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CHILLING ALLAHABAD:

Climate Control and the Production of Anglicized Weather in Early Modern India

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ABSTRACT

March 1775 proved to be an exciting time for Sir Robert Barker, stationed in India, traveling between Allahabad and Calcutta. Suffering as many British East India Company members did from the extreme heat and other forms of climatological discomfort produced by seasonal monsoons, Barker wrote to the fellows of the Royal Society begging permission to offer his observations on the manufacture of ice in India. Barker's interest had as much to do with the availability of comfortable refreshment as it did with the prospects of climate control, of making alien Indian weather English. Drawing on local knowledge, Barker's interest in Indian techne demonstrates the ways in which Enlightenment science and British colonialism were negotiated through the incorporation of "Asiatic" study. Barker's aims, however, were primarily in the interests of anglicizing the weather rather than promoting Indian science. In much the same way that Samuel Johnson's dictionary provided a template for fixing the meaning of what it meant to be English, Barker's study capitalizes on fantasies of climate control that dominated the Little Ice Age.



I want to begin with two stories about ice. Bénigne Poissenot described his encounter with a "cave glacière" in his *Nouvelles histoires tragiques* (1586). Passing through the Jura region of France in June of 1584, he stopped at the city of Besançon and was offered wine chilled with ice for his refreshment. In spite of the fact that the effects of radical climate changes characterizing sixteenth-century Europe were common knowledge—effects that included un-

usually long winters and prolonged periods of cold that extended well into the spring and summer months—Poissenot found the idea of an endless supply of ice during the summer something truly marvelous, particularly for luxurious purposes. He longed to see for himself the sources of this wondrous store of ice, and was taken to the Froidière de Chaux, through the dense woods on twisting paths to the opening of the enormous cave, “. . . a place so terrifying that he was reminded of what is said to be St. Patrick’s hole in Hibernia.” Nevertheless he drew his sword and entered the cavern “all paved with ice, and with crystal-clear water, colder than that of mount Arcadia Nonacris” (qtd. in Ladurie 138). His reaction to the cave, however, was primarily of terror:

Whenever I looked upwards my whole body shuddered with fear and my hair stood up on my head, seeing all the upper part of the cave covered with great blocks of ice, the least of which falling on me would have been enough to dash out my brains and tear me in pieces: so much so that I was like the criminal whose punishment in Hell was to have a big stone continually threatening to fall on him. (qtd. in Ladurie 138–39)

Not an isolated historical instance, successive travelers stumbled across this natural refrigerator that continued to supply the people of Besançon with ice to cool their wine cellars. In fact, the Froidière de Chaux was still steadily exploited for its ice until a disastrous flood in 1910 appeared to dissolve its reservoirs and ice never reformed again (Ladurie 140).

Some two hundred years later, Sir Robert Barker, Fellow of the Royal Society, adventurer, observer, and early modern climatologist, had a similar experience in Allahabad, where he was regaled with sherbets and iced creams when “the thermometer has stood at 112°” (Barker 257). Barker’s reaction to the availability of ice during the extreme heats of summer was far different from Poissenot’s. Unlike the “cave glacière” shown to Poissenot, Barker had “never heard of any persons having discovered natural ice in the pools or cisterns, or in any waters collected in the roads” (252). In a letter to the Royal Society, he begged “permission to present you with the method by which [ice-making] was performed at Allahabad, Mootegil, and Calcutta” (252). He describes the process by which porous clay vessels of water, buried in pits filled with reeds, salt, and saltpeter, came to provide ice for these cities:

From these circumstances it appears, that water, by being placed in a situation free from receiving heat from other bodies, and exposed in large

surfaces to the air, may be brought to freeze when the temperature of the atmosphere is some degrees above the freezing point on the scale of FAHRENHEIT'S thermometer; and by being collected and amassed into a large body, it is thus preserved, and rendered fit for freezing other fluids, during the severe heats of the summer season. (256)

