“CONQUERORS OF THE KÜNLÜN”? THE SCHLAGINTWEIT MISSION TO HIGH ASIA, 1854–57

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“Every industrious and ambitious man of science ... is Humboldt’s son; we are all his family.”
Emil du Bois-Reymond to Carl Ludwig, 26 June 1849

“That’s always been my dream. To have the latest scientific equipment in the middle of nowhere.”
Michael J. Balick, in conversation with Claudia Dreifus, “New York’s a jungle, and one scientist doesn’t mind”, The New York Times, Tuesday, 6 April 1999, F5

“The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.”
Marcel Proust

THE PICTURE
Adolph Schlagintweit began his last watercolour on 5 August 1857. It took him five hours to finish, though he had been careful to get up early enough to fix the light of his painting at half past nine in the morning, a good time for depicting the slopes and contours of the mountains around him. He worked with his habitual care in rendering the details of the landscape in the panorama before him — the rock outcrops, the sparse vegetation, the fresh snowfall. From his vantage at the crest of the pass he could make out a line of peaks marking the Künlin mountains stretch away from either side of him. Below that the plain of Eastern Turkestan remained hidden by fog. It was a fitting scene. No European since Marco Polo had crossed through this region of Central Asia, and that was more than five hundred years ago.

Schlagintweit aimed to be the first Westerner to revisit the legendary city of Kashgar. If his goal was clear, his motivation was not. It is not enough for us to say, echoing G. T. Mallory, “Because it is there”. Much like the entire enterprise of scientific exploration, the meaning of Schlagintweit’s three-year trek through India and High Asia is anything but self-evident. It really makes sense only against the background of history, where, like Schlagintweit at his painting, we can locate and map and consider. This essay will illustrate the Schlagintweits’ mission by positioning it within three contexts: one of aesthetics, one of politics, and one of religion. In this way the story of the Schlagintweits can help reveal some of the strangeness and fascination behind the image of nineteenth-century science.

Schlagintweit was born in Munich on 9 January 1829 to a rich and innovative
eye surgeon. His mother died when he was only ten; thereafter, Adolph and his four brothers were tutored by Franz Joseph Lauth, later Bavaria’s best Egyptologist. They received an outstanding education in painting and languages and science. None of the children showed any interest in medicine. Instead, the eldest distinguished themselves in science, showing such interest in the subject that Hermann, who had enrolled as a medical student to please his father, switched to physical geography after his first semester, and Adolph, who began his university training as a geologist at seventeen, had trouble finishing high school. They soon made a name for themselves with their researches in the Alps, publishing two monographs in 1850 and in 1854; these attracted the interest of Alexander von Humboldt, who arranged a three-year expedition to India and High Asia in 1854 paid for by the King of Prussia and the East India Company. Robert, who had accompanied Hermann and Adolph in the mountains during his vacations and done some research there on his own, was also permitted to join the expedition. After his return to Germany he was appointed assistant professor of geography at the University of Giessen, but, finding his students poor listeners, took to recounting his Asian travels to paying audiences in various lecture halls throughout Europe and the United States. He wrote several books about American railroads and died in 1885 as a result of pleurisy caught in San Francisco. He was fifty-two. Hermann, who had contracted malaria in India,
never fully recovered his health. He worked with Robert on the official report of the expedition at Schloß Jägersburg, the large estate near Forchheim they had bought to set in order the enormous quantity of material shipped back from Asia. Hermann also wrote a popular report of his travels, but this must not have sold very well, as he spent years trying to get the Bavarian government to purchase his collections. He succeeded only in disposing of some of the ethnographic objects. He died in a small apartment in Munich in the winter of 1882, aged fifty-five. Schloß Jägersburg was left to Emil. When he came to clear out Hermann’s things, he found that all his scientific correspondence and plant specimens had moulded over. They ended pulped in the Forchheim paper mill. The last of the brothers, Adolph, realized his ambition on 26 August 1857 and made it to Kashgar. He was apprehended by Vali Khan, the local chieftain, and then killed. In 1887 Russian and Chinese authorities dedicated a monument to his honour near the site of his execution in a ceremony as tense as it was absurd. The monument, which was nineteen feet tall and made of brick, later vanished. Floods were said to have washed it away.

In all it is a sad story. The simplest thing would be to blame the Schlagintweits’ misfortune on Alexander von Humboldt, for it was his example that they had always tried to match. The leading scientific figure in Germany during the first half of the nineteenth century, Humboldt has long been a subject of historical interest, in part due to disagreement over the significance of his work. He has appeared many guises: Humboldt the Romantic, intimate of Goethe and Schelling, tracing ideal forms across the surface of the globe; Humboldt the experimentalist, testing the limits of his equipment in the laboratory and in the field; Humboldt the Aufklärer, seeking balance, reason, and utility in the world around him; Humboldt the ecologist, spur to Darwin during his years on the Beagle; Humboldt the sage, founder of modern geography; Humboldt the reformer, liberal advisor to Prussian royalty, organizer of national congresses, and patron of German science; and Humboldt the adventurer, addict to sensation. Whatever weight we ultimately give each part, it is Susan Cannon’s characterization of Humboldt’s science, with its emphases on physical environments, accurate observations, and graphic data, that seems to fit the Schlagintweits best.

The Schlagintweits’ initial intellectual stimulus came from Humboldt’s Cosmos, the first volume of which appeared in 1845 — exactly the time when Hermann and Adolph were developing their interest in science and started spending their summer vacations in the Alps. Cosmos was a strange piece of writing: part narrative, part encyclopaedia, part study, the whole work directed to support the contention “that one sole and indissoluble chain binds together all nature”. The very first illustrations of this sublime principle were drawn, interestingly enough, with descriptions of mountains. Comparing Humboldt’s beautiful passages with sordid portraits of Munich — a city where matters of state were left to a reactionary and devout bureaucrat while the King conducted an obsessive affair with a Spanish dancer — it is easy to see why the two brothers escaped to the Alps whenever they got the chance.
The Schlagintweits soon began publishing articles on their excursions in the local press. Hermann’s report on the glaciers of the Ötz valley combined travelogue with analysis, much like Humboldt’s *Views of nature*, and the narrative of Hermann and Adolph’s ascent of the Monte-Rosa drew on the legend of Humboldt’s climbs in the Andes. In both these accounts the Schlagintweits helped to inaugurate a new type of travel writing, the mountaineering adventure. There had never been any past shortage of reckless ascents passed off as scientific inquiry — the Montgolfier brothers’ balloon experiments in 1783, Horace Bénédict de Saussure’s investigations of Mont Blanc in 1786, and Alexander von Humboldt’s nearly fatal climb of Chimborazo in 1802 were only the most famous — but the difference in the 1840s was that the public began to take these kinds of stunts seriously. *Cosmos*’s central message was that the scientific contemplation of nature was edifying, and if it was edifying to make sketches and collect samples and take readings in a valley, it was even more edifying to do these things on a mountain, where the view was better and the species were rarer and the measurements were harder. The Alps at mid-century therefore became the focus of a kind of scientific craze, attracting naturalists, geologists, physicists, and even art critics. John Ruskin devoted almost an entire volume in his series on modern painters to Alpine geology.

Ironically, the Schlagintweits’ research aroused little interest from their professors in Munich. In July 1848 Hermann was granted a Ph.D. in physical geography, and half a year later Adolph received one in geology, but these credentials did nothing to improve their local academic standing. It is not clear why they failed to get ahead. It might have been due to their youth, or their confession, or their ambition, and then again, it might have been that they simply perceived better opportunities elsewhere. In any case, the two brothers moved to Berlin in May 1849. The city was then the most dynamic in Germany, and through new scientific organizations like the Berlin Physical Society the Schlagintweits found opportunity to meet their peers and publish their research. In all they spent five years in the Prussian capital, apart from periodic trips to the Alps and one tour of Britain, where they visited Edinburgh’s coal mines and London’s luminaries.

The most important contact they made in Berlin was Alexander von Humboldt. The first meeting was arranged for 14 June 1849. Humboldt had turned eighty that month; Hermann Schlagintweit was twenty-three, Adolph, twenty. Both parties were impressed. Humboldt wrote to the Prussian Minister of Education and smoothed the way for the Schlagintweits to receive their Habilitation, or license to lecture, at the University of Berlin. In turn, the Schlagintweits compiled their Alpine researches into a large treatise and dedicated it to their new patron.

This work, which appeared in the autumn of 1850, founded the Schlagintweits’ careers. The title alone made plain their intellectual debt: *Investigations in the physical geography of the Alps, in their relationship to the phenomena of glaciers, to geology, to meteorology, and to plant geography*. Adolph covered the sections on plants and rocks; Hermann, those on ice and weather. Even with this division of labour, the *Alps* remained a book of Humboldtian ambition. In one comprehensive
volume, it attempted to analyse, fix, and reconstitute the characteristics of an entire region. In its reliance on precision instruments, its imaginative display of data, and its systematic treatment of topics it borrowed openly from Humboldt’s account of his travels in the New World. It displayed the same, almost obsessive desire to measure everything that could be measured: the temperature, distribution, and purity of spring water, for instance, or the humidity, clarity, and colour of the atmosphere. It also showed the same drive to generalize masses of observations into simple, intuitive relationships, such as the influence of glaciers on erosion or the variation of vegetation with altitude and climate. Where the Schlagintweis’ treatise differed from Humboldt’s was in its exclusive attention to the natural world. The Schlagintweis eschewed all discussion of economy, society, politics, culture, language — in short, anything human — just as they avoided reference to themselves. What mattered to them were facts.

