

glacier, probably the largest of its class known, to the small ice-bodies of the High Sierra. There are also two piedmont glaciers known, one the Malaapina glacier, briefly described in this paper, and a second on the coast to the west of the Mount St. Elias, and named Bering glacier. This second example, however, has only been seen from a distance, and no white man, so far as I am aware, has ever set foot upon it. Of continental glaciers, the one in Greenland is the only example in the northern hemisphere, unless the recently discovered ice-sheet of Franz Josef Land should prove to be of this type.

Space will not permit of a comparison of the glaciers of North America with those of other regions, but it is safe to say that no other continent affords such a variety of ice-bodies, or in such numbers.

It might be said that it is unfortunate America should have so much ice, but this is a matter which may be considered in two or more ways. The moderating influence of glaciers on climate, their conservative action on water-supply, etc., are frequently far-reaching and beneficent. To the geographer and geologist, glaciers are of more than passing interest, not only as illustrating the intricate working of the laws of nature at the present day, but for the reason that they furnish the key for unlocking a most interesting and instructive chapter in the Earth's history. But for the study of existing glaciers, the records of the Glacial epoch would still be a sealed book.

THE ENVIRONS AND NATIVE NAMES OF MOUNT EVEREST.

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As so little is yet known respecting Mount Everest, owing to its inaccessible position far within the jealously guarded territory of Nepal and Tibet, from which Europeans are rigidly excluded, I here record some notes on its nomenclature and topography which I have gathered during a visit to the Semorum pass, in the Yalung valley of Eastern Nepal, and from a Tibetan map and other sources.

Of the alleged native names for this mountain, which in this country is designated after Colonel Everest, the founder of the Indian Trigonometrical Survey, which revealed the surpassing height of this mountain, the one that is still current for it amongst continental cartographers, namely, Gaurisankar, has been conclusively proved by the late Colonel Tanner to be the name, not of Everest, but of a much smaller and totally different mountain altogether, about 40 miles to the west of that giant.* Moreover, Colonel Tanner and General Walker have

* On this controversy upon the identity of Everest and Gaurisankar, see *Alpine Journal*, xii., 1886, pp. 483-463; *Proceedings R.G.S.*, New Series, 1886, vol. viii. pp. 88-91, 176-188, 257-268; vol. xiii., 1891, pp. 108-111; *Petermann's Mitteilungen*, xxiv., 1888, and pp. 251-252, 1890.

shown that, owing to the curvature of the Earth, it is physically impossible to see Everest at all from the Kakani ridge and Kaulia peak above Khatmandu, in Nepal,* whence Hermann Schlagintweit believed he saw it and derived this name of Gaurisankar, which is an Indian title of the conjugal Hindu god Shiva. Nor is Everest visible from Tonglu (or even from Phalut), whence H. Schlagintweit made his sketch of the peak which he supposed to be the Everest of the Survey.† For this latter reason, also, I may add that Hooker's name of "Tsangau," which expressly referred to a mountain seen from Tonglu, could not designate Everest, even were it the specific name of a particular mountain or range, which, however, it is not. Because this word "Tsangau," notwithstanding the attempts to twist it into a support of the Gaurisankar theory, is a purely Tibetan word, and literally means "The Snows of Tsang"—Tsang, of course, being the adjoining province of Tibet, to the north of the Himalayas of Sikhim and Eastern Nepal. The word "Tsangau," therefore, has no specific significance whatever as a mountain name. And further, as to Gaurisankar, not one of the many natives of Eastern Nepal whom I interrogated on this subject, and who lived within sight of the Everest range, had ever heard of the name Gaurisankar as the name of any of those or of any other mountains.

So also with regard to the other Nepalese names, Bhairab Langur and Deodhunga—these do not denote either Everest itself or even, as Colonel Tanner seemed inclined to concede, the range of which Everest is the culminating point. For Bhairab Langur, or "The Terrible Pass," is the Indo-Nepalese name for that formidable Tibetan pass, the Gung Tang La, which lies about 50 miles north-west of Everest, on the track from Nepal to Lhasa *via* Nyalam, or "Nilam," as the Nepalese pronounce that Tibetan name. It was over this pass that the Jesuit fathers, in the sixteenth and seventeenth centuries, passed on their way between Nepal and Lhasa, and they have left a description of it on record.‡ And Deodhunga, or Deodhanga, the Indian vernacular for "God's seat or hill," is merely a general Hindu epithet for any sacred hill or hillock. There are hundreds of Deodhungas, but Everest is not one of them, as it is not sacred to the Hindus, nor even known to them as an exceptionally high mountain. For it lies so far behind the outer snows that its surpassing height is not apparent to the Nepalese, who seldom go near any of the snowy mountains, except the few which

* General Walker showed (in *Proceedings, loc. cit.*, vol. viii.) that Everest is 25' (minutes) below the horizon, and has a very different azimuthal direction from Kaulia than that assigned to the peak referred to by H. Schlagintweit.

