Fossil Fuel Romanticism:

Earth History, Industry, and Catastrophic Futurity in Jago's *Edge-Hill*

Abstract Visions of climate change, this essay argues, were written into the earliest Romantic representations of fossil fuel industry. In Richard Jago's topographical-georgic poem *Edge-Hill* (1767), Book I's geological recognition that the Earth is "stor'd with wonders" is smoothly converted, in Book III's description of the Black Country coalfields, into the extraction of other materials from "the latent Soil." Yet Jago also acknowledges that earth and rock can both "record the past, / And awfully predict its future doom." The poem's catastrophist history of flood, drought, and landslide is echoed in the more nightmarish aspects of the West Midlands mining economy.

Britain in the second half of the eighteenth century saw the rise of three concurrent movements: in industry, the Industrial Revolution, when technological and social developments enabled Britain to transition into a fossil fuel economy; in science, the Geohistorical Revolution, the disciplinary formation of geology and the popularisation of the theory that the Earth was much older than previously believed; and in literature and other arts, the nebulous movement subsequently labelled Romanticism. Industrialization, early geology, and Romantic aesthetics were deeply intertwined with one another, practically and causally as well as within the contemporary cultural imagination, as various critics have explored. Historians of science such as Ezio Vaccari and Roy Porter have written about the mutual practical construction and ideological validation of geology and industrial extraction in the eighteenth century, and Noah Heringman about the ways in which literature contributed to that mutual validation. Literary

criticism has moved beyond repeating the platitude of a straightforward antagonism between Romanticism and industrialization, with critics like Jeremy Davies and Seth T. Reno drawing attention to the complexity of Romantic literature's representations of, responses to, and potential imaginative fostering of industrialization as well as the developing earth sciences.

My aim in this article is to demonstrate, through the study of a particular case study text, how a literal and figurative association between geological Earth history and industrialized extraction was articulated in literature through a fossil fuel (or fossil-fuelled) Romanticism: poetry about industrial modernity that was full of revolutionary fervour but with an eye on the planet's deep past and the radically altered future that it implied, characterized by dread as well as delight. My case study text is the long poem *Edge-Hill* (1767) by the Warwickshire clergyman-poet Richard Jago. *Edge-Hill* is a four-book georgic-topographical poem written from the perspective from the top of Edge Hill in Warwickshire, an escarpment that was the site of the first battle of the English Civil War. Book I describes the surrounding countryside, and includes a speculative history of the formation of hills and mountains in the planet's geological past; Book II makes imaginary excursions into the nearby cities of Warwick and Coventry, and discusses the latter's textile industry; Book III visits the new industrial centre of Birmingham and its metal manufactories, and the area of nearby Staffordshire and Worcestershire that would in the nineteenth century become known as the Black Country due to its extensive coalfields and constant dark smog; Book IV returns to the countryside around Edge Hill, and reflects on the coming winter and the Civil War battle. I am particularly interested here in the connections Jago draws between the Earth history in Book I and the coal-mining in Book III. The imaginative and physical connections he draws between these serve to naturalize (and implicitly endorse) the

latter, but they also bring with them the spectre of environmental catastrophe and even of future climate change.

1767 may seem too early for a poet to engage meaningfully with any of my key categories of industrialized fossil fuel extraction, geological Earth history, or Romanticism. Often these movements are dated to the 1780s. In 2000 when the word "Anthropocene" was coined, the first proposed start date for this new geological epoch was 1784, when James Watt patented his design for a steam engine (Crutzen and Stoermer, 17–18). In geology, the "discovery" of planetary "deep time" is often traced to James Hutton's 1788 *Theory of the Earth*. And while few would try to assign such a definitive start-point for the entire movement of Romanticism, it is often pegged for practical purposes (such as in university course design) to the start of the French Revolution in 1789, and literature of the 1760s and 1770s is sometimes dubiously labelled "pre-Romantic." It may be significant that a second, revised edition of *Edge-Hill* was published in 1784, three years after Jago's death, bringing the poem more securely into the period that we can call the Industrial Revolution, the Geohistorical Revolution, and the Romantic Age. But the first edition of 1767 testifies to the earlier roots of Romantic industry, geology, and poetry.

More attention has been paid to representations of both fossil fuel energy regimes and geological theories of planetary history in nineteenth-century literature than in eighteenth-century literature (see for example Miller, MacDuffie, Gold); and more attention has been paid to these representations in prose than in poetry. Two important recent exceptions are Tobias Menely's *Climate and the Making of Worlds* (2021), which reads blank-verse poems from Milton to Charlotte Smith (including *Edge-Hill*) as "sundial[s] telling the time of geohistory" (9) and expressing the energy transition that took place over the long eighteenth century, and Seth T.