There is something deceptively simple in this interest. It is not at all like the interest in theory, where the Schlagintweis’ contributions fit a standard pattern of debate. One typical example: James Forbes and John Tyndall spent years arguing over how glaciers moved — did they flow, or rather just melt and re-freeze?25 The Schlagintweis, who seem to have been ignored by both British physicists, were of the opinion that glaciers cracked and slipped downhill.26 Such scholarly contention is understandable, even if we choose to see it as proxy for a larger scientific issue like the mechanical theory of heat or which physicist was to be supreme.

Facts are another matter. At the most fundamental level, the Schlagintweis wanted an accurate picture of the world. This seems reasonable enough as an ideal, but it was one they pursued without irony. By “picture of the world” they meant exactly that. Landscapes, profiles, and sections littered the pages of their treatise. Quantity became quality. Every observation they made, every measurement they took, every sample they collected, added to the detail of their description. After a time one cannot help but wonder, what was the point of all these data? What did it matter if the height of an obscure peak was determined to a tolerance of ten feet? What difference did this precision make to anyone’s ideas of nature? It was as if their desire for facts had exceeded any rational measure.

Historians have not lacked for explanations of why scientists like the Schlagintweis behaved as they did. Some simply attach descriptive labels: “mid-nineteenth-century realism” — “precision measurement” — and leave it at that.27 Some resort to the idea of progress, where each new advance in knowledge or field of research or experimental design or manufacturing technique or disciplinary organization leads naturally to a world where people concentrate more and more on less and less.28 Some stress industrialization, either pointing to the appearance of railroads and telegraphs and achromatic optics and precision engineering, or to the ways in which these technologies affected middle class values.29 Some refer to structural shifts in society, like the growth of bureaucratic administration or capitalist markets or foreign colonies or something as mundane as the need of the British Admiralty to keep itself occupied in the wake of the Napoleonic
wars. Studies. All these explanations are good, but they miss the primary character of the Schlagintweits’ cultural context.

I am referring to what Matthew Arnold called “the sense in us for conduct, and the sense in us for beauty”. Ethics and aesthetics did not stand apart from science in nineteenth-century Germany. More often than not they stood together. We need only think of Goethe, and of Einstein, and of all the figures in between, all those researchers and scholars who defined themselves through the creed of Wissenschaft and Bildung. Most Germans treated science like a secular religion, and if they did not always believe with the fervour of a Steffens or a Büchner or a Haeckel, they approached the subject with deference and respect.

The high tide of appreciation came between 1840 and 1880, that is to say, the period of liberal ascendency. This was a time of great cultural expectations. Middle-class hope showed in the new market for art and music, the new construction of public museums and parks, the new expansion of the universities, and the new opportunity for travel. At the same time, science flourished in every institutional form — in exhibitions and lectures, in disciplines and societies, and in laboratories and journals. By itself, this confluence of private values and public participation proves nothing: it can always be argued that the public was several and that the actors were separate. But this was not the case. Throughout most of the nineteenth century, the class of Germans involved in all this culture was too restricted to be anything but élite — which is to say that the Schlagintweits saw the same kinds of people at meetings of scientific societies as they did at the opera, if only because almost everyone else was too busy or poor or tired to attend.

My argument here boils down to two assertions, the first being that the Schlagintweits’ interest in the true also expressed an interest in the good and in the beautiful, and the second being that this pattern of values can be matched to a distinct social class. If these assertions are correct, then we should be able to find at this time other instances of German scientists treating facts in a way that we usually associate with art. There are many, but let me point to one that is particularly apt: the graphic method of physiology.

What I am referring to is a set of instrumental practices developed during the 1840s and 1850s that attempted to provide a clear and direct display of life function. Typically this involved recording the change over time in some physical variable, like body temperature (Wunderlich’s fever curve), blood pressure (Ludwig’s kymograph), blood flow (Ludwig’s Stromuhr), muscle contraction (Helmholtz’s myograph), nerve current (du Bois-Reymond’s astatic galvanometer), or nerve signal (Helmholtz’s ballistic galvanometer). The idea was to allow nature to speak directly, and accordingly, the language was visual: a graph tracing, a screen projection, a meter reading. The result, in du Bois-Reymond’s characteristic hyperbole, offered “a performance fit for the gods”.

Du Bois-Reymond generally meant what he said, but in this instance he may well have been joking. There is, after all, something intrinsically ironic about the graphic method. It is one thing to look at an inscription, and it is another to read it.
Direct is not the same as intelligible: Robert Frank has shown in his history of the electrocardiogram that it took years before clinicians learned to make diagnostic sense of the trace of a heartbeat. Nor is direct the same as exact: even unambiguous facts like the existence and speed of the nerve signal proved easier to display than to measure, as the Schlagintweits learned from du Bois-Reymond and Helmholtz at meetings of the Berlin Physical Society. In short, the utility of the graphic method to scientific investigation remained a premise, rather than a consequence. Researchers wanted pictures. Their reasons for wanting them were not entirely logical, which suggests that the pictures may have been an end as much as a means.

THE APPOINTMENT

In a way the idea for the Schlagintweits’ trip to India had been Humboldt’s all along. As a young man Humboldt had returned from his scientific travels to the New World eager to extend his research to the Old. There he could continue his systematic program of observation, gathering accurate regional data on climate, magnetism, topography, flora, fauna, race, language, religion, and culture, his ultimate aim being to discern the true aspect of the world. Humboldt believed that the forces at work in nature came in clearest focus at large scale. The scale he had in mind was nothing short of global. Having already investigated the Caribbean and the Americas, he planned a voyage east, sailing first to India, then crossing the Himalayas into Tibet and Central Asia. This was in 1808, when a lull in the Napoleonic Wars encouraged him in the enterprise. Friends reported him ensconced his rooms in Paris, eagerly studying Persian and geography in preparation for the voyage. He prepared in vain. The completion of his writings on America took him years longer than he had expected, and renewed campaigns against Napoleon made travel impossible. In 1812 Humboldt tried and failed to direct a Russian expedition across Siberia via Kashgar and Yarkand to the Tibetan plateau. Six years later his brother’s diplomatic connections secured him British support, but by 1821 the deal collapsed. No reasons were given for the reversal: the East India Company may have feared Humboldt’s criticism of their colonial rule.

Humboldt never saw the Himalayas and the Künlün. This lost experience seems to have been a source of great frustration to him, so great, in fact, that his references to it sound like he was talking about sex.

Nothing in my life has filled me with more intense regret than not having personally penetrated those famed regions whose relationship to the Cordillera of the New World I wanted to explore…. That is man’s fate: to stand at life’s end and gloomily compare the little one has achieved with what one would have gladly undertaken to enlarge the field of the sciences.

Humboldt may have hoped that a direct comparison of watersheds in Asia with those in South and Central America would have established his name in the theory of mountains, a focus of study dominating Continental geology throughout the nineteenth century. As it was, his contributions were minimal. His research
on the mountains of High Asia derived from the investigations of other, more fortunate explorers: Burnes, Cunningham, de Körös, the brothers Gerard, Hodgson, Hügel, Jacquemont, Lloyd, Moorcroft, Vigne, Webb, and Wood.\textsuperscript{43} There is pathos in this attentive list of names. Humboldt wants us to recognize that any one of them might have been his.

The closest thing Humboldt came to realizing his dream was in 1829, when he was invited by the Russian government to investigate the discovery of platinum in Siberia. Mountains interested him far more than metal, however, and he arranged to study the Urals and the Altai as part of the mission. The journey lasted eight months and ventured as far as the Chinese border. Humboldt was addressed as “Excellence”. The hospitality accorded an official guest of the Czar seems to have compensated for the restricted aims of the expedition, if ‘restricted’ is a word that can plausibly characterize any trip requiring the use of 12,244 horses.\textsuperscript{44}

Humboldt turned sixty on his Russian voyage. His health was still good — indeed, he lived on another thirty years — but the trip convinced him that exhaustive scientific travel was a business better left to younger men. In his final years he explored by proxy, the Schlagintweit brothers being the last and best of a series of protégés enlisted to satisfy his ambition. He also directed a good deal of his energy to the Magnetic Survey, the project that would employ the Schlagintweits throughout their travels in India and High Asia.

The Magnetic Survey — or “crusade”, as some contemporaries called it — was the largest scientific undertaking in the first half of the nineteenth century.\textsuperscript{45} Its aims were simple and grand. A network of stations would be established around the world to observe and record variations in the strength and direction of the earth’s magnetism. Scientists in Europe would analyse the data for patterns and anomalies, the idea being that recognizable features would appear once enough information was gathered. And so, the Survey enlisted a small army of scientists, officers, surveyors, explorers, and “establishments”, i.e., trained native observers, to log magnetic readings several times each day. Back in England the separate observations were compiled, the objective being to transform the data into something worthy, like an aid to navigation, or at the very least, a better understanding of terrestrial physics.

Neither of these benefits ever materialized. This did not prevent Col. Edward Sabine from underwriting the Survey for years. The decision seems to have hinged on a matter of pride. As director of the Magnetic Survey, member of the Royal Society Council, scientific advisor to the Admiralty, and general secretary of the British Association for the Advancement of Science, Edward Sabine was a prominent figure in British science. Early in his career Charles Babbage accused him of falsifying data, exposing Sabine’s awkwardness with figures to the grandees of theoretical physics.\textsuperscript{46} Sabine wanted revenge, and the Magnetic Survey gave him just the means he needed. No mathematical treatment could account for the Survey’s data, the sweetest and most notable failure being Gauss’s dipole model of the earth’s core.\textsuperscript{47} Sabine’s crusade thus served to divert scientific attention away from abstract mathematics, a field in which he could not compete.
This is an important point. It was one thing for Alexander von Humboldt to defer to Gauss’s superiority in physics — the grand old man of German science already had a long career behind him, and he could withstand deliberate slights, such as when Gauss refused to append the stations in his Magnetic Union to the international network of observatories that Humboldt was trying to co-ordinate in Britain, France, and Russia. But Sabine had made no great discoveries, had not travelled anywhere exotic, and certainly had not done much to dispel the belief that he owed his scientific position to favouritism. He needed a triumph, one that Gauss could not hope to equal. Accordingly, he played to his strengths: power and organization. Here he succeeded brilliantly, soliciting the Royal Society, the Admiralty, and the East India Company, institutions that commanded enormous prestige, and even more important, enormous capital.

