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# Science on the Summit: Exploring Scientific Tourism Through the Lens of Eighteenth Century Mountain Ascents

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I endeavoured to procure a barometer and a hygrometer, but without success. I did not much regret the want of them, not professing to make my ascent for any scientific object, feeling that I could add very little to the stock of existing knowledge. (Auldjo, 1828: 4)

- 1 This passage from the account of an ascent of Mont Blanc from 1827 is baffling because of the ambiguous role given to the scientific instruments which are both wanted, though not needed. Historians have read such accounts as indicative of a period before “climbing peaks for the sake of climbing” had become accepted. Instead, the dangerous and gratuitous activity of climbing a summit had to be justified by a scientific reason for which the scientific instruments acted as an “alibi” (Bellefon, 2003: 126; Dirlinger, 2000: 246; Engel, 1950: 33). The shift “from alpinism for science to alpinism for itself” (Moraldo<sup>1</sup>, 2021: 39) was precipitated by the creation of the Alpine Club in 1857, and resulted in the birth of an elite sport through the cultivation of virtues foreign to scientific or poetic purposes. The new ethos was articulated most bluntly by Leslie Stephen, a member and president of the Alpine Club, who scoffed at being asked “what philosophical observations did you make?” by some “fanatics” who “have somehow irrevocably associated alpine travelling with science” (Stephen, 1871: 107).
- 2 This paper aims to tackle some of the questions raised by the contemporary phenomenon of scientific tourism from a historical perspective by looking at how science and alpine traveling, in particular the ascent to the summit, came to be “irrevocably associated” at the end of the eighteenth century (Jouty, 1998). Though the

contemporary notion of scientific tourism is foreign to the eighteenth century, when travelers had not yet become tourists (Tissot, 2017) and scientific activity could hardly be divided between amateurs and professionals (Mody, 2016), there is something to be gained from the ambiguity of purpose implied by this concept (Mao and Bourlon, 2011). Although anachronistic, the concept helps to avoid the pitfall of assuming that late-eighteenth century travelers climbed on summits for selfish reasons which were kept private (and which came to be fully articulated in the mid-nineteenth century) while publicly invoking science as the reason for the ascents. Instead, as the opening quote shows, by the beginning of the nineteenth century the activity of climbing had become associated with scientific instruments and observations, though not necessarily with scientific contributions. Put briefly, one carried scientific instruments not because of what one hoped to find or as an “alibi”, but rather because others did it before.

- 3 While there is a rich literature on the perception and exploration of mountains in the eighteenth century, less attention has been paid to the reasons which might have brought a traveler to undertake the perilous ascent of a high-altitude summit (Scharfe, 2007). Many locals were already used to venturing on the slopes of high mountains hunting for chamois, crystals, or flora, while hiking was a knowledge practice shared among natural historians who aimed to collect and inventory specimens (Granet-Abisset, 2021). Aiming at the elevation of young minds through contact with the cultural marvels of Italy, the Grand Tour—an initiatory trip endeavored by Northern European, notably British, German, and French elites in their youth (Bertrand, 2004, 2008)—long considered the Alps as a mere obstacle to be overcome on the way. Although some interest in the mountain sprouted during the Renaissance (Korenjak, 2017), the Alps were highlighted mainly by late seventeenth- and eighteenth-century literature and were gradually integrated as a step in the traditional Grand Tour to Italy (Mathieu, 2019), dedicated to the admiration of the wonders of nature (Boyer, 2000, 2004). But while foreign travelers might climb to spots known for their view of waterfalls, gorges or glaciers, the aesthetic pleasure of panoramas which could be enjoyed from the summit was only discovered at the end of the eighteenth century (Dirlinger, 2000; Bigg, 2007).
- 4 We argue that a particular scientific context made summits a place of interest for eighteenth-century travelers. In the first part, we show that the use of barometers for measuring the height of mountains created a new incentive for ascending to the summit of a mountain. The uncertainties connected to this method of measurement made the summit an ideal spot for placing the barometer as the observations could be repeated at different times or by different observers, and the height of the summit could be measured independently by geometrical means. In the second part, we consider a series of travel narratives by Jean-André Deluc, Marc-Théodore Bourrit, and Horace Bénédicte de Saussure which detailed ascents of Mont Buet and the scientific observations and experiments carried on its summit. These accounts not only brought the summit to the attention and imagination of a broad public, but also served as guides for travelers—a historical phenomenon that Renaud de Bellefon dubbed the “double invention of summits and guides” (Bellefon, 2003: 113). Because alpine infrastructure was only in its infancy, it is not surprising that the first generations of travelers to summits like Mont Buet relied on such written guides. However, these accounts are important not only because they showed the way to the summit, but rather because, like the barometer, they acted as mediators or as “intermediary objects” (Sigrist and Vinck, 2017) between the traveler and the mountain. To

experience the height of a mountain, it was not enough to climb on its summit, but rather one had to learn how to pay attention to certain physiological changes or variations of the barometer.