Reno's *Early Anthropocene Literature in Britain, 1750–1884* (2020), which advocates for 1750 instead of 1784 as "a convenient starting date for the Anthropocene, which coincides with the Industrial Revolution, the Agricultural Revolution, and rise of capitalism in Britain, and is thus an apt marker for the start of the global fossil fuel era." (4) When Jago was writing, Britain was already undergoing a transition from an organic energy economy (based on water, wind, wood, and human and other-than-human animal energy fuelled by food) to a fossil fuel energy economy, powered by coal. Coal had been used for heating in domestic and small-scale business settings for centuries; but at the turn of the eighteenth century the West Midlands industrialist Abraham Darby developed a method of smelting iron ore using coke (refined coal) instead of charcoal, which heralded the widespread use of coal in heavy industry. It was not until the development of the coal-powered steam engine that coal's energy could be converted into motion, and only in the nineteenth century was coal-and-steam power put to wide-scale use in textile and metal manufactories; but the steam engine was not invented in 1784 as is often claimed. In *Edge-Hill* Jago celebrates Thomas Newcomen's "fire engine" or "atmospheric engine," invented in the Black Country in 1712 to pump water out of coalmines: this machine was the first one produced at scale that used steam, created by heating coal, to do mechanical work.

Although in the 1760s the concept of deep time had not yet been clearly formulated, or popularized as it would later be by Hutton, since the seventeenth century Earth historians had brought together scriptural records with geological discoveries to theorize about the varied dramatic changes that the planet had undergone in its past. In 1715 Edmund Halley had argued that the planet must be far older than a few thousand years, and his theories would later be used to date the planet at 100 million years old; in 1748 Benoît de Maillet's speculative, in parts

fantastical planetary history the *Telliamed* was published, with its pitch that the Earth could be two billion years old; and only a little later than *Edge-Hill*'s first publication, in 1778 the Comte de Buffon's *Les époques de la nature* proposed an age of 75,000 years. Although in his poem and its accompanying notes Jago cites more conservative theorists, he was aware from his extensive reading in Earth history that the age of the planet was a matter of debate, and that its past was one characterized by dramatic geological and climatic change.

As for Jago's credentials as a Romantic poet, this should not be overstated as *Edge-Hill* is firmly entrenched in a mid-century poetic vogue for georgic and prospect poetry; but these genres are of course themselves important in the development of Romantic nature poetry. *Edge-Hill* is one of a handful of strange mid-century poems that attempted to apply the conventions and principles of the ancient genre of georgic—didactic-descriptive poetry about agricultural labour, based on Virgil's *Georgics*—to the representation of modern industrialized labour. *Edge-Hill* is sometimes described as the last successful formal georgic poem in English: in 1936 Robert Arnold Aubin called it a "saurian among hill-poems" (91), which captures well both its ambitious scale and its status on the brink of generic extinction; the phrase also alludes to the poem's own interest in fossils and fossil fuels. But perhaps more often it has been treated as an unsuccessful attempt to bring georgic into industrial modernity, an unwitting herald of georgic's Romantic-period decline. (For more on this decline see Feingold, Beck.) As Matthew Craske put it in 2000, "this long and turgid work is now, quite justifiably, excised from the canon of English literature" (122). In the last ten years, however, the poem has received renewed attention by critics such as Menely, Rachel Crawford, and Carrie Anne Taylor for its complex and ambivalent treatment of industrialization and the environment.

Although georgic is in many ways a Holocene genre, premised on an environment that is stable and consistent enough in its character to be knowable, Jago adapts certain georgic conventions to represent the early Anthropocene. Georgic's temporal grammar of looking back through earth history and forecasting future change, and its tendency to anticipate potential catastrophe even as it celebrates wealth and productivity, allows Jago to register the local and global dangers of the fossil fuel industry. There is no question that at the end of the eighteenth century georgic faltered in the factory, but it was also reforged into a critical poetic that allowed visions of disaster into the earliest Romantic representations of industrialization. In *Extraction Ecologies*, Elizabeth R. Miller describes how in the nineteenth-century novel resource exhaustion was realized in literature through narrative "failures of futurity" (19), such as thwarted marriage plots and themes of reproductive infertility; Jago's fossil fuel Romanticism, however, is characterized not by a failure of futurity but by an all too stark catastrophic future, one foretold both in Scripture and in earth.

Readers see a glimpse of future disaster, for example, in the most overtly georgic trope of the poem (the trope that Kevis Goodman, in *Georgic Modernity and British Romanticism* (2004), takes as the defining trope for the entire genre of georgic): the image of the ploughman turning up bones and armour in the soil. This image, from the first Book of Virgil's *Georgics*, appeared in many eighteenth-century georgic poems, but Jago's version of it is uniquely disturbing. His ploughman turns up relics from the English Civil War Battle of Edge Hill:

> Still as the Plowman breaks the clotted Glebe,
>
> He ever and anon some Trophy finds,
>
> The Relicks of the war—or rusty Spear
>
> Or canker'd Ball; but, from Sepulchral Soil,

> Cautious he turns aside the lifted Share,
>
> Lest haply, at its Touch, uncover'd Bones
>
> Should start to View, and blast his rural Toil.
>
> (IV, 563–9)