The Schlagintweits’ appointment to the Survey proceeded as follows. Four of the magnetic stations approved by the British government in 1839 were located in India, where, over the course of a decade, they had gradually fallen into a state of disrepair. There they remained until 1849, when the Royal Society finally prevailed on the East India Company to address their neglect. Lieutenant Charles Elliot, an engineer long experienced in supervising magnetic observations, was chosen to repair the Madras observatory and complete the Magnetic Survey of India up to the 37th Parallel. Elliot had a reputation for thoroughness: his station in Batavia once recorded measurements every hour between three in the morning and nine at night over a period of nine months. In 1852, having devoted an entire year to drafting a report of his data, Lieutenant Elliot took up his new commission, fell ill with a fever, and died.

The chronology now accelerates. Elliot succumbed on 4 August, around the time that the Schlagintweits were finishing their Alpine researches. By then they had become good friends with Alexander von Humboldt, who arranged an audience with the King. The interview went well. Friedrich Wilhelm IV had an eye for beauty and grandeur, and having seen the Schlagintweits’ drawings and watercolours, he warmed to the idea of an Asiatic expedition. It all sounded so daring, and besides, he rather liked the “Siamese twins”. Humboldt then wrote a letter to the Minister of Education recommending Hermann and Adolph for state support. Karl Varnhagen von Ense, Humboldt’s confidant, recorded the result in his diary:

... [Humboldt] came about half-past one o’clock, and remained till half-past two o’clock, a mere visit, nothing of business; he felt the necessity of unburdening himself of many things ... he spoke with the utmost contempt of von Raumer, the Minister of Education, of his brutality and insolence, his hatred of all science, his pernicious activity. “The King”, Humboldt said, “hates and despises all his ministers, but this one particularly, and speaks of him as an ass; what particularly nettles him is, that Raumer opposes all the King’s wishes, and he keeps him in office nevertheless, as he keeps all of them, because he has them, and every change is a troublesome affair”.

The case of the brothers Schlagintweit, Humboldt explained to Varnhagen, was
typical. “The King wished to aid them in their voyage to the Himalaya Mountains; the minister refused; the King ordered him to hear Humboldt’s opinion of the matter, which was a most favourable one, but Raumer insisted on his opinion, which, he said, was not changed by Humboldt. Then the King ... confessed himself to be powerless against his minister....” 56

Humboldt, now in his eighty-fourth year, was not about to give up on his dream. Realizing that he could circumvent Raumer by transforming the expedition into an act of diplomacy, he went to the King and suggested that the Schlagintweit take over Charles Elliot’s work in India. Friedrich responded favourably. On 27 February 1853 he sent a letter to Christian Carl Josias Bunsen, his envoy in London, informing him that he was prepared to defray £200 per annum for three years, or one third of the estimated costs, provided that the British came up with the balance. Bunsen showed this proposal to Sabine on 18 April 1853. Within five days the two had worked out a preliminary agreement. Bunsen then submitted a formal petition to the president of the Royal Society, which was approved and forwarded with express recommendation to the East India Company. There Col. H. W. Sykes, the colonial administrator who had hired Elliot, rallied the Court of Directors to the Schlagintweit’s cause. On 18 May 1853 the East India Company declared their satisfaction with the plan of the mission. 57

From all this it is quite clear that the Schlagintweit owed their posts in India to a network of patrons. 58 This is not to denigrate their own facility in self-promotion. Between March 1853, when he ignored his father’s advice and quit forever his parents, his lectureship, and his home town, and September 1854, when he embarked from Southampton on the steamer Indus, Adolph Schlagintweit lobbied nearly everyone he could think might help: in Berlin, Alexander von Humboldt, Friedrich Wilhelm IV, and colleagues at the Physical Society, the Geographical Society, and the University; and in London, Edward Sabine of the Royal Society, Col. Sykes of the East India Company, Roderick Murchison of the Royal Geographical Society, and Chevalier Bunsen and Baron von Cetto, the envoys of Prussia and Bavaria. His efforts paid off. As Faraday once remarked to Humboldt, the brothers had left “a long remembrance” on their first visit to Britain in 1850. This remembrance Adolph now turned to profit. 59 Robert would join the mission as assistant to his two older brothers, the Royal Society would add its name as official sponsor to those of the East India Company and the Prussian Crown, and most significant of all, the scope of the survey would be expanded. As Adolph explained in a draft of operations proposed to the India House, 60

the magnetical Survey and its connection with the excellent observations of Capt. Elliot in the eastern Archipelago will require before all our most special attention. I may be permitted to state that we shall both, my brother Hermann and myself, be animated by the earnest desire to do credit to the Royal Society, who did us the honour to recommend this survey and our expedition, and to the Honourable Court of Directors, under whose enlightened patronage our researches will be undertaken.
With these magnetic measurements he proposed to unite “a regular Series of observations on the Meteorology and the Physical Geography of the country”, namely,

the temperature of the Air, the temperature of the Earth at different depths below the surface and the temperature of springs; the very important phenomena of atmospheric humidity at different heights; the optical phenomena of the atmosphere (polarisation, diaphaneity with Saussure’s diphanometer); the atmospheric electricity (with Saussure’s and Peltier’s Electrometers); and the chemical composition of the atmosphere.

Adolph declared that he would direct his “peculiar attention to collect as complete a series as possible of observations on the Geology of India and the Himalayas”.

It will be very essential to ascertain the elevation of many important points by barometrical or in part by trigonometrical observations, and to work out accurate sections of the different routes and geological maps of where we may be able to make any longer stay. We shall endeavour as much as possible to collect fossils, for the accurate determination of the comparative age of the different sedimentary strata, and to ascertain their order of superposition.

He also mentioned his interest in “the geography of plants in its connection with the general physical phenomena of the country...”. In other words — and this was a point explicitly accepted by Edward Sabine and Joseph Hooker and Charles Darwin, the subcommittee appointed by the Council of the Royal Society to review the proposal — the Scientific Mission to India and High Asia was to be thoroughly Humboldtian.61

THE MISSION

Preparations for the voyage took over a year. Scientific equipment had to be ordered from craftsmen throughout Europe. Adolph’s draft proposal of operations closed with three pages that most resemble a list of Christmas wishes: magnetometers, chronometers, clinometers, barometers, thermometers, diaphanometers, electrometers, polarimeters, theodolites, telescopes, compasses, scales, chemicals, hammers, magnifying glasses, maps, books, and cameras.62 Hermann saw to the construction of the instruments on the Continent while Adolph stayed on in England at Kew Observatory to train in the practice of magnetic observation.

Provision also had to be made for retrieving geological and botanical samples. The costs associated with this undertaking were considerable, but Friedrich Wilhelm promised to supplement the expedition’s budget with 3000 thaler a year. Humboldt lauded his king’s largesse, not merely for the sake of decency towards the British, but also to ensure that Prussia’s own natural history collections would not be left with a geographical gap. As he remarked to Bunsen, it was just as easy to collect for two capitals as for one, and besides, the British Museum had already received two
crates of alpine plants from his previous travels in America.63

For his part Robert rushed to finish his dissertation on the Kaisergebirge, the western group of the Salzburg Alps. He also helped Adolph produce relief maps of the Zugspitze and the Monte Rosa that set new standards in realism, based as they were on photographs of carefully illuminated plaster models.64 The same cartographic technique can be seen in the atlas of the second volume of Hermann and Adolph Schlagintweit’s treatise, New investigations in the physical geography and the geology of the Alps, a work that Adolph was determined to present to Friedrich Wilhelm before leaving for India.65 The book appeared in late summer 1854, as did Robert’s degree and all the expedition’s scientific equipment. On 20 September the three brothers sailed from England.

Adolph was so preoccupied those last months that he forgot to take leave of his family. He apologised: “After a few years I will be able to hug you again all the more joyfully.”66 Cholera killed his father before his letter had a chance to arrive. In consolation Friedrich Wilhelm awarded both Adolph and Hermann the Order of the Red Eagle, Fourth Class, an honour the King had originated to distinguish the highest achievements in arts and sciences.67

What Adolph did remember was to arrange publicity for the expedition, not only in Germany, but also in England and France.68 Good press created interest and flattered benefactors. Humboldt had spent his inheritance publishing the results of his travels. The Schlagintweits knew that it never hurt to cultivate sources of support, and throughout the course of the expedition they kept patrons and public informed of their progress. The pattern of transmission was simple. Every few months they sent news of their activities to Friedrich Wilhelm IV and the East India Company. These letters were communicated to the Zeitschrift für Allgemeine Erdkunde, the Proceedings of the Royal Geographic Society, and the Journal of the Asiatic Society of Bengal by Alexander von Humboldt, Col. Sykes, Roderick Murchison, and various colonial officials stationed in India. The popular press then summarized the accounts for their lay readers. Occasional scoops were awarded to select publications, like Abbé Moigno’s Cosmos.69 What strikes the modern reader is just how effective this system was. Mail travelled regularly and cheaply between England and India — in fact, any envelope labelled “On Service” was delivered free of charge.70 The only precaution the Schlagintweits took was to have letter carriers travel from the field in pairs — mail tended to arrive at colonial stations more regularly that way.71

News of the Schlagintweits reached Europe shortly after their landing in Bombay. Except for a brief camel ride between Cairo and Suez, the three brothers sailed the entire length of the voyage. The only thing to distinguish this leg of the expedition from a tropical cruise was their preferred diversion: every few hours they measured the temperature, colour, clarity, and salinity of the ocean.72 Samples of this water were later sent to Col. Sykes for chemical analysis, much to his delight.73 The Schlagintweits did not report the temperature of the ship’s champagne, 28°C, after the ice ran out. I can imagine the scene as the waiters, sweltering in their uniforms,
were presented with the thermometer reading.