† Dr. Emil Schlagintweit, in his rejoinder to Colonel Tanner in *Petermann's Mitteil.*, above cited, writes, "The point of view on the Singalila range from which the Gaurisankar group was drawn, as it appears in the Atlas to vol. i. of the *Results*, was the Tonglo peak."

‡ Kircher's *China illustrata*, and Georgi's *Alphabetum Tibetanum*, article "Mons Langur."

are sacred to the Brahmans, and Everest is not one of these. Hence has arisen the confusion in the names of peaks as obtained from Nepalese sources—owing partly to the extreme difficulty in identifying peaks from great distances, but mainly due to the remarkable looseness of the Nepalese in their nomenclature of the snowy mountains.

The Tibetans, on the other hand, worship all the snowy mountains individually; and they especially worship Everest as the abode of "The five sister-nymphs of Long Life," and also as the hermitage of their great saint Milarapa.* And troops of pilgrims regularly ascend its flanks as far as the latter shrine, and still higher, for purposes of worship.

The Tibetan name of the Everest range, as pointed out to me from the Semorum pass by a Tibetan resident of Khumbu, at the southern foot of that range, was "Lapchi-Kang;" and the highest peak of that range was said to be Jomo Kang-kar, or "The White Glacier Lady." Another informant, however, maintained that Jomo Kang-kar was to the west of Lapchi Kang. But both agreed that our Everest was known to the Tibetans as Lapchi Kang. These two names, as noted by Mr. Freshfield, in the *Proceedings R.G.S.*,† have already been mentioned by Baboo Sarat Chandra Das as the Tibetan names of the Everest range and its highest peak. But my informants stated that this Everest range is properly "The lower Lapchi-Kang," in contradistinction to "The upper Lapchi-Kang," which lies considerably to the north of Everest, in Upper Tibet, and is not visible from Nepal.

In support of this nomenclature, I have seen in some Tibetan manuscripts the upper Lapchi-Kang noted as a high mountain as well as the Lapchi-Kang on the Nepalese frontier. And in the printed vernacular topography of Tibet, which has been partly translated by the above Babu,‡ the mountain "Chomo-kankar" comes second in the list of great snowy mountains, immediately after mount Kailas ("Tesi" or "Ti-se"), the Hindu Olympus, at the source of the Indus and Tsangpo; and it is described as lying in this locality in these words: "To the east of the Kirong district lies Nalam or Nanam, in the vicinity of which are . . . Toipa cave, the hermitage of the sage Milarapa, and Ch'ubar, the place where Milarapa died. All these places are on the Tibet-Nepal boundary. Close to them are the recluses' monasteries of Phelgya-ling and Targya-ling, in the neighbourhood of that grand and very lofty snowy mountain called Jomo Kang-kar, and at the foot of Lab-chhyi Kang, on the top of which are the abodes of the Ts'ering-tshe-nga, the five fairies who were devoted to Milarapa. At the foot of Lab-chhyi Kang, on the Tibetan side, are five glacial lakes, each differing from the others in the colour of its water. . . . Travelling northward

* See my 'Buddhism of Tibet,' p. 67 note, 371, 430.

† Vol. xiii. p. 109.

‡ *Journal of Asiatic Society of Bengal*, vol. lvi. pt. i. p. 1.

from Nanam, one arrives at the foot of a lofty mountain called Gung-thang La. . . . Crossing Gung-thang La, and going northwards, you arrive at the district of Tengri (Dingri)."

Some further interesting details of this locality are given in a curious Tibetan picture-map obtained by Mr. A. W. Paul at Darjiling. This map bears no title, but it evidently represents the southern flanks of the Everest range,* for it has inscribed upon it certain place-names which definitely fix its position here, namely, Ch'ubar,† the site of St. Milarapa's death, the Kyung (eagle-) cave, his favourite hermitage, several shrines of the Ts'ering-ma, the special nymphs of Lapchi Kang (Everest),‡ and on the top left and right hand corners respectively, are inscribed the names of the adjoining Tibetan districts to the north of Everest, namely, Nalam ("Nilam") and Dingri. As it gives a rough bird's-eye projection of villages, bridges, and pilgrims' routes on one of the flanks of Everest, with many new names,§ I have made a tracing of it, on which I have printed the names in Roman characters; and, whilst reproducing an exact transcript of the Tibetan spelling, I have added in thicker letters the spoken form when this differs considerably from the written, so that the names may be generally recognizable. A few of the names were too illegible to be deciphered.

