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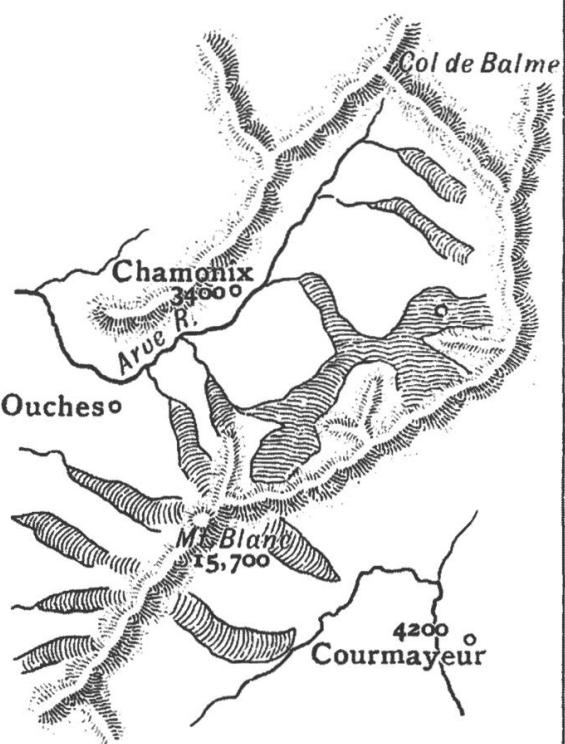
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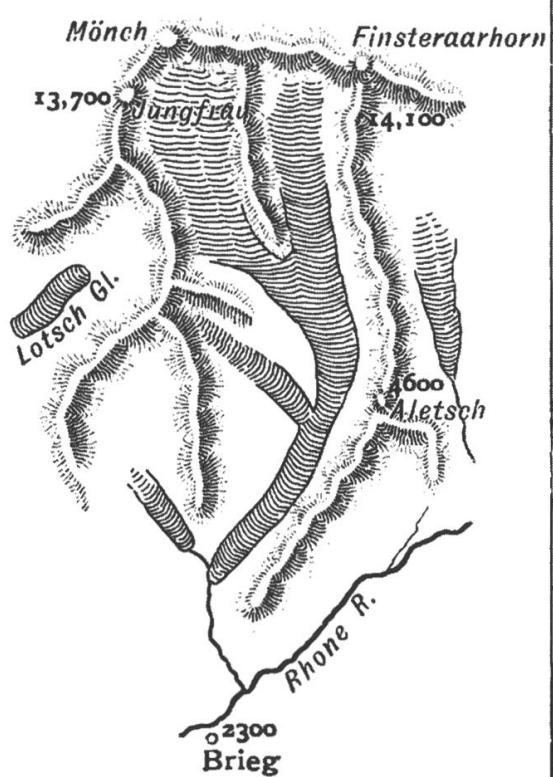
GLACIERS

Of the Alps.

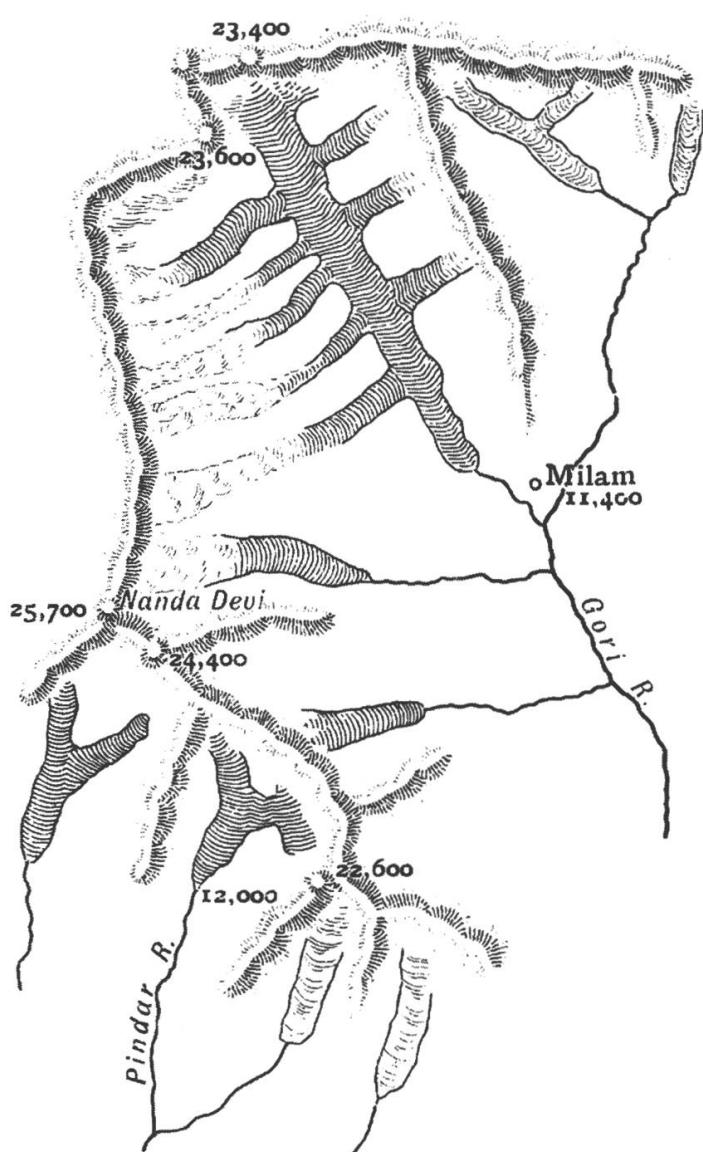
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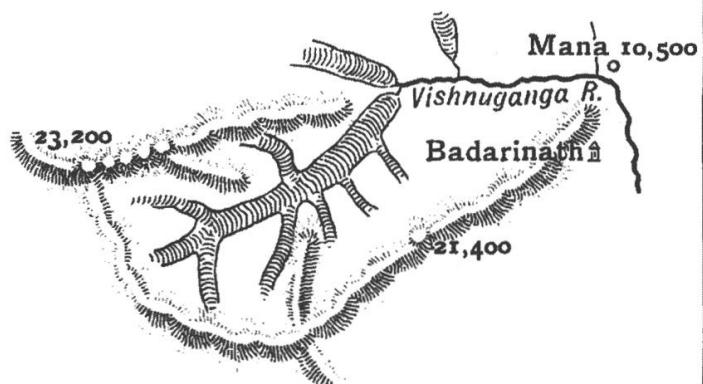
System of Mont Blanc.