Unlike Poissenot's cautious approach to the caves of the Jura, Barker was eager to observe foreign practices of icemaking, and while he muses that "during [his] residence in that quarter of the globe, [he] never saw any natural ice" (255), somehow this absence of a "natural" explanation seemed perfectly sensible to him. While Poissenot expresses himself to be "burning with desire" to be shown the "great stalactites of ice" in the Froidière de Chaux, he interprets the actual sight of this cave and its natural source of ice both as a threat and as a form of criminal trespass (qtd. in Ladurie 138). Barker, whose own eyes and ears have never seen or heard of a natural source of ice in Allahabad or Mootegil or Calcutta, nevertheless assumes that Indian techne could produce quantities of ice from no enduring source of chill. If one grants Poissenot the experiences a well-traveled man would have had in sixteenth-century Europe, then his reaction to the Froidière de Chaux is surprising. Glacial advances had left their infamous mark of famines, frosts, and floods on towns from Chamonix to Besançon. This area is described as

a poor country of barren mountains never free of glaciers and frosts . . . half the year there is no sun . . . the corn is gathered in the snow . . . and is so moldy it has to be heated in the oven. Even animals were said to refuse bread made from Chamonix wheat. The community was so poor that no attorneys or lawyers [were] to be had. Avalanches, caused by low temperatures and deep snowfall, were a constant hazard. In 1575–76 conditions were so bad that a visiting farm laborer described the village as a place covered with glaciers . . . often the fields were entirely swept away and the wheat blown into the woods and on to the glaciers. (Fagan 88)

Navigating his way through this area, Poissenot must have been familiar with the ways in which glacial advances had radically altered the landscape, making natural phenomena like the Froidière de Chaux a rule rather than an exception. Yet Poissenot's terror of the "cave glacière" borders on the sublime, his visit there a crime punishable by hellish forces, a horrific prospect that, far from cooling his "burning" desire, invokes flames hotter than any of human device.

Barker, on the other hand, seems eager to embrace and consume the results of "Asiatic" science, regardless of whether or not his own sensory per-

ceptions allow him to believe in the manufacture and production of ice. Rather than resorting to supernatural explanations, he uses his own instruments of measure to render the results of an alien techne readable to him: “Upon applying the bulb of a thermometer to one of these pieces of ice, thus frozen, the quicksilver has been known to sink two or three degree below the freezing point” (256). Thus, from “an atmosphere apparently not mild enough to produce natural ice, ice shall be formed, collected, and a cold accumulated, that shall cause the quicksilver to fall even below the freezing point” (256). The promising advantages he identifies make profitable “so very short a duration of cold” to “alleviate in some degree the intense heats of the summer season, which, in some parts of India, would be scarce supportable, but by the assistance of this and many other inventions” (257). Such profit, more importantly, stimulated by the “Asiatic (whose principle study is the luxuries of life . . .)” (256), could capitalize on the benefit of European visitors. Barker is making clear connections between two forms of technologies—the “principle study” of Asiatic science, luxury, and the measurement of instruments of Western science, the thermometer—in order to determine that what he is seeing is, indeed, a collection of ice, despite the lack of any natural evidence. Poissenot’s wonder at the availability of supplies of ice during the height of summer generates a “burning desire” to see such a phenomenon with his own eyes. Yet the sight of the “cave glacière” is one that produces an unreasonable terror, despite the abundance of natural evidence, anecdotal or otherwise, that makes this site perfectly natural. He resorts to the supernatural, trembling with fear for the hellish punishment that awaits his transgression. What accounts for these radically different reactions to the same story: the unaccountable production of ice during a season where no ice should be made? Or, rather, what accounts for these different reactions to the appearance of ice in the summer months when both travelers were writing deep in the throes of the Little Ice Age? Or, finally, can we account for five hundred years of ice out of context as a single historical period?

One answer seems transparent enough: what separates Poissenot and Barker are one hundred years in which the meteorological conditions might well have changed. What also separates them are a couple of continents in which the effects of the Little Ice Age might have been experienced quite differently. This period, identified by historians as a series of climatic shifts extending from 1300 to 1850, repeatedly subjected England and Europe to droughts, diseases, famines, and eternal winters of bone-chilling cold. European reaction to these climatic shifts varied during Poissenot’s time, but the

prevailing sentiment from 1560 to 1600 was that the disastrous results of these shifts were supernatural in origin.

As climatic conditions deteriorated, a lethal mix of misfortunes descended on a growing European population. Crops failed and cattle perished by diseases caused by abnormal weather. Famine followed famine bringing epidemics in their train, bread riots and general disorder brought fear and distrust. Witchcraft accusations soared, as people accused their neighbors of fabricating bad weather. . . . Sixty-three women were burned to death as witches in the small town of Wisensteig in Germany in 1563 at a time of intense debate over the authority of God over the weather. Witch panics erupted periodically after the 1560s. Between 1580 and 1620, more than a 1,000 people were burned to death for witchcraft. . . . Witchcraft accusations reached a height in England and France in the severe weather years of 1587 and 1588. Almost invariably, a frenzy of prosecutions coincided with the coldest and most difficult years of the Little Ice Age, when people demanded the eradication of the witches they held responsible for their misfortunes. (Fagan 91)