In this picture-map, the snowy range at the top is represented as ending in five peaks of conventional form, of which the middle three are capped by clouds, and the other two snowy peaks on the right border, above Ch'ubar, are also cloud-capped. The bold cliffy peak between the two passes has such an individuality of form that it may possibly prove to be something of a portrait of the sacred rocky peak on the shoulder of Everest. The shrines and villages are all marked by fluttering prayer-flags; and in the original are figured numerous pilgrims ascending and descending the mountain-paths.

The names of the two snow-passes are labelled Laskyi Kang and Chi-tsi respectively. Both of these are somewhat suggestive of Lap-ohi Kang. For there are many ways of spelling native names in Tibet, owing to frequent differences between the written and spoken forms of the majority of native names, which are not fixed by printing; and this mountain is seldom named in printed books, as these latter consist almost entirely of translations of Indian Buddhist works and commentaries

* And not the Bhairab Langur pass, as was suggested in this *Journal*, *loc. cit.*, p. 110.

† In addition to the reference in foregoing paragraph, see also my translation of Milarapa's biography in my 'Buddhism of Tibet,' p. 67, where the *b* is misprinted *g*.

‡ These, it is possible, give their name to Everest or Lapchi Kang, or have been suggested by a false etymology, thus—Lha-ch'e Kang means "The Icy Mount of the Divine Sisters."

§ As will be seen, the spelling differs materially from that given in the brief notice of the picture in the *Proceedings*, vol. xiii. p. 110.

there is a suspicion of a trace of a *y* under the *p*, which would also give this meaning of "Outer pass." Babu Sarat Chandra Das uses indiscriminately *Ləpohhyikang* and *Labchhyikang*, *Chomokankar* and *Jomo Kangkar*, and also varies the spelling of other words,* so that it is not evident what the written form of the word was in his manuscript. The name of the left-hand pass, as written in the picture, although suggestive in sound to *Lap-chi Kang*, has the euphemistic meaning of "The Pass to Happiness," referring doubtless to *Milarapa's* attainment of *nirvāna* on this mountain.

None of the villages named on this picture are to be found on any of the Himalayan Survey maps to which I have had access. They would appear to lie to the east of the *Pangu* or "*Pang-ji*" pass, and presumably on a route not yet traversed by the native explorers of the Indian Survey. It is to be hoped that some explorer soon may penetrate the *Everest* range, and wipe out the standing slur on our geographical knowledge, in that, although its highest peak is visible from *Darjiling* and other parts of British territory, we know as yet next to nothing about the king of mountains.

OCEANOGRAPHICAL EXPEDITIONS.

I. THE GERMAN DEEP-SEA EXPEDITION.

LETTERS have been received by Sir John Murray from Prof. Chun, the leader of the German Deep-Sea Expedition, giving particulars of the work on board the *Valdivia* down to September 14 last. After referring to the lively recollections cherished by all the members of the expedition of the hospitality extended to them during their visit to *Edinburgh*, Prof. Chun details one or two mishaps to the scientific apparatus and machinery; fortunately no one was hurt, and the damages were speedily repaired on board, so that the scientific observations suffered no interruption. The results so far obtained are of great interest to naturalists and oceanographers. Serial temperature observations were taken in the warm and cold areas of the *Færoe* channel, respectively south and north of the *Wyville-Thomson* ridge, which separates the ice-cold polar water flowing southwards from the warm Atlantic water flowing northwards, with the following results:—

	Cold area.	Warm area.
Surface	9°·8 C. (49°·6 Fahr.)	10°·9 C. (51°·6 Fahr.)
100 metres (55 fathoms) ...	7°·8 " (46°·0 ")	9°·7 " (49°·5 ")
200 " (109 ") ...	7°·6 " (45°·7 ")	9°·7 " (49°·5 ")
300 " (164 ") ...	6°·8 " (44°·2 ")	9°·6 " (49°·3 ")
400 " (218 ") ...	3°·2 " (37°·8 ")	9°·6 " (49°·3 ")
500 " (273 ") ...	0°·4 " (32°·7 ")	9°·0 " (48°·2 ")
600 " (328 ") ...	0°·1 " (32°·2 ")	—

} Warm Atlantic under-current

} Cold polar under-current

* Thus *Tshering-tshe-nga* for *Tshering-mchhed-nga*. *Journal Bengal As. Soc.*, loc. cit., pp. 7 and 8; and *E.G.S. Proceedings*, xiii. p. 109.