Glacier of Aletsch.



Systems of the Gori and Pindar.



Glacier of the Vishnuganga.

Scale: Eight miles to one inch.

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10

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Natural science and the Kumaon Himalayas Richard Strachey, the Bhotiyas and knowledge- production (1846–1849)¹

Himani Upadhyaya

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Zusammenfassung – Naturwissenschaftliche Forschungen im Kumaon-Himalaya. Richard Strachey, die Bhotiyas und die Erzeugung von Wissen (1846–1849)

Dieser Beitrag behandelt die botanischen und glaziologischen Forschungen von Richard Strachey (1817–1908), einem britischen Militäringenieur, der zwischen 1846 und 1849 im Kumaon-Himalaya weilte. Im Laufe seiner Karriere bekleidete er einflussreiche Positionen, wie die des Präsidenten der Royal Geographical Society of London (1887–1889). Anhand einer Studie über Stracheys frühe Tätigkeit, seine Notizen und Veröffentlichungen in den Zeitschriften der Royal Geographical Society und der Asiatic Society of Bengal wird gezeigt, dass die Praktiken der geografischen und botanischen Wissensgenerierung im 19. Jahrhundert nicht nur durch zeitgenössische europäische Schriften über die Alpen und den Himalaya geprägt waren, sondern auch durch Erfahrungen vor Ort und das Aufnehmen von lokalem Wissen der Bhotiyas.

Introduction

This paper focuses on the natural science research of an East India Company military engineer, Richard Strachey (1817–1908), who travelled in the Kumaon-Tibet frontier area of the Himalayas between 1846 and 1849. The study of knowledge-production in natural sciences in nineteenth-century India has been conducted mostly around specialists trained in medicine who worked for the British East India Company as surgeon-naturalists. These include Joseph Hooker (1817–1911), who began his career as a professional naval surgeon after studying medicine at the University of Glasgow; and individuals such as Nathaniel Wallich and Robert Wight, who trained at the Danish Academy of Sur-

geons and University of Edinburgh respectively.² By examining Richard Strachey's forays into botany and glaciology in the Himalayas, this essay sheds light on a less typical case in the history of natural science research in India, which differed from the common trajectory of medically-trained men joining the Company as surgeons and subsequently investigating natural resources in the Company's territories.

With respect to natural science in the Himalayas, Richard Strachey's contemporaries are better-known than him – to name a few, the famous botanist Joseph Hooker, who travelled in the Eastern Himalayas during 1848–1851; surgeon-botanists such as John Forbes Royle and Thomas Thomason, who authored important texts on the natural history of the Himalayas; and reputed geographers and geologists, the German Schlagintweit brothers who made extensive journeys and scientific observations in the Himalayas and central Asia some years after him. Strachey trained at the Addiscombe Military School of the British East India Company for two years before moving to India at the age of nineteen in 1836. Born in Sutton Court, Somerset, he began his career in India with the Bengal Engineers. He held powerful positions such as Head of the Public Works Department; Inspector-General, Irrigation; Chair, Famine Commission and Chair of the East India Railway Company. He was also a key figure in the establishment of the Meteorological Department in India. In the last decades of the nineteenth century, he held important posts in London, including membership of the Imperial Council; Vice-President of the Royal Society, London and President of the Royal Geographical Society (1887–1889). The following lines from his obituary in the *Geographical Journal* capture his achievements and his family's influential position in imperial administration very well: "It is well said of him [Richard Strachey] that in the variety of his claims to distinction he may be regarded as 'the most remarkable of the Stracheys ... There was a time, indeed, when the Government of India was sarcastically called the 'Government of the Stracheys'".³