Climate also dictated the course of the Schlagintweits’ travels on land. The mountains to the north of India can be passed only in summer. Accordingly, Adolph’s proposal of operations had allocated this season to their research in High Asia, the eastern Himalayas of Sikkim to be covered in 1855, the more central Himalayas of Kumaon and Gurwhal in 1856, and the western Himalayas of Ladak in 1857. “Under favourable circumstances” — meaning the receipt of visas — they would also journey to Nepal. No mention was made of Tibet, a country forbidden to foreigners.\textsuperscript{74} The remainder of their time would be spent at lower elevations. Adolph suggested southern India the first year, followed by the central plateau and plains the second, and the regions near Delhi and Lahore the third.\textsuperscript{75} It was patently obvious that this plan required the Schlagintweits to pass most of their time in areas familiar to their patrons, but there was no other way to complete the magnetic survey of India, and no one expected them to spend three years in the mountains, holed up in a remote village, idle, waiting for spring, like the natives.

The paths that the Schlagintweits actually followed corresponded quite closely with Adolph’s plan (see Table 1). The main difference lay in the western Himalaya, which they explored more extensively than anyone previous, European or not. Caravan traders knew the terrain well, but they avoided glaciers and mountains. In contrast, the Bavarian scientists seemed happiest in this environment, for it was here that they could exercise their talent and training to greatest effect.

The four volumes of their official report make this point absolutely clear. The \textit{Results of a scientific mission to India and High Asia} constituted a treatise of alpine science.\textsuperscript{76} Everything discussed in their previous work — the itineraries followed, the instruments used, the positions mapped, the data collected, the land surveyed, the climate recorded, the peaks scaled, the glaciers traversed, the panoramas sketched, the samples taken, the inhabitants described — reappeared at much larger scale. Humboldt stated that “one sole and indissoluble chain binds together all nature”. He might well have said “chain of mountains”. Once the Schlagintweits saw the Himalayas, they seem driven to a frenzy of recognition.\textsuperscript{77}

We can get a sense of the Schlagintweits’ enthusiasm in the statistics of their travels. The three brothers covered over 18,000 miles, most of it on foot, across forests, plains, deserts, swamps, rock, and ice; left 106 folio volumes of magnetic and meteorological records, route surveys, and miscellaneous notes; made 749 sketches and paintings, including 484 watercolours, pastels, and oils, some of the panoramas up to twelve feet wide; collected 14,777 specimens, among them 9,577 rock and soil samples, 1,800 botanical species, 650 tree sections and seed varieties, 750 zoological preparations, 400 human skulls, skeletons, and facial casts, 202 sets of anthropometric data, 1,400 ethnographic objects, and 200 manuscripts and prints; and, on top of all that, set a new mountaineering altitude record, one terrifying even to the locals, of 22,259 feet.

These achievements were impressive. I do not mean to disparage when I point out that, as with most naturalists, they fell into two main categories: on the one
Fig. 2. “Routes taken by Hermann, Adolph, and Robert Schlagintweit and their Assistants and Establishments in India and High Asia from 1854 to 1858”, Mercator map, 1:8,000,000, lithograph (Atlas, Geographical Maps, no. 1).
### Table 1. Tabular Statement of the Routes Followed by the Messrs. Schlagintweit during their Researches in India and High Asia.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hermann Schlagintweit</th>
<th>Adolph Schlagintweit</th>
<th>Robert Schlagintweit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1854</td>
<td>The Dekkan and southern India; with his two brothers, via Poonah to Bellary; from there to Bangalore with Robert, from Bangalore he continued, alone, his researches down to Madras.</td>
<td>Plateau of Mahabuleshwar, the southern parts of the Dekkan, via Kaldihi to Bellary with his two brothers; went alone by Cuddapah to Madras with a visit to the Diamond Districts.</td>
<td>The Dekkan and southern India together with his brothers on his way from Bombay to Bangalore; went by the Cornabootor Ghat down to Madras.</td>
</tr>
<tr>
<td>1855</td>
<td>Bengal, the Himalayas of Sikkim, and eastern frontier of Nepal, the Naga and Kossia Hills, Assam, a part of Bhootan, the Delta of the Ganges, and Brahmapostra.</td>
<td>Bengal, Northwest Provinces, the Himalayas of Kamaon and Gurwhal; crossed the Himalayas into Tibet with his brother Robert, and examined the basin of the Sutlej and the sources of the Indus. Ascended on Ibi Gamin to a height of 22,260 feet (English). During the cold season visited parts of central India, the valley of the Godavery (Madras Presidency), the Neighwees, and the fossiliferous strata between Trichinopoly and Cape Comorrin.</td>
<td>Bengal, Northwest Provinces, the Himalayas of Kamaon and Gurwhal; crossed the Himalayas with his brother Adolph into Tibet and examined the basin of the Sutlej and the sources of the Indus. Ascended on Ibi Gamin to a height of 22,260 feet (English). During the cold season examined Central India, Bundelkund, the environs of Amarkantak, and the sources of the Nerundra, Tons, Sone, and Johilla.</td>
</tr>
<tr>
<td>1856</td>
<td>Hindustan, Oude, the Himalayas of Kunower Spilli, the salt lakes of Tibet, met his brother Robert in Leh and continued with him his researches across the chains of the Karakorum and the Kuenluen to Khotan (Kh. Yarkand). Returned to Ladak and travelled via Sooroo to Kashmir.</td>
<td>Part of Bengal, Sirmor, and Zanskar in the Himalayas, Balti and Gilgit in Tibet and the Mustah Pass on the Karakorum Range. Returned via Gurays into Kashmir and the northern Punjab.</td>
<td>Northwest Provinces, Surinore, and Lapoul in the Himalayas and Central Ladak; met his brother Hermann at Leh, and continued with him his researches across the chains of the Karakorum and Kuenluen into Khotan (Kh. Yarkland). Went from Leh by Dras to Kashmar and by the most northern route through Ibuzarah into the Punjab.</td>
</tr>
<tr>
<td>1857</td>
<td>Southeast Punjab, Central Nepal, Bengal. Left Calcutta for Europe on the 23rd of April, making a stay of fourteen days in Egypt.</td>
<td>Northern Punjab (Peshawar), the hills between Kohat and Huzaiha, and a part of the Soelman Range. He is just now engaged in examining the Himalayas between Kangra and Kashmir, and will return to Europe at the end of December.</td>
<td>Travelled through the Punjab, Sind, Kutch, Kattewar, and Guzerat down to Bombay and Ceylon. Left Ceylon on the 11th of May for Europe.</td>
</tr>
</tbody>
</table>

The researches of Messrs. Schlagintweit extend from 5° to 37° N. Latitude, and from 68° to 98° Longitude East (Greenwich).

The total length of the different lines along which the researches were carried separately on amounts from an approximate calculation to 18,000 English miles.

[From Schlagintweitiana, II. 1. 43, Bl. 8, verbatim.]
hand, measurement and collection, and on the other, travel and exploration. The Schlagintweits excelled in both areas. With respect to the former, the meetings of the Berlin Physical Society had paid off. The brothers handled instruments as well as any laboratory scientist, eschewing the use of elegant, elaborate, and expensive apparatus simply because it was elegant, elaborate, and expensive. For example, in their determinations of altitude they found it far more effective simply to record the boiling point of water with their thermometers than to trust the opaque mechanism of their aneroid barometers. The same critical judgement carried over to their analysis of data. Whenever possible they repeated measurements under differing conditions, being certain to control for systemic bias, like periodic variations in air pressure. They also estimated their margin of error through partial differential expansions of their formulae, a technique still far from common among experimental physicists. I can think of no contemporary explorers who took equal pains to be accurate. Many of the Schlagintweits’ results held good for a century.

The Schlagintweits knew that their sophistication in measurement would be lost on all but a few. In consequence they laboured to render their data simple and clear. Tables, graphs, and charts followed explanations and summaries of their findings. The text also expounded their methods in great detail. If these glosses failed, the reader could always resort to perusing the series of coloured lithographs that filled the atlases accompanying each volume of their Results. More than anything else, these “panoramas and views” captured the Schlagintweits’ experience of exploration. It is one thing to read about the heights of mountains, and altogether another to look at an exact profile of the horizon, every detail in the distant range sighted and marked and traced with the aid of instruments carried in the field.

Images like these served as virtual witnesses to the expedition. Whenever possible the Schlagintweits brought back samples of the things they saw. Each spoke for itself: “I am soil” — “I am a bone” — “I am a manuscript”. With a little encouragement and interpretation they could be made to speak more eloquently: “I am alluvial gravel from the floodplain of the Karakash River” — “I am the femur of a Daphla skeleton acquired in Assam from the aboriginal tribe” — “I am a Buddhist prayer book donated by the Chibu Lama in Sikkim”. Landscape as a whole, however, resisted testimony and could not be communicated without the aid of pictures.

