrument was not readable to less than half degrees,—that is, when boiling in a common kettle over a smoky wood-fire,—the elevations cannot pretend to any precision within 250 feet, and I have, in most cases, therefore, made them up to the nearest quarter thousand; but the other causes of error, affecting measurements of this sort, will at least double that range of uncertainty, and the results cannot be considered anything better than rough approximations within 500 feet or so.

I have made the calculations by Prinsep's Tables (given in the Asiatic Society's Journal), which, though not strictly correct or complete, suffice for such rough observations. The mean temperature of the stratum of air under measurement (which materially affects the resulting elevation), is calculated as is done by Herbert in his Survey of the Alpine Sutluj (vide Asiatic Researches), by assuming the rate of refrigeration of the atmosphere to be 1° Fahrenheit for every 300 feet of elevation, and by deducing, according to this supposition, the temperature of the air at the level of the sea from the *observed temperature and the approximate height*.

I have reduced one or two Barometric observations by Manson, recorded in the Asiatic Society's Journal, for a few places about Rálam and upper Jwár, the mean temperature of the column of air being calculated as just explained, and neglecting the minor corrections, for temperature of instrument and decrease of gravity, as likely to be compensated, more or less, by the capillarity of the tube, regarding which no information is forthcoming.

Table of Elevations of places between Almorah and Gangri, to accompany Lieut. H. Strachey's Journal and Map.

No.	Name of place.	Nature of observation for determining the Altitude.										Elevation above the Sea in feet.	
		Trigonometrical by Webb.		Barometrical.		From Temperature of boiling water by H. Strachey.							Presumed Error.
		Height Deduced.	Authority.	Date.	Hour.	Temp. of Boiling Water.	Temp. of Air.	Elevation deduced.					
1	J. Strachey's hut on Binsar, near Almorah (estimated to be nearly 600 feet below top of hill, 7969 feet, T.)	..	..	1846.	3 P. M.	0	0	7007	393	7400	
2	Khazúchi's house, near St. Mark's Tower, Almorah, 50 feet below Tower (5188 B.)	..	..	21 Nov.	10 A. M.	199½	59	5280	158	5438	
3	Dol Bungalow, ..	..	..	7 "	sunset	202½	52	6065	35	6100	
4	Dew Dhura (vulgo Dee) Bungalow, ..	..	..	4 "	"	196½	53	6948	81	6867	
5	Pharka Bungalow, ..	..	..	3 "	"	201½	61	5880	34	5914	
6	Lohughát (Mr. Ramsay's house), ..	..	..	1 "	"	202	63	5630	19	5649	
7	Dhargara Bungalow, ..	..	..	31 Oct.	"	204	65	4474	36	4500	
8	Iron Bridge on the Sarju, 2 miles below confluence of Rám-ganga, estimated to be about the same height as Rámes-war, (1587 B.)	..	..	29 "	"	205	64	3892	..	1600	
9	Kantaganw Bungalow, ..	..	..	28 "	"	205	64	3892	..	3900	
10	Petoragah (Major Drummond's house), estimated 25 ft. above fort (5549 B.)	..	..	27 "	5 P. M.	202½	64	5328	256	5574	
11	Satgarh (Major Drummond's hut), 100 feet below top of Pass, ..	..	..	25 "	sunset	201½	59	5859	41	5900	
12	Singhali khán, (50 feet below Pass.)	..	..	24 "	"	202	60	5579	21	5600	
13	Village of Askot, (camp, 50 feet above.)	..	..	23 "	4½ P. M.	204	76	4519	570	5089	
14	Garjia Ghát, (estimated 35 feet below confluence of Gori and Káli, 2059 B.)	..	..	21 "	5 "	208½	63	1918	176	2094	

No.	Name of Place.	Nature of observation for determining the Altitude.										Elevation above the Sea in feet.
		Trigonometrical by Webb.	Barometrical.		From Temperature of boiling water by H. Strachey.						Presumed Error.	
			Deduced Height.	Authority.	Date.	Hour.	Temp. of Boiling Water.	Temp. of Air.	Elevation deduced.			
37	Confluence of the Tinkar River with Kali, 100 feet above,	..	..	23 Sept.	4 P. M.	194½	60	10,046	54	9900
38	Changrew village, (Estimated 500 feet above No. 37.)	..	..	..	..	..	..	..	..	10,500
39	Confluence of Kali with Kunti-Yankti, supposed to be the same as Webb's " <i>Katapani and Kali</i> ,"	11,413	..	..	..	..	..	..	..	11,413
40	Mangdang, or Kunti River,	..	..	25 Sept.	4½ "	192	56	11,518	232	11,750
41	Kunti village,	..	..	26 "	4 "	190	57	12,762	238	13,000
42	Sangchungma, encamping ground above the River,	..	..	28 "	5 "	188	41	13,652	348	14,000
43	Phia-mungba,	..	..	29 "	5 "	185	33	15,363	387	15,750
44	Lankya Dhura, top of Pass, (estimated 2000 feet above No. 44, and 1750 feet above No. 45.)	..	..	..	..	..	..	..	..	17,750
45	Welshia,	..	..	..	..	..	..	..	..	16,000
46	Bhaweti, at the Dharm-shola,	..	..	1 Oct.	9 A. M.	184½	29	15,598	402	16,000
47	Lama-Choktan, (Estimated 250 feet above No. 46.)	..	..	2 "	7 "	185	20	14,970	780	15,750
48	S. E. End of Chujia Tol, (estimated same height as the Lakes.)	..	..	..	..	..	..	..	..	16,000
49	Pass between Chujia Tol and Amlang, (estimated 1750 feet above valley on either side.)	..	..	..	..	..	..	..	..	15,250
50	Amlang, bottom of valley, (In Gangri.)	..	..	..	..	..	..	..	..	17,000
51	Jungbwa Tol, bottom of valley (estimated same height as No. 50),	..	..	3 Oct.	Noon.	186	45	15,025	225	15,250
52	Cho Lagan (Rakas Tal), level of Lake,	..	..	..	..	..	..	..	..	15,250
53	Gangri Mountains, average Height (estimated 4250 feet above Lakes),	..	..	4 Oct.	2 P. M.	186	54	15,291	..	15,250
		..	..	..	..	..	No. 55,	14,878	166	15,250
		..	..	..	..	..	mean	15,084	..	19,500

