Man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discords. — George Perkins Marsh, *Man and Nature* (1864)

Rival of the potent agents of the internal world, man undoes what nature has done.

— Antonio Stoppani, *Corso di Geologia* (1873), translated by Valeria Federighi

Gifford Pinchot, the first chief of the US Forest Service, was right in more ways than one when, in 1947, he claimed that *Man and Nature* was an “epoch-making book” (xix). Written by the diplomat-linguist George Perkins Marsh and published in 1864, *Man and Nature* reexamines the relationship between nature and the human, exploring the many ways humans have modified the earth. As Marsh’s biographer, David Lowenthal, writes in his introduction to *Man and Nature*, Marsh’s text fosters “alertness to the flux of change within the ramified network of dead and living matter,” making George Perkins Marsh “the first to recognize that man’s environmental impacts were not only enormous and fearsome, but even cataclysmic and irreversible” (xxix, xvi). This “epoch” in which *Man and Nature* is traditionally ensconced is called the American environmental movement, with some scholars, such as the environmental historian William Cronon, asserting: “it is no exaggeration to say that *Man and Nature* launched the modern conservation movement” (x). In addition to its “epoch-making” qualities in relation to the rise of environmentalism, *Man and Nature* has also been invoked in relation to the emergence of the concept of the Anthropocene Epoch, a term that was reintroduced in 2002 by
atmospheric chemist Paul Crutzen to designate a span in geological time—from the Industrial Revolution to the present—in which humans have so thoroughly transformed the environment that they constitute their own geological force (Steffen et al. 843). With regard to the historical context surrounding the concept of the Anthropocene, *Man and Nature* is often situated as among the initial texts, with some researchers postulating that Marsh’s book is “perhaps the first major work to focus on anthropogenic global change” (Zalasiewicz et al. 835). Thus Marsh’s *Man and Nature* is not only epoch-making, insofar as it embodies the intellectual inauguration of modern environmentalism, but also epoch-realizing, insofar as it articulates the extent to which humans have changed—or to use Marsh’s word, “deranged”—the earth and are caught up in the web of nature, embracing a level of human agency that anticipates the Anthropocene Epoch’s declaration of humans-as-geological agency.

If Marsh’s *Man and Nature* is among the initiators of a nascent Anthropocenic viewpoint, then the second edition of this text—renamed, *The Earth as Modified by Human Action*—represents the emergence of an Anthropocenic dialogue. It is in this 1874 edition that Marsh directly responds to the concept of the Anthropozoic Era, which was proposed by the Italian geologist and Catholic priest Antonio Stoppani in his 1873 text, *Corso de Geologia*. As Marsh writes, Stoppani “treats the action of man as a new physical element altogether *sui generis*. According to him, the existence of man constitutes a geological period which he designates as the *anthropozoic era*” (Marsh 609). Although the Anthropozoic shouldn’t be confused with the Anthropocene (the former—a hypothetical geologic *era*—refers to the very existence of humans as constituting a geologic force, while the latter—a potential new geologic *epoch*—traces its origin to the Industrial Revolution), they share a common intellectual lineage insofar as they both subvert a clear distinction between human force and geologic force. When it comes to Stoppani’s relation with Marsh and to the history of the Anthropocene, researchers tend to create
a rather reductive narrative. For example, with regard to Stoppani’s relation to Marsh, in his multi-authored historical review of the Anthropocene, Will Steffen—after noting how Crutzen’s use of the Anthropocene Epoch was influenced by Stoppani’s introduction of the Anthropozoic concept—merely notes that “Stoppani was quoted by George Perkins Marsh in the second edition” of his 1864 *Man and Nature* (844). In a similarly reductive vein, with regard to Stoppani’s contextualization within the Anthropocene narrative, critics tend to paint Stoppani as a solitary voice in the intellectual wilderness—a man whose Anthropozoic idea was entirely disregarded. For example, in their introduction to *Making the Geologic Now*, Elizabeth Ellsworth and Jamie Kruse write: “Stoppani’s proposal was ignored; other scientists found it unscientific,” while Etienne Turpin and Valeria Federighi assert that it is only in the present Anthropocenic discussions that “we finally have ears to hear him” (29, 35). While it is certainly true that Stoppani’s Anthropozoic proposal was ignored in the sense that it didn’t mobilize enough critical consensus to be formally adopted as a unit within the geological timescale, as far as opening a space for discourse is concerned, it wasn’t entirely ignored, as George Perkins Marsh’s work exemplifies. Taking Marsh’s response to Stoppani as a point of departure, I’d like to situate *The Earth as Modified by Human Action* as a discursive event in Anthropocene studies—an event in which Marsh packages Stoppani in a complex and ambivalent manner, not just in Marsh’s direct response to the Anthropozoic, but also in the way he engages with Stoppani in his footnotes, where, according to Cronon, some of Marsh’s “most interesting material is actually buried” (xiii). Like the intellectual pathway of the Anthropocene itself, as the unconscious impact of humans on the earth transformed into a conscious awareness, references to Stoppani travel between text and subtext, submerging into the footnoted-space of Marsh’s text and emerging precisely when the concept of the Anthropozoic can no longer be ignored. In following this discursive strand in which Marsh presents Stoppani to the English-
speaking world, it becomes increasingly apparent that, although Marsh legitimizes Stoppani via strategic citations, Marsh nevertheless meticulously distances himself from Stoppani’s assertion that human power is different in kind—and not merely degree—from earth’s other creatures. By distancing himself from Stoppani’s Anthropozoic concept in this way, Marsh is implicitly distancing himself from the grand narrative that Stoppani relays, in which the Anthropozoic is fundamentally tied to a Christian narrative. So at the same time that Marsh legitimizes Stoppani, gradually constructing him within the text as a source of authority, he is also secularizing Stoppani, insofar as he separates Stoppani’s scientific contributions from the fundamentally religious connotations of the Anthropozoic. This dual process of legitimizing and secularizing Stoppani in the 1874 edition of *The Earth as Modified by Human Action*, and Marsh distancing himself from the religious connotations of the Anthropozoic, accelerates further in the 1884—and final—edition. It is only in this 1884 edition that Marsh directly, albeit reservedly, supports the concept of the Anthropozoic. In tracking the status of Stoppani and the Anthropozoic within Marsh’s 1874 text, and noting how Marsh evidently continued to grapple with Stoppani in the ensuing years, as is evidenced by Marsh’s additional references to Stoppani in his final, posthumously published edition in 1884, I am following a narrative that, to borrow a phrase from Ellsworth and Kruse, navigates the “conceptual and aesthetic pathways for the arrival of the Anthropocene” (21). This argument is significant because, rather than situating Marsh’s response to the Anthropozoic within the reductive framework of having merely “quoted” Stoppani in his 1874 edition of *The Earth as Modified by Human Action*, this argument contextualizes the Stoppani-March discourse, seeing Marsh’s response to Stoppani as an ongoing event that plays out over time, implicitly unfolding an Anthropozoic pathway between the 1874 and 1884 editions. Implications abound when one follows the ‘Stoppani status’ within George
Perkins Marsh’s *The Earth as Modified by Human Action*, including how Marsh implicitly excavates the post-human aesthetic of the Anthropozoic.