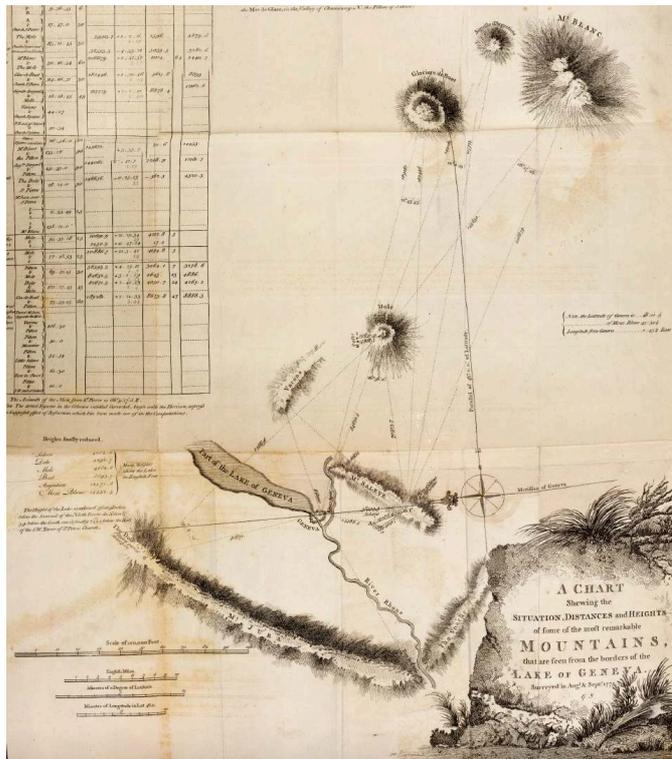
- 5 The focus of our paper allows us to better underline how the experience and exploration of the mountain could be shaped by a specific material practice (such as the measurement of heights with a barometer) through the intermediation of certain travel narratives which associated the path to the summit and the summit itself with certain scientific experiments and observations, giving meaning to such an endeavor. This situates our paper at the intersection between the history of science and cultural history. Though one could also focus on a series of different practices, instruments or sites, thinking about the summit in this context has the advantage of revealing a different history than that dominated by the ascent of the Mont Blanc or mid-nineteenth century alpinism (Hansen, 2013).

## Why Ascend to the Summit? The Role of the Barometer, or “The Philosophical Walking-Stick”

- 6 In 1738, during their expedition to Peru to determine the figure of the Earth, the French academicians Pierre Bouguer and Charles Marie de La Condamine climbed on the volcano Corazón (4,790 m) where the mercury of their barometer stood at the lowest level registered till that date: “No one had ever carried a barometer to such a high place, & it is even very likely that no one had been there, because there must be a reason for undertaking such trips” (Bouguer, 1748: 269). The passage is confusing to a modern reader because Bouguer did not refer explicitly to the achievement of the climbers, as the highest altitude reached by man, but rather to the state of the barometer. Not the act of climbing to the top, but rather the act of measurement on the top was meant to be celebrated. Ascending on the summit, for its own sake, did not only lack merit but also reason.
- 7 Various, specific reasons could have persuaded someone to climb a particular summit. Rocciamelone (3,538 m) was ascended in 1358 by the crusader Bonifacius Rotarius in fulfilment of a vow, while Charles VIII of France ordered his artillery officer to climb on the Mont Inaccessible, present-day Mount Aiguille (2,087 m), to assert his sovereignty (Hansen, 2013; Gal, 2018). In the sixteenth century, summits in the vicinity of a city started being climbed regularly, such as Mount Baldo (2,218 m) near Verona, Stockhorn (2,190 m) and Niesen (2,362 m) near Bern, or Rigi (1,797 m) and Pilatus (2,129 m) near Lucerne (Korenjak, 2017). However, the eighteenth-century surveying expeditions undertaken to measure the degree of a meridian arc provided a *general* motivation which could transform the ascent of almost *any* summit into a scientific experiment.
- 8 The triangulation technique which was employed (Figure 1) required one to know the elevation of the points above the sea level—a particularly difficult task in the case of mountainous regions. The astronomer Jacques Cassini, who was directly involved in the measurement of the meridian, considered estimating the height of a mountain using a barometer. In his reports to the French Academy, Cassini put forward a new plan which was to be followed throughout the eighteenth century: the answer to theoretical questions regarding the proper principles and derivations of the height of the atmosphere was pinned on a quantitative experimental approach which required the

careful correlation of precise measurements of heights with barometrical readings (Feldman, 1985). One of his reports included a “list of the main mountains” with the heights measured geometrically to “allow savants who are close to these mountains, to make the experiment of the barometer” (Maraldi, 1720: 236). Cassini’s call was answered by various local collaborators, such as François de Plantade who in 1731 ascended on Canigou (2,784 m) with a barometer, or the meridian expedition to Peru, launched in 1735, during which barometric measurements were carried out by Bouguer and La Condamine.