The relationship of language to images is not simple in any record of experience and certainly not in an expedition of this duration and scope. The Schlagintweits, as I suggested earlier, suffered literalmindedness. When afforded the opportunity they described their experience in unending detail, regaling the reader with the minutiae, say, of their socks and shoes. Topical arrangement helped lend some structure to these ramblings; after all, socks and shoes were essential to the traveller, and anyone planning a trip to India might want to know everything about what the Schlagintweits wore on their feet, not to mention their legs, torsos, arms, and heads, and beyond that, what kind of money they kept in their wallets, what they carried with them, how they packed it, how they travelled, how many servants and guides
accompanied them, whom they met, what language they spoke, what they ate, where they slept, where they went, what route they took, what they saw, what the weather was like, and how they felt about it all.

The cure for this surfeit of information was to edit. This habit did not come easily to the brothers, though once after their return King Ludwig I of Bavaria inquired about their travels and Hermann could barely answer. The plainest response to this question — which was a question they would often hear — would have been simply to list the expedition’s major achievements:

1. *Orography* of the mountain ranges separating India from Central Asia — the Himalaya, the Karakoram, and the Künlün — with the Karakoram shown to be the watershed.
2. *Exploration* at high elevation, including plateaux, glaciers, and mountains, and especially the route between Ladak and Yarkand.
3. *Geography* of indigenous plants, animals, and peoples.
4. *Graphic displays* of the physical characteristics of the region, including geomagnetism, geology, climate, hydrography, elevation, and landscape.

This they seldom managed. Instead they defaulted to the reciprocal genres of panorama and tale to transmit their experience. I say reciprocal because the Schlagintweits wrote about what they saw and painted what they recognized.

The panorama, as Stephan Oettermann has explained so brilliantly, was a middle-class art-form. Theatre scenery worked its illusion from one perspective only. It was painted for the King’s eyes alone; the rest of the audience saw a more of less distorted image — the worse the seat, the greater the skew. Panoramas, on the other hand, permitted a democracy of views. Several spectators could stand side by side and each one could see the curved canvas correctly, the single vanishing point replaced by a vanishing line that stretched horizontally across the picture frame.

The panorama therefore functioned as a visual encyclopaedia. The viewers could explore the subjects painted from any number of angles, moving in, or back, or along, as they saw fit. The exercise was fascinating enough in itself, but to the practised eye the real interest lay in the choice of visual elements, the artist’s subject headings, as it were. Here the Schlagintweits discovered that not all societies employed the same pictorial language. Native Indians appreciated their architectural views and individual portraits, but group arrangements and landscapes left them at a loss. In sketches without figures, buildings, or clear vegetation they often could not distinguish the sky from the ground. Contours confused them even more. Mountain peoples, on the other hand, took great interest in watching the Schlagintweits sketch and could readily identify objects from their outlines. Hermann attributed their visual sophistication to the dictates of survival in the Himalayas, which also explained the enormous number of place-names in their dialects. Now, this is beginning to sound like the old saw about Eskimo words for snow. My point here is not so much that language and image follow one another, but that *all* vocabularies,
whatever the context, are paltry and conventional.

This rings truest in the dull reports that the Schlagintweits sent home. The experience of travel, however — even scientific travel — is crammed with interest. Had the Schlagintweits written as well as they painted, they might have conveyed their exhilaration. They could not. The tedium of their findings was only rarely relieved by narrative.

The thing that kept their few scattered stories from slipping into absurdity was the fact that they were absurd already. There was the Tale of the Daring Ascent with Three Goats, in which Adolph induced his guides to follow him over the comb of the Nanda-Ghat with the promise of a ritual sacrifice at the top. There was the Tale of the Ferocious Encounter, in which Adolph barged into Tibet, whipped a Hunia guard in the face, and was escorted politely back to the frontier. There was the Tale of the Malarial Boil, in which Hermann drifted down the Brahmaputra for forty-four days, feverish and paranoid, convinced that his servant had sliced wantonly into his back until he found a mirror and inspected the incision for himself. There was the Tale of the Royal Welcome in Kashmir, in which the ageing king, Gulab Singh, invited the three brothers to the Palace Sheth-Bagh on the banks of the Jhilum, where they discussed their work and photographed the city and went on boat excursions with forty rowers, only to find their letters of credit cashed at a horrible loss when it came time to leave. There was the Tale of German Engineering, in which a bribe of one thousand rupees and two years of negotiation by Lord Canning, Governor General and Viceroy of India, finally secured Hermann passage to Katmandu, where he entertained the evil and cunning despot, Jang Bahadur, with a demonstration of his pocket knife, a special order from Henschel in Berlin that came apart in three sections and sported forty blades and instruments. These stories would have been funny if the brothers had any sense of humour.

Not all their adventures were absurd, however, as they found out the last time they saw each other. They met in Ravalpindi for a month in the autumn of 1856 to take stock of their travels and pack their collections. Hermann and Robert had recently returned from a high-altitude trek into Turkestan that had nearly killed them. After this experience the two brothers had their fill of mountaineering and resolved to take it easier in the time remaining before heading home the following year. Hermann’s malaria might have been running him down; any question whether to stay beyond the term granted by the East India Company was answered on 10 May 1857 by the Sepoy Mutiny, a rebellion of atrocious violence that took the British Army months to subdue. Robert departed for Europe on 14 May; Hermann, a little later. They met up in Cairo on 30 May and reached Berlin on 17 June.

Adolph, in contrast, decided to return overland, crossing the Karakorum and the Künlin into Central Asia and then continuing on to Germany by way of Russia. The details of this journey can be pieced together from Adolph’s diary and the reports and letters of the colonial official who interviewed the survivors. It was not a happy endeavour. The untracked route over high mountains and desolate plains offered
only hunger, thirst, cold, and fatigue. Headache, shortness of breath, irritation of
the lungs, spitting of blood, dizziness, and a “general lassivity” killed morale.93 As
Robert described in a similar adventure with Adolph the previous year.94

repeatedly did our attendants, who ought properly to have been our guides,
throw themselves down on the deep snow, and declare that they would
rather die on the spot than go even another step farther onwards; only by
the application of force did we succeed in getting them to rise, although we
ourselves felt not less discouraged, and only too often have followed their
pernicious and ruinous example; indeed great moral courage is requisite to
push on in such circumstances.

By the time Adolph reached the border of Chinese Turkestan, half of his party had
mutinied and decamped. To make matters worse, a passing caravan of refugees
informed them that Vali Khan, the Kokandi chieftain in Kashgar, had rebelled
against his Chinese overlords and was terrorizing the region ahead.95

Why Adolph chose to press on at this point is unclear. Central Asia had long
distrusted Westerners; now war threatened pillage, capture, and death. It made every
sense to turn around. But Adolph also knew that this would be his last opportunity to
visit Kashgar. If he did not take it, another would. He made up his mind. On 5 August
1857, he rose early, painted his last watercolour, and descended into Turkestan. His
plan was to move quickly and avoid notice. It failed. Within three weeks a patrol of
Vali Khan’s soldiers spotted him near Kashgar. They demanded his arms and took
him to see their chief. There was no exchange; instead

the Khoja, who is described to be a man of infamous character, at once ordered
his execution. The persons entrusted with this work endeavoured to bind Mr.
Schlagintweit’s arms, but this indignity he successfully resisted; a blow was
then struck with a sword, which took effect under his right ear; another was
aimed at the left side of his head, but neither proving fatal, his throat was cut
with a knife, which one of the executioners drew from his side. The head was
then severed from the body.96

The remainder of the caravan were thrown in a dungeon. One was executed that
evening; one was sold into slavery and eventually made his way back to India;
the rest were rescued by Chinese troops after Vali Kahn’s downfall. In the oddest
development, a Persian traveller discovered Adolph’s notebook at a tobacco shop in
Kashgar.97 He retrieved it with threats and bribes and also tracked down Adolph’s
head to a spot under a melon tree. He then took it upon himself to walk to India
where, like Peachy in Kipling’s “The Man Who Would Be King”, he presented
Adolph’s remains to the astonished colonial administrator. Two medical doctors in
Lahore examined the skull and determined “that it was not that of an European”.98
The traveller was rewarded for his trouble nonetheless.99
DECLINE AND FALL

The absolute value of the Mission to India and High Asia could be measured in the currency of attention: on one side, the attention paid by the Schlagintweits to the practice of exploration, and the persons they met, and the places they visited; and on the other, the attention paid to the Schlagintweits by indigenous peoples like the inhabitants of Bhūitia, who considered them “born under a lucky star”, or by native assistants like Dr Harkischen, who took careful measurements in Leh until 1858, or by local officials like Dr Mouatts, Inspector of the Jails in Calcutta, who supplied them with prisoners to photograph, measure, and cast, or colonial agents like Dr Macpherson, chief Medical Officer of the Indian Army, who lent them the official meteorological records of the various garrisons in India, or metropolitan patrons like Sir Roderick Impey Murchison, who rehearsed their achievements every year to the Royal Geographic Society.

If there is anything pitiable in the story of the Schlagintweits, it is the slow fall of this attention, both on their part and on the parts of others, until the brothers sank into oblivion. The symptoms of decline showed faint at first. Hermann and Robert thanked their patrons within hours of their arrival in Berlin before rushing off to Dublin to present their preliminary findings at the annual meeting of the British Association for the Advancement of Science. Back on the Continent they checked on the 340 crates of their material shipped from India but decided to wait until Adolph’s return later that year before working through it. In the meantime they drew up a preliminary report on their mission for the French Academy of Sciences, published, no doubt, with the assistance of Alexander von Humboldt.