The social climate of suspicion and fear in pre-Cartesian France, inspired by the debate over whether or not there was a divine authority over weather changes, accounts for Poissenot's recourse to a supernatural explanation. He describes his initial desire to see the cave as gratified by his hosts, but later when the phenomenon is revealed to him, realizes that such desire is nothing if it is not sin: the sight of a world turned upside down, where vast quantities of ice exist regardless of the season, but exist dangerously, ready to strike down the transgressor whose desire is too "burning." The accounts of witches being burned with alarming frequency as a punishment for altering the natural progression of the seasons saturated travel narratives in late sixteenth-century France. Despite the abundance of natural evidence for the "cave glacière," Poissenot, an intrepid adventurer and writer, could not help but be reminded of his own part in this unnatural phenomenon, particularly since he was enjoying its luxurious ramifications: iced refreshment during his sojourn in Besançon in late June of 1584.

Barker's experience is very different. While it is true that both travelers were writing during the historical period of the Little Ice Age, epistemological changes shifted the primacy of theodicy and recourse to the supernatural to the discourse of science in order to make unfathomable natural phenomena readable. For example, the emergence of the experiment as a crucial part of scientific methodology seems to be, in part, responsible for Barker's sang-

froid in the face of no physical evidence of natural sources of ice. Drawing on the Hobbes–Boyle controversies of the seventeenth century, Steven Shapin and Simon Schaffer argue that “solutions to the problem of knowledge are embedded within practical solutions to the problem of social order, and that different practical solutions to the problem of social order encapsulate contrasting practical solutions to the problem of knowledge” (15). In the case of these radically different responses to ice that Poissenot and Barker record, while chronological, historical, and geographical differences may easily contribute to the differences of their accounts, clearly the problem of social order is one that determines—and overdetermines—their discrete responses to inexplicable natural phenomena. The failure of witch sacrifices to alleviate the problems of climatic changes during the Little Ice Age may have contributed to seeking other solutions—often attributed to the “natural” linearity of a progressivist history—to account for problems of the social order. Thus, rather than invoking the supernatural, the wrath of God, and the dominance of theodicy as ways of determining causal issues, the emergence of a system of accountability based on empiricism might have had an equally radical influence on climatic etiology. Enclosed within a geographical economy of suffering, the issues of luxury seemed a sinful sign of excess, ones that could, without care, be castigated as sorcery.

And yet, Barker’s “observations” of icemaking in Allahabad—if that is what they were—are steeped in a kind of witchery: “promising advantages” were to be had to make profitable this “short duration of cold.” A “comparatively short season of cold weather”—far from freezing—would magically supply a long season of intense summer heat with means of alleviation. Barker’s thermometrical tests determine that “from an atmosphere apparently not mild enough to produce natural ice, ice shall be formed, collected, and a cold accumulated” (256). Such conclusions rely, as I have argued in another essay, on something other than an analytical model of reason: Barker seems to be engaged in an analogical reason that determines that ice produced from no enduring source of chill is perfectly natural and reasonable, an alchemical paradigm that fully believes in the transfer of base substance into a sublime abstraction. That is, while Barker’s recourse to the Fahrenheit system of measurement seems very much in line with empirical methodologies of control, the fact is that there is no discernable source of “natural” ice to be had. Instead, Barker reasons, the ice that is “formed, collected, and a cold accumulated” is one that is analogous to European modes of ice collection.¹

Barker falls back on an older form of reason that suits his context. His presentation to the Royal Society is the “method by which it was performed at Allahabad, Mootegil, and Calcutta,” presumably by Indian icemakers schooled in this practice and fueled by “Asiatic” study, whose principle interest is the “luxuries of life.” Untrammelled by any fears of witchcraft or allegations of sorcery—Barker is, after all, working well within the Cartesian confines of Enlightenment science that putatively put such nonsense to rest—Barker nevertheless seizes upon a medieval paradigm of science with which to make such a phenomenon readable to him and to his audience at the Royal Society. Porous clay vessels containing water, buried in pits of reeds, salt, and saltpeter, miraculously yield enough ice to cool a “season” of “intense heats,” which “in some parts of India, would be scarce supportable.” The value of this form of “Asiatic” *techne* for European colonists is inestimable, especially considering not only “the assistance of this” but of “many other inventions” that could render European habitation possible. The rudimentary elements of icemaking—water, clay, reeds, salt, saltpeter—produce the invaluable means not only for personal refreshment but the luxury of climate control. In short, with careful husbandry, Indian technology could Europeanize India’s climate. Moving from the base substance of this method to its priceless consequences, Barker recalls the paradigm of an alchemical transfer to make legible to his London audience the value of his own “empirical” observations.