The following discussion, however, pertains to a less-known early phase of Richard Strachey's career, during which he travelled extensively in British Kumaon⁴ in the Himalayas, particularly in high-altitude areas of Kumaon on the border with Tibet. Following his involvement in the Satluj campaign of the Anglo-Sikh war of 1846, Lieutenant Strachey arrived at the hill-station of Nainital to recuperate; and soon, in 1848, the Government of the North-Western Provinces, with support from the Court of Directors, ordered him and botanist J. E. Winterbottom (1803–1854) to undertake an official mission to conduct scientific research in the Kumaon-Tibet frontier.⁵ Starting from the British headquarters in Almora, they proceeded northwards to high-altitude Himalayan villages in the frontier of the Company's territories; then crossed the wa

tershed that formed the boundary with western Tibet and travelled up to the Satluj river and the lakes Mansarovar and Rakas Tal in western Tibet. They collected a range of botanical, zoological and geological specimens during this two-month-long journey in the Himalayas and Tibet. Between 1846 and 1849, Strachey also undertook other smaller journeys to the high-Himalayan valleys and passes, subsequently producing maps and essays on the physical geography and geology of the Himalayas, which were presented to the Royal Geographical Society and the Geological Society when he returned temporarily to Britain for a five-year period.⁶ In her biography of the Strachey family, Barbara Caine tells us that Richard's catalogue on Himalayan plants and his geological research in Kumaon led to his election to the Royal Society in 1854.⁷ The opportunities of being situated very close to the mountainous frontiers of the Company's territories were not lost on him and he succeeded in making a mark in the wider sphere of nineteenth-century European science, where the Himalayan mountains and Tibet piqued popular and scientific curiosity. The following discussion is structured in three parts. In the first two, I go over some aspects of his observations on botany and glaciology while in the third I discuss the place of the local in his journeys and narratives.

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The Strachey and Winterbottom Herbarium: Scientific Botany?

In 1852, Richard Strachey prepared a plant catalogue of over two thousand botanical species, several of which he had collected with Winterbottom during their 1848 journey. The herbarium to which this catalogue referred would later become known as the Strachey and Winterbottom Herbarium (SWH). The Himalayan plants which composed the herbarium were first arranged in Almora with the help of Colonel Madden, a military officer stationed in Kumaon, who frequently engaged in botanizing work. The specimens were subsequently transported to Calcutta from where they were shipped to England and compared with the "properly named specimens" in the "great botanical collections in Europe".⁸ In their Introductory Essay to *Flora Indica* (1855), Hooker and Thomason showered praise on this Herbarium and remarked that it was "the most valuable for its size that has ever been distributed from India". The specimens of the herbarium, they noted, had been preserved beautifully and were labelled with "fullness and accuracy".⁹ The herbarium was distributed in 1852–1853 to the Hookerian Herbarium, the British Museum, the Linnaean Society and some foreign museums, carefully ticketed with notes of the locality and elevation at which the specimens were found.¹⁰ While we do not know what the original catalogue looked like, an edited version of the catalogue was

subsequently published in full in 1881 in E. T. Atkinson's *Statistical, Descriptive and Historical Account of the North Western Provinces of India: Himalayan Districts*¹¹ as a work on scientific botany of the region of Kumaon and Garhwal. The total number of species (excluding variants) listed in this revised edition of 1881 were around 2370.

When compared with the botanical collections of earlier and contemporary surgeon-botanists, which spanned over a much longer period, Strachey's collection seems small. For instance on their return to Britain, the collections of Nathaniel Wallich and William Griffith were over three times larger than Strachey's collections.¹² Similarly, when John Forbes Royle, the Superintendent of the Saharanpur botanical garden, retired, his personal herbarium contained 12 000 specimens.¹³ But Hooker's favourable comments on SWH should perhaps be seen in light of the size of collections – made in Himalayan regions during particular journeys over a short span – rather than entire collections. For instance, Thomas Thomason's botanical collections, compiled during his journey as part of the Tibet Boundary Commission in 1847 numbered 2500 species, and Hooker's own collections from the Khasia Hills in 1849–1850 numbered 3000 species and those in Sikkim and eastern Himalayas in 1848–1849 consisted of around 3500 species.¹⁴ Similarly, Wallich's collections from Nepal between 1820 and 1822 comprised 2500 species.¹⁵ Strachey and Winterbottom's herbarium, then, was noteworthy for its size. Besides the scientific names of the species, the catalogue captured tabular information on the habit of growth, the height of the plant, colour of flower, time of flowering, locality, condition of soil, elevation above sea, and whether found in Himalayas or Tibet.

In a narrative report on his official journey to western Tibet (published in 1900) Strachey claimed that a curious little leguminous plant, *Stracheya Tibetica*, was a new “discovery” and that this was a new genus. Drawing support from the expertise of his companion, he noted that even though the “real discoverer” was in fact Winterbottom, the latter had humbly and generously named the plant after Strachey.¹⁶ That a new genus was named after Strachey can also be corroborated by the account of a contemporary military officer, Edward Madden, based in Kumaon, as well as by a letter from Joseph Hooker to his father, William, at Kew.¹⁷ In a revised version of the catalogue published in 1906, around twenty-nine species bear associations with Richard's family name – *Saxifraga Stracheyii*, *Cetraria Stracheyi* and *Stracheyana Benth*, to name a few – and merely one with the botanist Winterbottom's. This number may well have been higher in the original catalogue.¹⁸ As Strachey inscribed European associations into scientific names of plants in the herbarium, a significant erasure also occurred in the process. The vernacular names of all of these plants are entirely absent from both versions of the catalogue as well as from

Strachey's own account of his journey published by the RGS. Archival traces of Strachey's travels and writings are marked by this erasure.