Figure 1: Map of the mountains around Lake Geneva which George Shuckburgh measured by geometrical and barometrical means



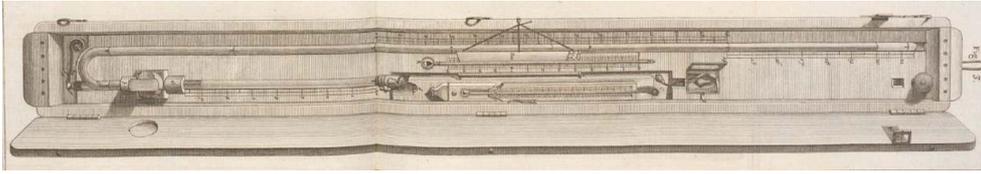
Source: Shuckburgh, 1777

- 9 Following the model of the meridian expeditions, by the mid-eighteenth century it was common for travelers passing through mountains to bring with them barometers, among other scientific instruments. In the early 1700s, Johann Jakob Scheuchzer, a scholar from Zürich, embarked on several voyages through the Swiss Alps carrying a 3½-foot-long barometer in the form of a “philosophical walking-stick” (*Philosophischen Wanderstab*); the measurements obtained with this instrument were later converted, using rules contrived by Scheuchzer and his brother, into height values (Boscani Leoni, 2019). William Windham, who had embarked on a Grand Tour of Europe, visited the glaciers in the Chamonix valley in 1741 and advised “those who are desirous to undertake this journey” to procure “barometers to measure the height of the mountains” (Windham and Martel, 1744: 11). Though Windham did not end up carrying any barometers during his own expedition, the following year Pierre Martel, a Genevan instrument maker, repeated Windham’s expedition, but this time with a barometer that was used to measure the altitude of the Arve at Chamonix above Lake Geneva (using Scheuchzer’s conversion table). From the same location Martel measured the height of

Mont Blanc with a semicircle, which he compared to the height obtained by the Fatio de Duillier brothers in 1685 from Geneva (Windham and Martel, 1744: 19, 28). This practice would become so generalized that, two decades later, the Genevan Marc-Théodore Bourrit remarked that “the border guards [...] do not check the foreigners who go to Chamonix, & they are right, since they are usually only loaded with barometers, thermometers, field glasses, & some clothes” (Bourrit, 1785: 219).

- 10 While Scheuchzer engaged in various speculations about the highest summits of Switzerland, his barometric observations were only taken from spots along the route which could include high passes (like the Gotthard), but never the actual summits: “This height must be understood only of that part of the mountain which is passed over by travellers, the mountain itself rising considerably above it” (Scheuchzer, 1727: 585). Almost half a century later, the Priest John Turberville Needham, a travelling preceptor for young English gentlemen on their Grand Tour, collected “various heights observed with the barometer on the mountains of the Alps in Savoy” (Needham, 1760: sig. A2v). While he listed the heights of various “*Monts*”, Needham, in fact, used the word to describe a pass (e.g. “Mont Cenis”), a common practice at the time (Roberts, 1947; Farrington, 2000).
- 11 Thus, it is important to notice that while travelers on the Grand Tour or to glaciers carried barometers to measure the heights of their itineraries, the barometer, on its own, did not provide them with the necessary incentive to abandon their usual routes and climb on the highest peaks. The summits were first ascended by those for whom the barometer was not yet capable of indicating the proper height of a mountain. Indeed, in 1754, when the Genevan physicist Jean-André Deluc and his brother undertook a first voyage to the glaciers in the Chamonix valley, bringing with them the indispensable barometer, they discovered that to convert their barometric observations into heights they had to choose among nine different rules which produced results that could differ by more than 1,000 m (Deluc, 1772; Sigrist and Heilbron, 2011). To identify a more reliable conversion rule, Deluc carried out observations with a travelling barometer of his own making on Mont Salève (1,379 m) at different altitudes that he measured by geometrical means from Geneva (Figure 2). The rule and the instrument he thus perfected were then employed on other nearby summits of known height, such as Le Môle (1,863 m) in 1763 and La Dôle (1,677 m) in 1764 and 1765. In 1765, Deluc planned another expedition on a summit he spotted from Geneva, the Mont Buet (3,096 m), where he could test his rule at a higher range of altitudes. After two failed expeditions in 1765 and 1770, Deluc finally managed to ascend twice in 1770 and 1772. Though the stated goal of the expedition was to measure the boiling temperature of water at high altitude, something else drove Deluc to push forward against all obstacles to reach the summit. In fact, the strong winds and low temperature discouraged him to carry out the boiling-water experiment right on the summit, choosing instead a more protected, lower place. Only the indications of the barometer were carefully and patiently read at the very top.

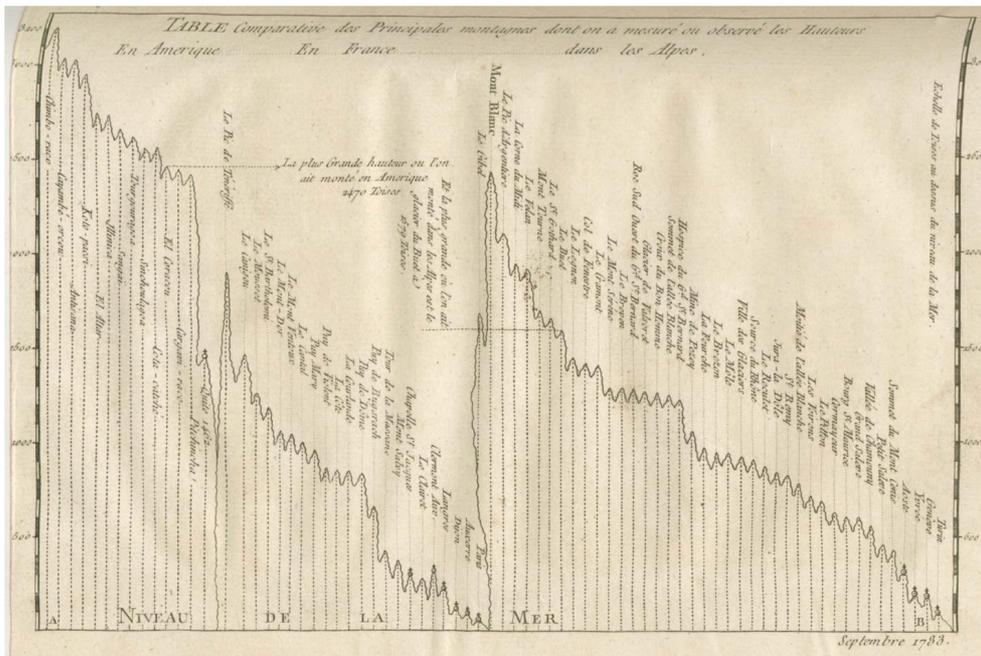
Figure 2: The travelling barometer designed and constructed by Jean-André Deluc