1. Antonio Stoppani’s *Corso di Geologia*

   In order to fully appreciate how Marsh structures Stoppani’s ideas within *The Earth as Modified by Human Action*, from secularizing Stoppani as a whole to critically distancing himself from the religiously-imbued side of the Anthropozoic, it is constructive to first get a sense of how thoroughly Stoppani’s Christianity pervades his concept of the Anthropozoic. Stoppani was, after all, a steadfast adherent to the *concordismo*, the idea that there must be a “full concordance between an allegorical interpretation of the Bible and the results of geological research” (Vaccari 272). In other words, Stoppani can be situated within the nineteenth century scriptural geology tradition, believing that the physical manifestations of the earth—such as strata, geological formations, and fossils—could be correlated with significant events in the Old Testament. Stoppani’s brand of mosaic geology lies at the heart of his concept of the Anthropozoic Era, informing not only the structure and rhetorical techniques he uses to couch the Anthropozoic within a Christian framework, but also his fundamental understanding of the very idea of the Anthropozoic Era. For example, in the paragraph immediately preceding his proclamation of the Anthropozoic Era, Stoppani meditates upon the transition within “universal history,” in which the universe as a whole entered a new era marked by Christ, whose birth on earth “established the two eras” (Federighi 36). As Valeria Federighi translates Stoppani, the new spiritual era “happened when in the world resounded the great Word; when, in the bosom of the aged fabric of ancient pagan societies, the Christian ferment was introduced, the new element *par excellence*” (36). Co-opting Christ’s parable of the wineskin, Stoppani situates Christ as a fundamentally “new element” within the universe; he then continues this wineskin analogy in the following paragraph, framing humans as the introduction of a “new element” into the physical
world—a “new being installed on the old planet” (36). According to Stoppani, just as Christ constitutes a new spiritual element, humans constitute a new physical element. Indeed, his first sentences after the paragraph proclaiming Christ’s creation of a new era unambiguously situates the Anthropozoic within a fundamentally Christian framework: “It is in this sense, precisely, that I do not hesitate in proclaiming the Anthropozoic era. The creation of man constitutes the introduction into nature of a new element with a strength by no means known to ancient worlds” (36). In other words, within the same sentence in which Stoppani declares the Anthropozoic, he’s simultaneously pointing—as if readers might somehow confuse his emphatic language—at the previous Christological paragraph, asserting that it is precisely in the same way (i.e. “it is in this sense” that) Christ changed universal history via the incarnation that humans changed earth’s physical history. He’s asserting that humans are, by their very *essence*, a new physical force, insofar as it is their mere existence—just as Christ’s bodily existence marks the new spiritual era, and not his crucifixion or resurrection—that indelibly establishes the Anthropozoic Era. As if to allow his provocative concept to sink in, he links the origin of humans once again to the “new element” of Christ, writing: “this creature, absolutely new in itself, is, to the physical world, a new element, a new telluric force that for its strength and universality does not pale in the face of the greatest forces of the globe” (36). Humans, according to Stoppani, have become a new geological force by their very existence. Although he continues to suffuse his environmental discourse with his Christian worldview in multiple ways, such as linking humanity’s dominion to both divine commands in Genesis and original sin, these few quotations alone illustrate how thoroughly Stoppani’s mosaic geology fundamentally undergirds his concept of the Anthropozoic Era—providing a Christianity-infused science that George Perkins Marsh so delicately subverts.
2. The Status of Stoppani in George Perkins Marsh’s *The Earth as Modified by Human Action*