Further, neither Strachey's narrative report nor his catalogue contains any plant illustrations such as those in J. F. Royle's two-volume *Illustrations of the Botany and Other Branches of the Natural History of the Himalayan Mountains and of the Flora of Cashmere*. If botanizing was a primary aim, why were illustrators not hired? Strachey did not describe the morphology of the specimens either; nor was any detailed account devoted to the botanical findings published, by the government or privately, by either of the collectors themselves. These points seem to suggest that their collections were perhaps less sophisticated than those of their contemporary professional botanists. The latter often had to undertake official duties wherein economic botany was prioritized. Yet, there were some, like Robert Wight, whose wide-ranging botanizing work extended, often at personal costs, into scientific botany. Though Strachey's foray into botany occurred at a time when there was much enthusiasm for the commercial prospects of improving mountainous landscapes by cultivating profit-generating crops, his botanical research had little direct significance for economic botany.¹⁹ Moreover, he did not undertake any further botanizing work after the 1840s. But does that imply that Strachey was motivated purely by scientific curiosity, as claimed by Noltie with respect to Wight's botanical research in Madras and Sangwan with respect to Royle?²⁰ I shall return to this question in the Conclusion.

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Himalayan Glaciers, Alpine Frames and Bhotiya Guides

The Himalayas, Strachey urged enthusiastically in a note to the Asiatic Society of Bengal, were "one of the most favourable fields for investigation of glacial phenomena".²¹ While cautioning that his knowledge was limited to the glaciers he had visited in Kumaon, he claimed that in the Himalayas, like in the Alps, there were true glaciers²² at the head of almost every valley that descended from mountain ranges covered with perpetual snow. The existence of glaciers in the Himalayas, he exclaimed, should not be doubted at all. In 1847 and 1848, he had personally visited and observed three glaciers in the Almora district in British Kumaon – the Pindari glacier at the source of river Pindar, a tributary of the Bhagirathi; the Kafni glacier at the source of the river Kafni, a tributary of the Pindar, and the Milam glacier at the source of the river Gori, a tributary of the Kali. In addition to these, based on his interactions with locally-posted or travelling Company officials and local residents, he vouched that there were glaciers at the heads of several other rivers in Kumaon as well. Like

his botanical ventures, Richard Strachey's knowledge of glaciology was not derived from academic training or prior experience in mountainous landscapes. His knowledge derived, at least in part, from reading the work of the Scottish glaciologist and Professor of Natural Philosophy at the University of Edinburgh, James David Forbes (1809–1868). He supplemented his essay on the Pindari and Kafni glaciers with an extract on the principal phenomenon of glaciers from Forbes's recently published *Travels through the Alps of Savoy* (1843).²³ On this basis, he noted that the forms of glaciers in the Himalaya, the ice of which the glaciers were composed, and even their rates of motion were seemingly identical to those in the Alps as described by Forbes.

En route to western Tibet, when he arrived at Milam village in the Gori valley in 1848, after nearly three weeks of leaving Almora, Strachey proceeded to the head of the river valley. He observed that the Milam glacier was the source of the Gori River and at its surface it was about 11 miles long. To measure the rate of movement of this glacier, he set up marks at four stations, against which he compared the motion of the glacier after his return from Tibet. He concluded that rates did not differ much from those commonly observed in the summer months on glaciers in the Alps, somewhere between 9 inches and 27 inches in 24 hours. To emphasise the similarity of the glaciers he had visited with the best-known glaciers of the Alps, he even provided a woodcut image comparing glaciers in Kumaon with those in the valley of Chamonix in Savoy and the glacier of Aletsch in the Bernese Alps.²⁴ He was equally interested in questions about the geological past. For this reason, he examined both glacial moraines and the testimony of villagers of Milam, concluding that in the past the glacier had extended far beyond where it terminated then, in 1848. The villagers showed him a rock several hundred yards below the terminating point of the glacier, from which he inferred that the earlier terminating point of the glacier was much further. But he was not fully convinced about the extent. Instead, he identified an old moraine some considerable distance away to the east of the village, about two and a half miles from the present end of the glacier. This extension, he asserted, was much greater and more ancient. In these observations on Himalayan glaciers, though foregrounding "direct evidence" obtained by him, Strachey embedded quite intricately the observations of Bhotiyas – "natives" of the high Himalayan river valleys who resided in close proximity to glaciers and were also his guides through the high mountain terrain. It is important to remember that the high Himalayan regions and western Tibet were far from being *terra incognita* for the Bhotiyas. They are mentioned only fleetingly and implicitly as being one of his "sources" but testimonies and observations of the Bhotiyas were used frequently by him to bolster his geographical claims and to render them more credible. This is evident with respect to his observa-

tions of *baignoirs* or pools of water on the surface of the Pindari glacier. His unnamed guides, who visited the Pindari glacier far more frequently than him, confirmed that they had observed that some of these largest pools remained in the same place every year. Richard thus found a reliable ground to claim that the *baignoirs* of the Alps were a feature that existed on the surface of ice of the Pindari glacier as well.²⁵

In addition to the nature and behaviour of glaciers, he commented on another important topic with respect to high mountain regions – the line of perpetual snow in the Himalayas.²⁶ He observed that the line of perpetual snow on the southern face of the Himalayas was located at about 15 500 feet, much lower than that for the north, where it receded significantly to about 19 000 or 20 000 feet. This, he argued, was because the amount of snow falling on the north of the Himalayas was much less than that falling on the south. As the prevailing winds over the Himalayas blew in from the south, he explained, they shed almost all of their moisture as precipitation on the southern face of the lofty ranges. His brother Henry Strachey, who had also travelled through the high-Himalayan valleys in British Kumaon, in fact pointed out that Alexander von Humboldt had erroneously fixed the “perpetual snow line” on the southern face of the Himalayas at 11 700 feet even though agricultural settlements and vegetation in Kumaon Himalayas flourished at and above this level. According to Richard, this line lay at about four thousand feet higher than Humboldt’s estimate.