Source: Deluc, 1772

- 12 The summit, rather than the mountain in general, became a privileged experimental site because it allowed the coordination and verification of barometric observations. For the barometer to indicate heights with precision, it had to be observed on various occasions to average out the impact of weather fluctuations. However, this required a well-defined or easily identifiable location. For example, when in 1764 the young Genevan geologist Horace Bénédict de Saussure took the height of La Dôle with a barometer, Deluc explained the discrepancy between their measurements as caused by Saussure's failure "to stand conveniently at the highest point of this Rock" which formed "the highest part of this mountain" (Deluc, 1772: II, 149). Summits were also an attractive location because the barometrical measurements of heights could be verified by geometrical means. In 1775, George Shuckburgh took advantage of his Grand Tour to Italy to test Deluc's measurements by both climbing on the Mont Salève and Le Môle with a barometer, and by measuring the height of Mont Buet from Geneva by geometrical means (Shuckburgh, 1777; see Figure 1).
- 13 While in the beginning of the eighteenth century the measurement of mountain heights was connected to a well-defined problem (the determination of the meridian arc, the cartography of a region), by the end of the century the height of summits had turned into a quantity of interest on its own (Figure 3). The discrepancies between height measurements and the absence of any definitive results convinced summit climbers of the potential importance of their observations, even when executed with inadequate instruments. In a letter to Saussure, the doctor Michel-Gabriel Paccard confessed his "desire to carry a barometer to the summit of Mont Blanc" with which he could "raise the elevation" of the mountain (Brown and de Beer, 1957: 405–406). When, during the first recorded ascent of the Mont Blanc, Paccard finally managed to reach the summit, guided by the chamois and crystal hunter Jacques Balmat, he only brought a barometer without a scale and had to mark the mercury level directly on the glass tube. His barometrical readings, jotted down on a paper titled "Observations sur le Mont Blanc le 7 et 8 aoust 1786 conquis par le Dr Paccard" and communicated to various scientific societies, distinguished his ascent from that of his socially inferior companion, Balmat (de Beer and Hay, 1955; Hansen, 2013). On reporting an ascent of Titlis (3,238 m) from 1739, William Coxe "regretted, that this expedition was only a mere object of curiosity; and that the ingenious physician carried with him neither thermometer nor barometer" which would have helped him prove that this mountain was indeed the highest in Switzerland (Coxe, 1794: I, 294).

Figure 3: Graphical table of the heights of mountains compiled from the reports of the meridian expeditions and the works of Deluc and Saussure



Source: Pasumot, 1783

- 14 While Deluc and Saussure took great care to procure reliable instruments and engaged in lengthy and drudging observations, other contemporaries who ascended on summits seemed to show a callous disinterest in their instruments and experiments. In 1787, the young physicist Mark Beaufoy ascended on Mont Blanc a week after Saussure with “the hope of repeating various experiments”; however, he “could not obtain the instruments that were requisite for many of the experiments which I was anxious to make” and his barometer proved to be unusable (Beaufoy, 1817: 97). Three decades later, the captain John Undrell was equally unprepared for his ascent on Mont Blanc: he was “imperfectly provided with instruments” and “could not procure any good barometers, which I most wanted” (Undrell, 1821: 374). Similar accounts have prompted some historians to regard the ubiquitous presence of barometers or other instruments as an “alibi”—science as a justification for an otherwise questionable and dangerous enterprise (Bellefon, 2003: 126). However, the practice of precision, so important for contemporary science, was just developing in the eighteenth century; numerous scientific observations and experiments from this period did not fulfill these new criteria. Furthermore, if indeed carrying scientific instruments like the barometer was necessary to justify mountain expeditions, then some like Windham, Beaufoy or Undrell could have taken better precautions. Rather, “the intertwining of perception and measurement” created “a figure of the traveler” that was “inseparable from his instrument” (Bourguet and Licoppe, 1997: 1145).