This reads initially as a standard trotting-out of a conventional georgic set-piece, but this set-piece takes on particular significance in the wider context of Jago's poem. The ploughman is not the only person in this poem discovering things in the sepulchral soil, although he is the only one who does not want to. He is a parallel to the miners in Book III who find their own trophies in the ground by breaking the clotted glebe; and to the implied geologists in Book I, who uncover strata and fossils in the earth, in order to read the rock record and uncover not human but planetary history. Menely notes the circulation here: the "work of the plow" is "like the work of the foundries and smithies that once produced the cannon and the ball" (163). Virgil's original ploughman who upturns spears, helmets and bones in Book I of the *Georgics* feels what is usually translated as "wonder" or "amazement." Jago's is different: he is cautious in his work because he anticipates finding something, and should he find something, the implication is that this will be distressing. This emergence of history from the sepulchral soil may itself be a georgic trope but it has the potential to "blast his rural Toil"—to upset and put a halt to the entire georgic project of working the earth. This kind of disturbance and discomfort is, in Goodman's reading of near-contemporary poems, central to the eighteenth-century adaptation of classical georgic to a modern imperial and industrialized world. Rainer Emig's account of soil in contemporary poetry could as easily describe Jago's passage: the ground "stabilises individual as well as collective scenarios of belonging," but it has a "challenging deconstructive role as a threat to the self as well as to ideas of the superiority of the present and the status quo"; it is

"always riddled with traces of the past that are far from neutral, objective, and pacified" (46). This sense of provisional, prospective danger, the constant possibility and threat of future disturbance, is persistent in what can superficially read as a complacent poem. *Edge-Hill* is a poem in which things that are unearthed—whether war relics, fossils, or coal—are trophies but are also records of violence and harbingers of future destruction.

An important question for ecocritical studies of historical literature is how to navigate and where to land between historicist and strategic presentist methodologies. What does one do with what Andreas Malm calls the "sporadic forebodings," "flash[es] of apprehension about the atmospheric consequences" of fossil fuels, that "appear in the literature" of the Industrial Revolution (7)? Allen MacDuffie calls them "the stirrings of an imaginative apprehension" of the Anthropocene: "we find in the imaginative literature of an earlier period traces of these new environmental realities beginning to enter the cultural imaginary" (33). Reno describes how from "around 1750, British literature registers an early Anthropocene," even if the "intuitive" connections it draws between industrialization and environmental destruction are "sometimes tenuous" (7). Anahid Nersessian argues that readers must look for glimpses of the emerging Anthropocene in Romantic poetry's aversions, avoidances, and "recognition[s] of its own insufficiency" to represent industrialization and its "ecological and human costs" (18). Miller's rewarding approach is one she calls "heterotemporal historicism," reading "extraction-based literature with an eye for [multiple] temporal registers" (23), including both hypothetical futures that were imagined in the past and the real future that occurred after the literature was written and that could never have been fully predicted or imagined.

My intention is to draw attention to an intellectual context in which late-eighteenth-century authors could and did link fossil fuels with an idea of future catastrophic climate change,

this context being the recent and contemporary theories of planetary history in which historical climate change was discovered through extraction. Clearly what links coal and climate change in the imagination of Jago and his contemporaries is not the mechanism of global warming that would link them in scientific theories and in the cultural imagination from the late nineteenth century. But recovering the narratives by which writers like Jago did connect them allows, in Thomas H. Ford's words, "Anthropocene coincidences to become legible as Romantic anticipations" (4). Recovering these contexts allows today's readers to recognize that the visions of climate change that they might find in historical accounts of the fossil fuel industry are not necessarily anachronistic impositions from a twenty-first-century reading. This recognition opens up further possibilities for interpretation, allowing one to identify both the real affinities and the important differences between past and present ideas about the environment. And it is in literature that the ethical as well as the aesthetic implications of such ideas are played out and presented for analysis.

In Book I of *Edge-Hill*, Jago gives a Romantic-modern twist to his chosen eighteenth-century genres of prospect poem and georgic. A convention of the prospect poem is to convert spatial into temporal vision, taking the landscape as a prompt to contemplate the past and future of that place. A recurring trope in georgic poems, meanwhile, following the classical models of Hesiod's Greek poem *Works and Days* and Virgil's *Georgics*, is to survey the progress of the world through a series of stages from the idyllic Golden Age to the present laborious Iron Age. (These ages were often differentiated by climate as well as by societal factors, with the Golden Age sometimes characterized as seasonless.) Jago combines these two tropes into one, expanding the prospect poem's survey of local history into an overview of planetary progress. The Romantic

quality of his survey is threefold. Firstly, he uses these older tropes to versify a selection of proto-geological theories about planetary history, theories that anticipated the “discovery” of “deep time.” He takes the view of the Warwickshire hills as inspiration to describe not the human history of the place, as is usual in a prospect poem (and which he covers in Book IV, in the discussion of the Battle of Edge Hill) but the geological history both of the local area and of the planet. The conventional progression from Golden to Iron Age is no longer conceptualized as a social and moral shift from humans’ pastoral innocence to georgic knowledge, but as a transformation in Earth systems. Secondly, Jago’s survey is Romantic in its use of a sublime aesthetic; and thirdly, it is infused with language and imagery of the burgeoning Industrial Revolution.