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Mountain ‘global’/ Mountain ‘local’

As mentioned earlier, Richard Strachey was mostly reticent on local or vernacular moorings of the objects of his observation. So much so that vernacular names of the plant specimens he collected were hardly noted at any place in his narrative. Unlike him, some of his contemporaries travelling in the Kumaon Himalayas offer us a better though still brief glimpse of these local settings. His brother Henry’s comments on botany were sporadic but some of his jottings included vernacular names of trees and plants he had seen. For instance: “Cypress (*Cupressus torulosa*), by the Khasias called *Saro*, by the Bhoteas *Tangshin*, a name which in other districts I understand they apply indiscriminately to any tree of the fir or pine species”.²⁷ In some cases, Henry also noted the significance of the plant to local cultural practices which connected Kumaon with Tibet. While leaving Sangchungma, an encamping ground at an elevation of 14 000 feet beyond Kunti village, he had observed that the “ground is covered scantily with grass and a few herbs, among which is *poh* (*Rhododendron an-*

thopogon) now in seed; I saw it in flower in Jwar last June, the whole plant is very fragrant and exported to Hundes for the benefit of the Lamas, who use it for incense".²⁸ Similarly, with respect to glaciers, Henry had expressed surprise at the fact that while the existence of Himalayan glaciers was being questioned or doubted even in the "30th year of British possession of Kumaon", these glaciers were well-known to the Bhotiyas of Byans under the term *gal*.²⁹ Though Henry Strachey does not offer any further description of the usage of the term *gal*, it is worth pointing out that he was more attentive to the vernacular than Richard. But, interestingly, this candid admission of the significance and perhaps superiority, in some cases, of the local knowledge of the Bhotiyas was made in the circles of the Asiatic Society of Bengal and not amidst the more global audience of the Royal Geographical Society of London. Additionally, in an attempt to justify this caveat in British knowledge, he quickly shifted the reader's attention to flaws in the reputed polymath Alexander von Humboldt's estimate of the line of perpetual snow on the southern face of the Himalayas. Humboldt had never travelled in the Himalayas but Henry Strachey's reference to him once again illustrates Humboldt's significance to European perceptions of the Himalayas, as noted in recent writings by Moritz von Bresius with respect to the Schlagintweit brothers; Lachlan Fleetwood with respect to the Scottish Gerard brothers of the Bengal Infantry and Mohd. Sohrabuddin with respect to Joseph Hooker.³⁰ Not surprisingly, then, in Richard Strachey's writings too, we find references to Humboldt though they occur occasionally and generally. Strachey's papers on the geography of the Himalayas presented to the RGS and the Geological Society began with a reference to Humboldt's views on mountains in Asia.³¹

And what of the views and beliefs of the local inhabitants such as the Bhotiyas, who resided in high mountains in Asia? On one rare occasion, Strachey commented on their conceptions of mountain geography. The usage of geographical names by mountain-dwelling inhabitants in Kumaon and Garhwal, he observed, confirmed Humboldt's observations in *Aspect of Nature* (1849). Geographical features such as mountain streams, rivers, mountain peaks and ranges, in Kumaon and Garhwal and their frontier with Tibet, he noted, with some hint of disappointment, did not have any distinct names – rivers were simply called *Ganga* meaning "the river" and mountain peaks and ranges took the names of the *deotas* or local deities who supposedly resided in them. It was only halting places, pastures and grazing grounds that had distinct names. Local conceptions of geography, Richard Strachey seemed to be suggesting, were not of a sophisticated nature and thus his essays on Himalayan geography had little space for *deotas* and local deities whose presence in the landscape shaped how local communities related to the mountains. In his work on the German

explorers, the Schlagintweit brothers, Brescius draws attention to one such instance when Adolph Schlagintweit was crossing the high pass of Nanda Devi in Almora, the Kumaon Himalayas, in 1855, with a diverse “establishment” which included but was not restricted to Bhotiyas (Milam village) and Brahmins from Almora. Adolph wrote in his report: “I was at once quite frightened by seeing three of my men, one after another, getting suddenly quite epileptic, they threw themselves down in the snow, turning their eyes and beating about with their arms and legs, evidently quite out of their senses, and all my people began to cry out ‘Nanda Devi Aya’ – ‘Nanda Devi Aya’. I was indeed rather a little frightened, since I feared that this nonsense might become contagious... I therefore took aside my two... Brahmins and told them...that I had given to the Nanda Devi everything they had asked for... I ordered them to calm the people at once, which they effected by Mantra, and snow applied to their temples.”³²

It is telling that this passage, which illustrates how European explorers in the course of their exploratory travels sometimes had to concede their authority to local deities and Brahmins, was removed from the official report on the expedition published by Adolph’s British patrons.³³