## Mediating the Ascent: *récits-guides* and Picturesque Descriptions<sup>2</sup>

- 15 At the end of the eighteenth century, travelers thus came to the Alps with their barometers and other scientific instruments. They were not only traversing the mountains—needing a “*porteur*” to cross a pass—but were lingering in and around the mountain, dwelling on its slopes, and especially on its summits, hence looking for routes, shelters, and guides. Indeed, summits as privileged sites of experimentation were inextricably linked with scientific publications because one could only find their way to the mountain peaks through the mediation of scholarly works. Before the birth of modern guidebooks, travelers had to rely on the written work of savants who had themselves set foot on the summits. As both a summit and a glacier,<sup>3</sup> Mont Buet attracted a lot of curious travelers with peculiar books in their bags. Let us dive into the material and literary properties that turned these scholarly works at the crossroads of travel narratives, picturesque descriptions, and scientific reports into guidebooks for travelers willing to reach known summits, particularly Mont Buet, and perform scientific experiments.
- 16 In 1772, Jean-André Deluc published his massive scholarly work, *Recherches sur les modifications de l'atmosphère*, as two volumes in-quarto of nearly 1000 pages (Hoffmann, 2003). Though this book was decidedly not made to be carried on the road, Deluc recounted his last ascent on Mont Buet in a chapter explicitly “recommended” to the “curiosity” of his readers and expressly written in a style that made it easier to follow his tracks and reach the summit: “I have sought to make it easier for them through some of the details into which I have delved, & of which I will recall the principal ones to serve them as a guide” (Deluc, 1772: II, 332-333). Indeed, after a summary of his early attempts, Deluc detailed his “New instructions on the path” in a somewhat linear and chronological fashion. The narrative of the ascent was punctuated by durations and places recalled in the margins, as well as practical information as to how they were accommodated by canons regular of the Sixt abbey, where they found their guides (chamois hunters whose names were never mentioned), and the kind of equipment they needed (notably the spikes Deluc saw on the shoes of his guides).
- 17 Though most of the account concerned the measurements of atmospheric pressure made along the way and the boiling-water experiment conducted on the summit, Deluc also paused for brief ethnographical and physiological remarks and vividly described the panoramic view from the top of Buet. The description of the ascent ended with a practical summary entitled “Directions for the trip to the Buet glacier”, added explicitly for readers to follow on-site: “I hope that this advice will contribute to giving some of my readers the pleasure that we experienced on this trip: I would be sorry if these marvels did not have other admirers” (Deluc, 1772: II, 333). This chapter on Buet was reprinted in 1776 as an octavo edition of fewer than 150 pages. It was meant to be read on the trail and used to make sense, book in hand, of the panorama visible from the summit (Deluc and Dentand, 1776).
- 18 Alongside *récits-guides*, another genre of writings acted as a mediator, bringing the mountain to the city and, reciprocally, encouraging travelers to go venture on the summits: picturesque descriptions. In 1773, three years before Deluc’s off-print of his *Relations*, Marc-Théodore Bourrit (1739–1819), drawer, painter, and cantor at Geneva’s cathedral, published a *Description des glaciers de Savoye*. In a pocket format, he

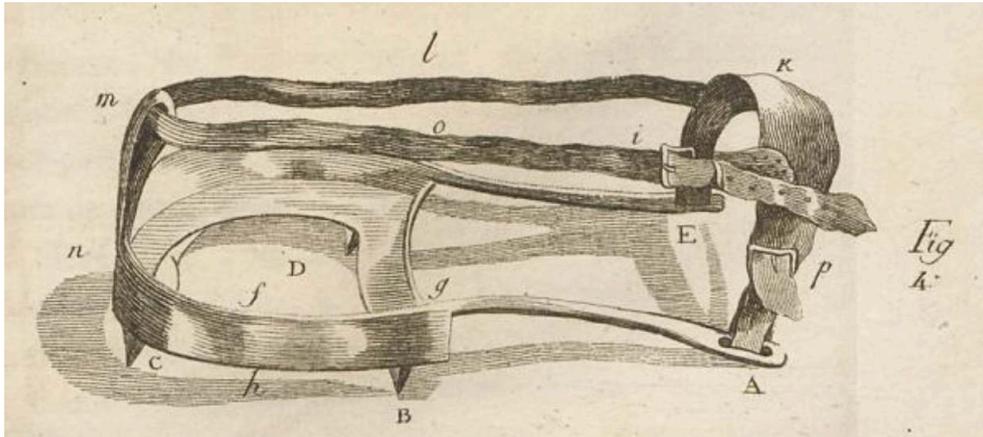
recounted Deluc's ascent on Buet with a host of practical details, durations, and toponyms, just as if he had been there himself (Bourrit, 1773), although Bourrit did not climb Buet before 1776 when Saussure commissioned him the circular view. The same year, he published a *Description des aspects du Mont Blanc...et de la découverte de la Mortine* consisting of a small octavo volume of merely 160 pages and organized in letters. In the letter dedicated to Mortine—the name given to Buet in Vallorcine—, Bourrit clearly stated the reason why he had traveled to the summit himself:

It was to be desired for the travelers, who are going to admire the wonders of Chamonix, that they should also be able to climb the Buet glacier, without being diverted from the route of this beautiful valley, and to be able to carry there, by an easy way, [...] the instruments suitable for observations useful to the progress of Physics and Natural History. (Bourrit, 1776: 120)