In the 1874 edition of *The Earth as Modified by Human Action*, Marsh references Stoppani four times, carefully introducing Stoppani from the start as a source of authority, while simultaneously erasing Stoppani’s relation to mosaic geology. After initially subsisting within footnotes, Stoppani ruptures upward into the text proper precisely when Marsh interrogates the concept of the Anthropozoic, and then ends his place within Marsh’s text by subducting back into the footnoted space of legitimizing reference. This textual space in which Marsh introduces Stoppani to the English-speaking world—and thereby inaugurates a transatlantic Anthropozoic discourse—follows an intricate path of legitimization, critical distance, and implicit tension between Marsh’s geographic narrative and Stoppani’s scriptural-geology-infused concept of the Anthropozoic.

In his first reference to Stoppani, Marsh introduces the reader to the Italian geologist in a subdued fashion—via a footnote—and yet, despite this quiet commencement, clearly constructs a narrative that frames Stoppani as the corrector of past scientific oversights and incomplete models of earth processes (473). Discussing groundwater, Marsh describes how current researchers don’t account for subterranean water when calculating the amount of precipitation that is derived from the evaporation of surface water. In other words, when estimating the evaporation within a river basin, these ill-informed scientists are stuck in an over-simplified binary framework, believing that precipitation either ends up as river discharge or is evaporated back into the atmosphere, instead of recognizing that a portion of the precipitation also infiltrates the ground, replenishing the groundwater reserve (472). Countering this scientific oversight, Marsh writes:

The progress of the emphatically modern science of geology has corrected these erroneous views, because the observations on which it depends have demonstrated not only the
existence, but the movement, of water in nearly all geological formations, have collected
evidence of the presence of large reservoirs at greater or less depths beneath surface of
almost every character, and have investigated the rationale of the attendant phenomena.

(473)

Here, Marsh constructs a narrative of scientific progress, in which the mistaken views of the past
are swept aside in the face of empirical observation, which not only discovers the presence of
water within rock layers, but also pushes scientific thought to an even higher summit by realizing
that these fluids dynamically move underground. In referencing the theoretical ground on which
he makes this claim, Marsh adds a footnote to the sentence: “See especially Stoppani, Corso di
Geologia” (473). The relation between the quoted sentence and this footnote is significant on
multiple levels. On one level, Marsh is obviously imbuing Stoppani with an aura of respectable
scientific status, aligning the Italian geologist with the “emphatically modern science of
geology,” as opposed to the reductive researchers Marsh describes in the preceding paragraph
(473). Stoppani, as Marsh implicitly packages him, is a geologist who recognizes relations
between physical phenomena that other scientists overlook; he is a scientist who confirms the
existence of an earth process via empirical observation and who recognizes the interrelated
complexity of the earth by concretely observing the movement of fluids underground. In
contrast to the “erroneous” scientists, who merely skimmed along the surface of the earth,
Stoppani—as Marsh frames him—literally dug deeper into the water-cycle process by revealing
the significance of subterranean fluids. Not merely a scientific observer, though, Stoppani is also
implicitly packaged as someone who “investigated the rationale of the attendant phenomena” of
groundwater flow (473). Simply by grounding this celebratory sentence of scientific progress
with a footnote to Stoppani, Marsh frames the Italian geologist from the start as a symbol of
scientific advancement—an authority whose credentials are based upon concrete observation.
On another level, Marsh implicitly legitimates both the value and the singularity of Stoppani’s research in the very construction of the footnote. With regard to value, for example, Marsh privileges Stoppani with a kind of superlative status, insofar as Marsh goes beyond suggesting that the reader should merely consult Stoppani; instead, Marsh recommends that the reader “see especially Stoppani” (473). To put Marsh’s particularity in context, it is important to keep in mind that Marsh very rarely indicates that a reader should especially consult a specific scientist; although he does occasionally use the word “especially” in relation to guiding the reader to another critic, Marsh’s footnote to Stoppani is arguably among the most assertive citations he creates because it is the only time the phrase “see especially” is used throughout the text. With regard to singularity, it is significant how Marsh doesn’t include any other scientists—for corroboration purposes—in the footnote; Stoppani is constructed as the stand-alone signifier of modern empiricism, battling the forces of groundwater ignorance. Amidst all these appellations of elevated scientific status, Stoppani is resoundingly associated with concrete observation without a trace of his mosaic geology foundation. In packaging Stoppani as the empirical foil to scientific oversight, Marsh implicitly introduces the reader to a secularized Stoppani—a Stoppani whose concordismo tendencies are neither acknowledged nor alluded to, even though his Christianity so thoroughly underlies his geologic motivations.