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Recent literature on the history of exploration has alerted us to note the local/indigenous actors on whom the success of travels by Europeans in unknown territories depended.³⁴ Unsurprisingly, Strachey’s itineraries, like others before and after him, were grafted onto older trans-Himalayan circulatory trade routes and networks of the Bhotiyas that extended to centres of trade in western Tibet such as Daba and Taklakot. While making trigonometrical observations of the peak of Mount Kailash in 1849, when Richard and his brother, Henry, went beyond Niti village in British territory to Daba in western Tibet, they allayed their fears about their safety by reminding themselves that there were more “British subjects” (Bhotiyas) than Tibetans in Daba at that time of the year. A year before that, when Strachey and Winterbottom had made their way on to Tibet from Milam, both had taken up even the attires of the Bhotiyas themselves. They abandoned their hats for felt skull-caps and put on the *baku*, the long gown worn by the Bhotiyas. Most importantly, Strachey and Winterbottom had mobilised a large team of sixteen Bhotiya inhabitants – two or three Bhotiyas from each village in the Juhar valley – along with their pack animals, which included *jhobus*³⁵ – to assist them in their journey. Out of these sixteen, only two men are named by Richard in his account – Bachu who was related to the “native official” in Juhar and Boru, the *padhan* (headman) of a neighbouring village of Tola who was their guide and helped them escape the queries of “over-inquisitive Tibetans”. Others took care of tasks such as loading and driving the cattle, pitching the tents, collecting firewood and water, cooking dinner and other domestic services. In addition to the Bhotiyas, “ordinary serv-

ants" (unnumbered, possibly non-Bhotiyas), too, accompanied them till they reached Tibet and waited for them to return to Milam in the British territory. The strength of having Juhari Bhotiyas as guides lay in the fact that not only did they speak Tibetan, in addition to their local Juhari language, but also ordinary Hindustani, which Strachey possibly understood. Their presence was very crucial to the exchanges that Richard had with Tibetan officials and other people encountered during the two-month journey.

In the early 1860s, Bhotiyas from the Milam village in the Kumaon-Tibet frontier were formally inducted by the Survey of India to be trained for secret projects of mapping trans-Himalayan routes. The narratives of their secret travels were published in the *Journal of the Royal Geographical Society*.³⁶ Though these projects of surveying have attracted their attention, historians of science have not paid adequate attention to the regional context from which the native surveyors came.³⁷ Their lives before the period of formal induction into the Great Trigonometrical Survey (GTS) as "surveyors" mostly remain outside the purview of the analysis of the historians of science. But this holds crucial clues to understanding the significance of the Bhotiyas to journeys of European officials, travellers, and scientists in the trans-Himalayan frontiers. While Richard Strachey had set off from Milam to western Tibet with a team of about 16 Bhotiyas in 1848, at the same time, Mani Singh Rawat, the son of the 'patwari' of Milam, was accompanying his brother Henry Strachey as an interpreter and "steward of his personal household" during explorations around Ladakh.³⁸ Two years before this, when Henry had visited Milam in the Juhar valley in 1846, it was again Mani who had been his primary assistant. And when Mani inherited the office of the 'patwari' from his father, he was again ordered by the Company to assist Adolphe and Robert Schalgintweits during their magnetic survey in the Kumaon-Tibet frontier in 1855. On this journey, they taught him to use instruments including the thermometer and even hoped to maintain meteorological registers at Milam and Munsiyari with his help. When Hermann and Robert proceeded to Leh, Mani was their chief interpreter who helped them plan their journey to Khotan and when they returned from there to proceed to Rawalpindi via Kashmir, they again solicited his services in 1856. Mani, then would have acquired a wealth of experience in making scientific field observations even before the GTS formally inducted him as surveyor in 1863.

Conclusion

The field of natural science research in the Himalayas was intricately connected with frontier diplomacy and it is hard to separate scientific and strategic interests especially with respect to Richard Strachey's 1848 journey. His journey had followed the Tibet Boundary Commissions of 1846 and 1847, which were the first attempts made by the East India Company to define their territorial boundary along the Kashmir and Ladakh frontier.³⁹ In the Kumaon-Tibet frontier, no formal Boundary Commission was designated as such but Strachey's journey provided strategic information about routes and networks in the border area. Strachey's scientific collections and observations in this frontier were also made possible by the confidence that the neighbouring Tibetan officials, Zung-pens of Daba and Taklakot, hardly posed any serious threat to the Company as western Tibet wholly depended on Bhotiyas for carrying food grains into Tibet; and Bhotiyas after all were British subjects. The confidence of this travelling military official in the loyalties of the Bhotiyas, however, stood somewhat at odds with the views expressed about two decades earlier by the Commissioner of Kumaon, G. W. Traill. Traill, who was more knowledgeable about local realities in the Kumaon-Tibet frontier, had observed that though they were a part of British territories the Bhotiyas were in an "anomalous state of subjection" as the Tibetan government continued to levy revenue demands on them.⁴⁰ This anomaly remained a feature of the subjecthood of the Bhotiyas for much of the nineteenth century.⁴¹

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With respect to the works and Indian careers of professional botanists such as Nathaniel Wallich and Joseph Hooker, David Arnold has convincingly shown that though they relied extensively on local communities and individuals for specimen collection and illustration, metropolitan audiences often disparaged their writings for these very local associations.⁴² In light of Arnold's work it is possible to read Richard's reticence on the involvement of local communities in his field research as a successful attempt at circumventing metropolitan criticism, which did not spare even his more professional and experienced contemporaries. Though Bhotiyas are not mentioned explicitly as plant-collectors, it is not unlikely that they may possibly have assisted him in the collection of botanical specimens during his 1848 journey. It is also noteworthy that to formulate his views on glaciers in the Himalayas, besides European experts, he equally relied on the Bhotiyas' observations on glaciers in their localities. Yet, he did not accept the validity of their local knowledge fully. His conclusions bore the mark of his individual intervention. Existing historiography tempts us to place Richard Strachey within hierarchies of scientific expertise – amateur, professional and philosophical. Though levels of expertise may

have differed, scientific knowledge on the field was produced through relations and networks which connected these different levels. This essay has illustrated the significance of recognising the diversity of actors in knowledge-production in the Himalayas by throwing light both on Richard Strachey and on the Bhotiyas, who were indispensable to his journey. Unlike the former, however, the involvement of the latter in scientific knowledge-production (particularly in the period before the GTS' trans-Himalayan surveys) remains marginal in the colonial archive.