- 19 Thus, opening a new path from the Chamonix valley through Vallorcine, Bourrit took pride in paving the way for science. In the same linear and chronological fashion as Deluc, albeit with less concrete detail, his letter described his first attempt and success at climbing Mont Buet. However, his style was quite different. Bourrit chose to emphasize the sensible and the subjective, which led him to use a significant number of metaphors and comparisons to convey this “alpine exoticism” (Moussa, 1995). Furthermore, Bourrit's reliance on ekphrasis to describe the summit extolled moral and aesthetic, rather than epistemic, virtues. Nonetheless, his prose was also a means to encourage his readers, however “weak and languishing”, to grasp the “interesting advantages for savants, who can give new insights and increase knowledge in Physics” (Bourrit, 1776: 159).
- 20 The second edition of Bourrit's text, a thicker volume published in 1785 as *Nouvelle description des glaciers de Savoye*, flaunted the same scientific aim. However, it was to a certain extent expunged from too picturesque flights. A “scene, amusing for some, terrible for others” (Bourrit, 1776: 133) became a simple “scene” (Bourrit, 1785: 195); a “terrible spectacle” of “dreadful appearance”, inspiring “horror and silence”, (Bourrit, 1776: 129) disappeared altogether. Bourrit also appended long citations from Deluc and Saussure and mentioned guides by name. We can observe the same trend in the successive editions of Bourrit's *Itinéraire de Genève*, a genuine guide on Geneva aimed at a female audience, providing readers with practical information about the customs and cultural history of the city in a portable format. In the first edition, the eighth letter explicitly advised against going to Buet—“Ladies, you will not go” (Bourrit, 1791: 304)—before describing it in rather ominous terms in the following letter. However, the third edition of 1808 contained an exhaustive list of all the guides available throughout the region and the villages where the reader could find them, while Mont Buet enjoyed one dedicated chapter with the names of specific guides. After recalling the Parminter cousins' first female ascent of Buet in 1786, turning it into the “Ladies' Mont Blanc” (Adams, 2011), Bourrit encouraged all women to climb its slopes and reach its summit.
- 21 Saussure's *Voyage dans les Alpes* was an even more encyclopedic endeavor than Deluc's *Recherches*: the first out of four volumes, published in 1779, was an octavo of nearly 600 pages with numerous tables and engravings. Nevertheless, again, in the second part entitled “*Voyage autour du Mont Blanc*”, Saussure aimed to lead his reader to the summit: “I will therefore lead my reader to the foot of the Buet, limiting myself to indicating what is most striking on this road: we will then climb this mountain” (Saussure, 1779: 431). The following chapters intertwined itineraries in the form “From A to B”—in the same linear style as Deluc, with toponymic and geographic details of importance in the

margins—and short essays on geology, physiology, or scientific instruments, even detailing in plates his supposed invention of more convenient climbing spikes (Saussure, 1779: 479; see Figure 4). Finally, Saussure explicitly named one of his guides to the summit of Buet—"His name is Pierre Boyon, but it is pronounced Bozon"—in order to recommend him "to the travelers who will think of climbing the Buet" (Saussure, 1779: 471).<sup>4</sup> The fact that Saussure included even the pronunciation of the name suggests that he expected some of his readers to follow in his footsteps.

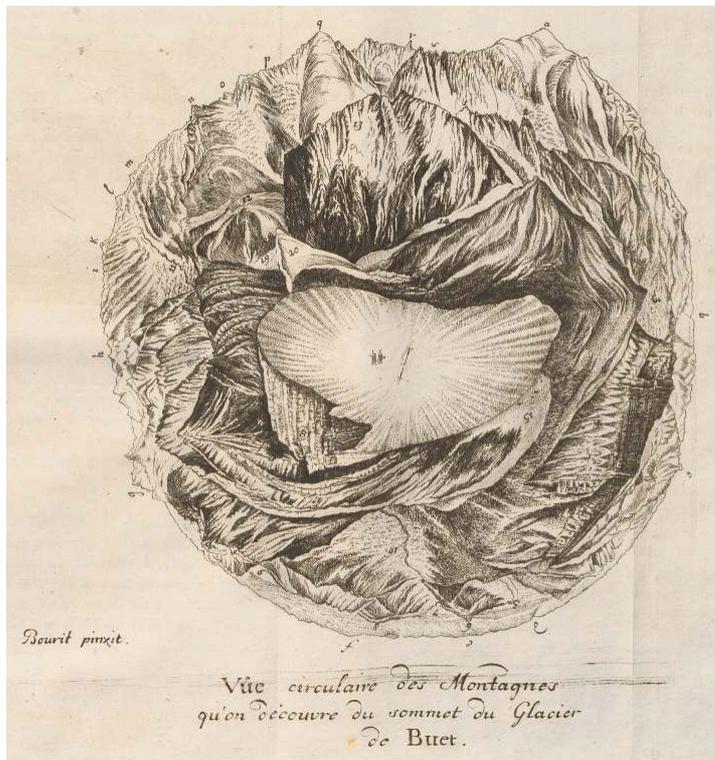
Figure 4: The spiked shoes of the guides were described in the accounts of Deluc's and Saussure's ascents of Mont Buet



Source: Saussure, 1779

- 22 Once on the summit, Saussure's narrative heavily relied on an engraving of the circular view drawn by Bourrit (see Figure 5), together with a set of instructions informing the reader how to use the image by rotating it. In a lengthy chapter where he extensively quoted Deluc and Marc-Auguste Pictet, his former student and colleague, Saussure shuttled back-and-forth between the circular view itself, the geological formations it depicted, and how they related to his history of the Earth (Sigrist, 2011). The engraving thus served as a scientific instrument made either to bring Mont Buet on the reader's desk or, reciprocally, for the reader to decipher on-site what stood before their eyes. This representation acting at once as a geology handbook and a viewpoint indicator for the reader on the summit, initiated a new interest in the aesthetic of panoramas seen from the top (Bigg, 2007).<sup>5</sup>