By February of the following year Adolph Schlagintweit still had not shown up and the shipping company, which had already spent 4500 thaler to install the collections in Schloß Monbijou, was beginning to wonder when they would be paid. They were not the only ones concerned by the Schlagintweits’ inaction. The East India Company had seen or heard little of the two brothers since they arrived in Berlin. To forestall further anxiety Hermann and Robert worked out a book contract in July 1858. They agreed to publish nine volumes on their researches within an “estimated” three years. During this time the collections would remain in Berlin, to be eventually returned, excepting one set of duplicates, to England for deposit in the Company’s museum, the King of Prussia paying the expense of the transfer. The Company was to furnish the brothers with a “personal allowance” of £25 per month for up to three years as well as £150 every six months for assistants, assuming they were needed. A further £800 was allocated to produce the atlas. To top it off, the first sixty copies of the work would be subscribed.

This was a good deal. Three hundred pounds a year exceeded the earnings of most English clergymen and government officials; among the professions, only surgeons and solicitors earned consistently more. In Germany the sum would go even further, translating into four thousand marks, a salary reserved for only the most prestigious occupations, like professor. Not to be forgotten was the income from the Schlagintweits’ inheritance, a considerable legacy made larger by the
certainty of Adolph’s death. All told, Hermann and Robert Schlagintweit shared a fortune of sixty thousand gulden.110

This wealth enabled the brothers to live as they chose. Their choice said everything. Since their return the two had often visited Alexander von Humboldt. When he died on 6 May 1859 it almost seemed as if they wished to honour his memory through imitation. They bought a large estate, Schloß Jägersburg, in the countryside north of Nuremberg. They applied for and received a patent of hereditary nobility. They accepted honours, awards, and decorations, thirty-five in all.111 They exhibited their paintings, photographs, and facial casts to rave reviews at the India House Museum in London.112 They published a lyrical summary of their findings for the benefit of their German readers.113 But mainly, they settled down with their notes and samples and wrote the results of their mission.

In this they most resembled their mentor. Humboldt sacrificed years of his life and nearly all of his money to publish the report of his travels. The Schlagintweits seemed intent on following his example. Their nine volumes proposed to cover “I. Astronomical and magnetic observations”, “II. Hypsometrical and trigonometrical observations”, “III. Topical geography, and route book of the Himalaya, Tibet, and Turkistan”, “IV & V. Meteorology”, “VI. Geology”, “VII. Natural history: Botany & zoology”, “VIII. Ethnography”, and “IX. Geographical aspects”.114

They finished four and gave up.

Reviews of the work varied. Those appearing on the Continent generally favoured the Schlagintweits’ thoroughness, praising the quality of the production, the breadth of the coverage, and the scholarship of the treatment.115 The response in Britain was more mixed. Everyone adored what they saw, whether maps, paintings, photographs, masks, artefacts, or specimens.116 They were less impressed by what they read. The Athenaeum’s criticisms cut the sharpest:117

There is ... a suspicion abroad that the [Schlagintweits’] appointment was one of the most gigantic jobs that ever disgraced the annals of science.

Our readers are aware that in former years we have shown the injustice committed in appointing not one, but all the members of a foreign family to a duty which some of our Indian officers were both anxious and competent to perform, — the absurdity of sending Messrs. de Schlagintweit to report on climates, rivers and mountains, with which we were already perfectly familiar, and re-make collections of natural history, which were actually rotting in the cellars of Leadenhall Street.... Well, the “results of the mission to India and High Asia” are now partly before the public, and the Germans have been amongst the first to perceive the disproportion between them and the lavish expenditure of money made to obtain them.

The reviewer especially deplored the costs the three brothers incurred in travelling separately, “still further increased by different parties of the establishment being despatched in various directions to gather information or specimens of natural history”, particularly when “the only really new territory visited was that entered
after crossing the chains of the Karakorum”.

The corruption of their appointment and the waste of their travels shrank, however, beside the enormity of their incompetence:

There are people who believe that at least one of the nine large volumes of which the ‘Results, &c.’ are to consist may furnish convincing proofs that the authors really are what they profess to be — scientific travellers of the first order. Judging from the specimen before us, and what we glean from their previous publications, we do not share that belief. Dry technicalities will never pass off for the results of abstruse science. Always judging from what is already before the public, we hold the Brothers de Schlagintweit quite incapable of taking a comprehensive view of any given subject; and we presume that we are stating the general opinion of the scientific world correctly when we say that they can take observations, but not make observations. Place good instruments in their hands, and they will take astronomical, magnetic and meteorological observations with accuracy; but ask them to furnish a comprehensive account, founded upon their observation, or of what they might have seen with their naked eyes, and they will ... thoroughly disappoint you....

The review closed by pronouncing the work “unreadable”.

*The Athenaeum*’s attack put everyone involved with the mission on the defensive. Murchison, who had already been forced to apologise once before for ignoring British achievements in High Asia, maintained that he had merely echoed the recommendation of his “illustrious friend Baron Humboldt”. He then turned the matter over to Sabine, who unpacked the entire process of the Schlagintweits’ appointment, noting that “it was understood from private information” that the Governor of India could not supply any officers for the post. At this Hooker wrote a letter to the editor asserting that his nomination to the Royal Society subcommittee reviewing the mission’s objectives came after the East India Company had already fixed Adolph Schlagintweit’s appointment. Hooker recollected “the surprise and concern” expressed by his colleagues “that the Court of Directors should overlook the claims of many competent and deserving scientific men of their own service” and added that even though he had done his utmost to assist the Schlagintweits, the mission had turned out a disaster. Darwin, the third member of the subcommittee, contented himself with a single comment: “What a row the affair has made.”

The reasons for the British reaction can be surmised. Bias played a part, as when Hermann and Robert Schlagintweit were called to testify before a select parliamentary committee investigating the colonization of the Himalayas and Sir Erskine Perry simply cut them short. Envy worked, too. Joseph Hooker, who was almost certainly the author of *The Athenaeum* review, more than matched the Schlagintweits in scientific accomplishment. He had been appointed assistant surgeon and naturalist to H.M.S. *Erebus*, one of two ships under the command of Captain James Clark Ross chartered to find the south magnetic pole in 1839; after
his return he published six volumes on the flora of Antarctica, New Zealand, and Tasmania. In 1847 he went to India and spent three years exploring, surveying, and collecting in Nepal, Sikkim, and Assam. His travel writings vied with those of Humboldt and Darwin, and his botanical catalogues, the *Rhododendrons of Sikkim-Himalaya*, the *Flora Indica*, and the *Flora of British India*, remain classics of the type. Yet Hooker never received any special favour. Until 1855, when he joined his father at Kew Gardens, insecurity and oversight tormented his career. The East India Company, for example, not only short-changed him a thousand pounds on his trip to India but also refused to underwrite his *Flora Indica*, preferring to buy up the remaindered copies on the cheap. The Schlagintweits also dealt him quiet defeats, such as requesting his advice on an expedition he gladly would have led, or proving that they could climb and map and paint with far better skill. In 1858 Hooker was finally granted permission to retrieve the herbarium neglected in the cellars of the East India House. After thirty years most of the plants had mouldered. I can only imagine his outrage as he worked through eleven wagon loads of decaying material and saw eleven fresh crates arrive from his competitors in Berlin.

Politics also hurt the Schlagintweits. The Indian Mutiny prompted Parliament to nationalize the East India Company in 1858. This act afforded Hooker some measure of revenge, at least to the extent that it put to an end any favours granted to the Schlagintweits under the old system of patronage. Between 1860 and 1865 Hermann and Robert repeatedly petitioned the India Office for a continuation of support; each time the British government reminded them, ever more coldly, that the original provision had been liberal enough. For a while they enjoyed a measure of protection from Murchison, who turned Section E, “Geography and Ethnology”, into the most popular attraction of the annual meetings of the British Association. There was, however, increasing antipathy to Murchison’s sensationalism, particularly from accomplished naturalists like Darwin, Wallace, Hooker, and Huxley, all of whom shunned the Royal Geographic Society as unprofessional. By the mid-1860s the day had passed when Murchison could stultify Hooker with comments like “I find a feeling seeming to prevail against employing Germans in which I do not participate, ... indeed we have not better & fitter men ready”.

The Schlagintweits also suffered from a more general decline in relations between Britain and Prussia. The strain showed first in the Crimean War, and with Bunsen gone, Humboldt dead, and Friedrich Wilhelm abdicated, foreign policy fell to Bismarck. National rivalry eroded trust and turned science eristic. This could be seen in the exploration of Central Asia, where British memory of the Schlagintweits’ contributions all but faded. Sir Douglas Forsyth led his diplomatic mission into Kashgar in 1873 — “not only the grandest ever seen in Eastern Turkestan but the biggest of its kind sent out from India for sixty-five years” — as if the Schlagintweits — and their critics — had never lived. Forsyth’s itineraries presented the same routes in the same form as those
attacked by Hooker. 136

In the end, though, most of the misunderstanding was cultural. What exactly did Hooker mean by “a comprehensive account”? My guess is a lucid story, something that could be read and grasped with ease. The Schlagintweits seemed to have construed another meaning to the phrase, rendering “a comprehensive account” more in the sense of an all-encompassing presentation. The essence of the difference was simple: the British inclined to narratives, and the Germans inclined to images. One view conceived of scientific exploration as a journey in time; the other, as a journey in space.