In opening: Strachey, Richard, "Narrative of a Journey to the Lakes Rakas-Tal and Manasarowar, in Western Tibet, Undertaken in September, 1848 (Continued)", *The Geographical Journal*, 15, 4, 1900, pp. 394–415, <https://doi.org/10.2307/1774960>.

1 A short version of this paper was presented (online) under the title «Natural science researches in the western Himalayas in the nineteenth century CE» at the Conference Mountain «Global», 3–4 Sept 2020, University of Lausanne.

2 On Joseph Hooker, see D. Arnold, *The Tropics and the Traveling Gaze: India, Landscape, and Science, 1800–1856*, Seattle/London 2006; J. Endersby, «A Life More Ordinary: The Dull Life but Interesting Times of Joseph Dalton Hooker», *Journal of the History of Biology*, 44, 4, 2011, pp. 611–631. On surgeon-naturalists in India such as Francis Buchanan, Nathaniel Wallich, Robert Wight and John Forbes Royle, see R. Desmond, *The European Discovery of the Indian Flora*, Oxford 1992; M. Vicziany, «Imperialism, Botany and Statistics in Early Nineteenth-Century India: The Surveys of Francis Buchanan (1762–1829)», *Modern Asian Studies*, 20, 4, 1986, pp. 625–660; D. Arnold, «Plant Capitalism and Company Science: The Indian Career of Nathaniel Wallich», *Modern Asian Studies*, 42, 5, 2008, pp. 899–928; H. J. Noitie, «Wight and His European Botanical Collaborators», in: V. Damodaran, A. Winterbottom, A. Lester (eds.), *The East India Company and the Natural World*, Basingstoke/New York 2015, pp. 58–79; S. Sangwan, «From Gentleman Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780–1840», in: R. H. Grove, V. Damodaran, S. Sangwan (eds.), *Nature and the Orient: The Environmental History of South and Southeast Asia*, New Delhi 1998, pp. 210–236.

3 T. H. Holdich, «Obituary: General Sir Richard Strachey, G. C. S. I., F. R. S., LL. D.», *The Geographical Journal*, 31, 3, 1908, pp. 342–344.

4 British Kumaon was briefly under the Gorkha rule and was annexed by the East India Company (EIC) after the Anglo-Gurkha war (1814–1816) thus

giving the EIC a direct border with Tibet for the first time.

5 Home, Public, No. 114. Letter to Lieut. R. Strachey, dated 29 Jan. 1848, National Archives of India, New Delhi (NAI).

6 R. Strachey, «On the Physical Geography of the Provinces of Kumáon and Garhwál», *Journal of the Royal Geographical Society of London*, 21, 1851, pp. 57–85; R. Strachey, «Narrative of a Journey to the Lakes Rakas-Tal and Manasarowar, in Western Tibet, Undertaken in September, 1848», *The Geographical Journal*, 15, 2, 1900, pp. 150–170; R. Strachey, «On the Geology of Part of the Himalaya Mountains and Tibet», *Quarterly Journal of the Geological Society*, 7, 1–2, 1851, pp. 292–310.

7 B. Caine, *Bombay to Bloomsbury: A Biography of the Strachey Family*, Oxford 2006, p. 230.

8 «Notice of Lt. Strachey's Scientific Enquiries in Kumaon: From J. Thornton, Esq. Secy, NWP to Secretary, Asiatic Society», *Journal of Asiatic Society of Bengal* 19, 1851.

9 J. D. Hooker, T. Thomson, *Flora Indica*, Vol. 1, London 1855, p. 66.

10 Cited in E. T. Atkinson, *Statistical, Descriptive and Historical Account of the North-Western Provinces of India: Himalayan Districts*, Vol. 10, Allahabad: N. W. Provinces and Oudh Press 1882, p. 403. In the preparation of the Catalogue, Strachey acknowledged assistance from several people including Joseph Hooker and other members of the Kew Herbarium staff.

11 Atkinson (see note 10).

12 Cited in Hooker/Thomson (see note 9), pp. 45–66. As per the authors' observation, Wallich's herbarium comprised about 6500–7000 species (though Wallich himself had vastly overestimated the number of species to 9000). Similarly, Griffith's herbarium com-

prised about 9000 species, the largest ever obtained by individual exertions.

13 R. R. Stewart, «The First Plant Collectors in Kashmir and the Punjab», *Taxon*, 28, 1–3, 1979, p. 8.

14 Hooker/Thomson (see note 12), p. 72.

15 Arnold 2006 (see note 2), p. 153.

16 R. Strachey, «Narrative of a Journey to the Lakes Rakas-Tal and Manasarowar in Western Tibet, Under-Taken in September, 1848 (Continued)», *The Geographical Journal*, 15, 3, 1900, p. 244.

17 Major Madden, «The Turaee and Outer Mountains of Kumaon», *Journal of Asiatic Society of Bengal*, 17, 1, 1848, p. 588. Joseph Dalton Hooker Papers, JDH/1/10/283-287, 29 May 1850, Kew Archives.