> O! listen, while, from sacred Records drawn,
>
> My daring Song unfolds the Cause, whence rose
>
> This various Face of Things—of high, and low—
>
> Of rough, and smooth. For with its Parent Earth
>
> Coeval not prevail’d this awful Scene
>
> Of fractur’d Hills[.]
>
> (I, 71-76)

Jago goes on to consider and dismiss various theories that had been proposed for the formation of hills and mountains. His main authorities on planetary history, which he cited in notes to the second edition of the poem, were mostly older texts, but they remained important resources for mid- and late-eighteenth-century geology. These included Thomas Burnet’s *Sacred Theory of the Earth* (1684–90), John Woodward’s *Essay Toward a Natural History of the Earth* (1695), John Keill’s *Examination of Dr. Burnet’s Theory of the Earth* (1698), Erasmus Warren’s *Geologia*

(1698), John Hutchinson's *Moses's Principia* (1724–7), and, the most modern source, Alexander Catcott's *Treatise on the Deluge* (1761). When it came to the formation of hills, as Jago explained in a note in the second edition, he ultimately chose to endorse the theory offered by Warren in *Geologia*, that the primeval Earth had been covered in water, which then at divine command flowed underground and in its course carved out hills and valleys: "The following solution, by the descent of water from the surface of the earth to the center, seem'd most easy, and natural to the author, and is therefore adopted" (Jago, *Poems* 11). Jago then describes this process, which supposedly took place on the third day of creation:

> Strait, to their destin'd Bed,
>
> This Way, and that, th' obedient Waters ran,
>
> Shaping their downward Course, and, as they found
>
> Resistance various from th' adhesive Soil,
>
> Of various Density, compact, or loose,
>
> In their Retreat they scoop'd each hollow Dale,
>
> Or Valley, length'ning its embosom'd Maze,
>
> As further still their humid Train they drew.
>
> (I, 95–102)

Dales and valleys are "scoop'd" by the water as it runs through and across soil and rock. The waters are "obedient" labourers, following God who appears as a Capability Brown-like landscape designer, and they produce the attractive scene that the speaker observes from his prospect position in the present. What will become clear when the poem later describes contemporary industry is that the description of the waters scooping out the earth and "length'ning its embosom'd Maze" is designed to resemble the activities not just of decorative

landscape gardening but also of mining. In the lines that follow, the waters' overseer, God, is presented as a heavenly engineer:

> So He ordain'd,
>
> Who form'd the fluid Mass of Atoms small,
>
> The Principles of Things! who moist from dry,
>
> From heavy sever'd light, compacting close
>
> The solid Glebe, by heav'nly Mechanism,
>
> Stratum on Stratum, in concentric Lines[.]
>
> (I, 106–11)

It is notable that when Jago revised the poem he cut the phrase "heav'nly Mechanism," but emphasized the connection to mining by introducing a reference to "ore," that is, rock from which metal can be extracted such as iron, the other material besides coal that had begun to be heavily mined in the West Midlands:

> […] compacting close
>
> The solid glebe, stratum of rock, or ore,
>
> Or crumbly marl, or close tenacious clay,
>
> Or what beside, in wond'rous order rang'd,
>
> Orb within orb, earth's secret depths contains.
>
> (Jago, *Poems* 13)

Into these revised lines Jago also adds the idea of Earth and earth as container, full of varied materials and as-yet-unknown treasures. Jago's Earth history establishes a planet that is malleable and changeable, and furthermore extractable. What appears "solid" is in fact a "compacted" arrangement of disparate materials, each of which can be removed by one with the

right knowledge and instruments. The lines of “stratum on stratum” that early geologists read as a kind of parallel “sacred Record” to Scripture contained what Jago calls “Stranger-Fossils, in their inmost Bed / Of flinty Rock, or min’ral Strata, found” (I, 144–5). The word “fossil” meant originally anything dug up from underground, including metals and other kinds of rock, but by the eighteenth century had also assumed its modern meaning of the petrified remains or impressions of ancient living organisms. For many planetary historians and for Jago (thinking presumably of the Jurassic belemnite and bivalve fossils often found in the ironstone quarries at Edge Hill) the fossilized remains of strange plants and animals constituted “strong Proofs” (142) of planetary changes in the deep past. Such fossils were often cited as evidence that the planet’s climates had changed in the past, either permanently or in short-term catastrophes: either northern Europe must have been warmer to allow large exotic animals to live there; or, as Jago suggests, such fossils must have been transported by the Flood. Already, then, there was a conceptual link between the things that “earth’s secret depths contains” underground and climate change. The English term “fossil fuel” is often dated to William Lewis’s 1759 translation of Caspar Neumann’s *Chemical Works* (and this is the earliest citation given in the Oxford English Dictionary), but a few years earlier Samuel Johnson had defined “coal” as “The common fossil fewel” in his Dictionary of 1755 (Johnson, “COAL, n. s.”). He was invoking the older meaning of “fossil” as something unearthed and only by coincidence anticipated the later wider understanding of coal as fossilized plant matter. Although some European natural philosophers had suggested that coal might be formed of dead plants, throughout the eighteenth-century coal was still widely considered a type of inorganic rock, “ranked among the minerals” (Johnson, “COAL, n. s.”). For Jago, coal’s likeness to the “Stranger-Fossils” in the rock strata lies in its status not as fossilized organic matter but as another one of those wonders that is extracted from

"earth's secret depths." This is sufficient likeness, however, for coal to be accompanied by the spectre of past climate change that those other "Stranger-Fossils" summoned.