Marsh’s second moment of packaging Stoppani for the reader continues in a similar manner to the first, with Stoppani once again linked to empirical proof of a phenomenon that is not readily apparent. And yet, there are a couple significant differences between the Stoppani Marsh constructed in the first reference and the Stoppani he now constructs. Explaining the source of water for artesian wells, Marsh writes:

The waters of the earth are, in many cases, derived from superficial currents which are seen to pour into chasms opened, as it were, expressly for their reception; and in others,
where no apertures in the crust of the earth have been detected, their existence is proved by the fact that artesian wells sometimes bring up from great depths seeds, leaves, and even living fish, which must have been carried down through channels large enough to admit a considerable stream. (476-478)

Adding a footnote to this sentence leading to Stoppani, Marsh legitimizes the Italian geologist in a slightly different manner than the original reference. Rather than boldly assert the progression of geology through a broad explanation of water’s underground existence, now, Marsh implicitly reveals the mental abstractions Stoppani uses to make these kinds of conclusions: the very fact that artesian wells can yield above-ground objects like seeds and leaves reveals the existence of some kind of opening into the earth, even though this opening might not be readily apparent. By associating Stoppani with this parsimonious scientific observation, Marsh is carefully constructing an image of Stoppani as someone who intuits connections between circumstance and process, cause and effect, surface details and subsurface complexity. In other words, Marsh is associating Stoppani with a level of mental abstraction that, in its own subtle way, prepares readers for the increasingly abstract concept of the Anthropozoic; by implication, Marsh is revealing to the reader that Stoppani’s conclusions, however abstract, are founded on concrete, ocular proof. In addition to specifically relaying Stoppani’s implicit thought process, this reference modifies the reader’s view of Stoppani by placing the Italian geologist in a different relation to the scientific community, and situating him as a member of the scientific consensus on a topic. Marsh constructs a community of likeminded individuals around Stoppani by the very act of nesting the reference to Stoppani within a list of three other scientific researchers, thereby giving the impression that Stoppani’s ideas are in accordance with the rest of the geologic community. If the first reference constructs Stoppani as the singular scientist correcting fallacious models, then the second reference reveals Stoppani’s acceptance within the scientific
community. Continuing the secularizing process of the first reference, Marsh has now situated Stoppani as a legitimate source of authority whose power to advance science relies on the empirical method—a scientist who both singularly reforms the errors of overly-reductive researchers, as the first reference attests to, and who is also, as the second reference implies, methodologically in consensus with his peers.

If the first two references to Stoppani represent Marsh’s subtle way of simultaneously legitimizing and secularizing Stoppani within the submerged textual space of footnotes, then the third reference represents the eruption of Stoppani into the text proper—a rupture that coincides both with Marsh’s direct interrogation of the concept of the Anthropozoic and with his direct engagement—and distancing—of the Anthropozoic’s Christian undertones. With the Anthropozoic, the implicit tension between modern and mosaic geology is wrenched into the foreground. As Marsh writes:

In a former chapter I spoke of the influence of human action on the surface of the globe as immensely superior in degree to that exerted by brute animals, if not essentially different from it in kind. The eminent Italian geologist, Stoppani, goes further than I had ventured to do, and treats the action of man as a new physical element altogether *sui generis*. According to him, the existence of man constitutes a geological period which he designates as the *anthropozoic era*. (609)

Here, Marsh responds to Stoppani with a mixture of legitimization and critical distance. Although he raises Stoppani’s status by referring to him as the “eminent Italian geologist,” he nevertheless distances himself from the less empirical—and implicitly religious—ontological assertion that the very existence of humans, irrespective of concrete environmental impact, constitutes a new geo-physical force. Significantly, though, Marsh simultaneously reveals that he is taking Stoppani’s concept seriously: though he doesn’t give Stoppani a wholehearted
endorsement, he nevertheless implies that, on some level, he is in agreement with Stoppani, despite distancing himself from the idea of humans as being different in kind and not just degree. This implied openness to Stoppani’s idea is conveyed in Marsh’s phrasing of how Stoppani “goes further than I had ventured to do” (609). By using the past tense to reference his willingness to extend his scientific stance to Stoppani’s position, Marsh suggests the possibility that he is willing to grant Stoppani’s point or, at the very least, is seriously considering Stoppani’s idea of the Anthropozoic. In addition, by choosing not to frame Stoppani as directly in opposition with his own ideas, but as a scientist whose ideas go “further than I had ventured,” Marsh is implicitly activating the reader’s memory of the first Stoppani reference, in which Marsh constructed a scientific narrative in which Stoppani acted as the researcher who went farther—that is, into the ground—than the other scientists, whose erroneous models merely skimmed the surface of the earth. Having already situated Stoppani as the scientist who digs deeper into earth processes, Marsh is implicitly placing Stoppani into that narrative once again, this time to give credence to the Anthropozoic. And yet, as if he is aware of how close he is getting to directly endorsing the Anthropocene, Marsh carefully continues his discourse with Stoppani by writing: “‘The creation of man,’ says he, ‘was the introduction of a new element into nature, of a force wholly unknown to earlier periods.’ ‘It is a new telluric force which in power and universality may be compared to the greater forces of the earth’ (609). Suddenly, the implicitly religious connotations of the Anthropocene are brought to the forefront, and Marsh does this in a way that distances Stoppani’s religiously infused geology from himself. This distancing can be seen in the very act of quoting Stoppani and buffering the phrase, “the creation of man,” with the authorial clarifier, “says he.” As soon as Marsh uncovers for the reader the Christian undertones of the Anthropozoic—as soon as he links it to the creation of man—Marsh enters the rhetorical mode of the quotation, making it abundantly clear that this linking of
creationism and science is entirely of Stoppani’s doing. The act of quotation and the further clarifying distance provided by the phrase, “says he,” allows Marsh to acknowledge the Christian foundation of Stoppani’s concept of the Anthropozoic, and yet also convey Marsh’s own divergence from the Italian geologist’s mosaic geology. Prior to this explicit foregrounding of the religious nature of the Anthropozoic, Marsh only hinted at the marginally non-scientific—at least in Marsh’s view—status of the Anthropozoic by insisting that, unlike Stoppani, he’s not as self-assured in proclaiming that humans are different in kind from other animals. The concept of being different in kind—by one’s ontological being—is a source of tension in Marsh’s text because he apparently recognizes, as Stoppani does, that difference in kind can be associated with creationism and mosaic geology, and not with the concrete, empirical facts that Marsh so thoroughly focuses on in his text. Through a complex dance of critical distancing and legitimization, Marsh simultaneously introduces the English-speaking world to the concept of the Anthropozoic and attempts to manage the concept’s religious undertones.