British ventures into the New World during the Little Ice Age were also faced with the quandary of the colonist: while “demystifying nature, displaying bodily strength, and using technology all became measures of colonial power,” as Joyce Chaplin argues, the British were still faced with the undeniable refutation of those very elements of mastery (15). Even if climatic similarities rendered their experiments in Arctic navigation familiar, they were, nevertheless, confronted with the utter paucity of *techne* to deal with overwhelming natural ice.² Limited to Arctic exploration because of Iberian domination, the English found themselves bested by “uncivilized” Inuit nations largely because of their assumptions about shared technologies:

. . . it was one thing to have expected to meet Asian migrants passing through the north and another to meet people who lived there. Indeed, Frobisher’s first crew was astonished that they had an audience for their efforts in the Arctic, which Best reported was ‘habitable’ by people and animals. The people lived in a veritable desert, one where agriculture itself was impossible—something incredible to Europeans. In such sur-

roundings, established opinions about raw nature and its transformation made little sense. The English puzzled over how the Inuit managed to stay alive in their region, and how they so quickly adopted European technology. Lack of sustained contact with the natives of Newfoundland, before 1612, created a continued context for puzzlement, especially as the English tried to make sense of the increased presence of European technology among the Abenaki, Beothuk, Micmac, and Montagnais, without the increased presence of Europeans. (Chaplin 15)

Sixteenth-century English explorers, then, initially found the conditions of excessive frost and cold in the New World a source of comforting familiarity, something that was quickly dispelled when it became increasingly clear to them that European bodily might, technological superiority, and the conquest of a fickle nature were only illusions, and that far from confronting an uncivilized “tribe,” the Inuit defied every tenet of their colonial discourse, including mastery of European techne. Of course, even if Frobisher’s first crew experienced this cultural disjunction with necessary immediacy, the dissemination of the discrepancy between European fantasies of Inuit and Eskimo tribes and the bitter realities environmental conditions wrought was slow to spread. After their stinging expulsion from the Thirteen Colonies some 150 years later, however, the British sought different contexts in which to articulate measures of colonial power.³

Barker’s experience in India, then, has a rich and complex environmental footprint that extends not only over several continents but also over several centuries. What is interesting about these two stories about ice is not so much their chronological and geographical distance, both of which are fairly easy to imagine, but the insistent continuity of certain ideas about climate control and certain fantasies that imbricate climatic change, history, colonial ideology, technology, and scientific and literary discourse. As historians such as Emmanuel Ladurie, Brian Fagan, Joyce Chaplin, and Linda Colley agree, it seems as if history is shaped by diverse conditions including climate change that could well alter the ways in which we understand such mainstays of discursive continuity as colonialism. Rather than thinking solely about the administrative implications that occupy postcolonial discussions of British colonialism—and by administrative I am referring to ideologies of domination and conquest that have structured postcolonial inquiry—it may also be important to think about circumstances putatively out of human control. It is not that administrative structures of power are not central to understanding colonialism—they are indeed necessary and crucial to

understanding ideological production. That weather, for example, had a critical place in imperial history complicates the a priori agreement that European Enlightenment historical and technological progress led to an inevitable global dominion.

About twenty years before Barker was engaged in his thermometric observations, reporting his findings to the Royal Society, Samuel Johnson had finally completed his *Dictionary of the English Language*. This project, undertaken in 1746 and occupying his time and psychological wherewithal for the next ten years, was in part motivated by competing academies in Italy and France who were compiling dictionaries of their own, but it was also spurred on by Johnson's own interest in taxonomy:

When I thus inquired into the original of words, I resolved to likewise show my attention to things: to pierce deep into every science, to inquire the nature of every substance of which I inserted the name, to limit every idea by a definition strictly logical, and exhibit every production of art or nature in an accurate description, that my book might be in place of all other dictionaries whether appellative or technical. (291)