But this spectre is a by-product. Clearly the main purpose of the parallels Jago draws between the Earth history in Book I and the mining activity in Book III is for the former to naturalize and implicitly authorize the latter. This is an example of what Kent Linthicum calls the "petroaesthetics" of the late eighteenth and early nineteenth centuries, "the lubrication of fossil cultures" through arts and other cultural forms which could "license [...] the easy consumption of otherwise fraught fuels" (740). The Black Country coalfields, which had been mined increasingly intensively since the seventeenth century and were by the mid-eighteenth century already heavily industrialized, are depicted as scenes of geological process in miniature:

> A cunning Artist tries the latent Soil:
>
> And if his subtle Engine, in Return,
>
> A nitrous Mass contains, brittle, adust;
>
> Strait he prepares th' obstructing Earth to clear,
>
> And raise the sable Rock[.] A narrow Pass
>
> Once made, wide, and more wide the gloomy Cave
>
> Stretches its vaulted Isles, by num'rous Hands,
>
> Hourly extended.
>
> (III, 418–25)

God's "heavn'ly Mechanism" by which he arranged strata into hills and mountains is mirrored in the "subtle Engine" that reverses the "compacting" process of creation by separating and removing those strata. The disembodied "Hands" (a typical example of the eighteenth-century georgic abstraction and dehumanization of labourers) "extend" and "stretch" the vault of the

mine and in doing so mimic the action of “th’ obedient Waters” in Book I, which had “scoop’d each hollow Dale, / Or Valley, length’ning its embosom’d Maze.” (In the revised edition, the waters are described as “*stretching* far its winding maze,” enhancing the connection between these passages (*Poems* 12, my emphasis).) Rachel Crawford reads *Edge-Hill* as a poem about, and itself in practice of, mimicry: prioritizing “invention” over “originality” and “ingenuity” over “genius,” the manufacturers of Birmingham produce counterfeit works and the poet of *Edge-Hill* produces Virgilian imitation (Crawford 163). I would add that the mines and factories in the poem re-produce the processes of Earth history described in Book I, their instruments and procedures distorted imitations of the “heav’nly Mechanism[s]” of the creation.

For most commentators, Jago’s georgic presentation of the newly industrialized West Midlands is a conservative technique aimed at bolstering older social, economic, and spatial relations between classes. “On the whole,” writes Rudolf Beck, “naturalising the industrial world and placing it in a traditional context creates [...] an overall impression of historical continuity and social stability.” (20–21) For Crawford, Jago’s placement of the descriptions of industry *within* his longer “survey of the landed estates of Warwickshire” ultimately “validate[s] patterns of conservative landownership” (143). Taylor demonstrates that far from undermining (literally and figuratively) the traditional aristocratic rural estate, “Jago recognizes that mining, in fact, economically stabilizes the landed classes and increases the gentleman’s administration over his lands”; “depiction of mining as part of the gentleman’s prospect confers legitimacy to the practice” (40). Yet the shape that Jago gives to Earth history in Book I brings with it implications for the industrial activity that mimics it in Book III. Theories of Earth history provided a way for Jago to naturalize and historicize an industrial economy, but they also created the premise of a

combative planet, a climate that changed and could change again, and a treacherous Earth that moved and that thereby unsettled industrial mining's premises of stability and ownership.

The way Jago's receding waters "scoop" earth and "lengthen" valleys in Book I is not clearly violent, but these waters that had run underground (following Warren's hypothesis) rise again later in Earth history, and later in Book I, in the form of the biblical Deluge. (In his revisions, Jago hints that the Flood was sent as a punishment for specifically environmental sins: "man, ungrateful man! [...] with horrid crimes, / Polluting earth's fair seat" (*Poems* 14). While "pollution" referred to general moral corruption and had not yet assumed its specifically environmental associations, the phrase "earth's fair seat" suggests a sense of these crimes' impact on the nonhuman world.) Until the late eighteenth century, European Earth historians and proto-geologists broadly agreed that the biblical Deluge was a real historical event but often disagreed on the mechanism by which God implemented it and on the effects that it had had on the planet's systems and structure. Jago reflects this disagreement by refusing to commit to a particular theory:

> In that dread Time what Change th' avenging Flood
>
> Might cause in Earth's devoted Fabric, who
>
> Of mortal Birth can tell? Whether again
>
> 'Twas to its first chaotic Mass reduc'd,
>
> To be reform'd anew? or, in its Orb,
>
> What Violence, what Disruptions it endur'd?
>
> (I, 134–9)

But that the Deluge occurred, he does not doubt, and enlists the standard supply of evidence:

> the Plains,

> With Surface smooth, or Vale, in Eddies worn,
>
> Or Fissure, op'ning, in the delug'd Soil,
>
> Its rifted Bosom to the scorching Sun
>
> Attest it[.]
>
> (I, 148–52)

As the post-diluvian earth opens its "rifted Bosom" to the sun in a sexualized image of tendering, it offers its history to readers of its strata, and offers its materials to both fossil-hunters and fossil fuel extractors. Not only did the new Earth history authorize the "op'ning" of fissures and rifts in the Earth's surface, presenting this action as continuous with nature's own processes (and, in Jago's lines, an action carried out by the "Fissure" itself); in turn, industrial extraction also authorized the new Earth history, as the subterranean discoveries made by miners, of animal fossils and of stratigraphic patterns, served as evidence for geological theories. In Jago's lines the bosom of the Earth reveals the traces of its own "delug'd" formation. He may have been drawing on Catcott here, who took evidence from mining for the theory that at the creation the planet had been covered in waters that had then receded underground, and then risen again at the Flood and retreated back afterwards:

> That there is an *Abyss of waters beneath the earth*, may still be further shewed from the quantity of water that has been discovered in the inside of the earth, in opening the strata either for Stone, Coal, &c. […] The vast profusion of water that sometimes ensues the breaking up of the strata in *Coal-pits* is well known to all that are in the least conversant in that affair; and what amazing quantities are drawn off from deep *mines*, either by drains or levels, or raised by engines, is also well known[.] (Catcott 152)

Catcott proposes not just an aesthetic and imaginative but also a causal and epistemological relationship between mine-water and diluvian water. When in Book III Jago turns his attention to the flooding of mines, the echoes of diluvial geology in Book I form part of the wider mutual authorization of geological history and modern extraction; but in mimicking the Deluge the mine must mimic the “Violence” and “Disruption” of Earth’s deep past as well as its malleability and separability. Earth history carries catastrophic implications for the present and future that imitates it−what Menely describes as “a cataclysmic latency, a demonic principle of change harbored in the Earth’s mineral reserve” (160)−and dealing with this implicit catastrophism becomes a challenge for Jago.

> Such is the Structure, such the wave-worn Face
> Of Earth’s huge Fabric! beauteous to the Sight,
> And, to the searching Mind, with Wonders stor’d.
> But Beauty marr’d! Wonders! which solemn Dread
> Mix with Delight! and, from Experience past,
> How great th’ Almighty’s Judgments are, how true!
> Its threaten’d Period with Conviction teach.
> (I, 169–75)

Jago’s grammar can barely corral his exclamations at such sublimity. The “Wonders stor’d” in the Earth—strata, plant and animal fossils, coal, iron ore—bring dread as well as delight to those who extract them and stimulate a turn from contemplating the past that may be read in these subterranean wonders to contemplating the future that they imply. Reading the catastrophist history of the world in strata and fossils teaches us that the world will end in cataclysm, too. Within Jago’s Christian scheme this catastrophic quality of the planet’s “Experience past” can

neatly presage the Day of Judgement, which is dreadful but good. But this past also presages extractive industry, and its catastrophism is harder to reconcile with Jago's endorsement of that industry.

In his revision to this passage for the second edition Jago enhanced the connection between the "Wonders" and the activity of extraction, and also made the prophecy of ruin more explicit than it had been in the vague phrase "threaten'd Period":

> Such is the structure, such the wave-worn face
> Of Earth's huge fabric! beauteous to the sight,
> And stor'd with wonders, to th' attentive mind
> Confirming, with persuasive eloquence
> Drawn from the rocky mount, or watry fen,
> Those sacred pages, which record the past,
> And awfully predict its future doom.

(*Poems* 17)

The "sacred pages" are the scriptures whose account of past and future are confirmed by the "wonders" (rock strata and fossils—Jago added a note to the second edition specifying trees "and other vegetable and animal bodies, the spoils of the deluge" that are found in fens and bogs, and citing Woodward as his source (17)) stored in the earth. In Jago's slightly ambiguous formulation, it is not these wonders themselves that are "Drawn from the rocky mount" but the planet's "persuasive eloquence," its abstract testimony to its own deep past. The human extractors are effaced to afford greater agency to the Earth, making the planet further complicit in its own "future doom."

This dreadful prophecy is followed by a sudden return to the present morning, in which the poem's speaker walks the brow of Edge Hill and admires the local scenery and climate: "Upton's airy Fields" (I, 191), and the rich harvest that the temperate Midlands climate produces. But despite the poem's breeziness, the pleasing scene is haunted by the "future doom" that may be read in the strata and fossils of Edge Hill's sedimentary ironstone. If this future doom consisted only in a) the distant, abstract future of the Day of Judgement, and b) more near at hand, isolated catastrophes like individual floods in individual mines, this weight of catastrophic futurity might be manageable. But part of the potential "future doom" imagined by the poem is anthropogenic climate change: human sin, potentially including environmental devastation, brought about the Deluge, which in some accounts was not just a temporary weather event but effected permanent planetary climate change; and the human activity of industrial extraction, in replicating the changes made to the surface and underground structure of the planet in its deep past, might bring about changes in its atmosphere too.