In the final moment of discourse with Stoppani in the 1874 edition, Marsh re-submerges the Italian geologist into the footnoted space of textual authority. Writing about the effects of mining and how thoroughly some countries have delved into the earth, Marsh adds a footnote, stating, “Stoppani mentions an abandoned mine at Huttenberg, in Bohemia, of the depth of 3,775 feet” (631). A rather mundane citation, this footnote nevertheless concludes Marsh’s construction of Stoppani as a scientist who is associated with delving deeper than other researchers. Just as Stoppani’s thoughts, in the first reference, sunk into the earth when other researchers stayed on the surface, and just as Stoppani, according to Marsh, “goes further than I had ventured” in articulating the radical extent to which humans have modified the earth, Stoppani in this final citation delves deeper yet again insofar as his assertion of the nearly 4,000 foot deep mine is—in context with the other mine depths referenced near the footnote—the
deepest mine that Marsh references. In other words, Stoppani is once again interpolated within this narrative of progression. Now that Marsh has carefully introduced Stoppani’s radical concept of the Anthropozoic in the previous reference, he now mitigates Stoppani’s association with mosaic geology by returning the Italian geologist to the realm of apparently concrete fact: the specific depth of a particular mine. In this way, Marsh further legitimizes Stoppani, leaving the reader with a similar impression of scientific authority in which he began his engagement with Stoppani’s ideas. In his 1874 text, Marsh not only distances himself from the religious connotations of the Anthropozoic in the third reference, but he also distances the reader—throughout the text—from the religious rupture of the Anthropozoic (when Stoppani finally erupted out of the footnotes) by buffering the radical Anthropozoic concept with Stoppani’s empirical observations. By literally surrounding his introduction to Stoppani’s Anthropozoic concept with carefully-crafted, concrete, authoritative scientific citations, Marsh constructs a secularized image of Stoppani that helps legitimize—at least, for the scientific audience—both the scientist and the concept of the Anthropozoic.

George Perkins Marsh evidently continued to grapple with Stoppani’s concept of the Anthropozoic after his 1874 edition of The Earth as Modified by Human Action, because, by the time the final edition of the text was posthumously published in 1884, Marsh accelerates the legitimizing narrative by doubling the number of references to Stoppani. Instead of following in its entirety the new narrative of the ‘Stoppani status’ within Marsh’s text, I would like to focus on two important developments in Marsh’s 1884 discourse with Stoppani before transitioning to the implications these sub-narratives have upon Anthropozoic—and, by implication, Anthropocenic—discourse as a whole.

With regard to an Anthropozoic discourse, one significant development in Marsh’s 1884 edition is how he finally directly—albeit with reservations—expresses his agreement with
Stoppani’s concept of the Anthropozoic. In the 1874 edition, Marsh’s alliance with Stoppani’s ideas tended to be more implicit, with his divergences from Stoppani occupying the realm of the explicit. Now, in the 1884 edition, Marsh directly aligns himself with Stoppani’s idea of humans constituting a geologic force. Writing about the vertical movement of landmasses, Marsh mentions how coastal elevation can give the appearance that the adjacent seas are falling, and how coastal subsidence can give the impression of sea-level rising, stating: “These movements depend upon geological causes wholly out of our reach, and man can neither advance nor retard them” (388). Although Marsh seems to clearly assert that humans have no influence upon these large-scale geological movements, his footnote to this sentence uses Stoppani to complicate that simplified assertion:

Now, almost all the operations of rural life, as I have abundantly shown, increase the liability of the soil to erosion by water. Hence, the clearing of the valley of the Ganges, for example, by man, must have much augmented the quantity of earth transported by that river to the sea, and of course have strengthened the effects, whatever they may be, of thickening the crust of the earth in the Bay of Bengal. In such cases, then, human action must rank among geological influences. See Stoppani, *Corso di Geologia.* (388-389)