Even if he dismisses this ambition as the “dreams of a poet,” he was clearly provoked by the mass of correspondence coming from the British East India Company, members of which were charting their interactions with an alien land in the interests of epistemology. His gargantuan undertaking, made with “little assistance of the learned, and without any patronage of the great,” is recorded with a certain bitterness in his *Preface* to the *Dictionary* in which he recounts, among other things, the thankless task of the lexicographer (Johnson 291, 297). Doomed to “toil at the lower employments of life,” to be “rather driven by the fear of evil than attracted by the prospect of good; to be exposed to censure, without hope or praise, to be disgraced by miscarriage or punished by neglect,” is the fate of these “unhappy mortals,” among whom is the “writer of dictionaries” (277). Johnson's representation of lexicographical labor is curiously prescient of later nineteenth-century descriptions of the thankless toil of colonial laborers who, for the most part, work tirelessly for the good of indigenous populations and the glory of the British crown with equal loyalty.⁴ Unlike Barker, who was excited at discovering new methodologies to improve the circumstance of Britons in India—methodologies that submitted to the reputed rigors of European scientific measurement—Johnson calls up the figure of the “slave of science” rather than its “pupil,” a position “doomed only to remove rubbish and clear obstructions from the paths through which learning and genius press forward to conquest and

glory” (277). Like Daniel Gabriel Fahrenheit before him (1724), Johnson’s place in scientific enterprise is to provide a system of measurement against which the purity or reliability of analogical experiments may be tested. Finding “our speech copious without order, and energetic without rules” while “adulterations were to be detected without a settled test of purity,” Johnson applies himself

to the perusal of our writers; and noting whatever might be of use to ascertain or illustrate any word or phrase accumulated in time the materials of a dictionary, which, by degrees, I reduced to method, establishing to myself in the progress of the work the rules as experience and analogy suggested to me; experience, which practice and observation were continually increasing; and analogy, which, though in some words obscure, were evident in others. (277–78)

Johnson’s *Preface*, as I have argued elsewhere, amounts to a deeply xenophobic invective against the problems with stabilizing and even freezing language and meaning. The trials that frequent translation, combined with the “jargon” or “mingled dialect” that “serves the traffickers on the Mediterranean and Indian coasts,” pose to the “settled” test of purity of English diction are “as much superior to human resistance, as the revolutions of the sky, or the intumescence of the tide” (Johnson 294). Thus Johnson’s toil, superhuman in his effort to stem the insidiousness of a “natural tendency to degeneration,” is “devoted . . . to the honour of my country, that we may no longer yield the palm of philology without a contest to the nations of the Continent” (296).

But it is equally important as testimony to the dissociation of mercenary work to establish ways for new discovery. Thus the “slave of science” and “pioneer of literature” engage the European burden of science (as opposed to the Asian science of luxuries) and provide an “established principle of selection,” whether to the “chief glory of every people . . . its authors,” or to “the propagators of knowledge . . . and teachers of truth,” in which “[Johnson’s] labors light to the repositories of science, and add celebrity to Bacon, to Hooker, to Milton, and to Boyle” (Johnson 296). Unaided by the “soft obscurities of retirement or under the shelter of academic bowers” (297), Johnson’s cold “sickness and sorrow” nevertheless establish him as the proper lexicographical laborer. Johnson thinly veils his contempt for the soft shelter of French and Italian academies, posing his “gloom of solitude” (298) against their temperate climates for the cooperative production of lexicographical work, warmed by relatively generous patronage. He positions the relatively

enervative efforts of effete cultures by his own self-representation as the eighteenth-century man of letters driven to work tirelessly, courageously, and fruitfully in an intellectual and meteorological climate zone that produced fantasies of individualist control. Johnson's *Dictionary* may thus be read not only as emerging from British taxonomic and epistemological drives, but by the ways in which Hippocratic notions of climatic determinism fueled and propelled fantasies of colonial enterprise.

Johnson completed his lexicography in 1755 and was known thereafter as "Dictionary Johnson," a title that both elevated him to the status that his honorary MA from Oxford, included on the title page of the *Dictionary*, had already determined, and designated him as the hopeless literary drudge that he feared he might be. Nevertheless, such an appellation made his contribution resonate in both the world of letters and in the world of scientific discovery. Barker, writing twenty years later, would have been familiar with his notions of standardization.

But more interestingly, Barker is far more eager to embrace encounters with otherness in their sublime and uncanny forms and, consciously or not, emulates the same kind of double reasoning in his letter to the Royal Society regarding icemaking in Allahabad as Johnson does in his *Preface* to the *Dictionary*. Johnson sets about collecting examples of diction "from writers before the Restoration, whose works I regard as the 'wells of English undefiled,' as the pure sources of genuine diction" (289). Barker sets about determining the purity of the ice he sees collected in clay vessels, observing that "plain water will become so hard as to require a mallet and knife to break it" (256), and thus concludes that "these pieces," defined by the "bulb of a thermometer [whose] quicksilver has been known to sink two or three degrees below the freezing point" (256), are, in fact, "ice." Both self-consciously announce when they take recourse to analogical reason when analysis fails: when Johnson's "experience" fails, "analogy, which though in some words obscure, [is] evident in others" (Johnson 278) supplies the gap, while Barker, undisturbed by never having "heard of any persons having discovered natural ice in the pools or cisterns, or in any waters collected" (Barker 252), is quite willing to replace his lack of empirical evidence with Indian *techne*, even if he uses instruments of his own understanding to determine authenticity.