Figure 5: Circular view from top of the Buet drawn by Marc-Théodore Bourrit



Source: Saussure, 1779

- 23 The scientific activity of these Genevan savants not only advertised the panoramic view of the Alps from the summit of Buet but by turning the mountain into a “laboratory of nature”, it also encouraged philosophers and enthusiasts from all over Europe to experiment with the new science of the mountain (Bigg *et al.*, 2009). Although these savants did not always write works that could easily be carried in the rucksack, their publications were not restricted to other savants. Indeed, they were aimed at a broader, somewhat knowledgeable audience, and the goal of these “*récits-guides*” (Bertrand, 2000) was clear: fostering the enthusiast practice of experimental science on the summit.
- 24 Indeed, these literary and material peculiarities were only “affordances” that readers chose to engage with or not, and documenting actual practices would necessitate a full-blown study of the material reception of these publications. Nonetheless, the broad reception of Saussure’s works (Sigrist, 2011) ensured a variety of readership, and historical testimonies studied above show that they were indeed sometimes carried by hikers on the road. As another example, Marc-Auguste Pictet (1752–1825), Genevan physicist and student of Saussure, recounted in 1800 how a traveler fell to his death while climbing Buet; next to his body, a rescue team found the third volume of Saussure’s *Voyages dans les Alpes* (Pictet, 1800).
- 25 More importantly, the numerous republications of every one of these works, in successive formats each time closer to the genre of “modern guidebooks”—Saussure’s *Voyages* stripped off their most technical parts, Deluc’s off-print of only his itinerary in his *Relation*, Bourrit’s shift from a picturesque to a more informative style in his *Itinéraire*—suggest that there was at least a market, for pocket publications with practical information on how to climb to the summit if not an audience engaging with

experiments on the summit. Used as the first “touristic guidebooks” of the region, even if they did not belong to the genre, these publications at the crossroads of the picturesque, modern guides, and scientific reports, gathered and circulated a host of technical and scientific details that prompted locals and foreigners to venture to the summit. Beyond their publications, Deluc, Saussure, and Bourrit also promoted the exploration of the region by organizing expeditions to accompany foreign travelers or family members (e.g., Bourrit, 1791: Preface). As in a pilgrimage, many visited the early sites of mountain science to further test and replicate the original measurements and observations.

- 26 Even more telling is the posterity achieved by Bourrit, Deluc, and Saussure’s practices and publications in the constituted touristic literature of the early nineteenth century. Considered the “father of travel guides [...] in the Alps” (Devanthéry, 2016: 146) both by his contemporaries and by historians, the German physician Johann Gottfried Ebel (1764–1830) paid great tribute to his savant forebears and Mont Buet as one of the prominent birthplaces of tourism in the Chamonix valley. First published in German in 1793, his guidebook was translated into French in 1795 and English in 1818 and was later abundantly expanded in successive reeditions.
- 27 One of the first “modern guides”, Ebel’s *Manuel du voyageur en Suisse* (1805) is a four-volume in-octavo foremost dedicated to physicists, natural historians, and entomologists alike. Ebel mentions and comments on Bourrit’s publications at the very beginning of the first volume, among the “books published as Guides or Manuals for foreigners traveling in Switzerland” (Ebel 1805, I, p. 2) while he cites Deluc and Saussure’s works where necessary. The first volume is dedicated to practicalities about traveling to Switzerland, and the last three volumes are an alphabetical table of places to visit. In the second volume, Mont Buet, between the Brusasca valley and the city of Bulle, is followed by a succinct and practical itinerary, with names of potential guides,<sup>6</sup> and two pages of numbered “geological facts.” If Ebel’s latent encyclopedism is evident and became more assertive in the successive editions of his work, he nonetheless defined a specific genre for travel guides rooted in the savant expeditions and publications of the previous decades. Subsequent guidebooks in the nineteenth century owed a lot to Ebel’s *Manuel*, from which they derived most of their epistemic functions. Although they gradually encompassed broader “cultural knowledge” of the regions to be visited—notably, their history and customs—, their books acted as mediators that placed travelers in a position of direct scholarly engagement with the summit, producing knowledge about physics, natural history, and the theory of the Earth.
- 28 Through these narratives, descriptions, and guides, we are witnessing the gradual emergence of touristic infrastructure. Initially impelled by the scientific expeditions, such an infrastructure scarcely existed at the end of the eighteenth century but fully developed in the nineteenth century, involving dedicated routes and maps, professional guides and equipment, housing, and guidebooks. By the beginning of the nineteenth century, tourism had become a professional activity, and guides were organized into a corporation. The *Compagnie des guides de Chamonix*, founded in 1821, structured the profession (Dartigue-Paccalet and Ravanel, 2021). Its hierarchy, the guides’ schedules, their assigned zones are all attested by the personal travelogue of Charles Bourrit, Marc-Théodore’s son. He recounted how, in 1836, he was cheerfully greeted by the “old guides” of the region and how the new ones crowded to meet him,

as they recognized his father as the primary source of the touristic activity in the valley.<sup>7</sup>