This is an impression. It would be foolish to argue that the British never painted and the Germans never wrote. The tale and the map remained ideals, but that was the source of their power: they informed beliefs of what made good science. “Life is too short and uncertain to encourage the undertaking of encyclopaedical publications by individuals”, James Forbes observed of _Cosmos_: 137

There cannot be a doubt that what was truly valuable in Humboldt’s investigations might have been comprised in a fifth, if not a tenth, of the bulk, and published within a proportionally smaller compass of time. If a traveller narrates circumstentially and faithfully what he has seen and observed, expresses his own opinions, draws his own conclusions, and refers generally to the writings of his predecessors, so as to facilitate a comparison, and to exonerate himself from a just charge of endeavouring to throw them into the shade, he does all that can reasonably be required of him.

He certainly had a point. I also think that Humboldt composed his monumental treatise precisely because life is short and uncertain.

Hermann and Robert, as I mentioned earlier, never completed their _Results_. Adolph’s death left a gap in their expertise that was difficult to fill. To make matters worse, new investigations dated their findings, forcing them to revise and expand their manuscript. Eventually Hermann gave up on the project altogether. The closest thing to a synthetic treatment of the mission were the four volumes of his _Travels in India and High Asia_, published between 1869 and 1880. 138 This work crossed the genres of popular narrative and scholarly reference with little success. It was prolix and dull. Debilitated by malaria, Hermann Schlagintweit passed the quiet remainder of his life in Munich. He received his share of scientific honours and royal invitations, but for the most part he kept to himself, sick and forgotten, frequently changing address. 139 He died of a protracted illness on 19 January 1882.

In a weird gesture of remembrance he left his brain and skull to the Royal Anatomical Collections.

Hermann’s slump was characterized by stasis. The opposite marked his brother’s decline: an obsessive and frenetic record of travel that bordered on fugue. In 1864 Robert Schlagintweit accepted an appointment as assistant professor of geography at the Archducal Hessian University of Giessen. Academia seems to have horrified
him. During his first semester break he agreed to recount his experiences in India to a few local societies. He never returned to his post. Within four years he had lectured 542 times in seventy-four cities across Germany, Switzerland, Austria-Hungary, and the Baltic provinces of Russia. In August 1868 he arranged an invitation to the Lowell Institute in Boston. There he began a nine-month circuit of seventy-six lectures in twenty American cities, making him the first German ever to engage in a public-speaking tour of the United States.\(^{140}\) The experience was an enormous success, particularly among German immigrants in the Midwest.\(^ {141}\) Robert Schlagintweit realized a huge profit on his first American trip and returned to speak again and again, always the same lectures, the same props, over and over.\(^ {142}\) He saved every scrap of paper from these travels — letters, postcards, telegrams, newspaper stories, reviews, advertisements, posters, tickets, invitations, business cards, and bills — and had them bound in twenty-five folio volumes. Along the way he published seven tedious books on American railroads that read very much like the timetables and municipal statistics upon which they were based.\(^ {143}\) A recrudescence of pneumonia in 1885 finally put an end to him and his mania to live and relive his youth.

**CONCLUSION**

The significance of the Schlagintweits’ story eludes easy definition. It might help to state what their travels were not: European imperialism. Much to the Schlagintweits’ regret, Central Asian trade hardly interested the British. The East India Company was far more concerned with maintaining good relations with the Chinese. Even
the most aggressive of Indian Governors, Lord Dalhousie, abandoned efforts to build a road to Tibet after the Sepoy Mutiny.\textsuperscript{144} Forsyth’s missions to Yarkand in 1870 and Kashgar in 1873 may have helped Hooker lobby for the expansion of commerce, but ten years of negotiations with China brought little real gain.\textsuperscript{145} In 1883, trade with Tibet still accounted for only one percent of imports and exports in the Punjab. As the Earl of Rosebery quipped, it appeared that the whole object of British policy in the region “was to make people drink Indian tea who did not like Indian tea and did not want Indian tea”.\textsuperscript{146}

What worried Rosebery was Russia. “The Great Game” accounted for most of Britain’s activity in Central Asia. The danger is to trace this rivalry too far back in time.\textsuperscript{147} The European race to carve up the world really began in 1878, at the Congress of Berlin; British interest in Turkestan dated only a decade earlier.\textsuperscript{148} Much as I would like to believe it, the Schlagintweit’s were not secret agents.\textsuperscript{149}

Of course it was not just wealth and power but also knowledge that enabled Britain to dominate India. Surely it is worth considering to what extent the Schlagintweit’s assisted colonial rule. The answer is little. Nothing of value ever came of the Magnetic Survey. If we take an uncharitable view of Sabine’s motives, that was clear all along. The vitality of the Schlagintweit’s’ findings can be gauged by the dust they gathered in Schloß Jägersburg. Information and control equate through utility. Hardly anything that the Schlagintweit’s discovered had any use.\textsuperscript{150}

Imperialism is simply too rational an explanation for the Schlagintweit’s’ behaviour. To my mind their mission seems closer to religious ritual. The voyage to India and High Asia initiated the brothers into the sacred world of science — it was a rite of passage, to use van Gennep’s term.\textsuperscript{151} Alternatively, their travels could be considered a pilgrimage. Year after year explorers traced and retraced their colleagues’ footsteps. The Schlagintweit’s were no different: they went where the British went, and the British went where they went, a little farther every time.

The three interpretations I have considered in this essay — aesthetic, political, and religious — suggest a fourth: narrative. The story of the Schlagintweit’s’ travels could take on any number of positive forms. It could be read as Romance: their longing to escape Munich, the lure of the East, the search for Paradise, once a real place. Hermann, Adolph, and Robert Schlagweit never married. If they went to Asia for desire, they did not speak of it.\textsuperscript{152} Perhaps their story is a \textit{Bildungsroman}, the classic novel of psychological development. In their version, landscape mirrors self: the Mission to India and High Asia as Road Trip. Madame Blavatsky claimed to have visited Tibet in 1856. The Schlagintweit’s actually did. They experienced no awakening. Then there is hagiography, martyrdom, tragic loss. The facts of the Schlagintweit’s’ lives, however, were too plain for legend. The best heroes are invented; all the Schlagintweit’s’ documentation merely insured that they would be forgotten.

Meaning derives from contexts. In a literal way the Schlagintweit’s’ task was meaningless, since all attempts to retrieve contexts of discovery are doomed.
Whatever Adolph learned stayed with him in Kashgar. I find it hard to believe that the Schlagintweits did not understand this. It is not an easy truth to express. Perhaps this is why Hermann remained silent before his king. In the end some things are better shown. Adolph Schlagintweit’s last watercolour portrayed the landscape of his death.

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7. Dettelbach, “Humboldtian Science” (ref. 4).


12. Cannon, *op. cit.* (ref. 6).

13. Humboldt, *Cosmos* (ref. 11), 27.


  Wo das Eis sich Berge türmt,
  Wo die Sonne milder scheint,
  Dahin sich mein Herz bestürmt,
  Als des Schönem steter Freund.

The poem actually rhymes in dialect. Stefan Schlagintweit, *op. cit.* (ref. 1), 11.


17. Humboldt, Cosmos (ref. 11), ii, 90, 98.


19. Emil Schlagintweit, ADB (ref. 1), 338; Adolph Schlagintweit to Emil du Bois-Reymond, 10 June 1850, Staatsbibliothek Preußischer Kulturbesitz zu Berlin, Haus 2, Handschriftenabteilung, Sammlung Darmstädter (hereafter: SD), Asien, Bl. 5–6. Adolph sent his greetings to Beetz, Dove, Magnus, Mitscherlich, Müller, Pogendorff, Rieß, and the Rose brothers.


23. See, for example, his Relation historique du voyage aux régions equinoxiales du Nouveau Continent, fait en 1799, 1800, 1801, 1802, 1803, et 1804 (3 vols, Paris, 1814–19); Hermann Schlagintweit and Adolph Schlagintweit, Alpen (ref. 22), 242–98; 399–434.


28. The best discussion of this trend can still be found in Robert Musil, The man without qualities, transl. by Sophie Wilkins (2 vols, New York, 1995).


30. Susan Faye Cannon, “History in depth”, Science in culture (ref. 6), 225–62, p. 239.

31. Arnold wrote these words in 1882 in defence of the humanities, which he felt had received a slight from T. H. Huxley and other “friends of physical science”. Matthew Arnold, “Literature and society”, in R. H. Super (ed.), The complete prose works of Matthew Arnold (11 vols, Ann Arbor, 1960–77), x, 64–65.

33. See Dietrich von Engelhardt, “Historical consciousness in the German Romantic Naturforschung”, in Cunningham and Jardine (eds), Romanticism and the sciences (ref. 8), 55–68; Frederick Gregory, Scientific materialism in nineteenth-century Germany (Dordrecht, 1977); Owen Chadwick, The secularization of the European mind in the nineteenth century (Cambridge, 1993); Erika Krausse, Ernst Haeckel (Leipzig, 1984); Kurt Bayertz, “Biology and beauty: Science and aesthetics in ‘fin-de-siècle’ Germany”, in Mikuláš Teich and Roy Porter (eds), Fin de siècle and its legacy (Cambridge, 1990), 278–95.


41. “Nichts hat mich in meinem Leben mit lebhafterem Bedauern erfüllt, als daß es mir nicht vergönnt gewesen, selbst in jene berühmten Regionen einzudringen, wo ich ihr Verhältniss zu den Cordilleren der Neuen Welt erforschen wollte.... Das ist das Geschick des Menschen: am Ziele seines Lebens stehend, vergleicht er nicht ohne Betrübniss das Wenige, was er geleistet hat, mit dem, was er zur Vergrösserung des Gebiets der Wissenschaften gern hätte unternehmen können.” Alexander von Humboldt, *Central-Asien: Untersuchungen über die Gebirgsketten*


43. Humboldt, *Central-Asien* (ref. 41).


49. The geodetic survey of Hanover had proved Gauss’s talents in administration, but the German kingdom was not the British Empire, despite rumours to the contrary.