18 This is one of the instances that reveal that there were hierarchies between European actors as knowledge-producers as well. Even though Winterbottom was a trained naturalist, it is Strachey's presence that is more firmly inscribed in the archival traces of the botanical researches discussed in this essay. J. F. Duthie (ed.), *A Catalogue of the Plants of Kumaon and of the Adjacent Portions of Garhwal and Tibet Based on the Collections Made by Strachey and Winterbottom during the years 1846 to 1849 and on the Catalogue Originally Prepared in 1852* (1918; 1974 edn).

19 Beginning in the 1830s, tea-nurseries were set up in several places in Kumaon including Almora, the lake region around Naini Tal and Dehradun.

20 Noltie (see note 2); Sangwan (see note 2).

21 Lieut R. Strachey, «A Description of the Glaciers of the Pindur and Kuphinee Rivers in the Kemaon Himalaya», *Journal of Asiatic Society of Bengal*, 16, 2, 1847, p. 809.

22 He gives the following definition of a glacier from an extract from James David Forbes – «The common form of a glacier is a mass of ice, that extends from the region of perpetual snow, into the lower valleys, which are clothed with vegetation; and that sometimes even reaches to the borders of cultivation. The snow line on the glacier, is somewhat lower than on neighbouring parts of the mountains; but below it, the snow is melted and disappears from the surface of the ice, as regularly and entirely, as from that country into which the glacier descends». *Ibid.*

23 Strachey (see note 21).

24 Strachey 1900 (see note 6), p.156.

25 Strachey (see note 21), p. 802.

26 Perpetual snow referred to the height above sea level above which the mountain was always covered with snow.

27 H. Strachey, «Narrative of a Journey to Cho Logan (Rakas Tal), Cho Mapan (Manasarowar), and the valley of Purang in Gnari, Hundes, in September and October 1846», *Journal of Asiatic Society of Bengal*, 17, 2, 1848, p. 105.

28 *Ibid.*, p. 134.

29 *Ibid.*, p. 107.

30 L. Fleetwood, «'No Former Travellers Having Attained Such a Height on the Earth's Surface': Instruments, Inscriptions, and Bodies in the Himalaya, 1800–1830», *History of Science*, 56, 1, 2018, f.n. 138; M. von Brescius, *German Science in the Age of Empire: Enterprise, Opportunity and the Schlagintweit Brothers*, Cambridge/New York 2019; M. Sohrabuddin, «Construction of the 'Himalayas': European Naturalists and the Oriental Mountains», in: S. Nag (ed.) *Force of Nature: Essays on History and Politics of Environment*, New Delhi 2017, pp. 87–108; Arnold, *The Tropics and the Travelling Gaze*, pp. 190–191.

31 Strachey (see note 6).

32 Cited in Brescius (see note 30), p. 182.

33 *Ibid.*

34 F. Driver, «Intermediaries and the Archive of Exploration», in: S. Konishi, M. Nugent, T. Shellam (eds) *Indigenous Intermediaries: New Perspectives on Exploration Archives*, Canberra 2015, pp. 11–30; D. Kennedy, «British Exploration in the Nineteenth Century: A Historiographical Survey», *History Compass* 5, 6, 2007, pp. 1879–1900.

35 A *jhobu* was a cross between a hill cow and a yak (male).

36 For instance, see T. G. Montgomerie, and Pundit, «Report of a Route-Survey Made by Pundit, from Nepal to Lhasa, and Thence Through the Upper Valley of the Brahmaputra to Its Source», *The Journal of the Royal Geographical Society of London*, 38, 1868, pp. 129–219; Captain T. G. Montgomerie, «Report of the Trans-Himalayan Explorations during 1867», *The Journal of the Royal Geographical Society of London*, 39, January 1, 1869, pp. 146–187; H. Trotter, «Account of the Pundit's Journey in Great Tibet from Leh in Ladákh to Lhásá, and of His Return to India Viā Assam», *The Journal of the Royal Geographical Society of London*, 47, 1877, pp. 86–136.

37 K. Raj, «When Human Travellers Become Instruments» in: *Relocating Modern Science: Circulation and the Construction of Scientific Knowledge in South Asia and Europe*, Delhi 2006, pp. 181–222.

38 Revenue and Agriculture, Surveys, Sept. 1893, Nos. 5 & 6, F. No. 164: Testimonial by H. Strachey dated 27 June 1846, NAI.

39 J. Marshall, *Britain and Tibet 1765–1947: A Select Annotated Bibliography of British Relations with Tibet and the Himalayan States Including Nepal, Sikkim and Bhutan*, London 2005, p.159.

40 G. W. Traill, «Statistical Report on the Bhotea Mehals of Kumaon», in: J. H. Batten (ed.) *Official Reports on the Province of Kumaon*, Agra 1851, p. 88.

41 C. Bergmann, «Confluent Territories and Overlapping Sovereignties: Britain's Nineteenth-Century Indian Empire in the Kumaon Himalaya», *Journal of Historical Geography*, 51, 2016, pp. 88–98; H. Upadhyaya, «Claiming the 'Bhotiya' for the British Empire» in: B. K. Joshi, M. P. Joshi (eds.), *Unfolding*

Central Himalaya: The Cradle of Culture, Dehradun/
Almora 2017, pp. 205–221.

42 Arnold 2006 and Arnold 2008 (see note 2).