Shapin and Shaffer argue that Enlightenment science functions as a discourse that politicizes the "problem of generating and protecting knowledge" (21). Given the importance of the experiment in Enlightenment scientific culture and the ways that culture relied so heavily on analytical models of

reason, one wonders why Johnson and Barker navigated between different paradigms of reason, often substituting analysis with analogy. Returning for a moment to the story of Poissenot and his response to the “cave glacière,” one way of accounting for these two pioneers of science, Johnson and Barker, is to think about knowledge in terms of climate control. Both figures were writing during the Little Ice Age, Johnson experiencing the rigors of climatic shifts perhaps a bit more keenly than Barker. But if we think about the ways in which Johnson’s call for fixity is articulated in his invectives against translation, we can get an idea of the contrary drives that determine his enterprise. On the one hand, there is the unmistakable notion of change: the “French language has visibly changed under the inspection of the Academy, the style of Amelot’s translation of Father Paul is observed by Le Courayer to be ‘un peu passé’; and no Italian will maintain that the diction of any modern writer is not perceptibly different from that of Boccace, Machiavel, or Caro” (Johnson 294). On the other hand, however, is the great “pest” of speech—the “frequency of translation”—that, according to Johnson, threatens to destroy its integrity. “Let them,” he enjoins, “stop the license of translators, whose idleness and ignorance, if it be suffered to proceed, will reduce us to babble a dialect of France” (296). Johnson’s lexicographical contribution somewhat magically performs the impossible task of freezing meaning within the rigid confines of purely English wells, willfully unaffected by the inevitable movement of discourse from continent to island. His terror—if that’s the right word—of fluid linguistic parameters slides into his own frigid indifference at the conclusion of his poignant *Preface*, where he declares that “success and miscarriage are empty sounds” that he therefore dismisses with “frigid tranquillity, having little to fear or hope from censure or praise” (Johnson 298).

While writing a different text in a similar climatic context (what it means to be English), Barker’s motives are not entirely dissimilar. The fantasies about controlling seasons of excessive summer heat by using the inventions and *techne* of Indian science circumvent the actual situation of these East India Company officers, stuck in an inhospitable landscape, lured with the promise of fabulous profit. Regaled as he is with frozen “sherbets, creams, or whatever fluids are intended to be frozen” (Barker 257), when the thermometer has registered above 100 degrees Fahrenheit, he can construct an entire cultural imaginary of a contained and controlled landscape, untrammelled by climatic realities—untroubled, it would seem, by Johnson’s fine distinctions between “Mahometan” pursuit for “procuring the conveniences of life,” a practice situated “a little above barbarity” (Johnson 294–95).

Barker, on the contrary, embraces this uncanny production of comfort and luxury and sees the possibilities for British profit, even if he embraces alien techne in order to put it to proper work. Poissenot's reaction to the gelid realities of rivers of ice encroaching upon arable farmland, destroying a very fragile agricultural existence at the whim of weather, was that such climatic and topographical phenomena were the cruel realities of existence, which renders his terror of the "cave glacière" that much more reasonable. Such a natural formation deserved the kind of trepidation with which he approached it, given the fact that the land and climate was, according to sixteenth-century knowledge, entirely capricious.

The end of the Little Ice Age—1850, according to Fagan—wrought other kinds of shifts in the British relationship to Indian landscapes. More secure in their imperial purchase, Britons seemed to be confronted by the material realities of intense heats, and rather than turning to local technologies and local knowledge—which, by this point, they had dismissed as primitive, obscure, ineffectual, and rudimentary—they sought relief in the natural landscape. Kavita Philip documents the ways in which hill stations and hill settlements became part of the annual migration of Britons living in India. Referring to a popular ditty of the early twentieth century, Philip argues:

Not only is the Nilgiri climate a relief from that of the Indian plains . . . but it surpasses even that of England. . . . the Nilgiris are represented as paradise: as England on a grander scale, a land blessed with immortality. . . . In the Nilgiris . . . the Englishman escapes from the tyranny of regulated, ordered temporality into a space that stands outside of time. Nilgiri sunshine has 'the art' that English sunshine doesn't—this appeals to a view of art as outside sociality and temporality, eternal, unspoiled by the grimness of production relations. Like pure art, then, Nilgiri nature is unburdened by social functions; its manifestations are fairylike, full of flowers and birds. (35)