## Conclusion

- 29 The above account has described how by the end of the eighteenth century the activity of ascending to the summit of mountains, the scientific practice of measuring the height of mountains with a barometer and travel narratives were inextricably linked. In part, this was the result of a peculiarity of a genre of scholarly publications which can now be situated at the crossroads of scientific account, public communication, and early guidebook. These accounts intermingled practical information about the path to the summit, picturesque descriptions of views and panoramas, and detailed scientific observations and experiments. In doing so, they not only created an interest for exploring mountains and summits, or showed the way to the top, but they also shaped one's experience of the mountain. While we lack direct sources on how exactly each reader read or used the *récits-guides*, their impact could be reflected in the practice of carrying a barometer to the summit for observations.
- 30 Within the scope of this special issue on contemporary scientific tourism, this brief historical argument suggests that acknowledging this past complex socio-technical fabric allows us, in turn, to promote a specific mode of scientific mediation in the mountain informed by the history of science and technology. Indeed, understanding and mediating scientific developments as part of a much broader cultural history, rather than as merely contemporary facts, allows for a “cultural decentering” (Kramar, 2012: 99) that fosters the problematization—the historicization—of inherited shared representations of both the mountain and science. More specifically, the ambiguities in the practice and communication of late-eighteenth century science—between scientists and the public, professionals and amateurs, scientific genres—can inform current approaches to scientific mediation in order to go beyond overly clear-cut objectives and distinctions between science and other cultural activities, or scientific research and popularization. The corresponding model of scientific tourism would be focused on historically and culturally situated scientific practices.

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## NOTES

1. All the translations are by the authors
2. Here, “mediation” is to be understood as a category denoting the means mobilized by historical actors to communicate about their travels and experiments to a broader audience, with an emphasis on the materiality of written publications.
3. Reachable either from the North through Sixt or from the South through Vallorcine.
4. Pierre Boyon was a cousin of Joseph Boyon, a local *porteur* whose personal notebooks with itineraries in the region are still extant (Lévi-Pinard, 1974: 137–138). Saussure’s first guide to Buet, Pierre Simon, is also mentioned (Saussure, 1779: 484).
5. Thomas Martyn’s early *Guide du voyageur en Suisse* (1790) features a reprint of Bourrit’s circular view.
6. He mentions Pierre Boyon and Jacques Claret. The latter’s name can still be seen engraved on a stone near Couteraye.
7. Archives d’État de Genève, Archives privées, 490.7.

## RÉSUMÉS

This contribution argues that a particular scientific context made summits a place of interest for eighteenth-century travelers. This development is connected to two particular scientific practices. First, the challenges raised by making the barometer into an instrument capable of

measuring the altitude of mountains transformed the summit into a privileged experimental site. Second, the scientific publications which described these experiments acted as guides to the summit for its readers, as shown by the example of the first ascents of Mont Buet by Jean-André Deluc, Marc-Théodore Bourrit, and Horace Bénédicte de Saussure. Those who ascended on summits not only followed in the footsteps of Deluc and Saussure, but also imitated some of their scientific practices and observations, though not always with a clear scientific goal of their own. We suggest that these travelers engaged in science not so much because they needed a justification for their ascents, but rather because their experience of the mountain came to be mediated through such instruments, observations and publications. The ambiguity behind these scientific practices lacking a clear scientific purpose draws an interesting parallel between this historical study and the contemporary phenomenon of scientific tourism. Our historical case study indicates how contemporary scientific tourism could rely on a model of public engagement with science informed by the history of science and technology.

Cet article avance qu'un contexte scientifique particulier a fait des sommets alpins un lieu d'intérêt pour les voyageurs du XVIII<sup>e</sup> siècle. Ce développement est lié à deux pratiques scientifiques spécifiques. Premièrement, les défis soulevés par l'utilisation du baromètre comme instrument capable de mesurer l'altitude des montagnes ont transformé le sommet en un site privilégié pour l'expérimentation. D'autre part, les publications scientifiques qui décrivent ces expériences servirent de guides jusqu'au sommet pour leurs lecteurs, comme le montre l'exemple des premières ascensions du Mont Buet par Jean-André Deluc, Marc-Théodore Bourrit et Horace Bénédicte de Saussure. Les voyageurs qui ont réalisé l'ascension des sommets ont non seulement suivi les traces de Deluc et de Saussure, mais ont également imité certaines de leurs pratiques et observations savantes, parfois sans objectif scientifique clair et précis. Nous suggérons que ces voyageurs se sont adonnés à de telles activités non pas tant parce qu'ils avaient besoin de justifier leurs ascensions par la science, mais plutôt parce que leur expérience même de la montagne a été médiatisée par ces instruments, observations et publications scientifiques. L'ambiguïté de ces pratiques scientifiques dépourvues d'objectif scientifique clair ouvre un parallèle intéressant entre cette étude de cas historique et le phénomène contemporain du tourisme scientifique, suggérant comment le tourisme scientifique contemporain pourrait s'appuyer sur un modèle de médiation scientifique informé par l'histoire des sciences et des techniques.

## INDEX

**Keywords** : history of science, scientific instruments, mediation, science in the mountains, Mont Buet

**Mots-clés** : histoire des sciences, instruments scientifiques, médiation, science dans la montagne, Mont Buet

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