The passage in Book III on the "cunning Artist" who discovers where to "raise the sable Rock" (coal) proceeds to describe "the subterraneous City" (III, 434) and the "swarthy Slaves" who work it with their "Instruments of Toil" (III, 436); this introduces Jago's account of the various dangers of mining, including the Deluge-echoing floods:

> And oft a chilling Damp, or unctuous Mist,
>
> Loos'd from the crumbly Caverns, issues forth,
>
> Stopping the Springs of Life. And oft the Flood,
>
> Diverted from its Course, in Torrents pours,
>
> Drowning the nether World.
>
> (III, 440–46)

These lines describe hyperlocalized effects on the air and on water courses, by which the mine assumes its own microclimate. There is nothing in these lines themselves to suggest that "Damp," "Mist," or "Flood" might become more widespread attributes of a larger local let alone global climate. But in their echoes of the geological processes of Book I, these references to the damps, mists, and floods of the mine carry stores of catastrophic potential. Of the main Earth history sources Jago cites in his poem, only Burnet proposes that the planet's climate changed permanently with the Flood: "there was a perpetual Æquinox and Stability of the Heavens before the Flood, we have show'd both from History and Reason; neither was there then any thing of Clouds, Rains, Winds, Storms, or unequal Weather" (284). Keill and Warren both disagreed, the latter pointing out that any "notable alteration in the *Tempestival* (to say nothing of the *Astronomical*) face of things" would have been noted as a "surprizing Novelty" by Noah and his family and so would have been recorded for posterity (159). Jago acknowledges short-term climatic effects of the Deluge: he notes that fissures in the "wave-worn" Earth are caused not only by the violence of the floodwaters themselves but also "by succeeding drought" (*Poems* 15). But he seems also to be in touch with the Burnetian idea of a more dramatic and long-lasting change in the world's climate, as well as Burnet's claim that the climate would change again in the future, as the planet would heat up and be consumed in fire before its ultimate restoration at the Millennium. Jago suggests that the floodwaters receded not only back into the Earth "to their antient Bounds, / The cavern'd Deep" (I, 164–5) but also up into the atmosphere. In 1767 he proposes that they rose up through the hills "In secret Tubes" (I, 166), but in the revised edition the waters ascend "Urg'd by th' incumbent air […] or rise in vapours warm, / Piercing the vaulted earth" to become mountain springs (*Poems,* 16). These risen floodwaters form a mirror image to the vapours of the mine that stop "the Springs of Life." A direct relationship is

established between what comes out of the earth and what happens in the air. If the Deluge could reconfigure the planet's climate so dramatically, could these miniature imitations have equivalent repercussions?

The mines reconfigure what is underground and in doing so alter the local air. These alterations must then be mitigated by technological solutions:

> Two Philosophic Arts are us'd to drein
>
> The foul, imprison'd Air, and, in its Place,
>
> Purer convey; or, with impetuous Force,
>
> To raise the gath'ring Torrents from the Deep.
>
> (III, 445–8)

These are the Newcomen steam engine, for pumping out floodwater, and the ventilation bellows invented by Stephen Hales to improve air quality. But if technology can mitigate the effects of impure air and flooding water, it fails when confronted with fire.

> But who that fiercer Element can rule?
>
> When, in the nitrous Cave, the kindling Flame,
>
> By pitchy Vapours fed, from Cell to Cell,
>
> With Fury spreads, and the wide fewell'd Earth,
>
> Around, with greedy Joy, receives the Blaze.
>
> What Art, what Time can stop the burning Pest?
>
> By its own Entrails nourish'd, like those Mounts
>
> *Vesuvian*, or *Sicilian*, still it wastes,
>
> And still new Fewel for its Rapine finds
>
> Exhaustless.

(III, 459–68)

Even more nightmarish than the flood that drowns “the nether World” is this vision of fire spreading through the mine. In his chapter on volcanic imagery in Romantic industrial literature, Reno proposes that even when “authors do not explicitly link negative environmental effects with industrialization,” their use of such dark imagery intimates “a nascent awareness, an almost-acknowledged connection” (78). Jago’s comparison of the fires to the volcanoes Etna and Vesuvius introduces an anticipatory hint towards what would later be labelled Plutonism, the theory that Earth’s rock was formed primarily through magmatic activity (which would eventually displace the older Neptunist theory that rocks were formed in the primordial oceans, Warren’s version of which Jago had adopted in Book I). Menely notes that as well as echoing Milton’s Hell, this description of the mine-fire resembles Burnet’s prophecy of future conflagration (160). Menely observes the “catastrophic potential” of the earth in this passage but suggests that these implications are “quickly sidestepped as the poet’s gaze shifts to another scene of production, the Black Country iron smelters.” (160) It is true that Jago’s acknowledgements of the darker sides of industry, including danger to labourers, are placed alongside more optimistic passages; but the catastrophism of the mines is not sidestepped quickly enough. Before turning his attention to the iron smelters, Jago inserts nine lines that draw on the common association between volcanoes and earthquakes, introducing another disaster: landslide. These lines bring implications of a wider (in space) and longer (in time) environmental damage and threat to human and nonhuman life.