Having abandoned the promise (real or imagined) of deploying Indian technology to suit their domestic needs, nineteenth-century Britons took charge of the land; their hill stations functioned as places from which they could escape both the rigors of seasonal heats and the rigors of administrative duties. As Philip argues:

Officials in the hills could easily see themselves as invested with god-like qualities: a sense of omnipotence emerges, in this account, from the language of laying out, settling, and planning the lives and landscapes of the hills. Hill stations were relatively isolated from the state bureaucracy, and

hence individual administrators were less accountable to higher officials. This increased personal power allowed hill administrators to feel like lords of their own kingdoms. (40)

The terms have shifted somewhat. Not just meteorological issues of chill and warmth, but topographical terms of height and depth became the new, more controllable markers for British power. Unlike Barker's *tabula rasa* of eighteenth-century colonial Bengal, these colonial administrators found themselves bound once more to the structural realities of the landscape. The advent of a more complicated political relationship to imperial rule may have resulted not only in a more layered bureaucracy, one that necessitated a change in the ideologies of imperialism that now envisioned British rule as social missionary work, but one that was also shaped by climatic shifts on the home front. To be sure, nineteenth-century Britain was still faced with the vagaries of weather—witness the legendary nineteenth-century yellow fogs of London under cover of which all sorts of potentially nefarious industrial deeds were performed—but nothing like what it had faced during the depths of the Little Ice Age. Conversely, the climatological perceptions of India were now getting cast in other Hippocratic forms: the frightening heats of the summer seasons begat restrictions as insurmountable as Poissonot's reaction to the "cave glacière." Thus the hill stations managed to create British spaces that were eccentric to British administrative control, spaces that perhaps relied more and more on forms of local knowledge jealously guarded from the teeming hordes of Indian civil servants, and reserved as exclusively British spaces. Again, as Philip suggests, the problems of administrative control were articulated in an endless bureaucracy:

Take this account of official duties in the hills: 'what a god-send and relief it is to get a little elbow-room, a little broad freehand work, a chance of action not absolutely determined by Codes and Manuals.... Oh, the relief of getting away [from the plains;] from niggling and pottering over Section X Subsection Z to a wider world where one lays out roads and reservoirs, plans for reserves and areas for cultivation, settles questions of rights and tenures, has, in a word, a chance of getting something done that shows. (40)

Showing one's work here capitalizes on another model of administration that James C. Scott identifies as a form of mapping control over local areas from an abstracted governmental center regardless of its peculiarities.⁵ This colonial administrator poses the problem as one that pits tedious bureaucratic

abstraction—Section X, Subsection Z—against the material pleasures of road building and settlement planning that amount to another form of climate control. Controlling the land was a form of controlling the climate. Decisions British colonial administrators made regarding the ground shaped the climate, both in the Nilgiris and elsewhere in other important hill stations in Bengal such as Darjeeling.⁶ While the move from controlling meteorological conditions to controlling topographical ones seems different, they are linked by politics and power. Barker's plans for improving British habitation in colonial Bengal by exploiting Indian techne emerged as the East India Company's decision to claim hills for their topographical control in effect amounted to feeding the fantasies of climatic and political control.

In January of 1882, *The New York Times* published an article from *Chamber's Journal* on icemaking in India in which the author hails the advent of a technology that will allegedly decrease dependence on foreign ice.

When I came out in 1853, Calcutta, Madras, and Bombay were wholly dependent on American ice, supplied by the Tudor Ice Company, and retailed at two annas the *ser*; that is, two pounds of ice brought from America were sold in India for 3d.! . . . Science came to our aid; and sulphuric ether and ammoniac machines came gradually into vogue, and latterly Carre's wonderful pneumatic machine. . . . With these great appliances, block-ice is now available in districts where it could not formerly be had at from 11/2 to 2 annas per *ser*.