53. Hermann Schlagintweit to Adolph A. Barth, Berlin, 21 March 1851, SD Asien 1855 (5), Bl. 18; Elizabeth, Queen of Prussia to Hermann Schlagintweit, Sanssouci, 8 July 1852, Bayerische Staatsbibliothek, Nachlaß Schlagintweit (hereafter: Schlagintweitana), IV. 6. 1.


56. Ibid.


60. Adolph Schlagentweit, London, 1854, Schlagenweitiana, II. 1. 43, Bl. 2r–2v.

61. Sabine, op. cit. (ref. 57).

62. Adolph Schlagentweit, London, 1854, Schlagenweitiana, II. 1. 43, Bl. 3r–4r.

63. Potsdam, 1 Oct. 1853, op. cit. (ref. 58), 178, 185.


69. Schlagenwein to Moigno, op. cit. (ref. 68); Hermann Schlagentweit to Eugène Arnauld, Berlin, 6 May 1849, SD Asien 1855(5), Bl. 12–13.


71. Ibid., 259.

73. Humboldt to Bunsen, Berlin, 30 Dec. 1854, op. cit. (ref. 58), 189.
75. Ibid.
77. Reisen (ref. 70), ii, 14–15.
78. Results (ref. 76), ii, 48–64.
79. Olesko, Physics as a calling (ref. 32).
80. Kick, “Vor hundert Jahren im Himalaya” (ref. 1), 54–55.
81. Reisen (ref. 70), iv, 109–11; i, 556–61; ii, 206.
82. Anon., review of Results (ref. 76), The Athenaeum, no. 1764 (17 August 1861), 215–16.
83. Stephan Oettermann, The panorama: History of a mass medium, transl. by Deborah Lucas Schneider (New York, 1997), 22–32; Reisen (ref. 70), ii, 258.
84. Reisen (ref. 70), ii, 275–6.
87. Reisen (ref. 70), i, 256–7.
88. Reisen (ref. 70), ii, 402–28.
89. Reisen (ref. 70), ii, 240.
91. Hermann Schlagintweit to Alexander von Humboldt, telegraph message, Triest, 8 June 1857, Schlagintweitiana, II. 1. 43, Bl. 390.
92. Hermann Schlagintweit, Reisen (ref. 70), iv, 215–84, gives the most coherent account, although he seems to enoble Adolph’s murder. See also Hermann and Robert Schlagintweit, Offizielle Berichte über die letzten Reisen und den Tod von Adolph Schlagintweit in Turkistan. Berlin, den 2. Mai 1859. (Nur zur Privat-Verheilung bestimmt.) (Berlin, 1859); Adolph Schlagintweit, “Adolph’s latest papers”, Schlagintweitiana, II. 1. 46; Roderick Impey Murchison to Hermann Schlagintweit, London, 2 Nov. 1861, Schlagintweitiana, IV. 6. 1; William Hay to Robert Schlagintweit, Srinaggar, 9 Sept. 1861, Schlagintweitiana, IV. 6. 1; Results (ref. 76), i, 42–65; ii, 526–46; iv, 466; Hermann von Schlagintweit-Sakününki, Neue Daten über den


94. Robert Schlagintweit, “Fourth Lecture” (ref. 86), Schlagintweitiana, V. 2. 2.1, Bl. 10.


96. William Hay to the secretary to the government of the Panjab, 14 Sept. 1861, Results (ref. 76), ii, 544–5.

97. The proprietor was using its paper to wrap packets of snuff.


99. William Hay to Robert Schlagintweit, Srinaggar, 9 Sept. 1861, Schlagintweitiana, IV. 6. 1; Results (ref. 76), ii, 541–2.

100. “Die Bhútias zeigten sich über das Gelingen des Unternehmens höchst erfreut, abergläubisch in hohem Grade, waren sie jetzt zu der Überzeugung gelangt, daß die Brüder einen ganz speziellen Glücksstern besitzen müßten...” Reisen (ref. 70), ii, 340.

101. Results (ref. 76), i, 37.

102. Reisen (ref. 70), i, 237–8.

103. Reisen (ref. 70), i, 234–5.


105. Hermann Schlagintweit to Alexander von Humboldt, 17 June 1857, SD Asien 1855 (5), Bl. 71–72; Hermann Schlagintweit to Kultusminister Raumer, Berlin, 16 June 1857, SD Asien 1855 (5), Bl. 84; Hermann Schlagintweit to Königliche Bibliothek zu Berlin, Berlin, 17 June 1857, SD Asien 1855 (5), Bl. 73–74; British Association for the Advancement of Science, Dublin 1857 notice, 30 June (Sections E & A), 2 July (Section A), Schlagintweitiana, VI. 4. 8. See also Anon., “Twenty-seven meeting of the British Association for the Advancement of Science”, The Athenaeum, no. 1559 (12 September 1857), 1156; Robert von Schlagintweit, “Remarks on some of the races of India and High Asia (in connexion with casts exhibited)”, Report of the ... meeting of the British Association for the Advancement of Science, xxx (1860), 175–6; Hermann Schlagintweit, “On ethnographical casts”, Report of the ... meeting of the British Association for the Advancement of Science, xxxiii (1863), 146.


107. Humboldt to Raumer, Berlin, 8 Feb. 1858, in Alexander von Humboldt, Vier Jahrzehnte Wissenschaftsförderung (ref. 20), 155; Beck, Humboldt (ref. 9), 234–5.

108. India Office to Hermann Schlagintweit, 8 July 1858, Schlagintweitiana, IV. 6. 1.


110. Körner, op. cit. (ref. 1), 65.

111. Czar Alexander II even granted Hermann Schlagintweit the title “Sakülünśli”, or “Conqueror of the Küllün”. Emil Schlagintweit, ADB (ref. 1), 346.

112. Hermann Schlagintweit and Robert Schlagintweit, General index to the “Results of a scientific
mission to India and High Asia” (Leipzig, 1860), Schlagintweitiana, VI. 4. 8.


114. General index (ref. 112).


121. Charles Darwin to J. D. Hooker, Down, 24 September [1861], Frederick Burghardt et al. (eds), The correspondence of Charles Darwin (Cambridge, 1985– ), ix, 277–8.

122. House of Commons, “Minutes of Evidence taken before the Select Committee appointed to inquire into the Progress and Prospects, and the best Means to be adopted for the Promotion of European Colonization and Settlement in India, especially in the Hill Districts and Healthier Climates of that Country, as well as for the Extension of our Commerce with Central Asia, Fourth Report”, Sessional papers, 1857–1858, Colonization and settlement (India), vii, no. i, 6 July 1858, 1–10, esp. par. 7087–104. Perry spent two years studying in Munich before serving as a popular Liberal judge of the supreme court of Bombay. He opposed both the East India Company and Lord Dalhousie’s policy of annexation. It is not surprising that he found the Schlagintweits’ enthusiasm puerile. Dictionary of national biography, xv, 924–6.


125. Joseph Dalton Hooker, Himalayan journals: Notes of a naturalist in Bengal, the Sikkim and Nepal
Himalayas, the Khasia Mountains, etc. (2 vols, London, 1854).

126. Joseph Dalton Hooker, The rhododendrons of Sikkim-Himalaya, being an account, botanical and geographical, of the rhododendrons recently discovered in the mountains of eastern Himalaya, from drawings and descriptions made on the spot, during a government botanical mission to that country, 2nd edn (London, 1849); idem, Flora Indica: being a systematic account of the plants of British India, together with observations on the structure and affinities of their natural orders and genera (London, 1855); idem, The flora of British India (7 vols, London, 1875–97).

127. Huxley, Life and Letters (ref. 123), i, 344, 358; ii, 146.


135. Keay, Men and mountains (ref. 132), 250.


137. He continued: “It may be left for other and systematic writers, or for himself, as a future and independent task when he changes the character of a traveller for that of a didactic author, to harmonize the entire body of scientific information to which he has contributed into a methodological whole: but first let him publish, speedily and at all hazards, what belongs to himself; — otherwise, ere he has finished, he may have spent his life, or his fortune; or (as is the present case) his own labours may be anticipated by other travellers whom his example
has encouraged, and whose publications has been more individuals and less tardy”. [James Forbes], review of Cosmos: A sketch of a physical description of the world, vol i; Quarterly review, lxxvii (1845), 154–91, p. 156.

138. *Reisen* (ref. 70).


141. He lectured fifty-six times in German.

142. §3335 net. Schlagintweitiana, V. 1. 5, Bl. 17–19.

143. Robert Schlagintweit, *Die Pacific-Eisenbahn in Nordamerika* (Cologne, 1870); *idem, Die Prarfen des amerikanischen Westens* (Cologne, 1876); *idem, Die Amerikanischen Eisenbahainrichtungen* (Cologne, 1882); *idem, Neue Pfade vom Missouri-Strom zum Stillen Meere. Ein Wegweiser durch Kansas, Colorado, Neu-Mexiko und Arizona nach Californien* (Cologne, 1883); *idem, Die Santa Fe- und Südpacificbahn in Nordamerika* (Cologne, 1884); *Die Eisenbahn zwischen den Städten New York nach Mexiko, nebst einer allgemeinen Schilderung Mexikos* (Weimar, 1885); *idem, Die Pacificschen Eisenbahnen in Nordamerika* (Gotha, 1886). Also in this vein were his Californien: *Land und Leute* (Cologne, 1871) and *Die Mormonen oder Die Heiligen vom jüngsten Tage von ihrer Entstehung bis auf die Gegenwart* (Leipzig, 1884).


150. The Schlagintweit’s case is easy. The relationship between knowledge and power in British India