Although Marsh is arguably aligned with the spirit of the Anthropozoic throughout his texts, as he traces how humans have influenced the earth, it is only here that he directly aligns himself with Stoppani and the idea that humans can act as a geological force on such a large scale. Here, Marsh creates a narrative in which human modification of the Ganges valley leads to soil erosion, causing the Ganges river to have a higher sediment load, which in turn causes the crust in the Bay of Bengal to thicken, strengthening “the effects, whatever they may be,” of this sudden thickening of crust. The implication, as he notes earlier in the footnote, is that this human-induced accumulation of sediment in bays can—depending on the nature of the river and
shape of the bay—eventually get so heavy, compressing the underlying strata, that the layers of earth in the bay physically get lowered in relation to the surrounding landscape. Although Marsh is quick to stick to the facts and point out that this subsidence is not always the case, he nevertheless directly sides with Stoppani in this particular instance with the Ganges river, boldly stating that “in such cases…human action must rank among geological influences” (389). In other words, before Marsh even explains the concept of the Anthropozoic in his 1884 edition, he is already explicitly aligning himself with Stoppani’s idea of humans constituting a geological force, taking the concept of the Anthropozoic and agreeing to it in its particularity, as it applies to a specific geologic scenario. Thus the 1884 edition of The Earth as Modified by Human Action represents a distinct development in Marsh’s discourse with Stoppani in which he articulates more clearly than before his direct agreement with Stoppani’s radical proclamation of human agency.

The second development in the 1884 edition revolves around how Marsh situates Stoppani within a different geologic discourse. Throughout most of his references to Stoppani, Marsh situates him in relation to the subterranean study of the earth, whether that means groundwater or the practice of mining. Now, in the 1884 edition, Marsh constructs Stoppani as an authority on the surface process of dune migrations (566). Explaining the migration of dunes in Prussia, and how, without vegetation covering the dunes, their migrations can destroy hundreds of acres of forestland, Marsh legitimizes Stoppani as a source of authority on this subject via the following footnote: “Stoppani […] says that there are dunes 100 mètres high at the mouth of the —, and they have advanced a mile in twenty years” (566). On one level, this reference functions in a similar way to the many other Stoppani footnotes: Marsh is aligning Stoppani with concrete, empirical observations, and thereby giving credence—by implication—to the concept of the Anthropozoic insofar as he is textually heightening the scientific status of Stoppani. Similarly,
by suddenly associating Stoppani with the study of dunes, Marsh is essentially broadening
Stoppani’s expertise for the reader, constructing him as a scientist with insights on
predominantly surface processes, just as he has been situated all along as an expert in subsurface
systems. On another level, by the very act of associating Stoppani with the destructive force of
dunes, Marsh is anticipating the post-human aesthetic of the Anthropozoic and Anthropocene—a
concept whose Anthropozoic origins I will explore, among other implications, in the following
section. All in all, the 1884 edition of Marsh’s work reveals a deeper engagement with
Stoppani’s concept of the Anthropozoic, as Marsh continues a discourse that began in 1874.