In an uncanny return of the French “cave glacière,” Ferdinand Carre's invention of the compressor brought with it another fantasy of climate control for the author of the *Times* article. What is striking about this article, however, is not so much the ways in which new forms of technology and machinery change the climatic conditions of British India, nor the curious dependence on American ice, but the fact that most of the article is taken up with the author's fascination with “an industry peculiar to the cold weather, which, except in small stations, is fast dying out, and that is the manufacture of ice.”⁷ While deploring the mercenary habits of the Americans and lauding the advent of European technology to obviate this humiliating dependence, the author nevertheless describes in great detail the same process of manufacturing “artificial ice” (on which “the *mofussil* [up country] was entirely dependent”) that Barker had written about a hundred years earlier. Although the process is “tedious and expensive” it is saturated with nostalgia, and the danger of its disappearance is preserved by this author in his account, sent back to London, published by the *Chambers Journal*, later

taken up by the relatively new *New York Times*, to be disseminated to a transatlantic audience.

Fagan declares that today “our ecological sins seem to have overtaken our spiritual transgressions as the cause of climatic change” (91). Once at the mercy of a frozen landscape, of a supernatural wizardry that capriciously determined the economic, social, and cultural wherewithal of a pre-Cartesian Europe, Enlightenment reason and colonial administration together focused attention away from meteorological conditions and toward a topographical control of land that shaped political power in crucial ways. Eighteenth-century interest in taxonomy, working in tandem with scientific discovery, sought ways to freeze the fluidity of exchange into extant meaning. Johnson’s single-handed hardiness produced a tour de force that “soft” Continental retirements and “obscure” academic bowers could not, and provided a reconfigured British colonial force with a lexicon of power.⁸ Thus forms of Indian techne, far from being sources of either terror or derision, became possible solutions to anglicizing the weather. Administrative duty, however, forced Britons to pay attention to the land and the ways in which topography contributed to an increased presence of power. The fluid exchanges between icemakers in India and Barker were then replaced by harder-edged boundaries that, nevertheless, wrought climate changes whose effects are still being felt. Fagan’s ecological sins, committed in the name of a technological progress, caution us to pay attention to the land, and, perhaps, the medieval retribution visited upon spiritual transgression. But whether or not we heed the hard realities of material landscapes or the conditions outside human management, our decisions are controlled by the desire to control that may, ultimately, shape our destinies.

NOTES

1. For example, Parlinton Hall, seat of the Baronet Sir Edward Gascoigne (1743), was famous for architectural innovations including the icehouse in which ice from nearby ponds and lakes was stored, and could keep up to three years. Initial conjectures suggest that the ice was used to keep sides of venison and beef, but in addition to this form of refrigeration, the ice stored in the house was also used to cool white wines and other drinks for summer consumption. A contemporary of Barker’s, Gascoigne’s experiment with ice storage would very likely have been in Barker’s mind during his time in India.

2. Chaplin writes: “The English even cheered themselves by using the ‘Little Ice Age’ to emphasize similarity between the new world and the old. The ice that one

northbound crew encountered in 1607 was explainable, they said, because that was the year ‘when the extraordinary frost was felt in most parts of Europe’” (50).

3. See Colley.

4. Rudyard Kipling’s poem “The White Man’s Burden” is a pithy example of imperial drudgery.

5. Scott’s compelling example invokes the environmental history of monocropping trees in medieval Germany, the ways in which abstract administrative decisions, made without accounting for local issues, changed the history of the land.

6. Originally under the jurisdiction of the kingdoms of Nepal and Sikkim, Darjeeling became folded into West Bengal when members of the East India Company, traveling to Sikkim in 1828, decided that the area was an admirable site for a sanatorium for British soldiers. Darjeeling grew in popularity with the British ruling class and Maharajahs of local princely estates. The legacy, however, of this administrative decision is one that is still being felt; British appropriation of topography regardless of ethnic and political divisions, affected and continues to affect the political climate of West Bengal.

7. Frederic Tudor’s Boston-based company started supplying ice to Calcutta in 1833. Although the journey was at least four months’ duration from Massachusetts, ships laden with 180 tons of ice in Boston entered the Ganges with 100 tons of ice left for sale. Calcutta became Tudor’s most rewarding interest, yielding over \$220,000 in profits. It is interesting to note another climate change: water from Walden Pond in Concord, most commonly associated with American transcendentalism, was, when frozen and cut and harvested by Tudor’s company—turned, in fact, into a hard commodity—a source of immense profit. American water from Walden Pond, furnishing an endless supply of intellectual inquiry, was thus simultaneously engaged in shaping the material realities of British colonial life in Bengal. Thus Britain’s failed former empire of the Thirteen Colonies ended up supplying (again to Britain’s detriment) their new imperial interest.

8. By using the term “reconfigured,” I am alluding to the shift from early eighteenth-century British East India Company factors who had a precarious purchase on the Coromandel Coast, to the later eighteenth-century EIC whose triumph over Tipu, Sultan of Mysore, ushered in an new age of British colonial power.

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