3. Spiraling Outward from the Anthropozoic

In following the way in which Marsh creates a nascent Anthropozoic discourse with Stoppani,
several implications arise, such as the nature of Marsh’s mediation between the Anthropozoic’s
scientific and religious connotations, as well as this narrative’s relation to the emergence of
Anthropozoic aesthetics. So far in this essay, I have suggested that Marsh, in presenting
Stoppani as a highly respected scientific authority, has also—when keeping Stoppani’s mosaic
geology tendencies in mind and the Christian foundations of the Anthropozoic—secularized the
Italian geologist. Distancing Stoppani from mosaic geology in his footnotes, Marsh also
distances himself from the specifically religious connotations of the Anthropozoic when the
Stoppani-discourse emerges out of the footnoted space into the text proper, forcing Marsh to
directly respond to this radical idea of the Anthropozoic. This process of secularizing Stoppani,
far from being some kind of overt agenda, appears to organically branch out from George
Perkins Marsh’s assumptions about the relation between science and religion, and his general
approach to thinking and writing about science. As a whole, Marsh’s text—in keeping with the
Victorian fashion—is intercalated throughout with religious anecdotes and rhetoric. Indeed,
even his title page includes an epigraph from theologian Horace Bushnell’s Sermon on the Power
of an Endless Life: “‘Not all the winds, and storms, and earthquakes, and seas, and seasons of the world have done so much to revolutionize the earth as Man, the power of an endless life, has done since the day he came forth upon it, and received dominion over it’” (i). Religious quotations and anecdotes, though, are more related to Marsh’s general Victorian writing style than to his motivating arguments, which tend to be exceedingly fact-based and empirical. Unlike Stoppani, whose concordismo tendencies necessitated agreement between geological phenomena and religious beliefs, Marsh does not perceive a need to constantly correlate religion and geology. As Lowenthal writes in George Perkins Marsh: Versatile Vermonter, “To account for God through the evidence of the material world seemed to him both imprudent and impious, the one because such proof was questionable, the other because God should be felt, not understood, by man. Science and religion were neither antagonistic nor complementary” (271). Marsh, in other words, postulated a separation between science and religion, in which spiritually-infused scientific assertions were looked at with suspicion. In writing Man and Nature and revising his text to create The Earth as Modified by Human Action, Marsh’s perspective on the division of science and religion finds expression in his consistent pattern of focusing on concrete observations by other scientists. Marsh “incessantly checked conjecture against facts,” as Lowenthal writes in his introduction to Man and Nature, and, “more than any of his erudite contemporaries, he was realistic, pragmatic, down-to-earth. Enforced intimacy with mundane enterprise patterned his tastes, tested his ideas against reality, and gave him a relish for hard facts, a zest for homely details” (xviii, xxx-xxxi). Marsh, as a writer, was thoroughly focused on representing the physical world in the most forthright fashion that he knew, which was founded on a steadfast adherence to concrete observations. Thus Stoppani’s fundamental linkage between Christianity and the Anthropozoic is a source of tension within Marsh’s text because it is predicated upon an association between religion and science that Marsh consistently tries to
dissociate. In Marsh’s text, this tension begins in a subdued manner, implicitly present in the footnoted construction of Stoppani’s scientific status, until the tension bursts out of this footnoted space and enters the main narrative in the form of Marsh’s direct engagement with the Anthropozoic. In addition to the previously mentioned simultaneously legitimizing and distancing tactic that Marsh deploys, another manifestation of this tension lies in the way that he suddenly modifies a prior statement. The 1884 edition of Marsh’s text reprints his bold proclamation from the Preface to the First Edition, stating that, in part, his objective is to “illustrate the doctrine that man is, in both kind and degree, a power of a higher order than any of the other forms of animated life” (vii). But this assertion that human power is different in both degree and kind from other creatures is modified as soon as Marsh directly engages with Stoppani’s Anthropozoic, writing in the 1884 edition: “In a former chapter I spoke of the influence of human action on the surface of the globe as immensely superior in degree to that exerted by brute animals, if not essentially different from it in kind” (584). Even though Marsh does not directly refute the idea that humans are different in kind, he nevertheless distances himself from the idea, making it abundantly clear that Stoppani’s idea that humans constitute “a new physical element altogether sui generis” exceeds his own view, even though he postulated that view earlier in the text. Directly confronted with the religious connotations of Stoppani’s Anthropozoic, Marsh introduces an inconsistency in his text by qualifying the previously resolute declaration of humanity’s uniqueness in both kind and degree from other animals. Stoppani represents a union between science and religion that is fundamentally incompatible with Marsh’s conception of what religion is and what science should do, and so, as has been shown, it makes sense that Marsh constructs a narrative that implicitly secularizes Stoppani, isolating the religious connotations of the Anthropozoic from the scientific connotations by imposing a critical distance on the former, and embracing the latter.6
With regard to aesthetics, Marsh subtly associates Stoppani—and, by implication, the
Anthropozoic—with the encroaching, destructive force of sand dunes, thereby recognizing the
nascent post-human aesthetic within Anthropocene studies. In his 1884 edition of *The Earth as
Modified by Human Action*, Marsh references Stoppani in a footnote attached to a specific,
environmentally damaging scenario in Prussia, in which migrating dunes encounter a new
environment that allows them to reach heights they normally would never achieve: “This
elevation has enabled it to advance upon and overwhelm woods, which, upon a plain, would
have checked its progress, and in one instance a forest of many hundreds acres of tall pines was
destroyed by the drifts between 1804 and 1827” (566). In other words, these growing dunes
acquired enough height to allow them to envelope an entire forest—a scenario that Marsh links
to Stoppani by referencing his *Corso di Geologia*. Leading up to this association between
Stoppani and encroaching dunes, Marsh has painted a clear picture of the devastating effects of
uncontrolled dune migration. For example, Marsh explains that when dunes lose the stabilizing
force of vegetation—often as a result of “human imprudence”—the dunes become a dynamic
geo-physical power “burying fields, houses, churches, and converting populous districts into
barren and deserted wastes” (564, 563). Dunes become a transforming force, laying waste to
human geographies to such an extent that, in order to find a language to describe this destructive,
almost human-like agency, Marsh resorts to the rhetoric of war: “The dune is now a magazine of
sand” (564). Like a metal receptacle for weapon cartridges (i.e. a magazine), de-vegetated
dunes, according to Marsh, become a kind of ammo supply for the wind, facilitating the
transportation of sand, which grain by grain can overwhelm fields, houses, and churches (564).
Not stopping at the mere burying of fields and buildings, Marsh points out in the same paragraph
in which he references Stoppani that entire “villages have been buried and valuable forests laid
waste by” dunes (566). Dunes, I’d like to suggest, represent an enclave within the nascent
Anthropozoic aesthetic of the post-human; their geographic particularity makes them a destructive force for specific human communities, thereby rendering the engulfment of individual villages a microcosm of the post-human aesthetic. In referencing Stoppani within this enclave of the post-human aesthetic, it is as if Marsh is registering the way Stoppani predicates the concept of the Anthropozoic upon future geologists excavating human structures. As Stoppani writes:

Let us admit, though eccentric it might be, the supposition that a strange intelligence should come to study the Earth in a day when human progeny […] has disappeared completely. […] Could he, from the pattern of floods, from the distribution of animals and plants, from the traces left by the free forces of nature, deduct the true, natural conditions of the world? Maybe he could; but always and only by putting in all his calculations this new element, human spirit. […] If current geology, to understand finished epochs, has to study nature irrespective of man, future geology, to understand our own epoch, should study man irrespective of nature. So that future geologists, wishing to study our epoch’s geology, would end up narrating the history of human intelligence. (Federighi 40)

Here, Stoppani justifies the naming of this new era called the Anthropozoic by imaginatively projecting a future post-human condition in which a sentient being attempts to narrate the physical history of the world, which subsequently—because humans have so thoroughly changed the face of the earth—necessitates the study of human history. Natural history has become human history. In his own way, Marsh is registering Stoppani’s post-human aesthetic by implicitly relating Stoppani to the destructive force of migrating dunes. Just as Stoppani’s concept of the Anthropozoic lies on a post-human vision, Marsh constructs an enclave of the post-human aesthetic by referencing Stoppani in relation to the village-engulfing power of
encroaching sand dunes. This intertextual moment of the post-human aesthetic, in its own subtle way, anticipates the post-human aesthetic of the Anthropocene Epoch.

As has been shown, George Perkins Marsh’s *The Earth as Modified by Human Action* represents the emergence—spanning from the 1874 to the 1884 editions—of an Anthropozoic dialogue, anticipating, just as the Anthropozoic anticipates the Anthropocenic, the present-day discourse in Anthropocene studies. Seriously engaging with Stoppani’s concept of the Anthropozoic at a time when the scientific establishment largely passed the concept over, Marsh’s response to Stoppani embodies a discursive event in Anthropocene studies. This discursive event is recorded in the complex weave of references Marsh makes to Stoppani, transitioning between text and subtext, subsisting in a footnoted-space of legitimization before extruding into the text proper when Marsh directly interrogates the concept of the Anthropozoic in all its messy religious-scientific entanglement. Simultaneously legitimizing and secularizing Stoppani, Marsh evidently continued to study the concept of the Anthropozoic because it is only in the 1884 edition that he directly—albeit in a particular circumstance—articulates his agreement with Stoppani. Rather than settling with the knowledge that George Perkins Marsh merely quotes Stoppani, this essay has situated Marsh’s engagement with Stoppani as a complex event in which Marsh actively constructs a specific image of the Italian geologist, confronting Stoppani’s belief in the *concordismo* by carefully parsing the Anthropozoic’s scientific and religious implications. This essay took its point of departure from Ellsworth and Kruse’s statement in *Making the Geologic Now*: “Stoppani’s proposal was ignored; other scientists found it unscientific” (29). Although Marsh certainly found aspects of the Anthropozoic unscientific, as is evidenced by the way that he distances himself from its Christian connotations, significantly, he remains open to the general concept because he is able, despite the textual tensions, to separate—or to at least attempt to separate—the scientific and religious realms. In
his text, Marsh situates Stoppani’s grand theory within specific, concrete observations, which is a habit of mind that, interestingly, Marsh practiced in his philology research, when—responding to the theories of the new nineteenth-century discipline of evolutionary linguistics—he “mistrusted their speculative hypotheses untested by ‘reading and excerpting real live English books’” (Lowenthal xxxi). Engaging with Stoppani’s ideas, Marsh also anticipates the post-human aesthetic in the way that the destructive power of dunes represents a post-human microcosm. Aside from creating a new epoch in American environmental history, Marsh’s *The Earth as Modified by Human Action* anticipates—in its creation of an Anthropozoic discourse—another epoch altogether: the Anthropocene Epoch.
Notes

1 Although some writers assert that the Anthropocene is a neologism introduced by Paul Crutzen, Crutzen is here referred to as having “reintroduced” the term because, as Will Steffen, Jacques Grinevald, Paul Crutzen, and John McNeill write in their multi-authored paper, “Biologist Eugene F. Stoermer wrote […]: ‘I began using the term “anthropocene” in the 1980s, but never formalized it until Paul contacted me’” (843).

2 Officially, the current geological epoch is still called the Holocene Epoch (Steffen et al. 843). In terms of the geological time scale, epochs and eras are different orders of time, with an epoch denoting a smaller unit of time than an era.

3 For more information about scriptural or mosaic geology, and a general history of geology in the nineteenth century, see Klaver’s Geology and Religious Sentiment and Rupke’s The Great Chain of History.

4 One could argue that Marsh’s fiercely anti-Catholic perspective might also possibly play into his relationship with the Catholic priest Antonio Stoppani, but I choose not to follow that narrative in this essay. To get an idea of Marsh’s relationship with Catholicism, see Lowenthal’s George Perkins Marsh: Versatile Vermonter 62-64 and 214-215.

5 Marsh’s own relation to faith is complex, though he can be described as an evangelical Protestant (Lowenthal 62). For more on Marsh and religion, see Lowenthal’s George Perkins Marsh: Versatile Vermonter 326-327.

6 As a concept, the Anthropozoic can be said to have religious connotations on multiple levels. As has been shown, Stoppani situated the term from the start within a Christian context. In addition, the very assertion of humans being somehow different in kind—and not just degree—from animals can contain religious connotations insofar as difference in kind can suggest essentialized difference instilled at creation.
Works Cited