Wretched he! who journeying late,

O’er the parch’d Heath, bewilder’d, seeks his Way.

Oft will his snorting Steed, with Terror struck,

> His wonted Speed refuse, or start aside,
>
> With rising Smoak, and ruddy Flame annoy'd.
>
> While, at each Step, his trembling Rider screams,
>
> Appall'd with Thoughts of Bog, or cavern'd Pit,
>
> Or treach'rous Earth, subsiding where they tread,
>
> Tremendous Passage to the Realms of Death!
>
> (III, 468–76)

This tale of a horseman bewildered in the night derives from two main sources: first, Milton's epic simile comparing Satan to a will-o-the-wisp that leads travellers astray—'a wandring Fire, / Compact of unctuous vapor [...] Misleads th' amaz'd Night-wanderer from his way / To Boggs and Mires [...] There swallow'd up and lost' (Milton IX, 634–42)—which introduces a satanic lineage for the "rising Smoak" and "ruddy Flame" of the mines; and second, a short tale in James Thomson's influential georgic *The Seasons* (1746): 'decoy'd by the fantastic Blaze, / Now lost and now renew'd, he sinks absorpt, / Rider and Horse, amid the miry Gulph' ("Autumn," 1154–6). An important difference from Milton and Thomson's horsemen, however, is that Jago's is appalled "with Thoughts of Bog," rather than with a real bog or marsh. As in the episode of the ploughman, cautious in case he turns up bones, it is the dread, the anticipation, the future potential of disaster that interests Jago and arrests his characters. But while the horseman's death is deferred into a possible and presumably avoidable future, the present remains threatening. The "Oft" in l.470, a standard temporal frame in the ongoing future conditional tense of georgic, means that the "parched heath" and smoky air are present as well as future dangers. The fires and even the imagined landslides are not so much isolated or occasional catastrophes as they are recurrent features of the changed climate of this place.

If all this passage suggested was that the coalfields are scary and dangerous places, this would not make a particularly effective or novel critique of the coal industry. The more disarming implication of this passage is its challenge to the principle of land ownership itself. As Taylor has shown, Jago makes an effort in this poem to incorporate the earth's underground stores within existing property boundaries, so that coal and metal mines can form parts of gentlemen's estates, come under their ownership, and contribute to their wealth. Yet the moveability of the ground implied by both planetary history and the activity of mining itself creates a "treach'rous Earth": one's land can disappear beneath one's feet. In the horseman passage the realm of an anonymous gentleman-landlord subsides into the "Realms of Death." In *Edge-Hill*, as the ground beneath and air above change, the ownership of a place changes, too. In the lines above on fire, the coal now belongs not to the owner(s) of the land and the mine but to "the wide fewell'd Earth" itself, and the agent who "finds" this "Fewel" is no longer the cunning human artist but the fire. The fire is "fed" by "Vapours," which assume their own agency, a trope that would recur in later mining literature (Constantine 131). Jago's suggestion that the fuel is "exhaustless" is of course mistaken, but within his geologically-informed scheme the Earth's "greedy" appetite for destruction is potentially unbounded.

Recognizing that an association between fossil fuels and past and future climate change was available to Romantic writers allows one to read other coal poems in a slightly different light. This is true of poems that are celebratory or critical of the industry. John Dalton's 1777 poem "A Descriptive Poem: Addressed to Two Ladies, at their Return from Viewing the Mines Near Whitehaven" (which contains several close verbal echoes of *Edge-Hill*) seems at first a triumphant eulogy of "the glories of the mine!" (Pearch 34) even if it recommends that ladies should enjoy the spectacle at a safe distance. The terrors of the mine are framed as sublime

gothic entertainments in the “dark mansions of despair” (24), from whose “sulph’rous damps” (23) middle- and upper-class tourists can retreat “to light and air” (24). However, as Reno points out, “the focus here seems not so much on humans’ mastery of wild nature but rather the ability to transform it so quickly—a form of mastery, yes, but one that seems impossible, even potentially dangerous with regard to unintended consequences” (81). Dalton’s comparisons to volcanic eruptions and earthquakes hint that the “bursting streams, and burning rocks” deep in the mine might find their way out from underground to taint the “balmy air” (23) above:

> […] in caverns deep,
>
> Where subterranean thunders sleep,
>
> Or, wak'd, with dire Ætnæan sound
>
> Bellow the trembling mountain round,
>
> Till to the frighted realms of day
>
> Thro' flaming mouths they force their way
>
> (Pearch 23–4)

Later Romantic poems about mines were often more explicitly critical of local environmental damage. To readings of such poems the heritage of older fossil fuel Romanticism, in which fossil fuels are imaginatively and causally connected with historic and future geological and climatic change, brings the possibility that the scale of environmental damage imagined within these poems may be far greater, amounting even to a planetary scale, than one might assume in the reluctance to impose anachronistic presentist readings. One of Anna Seward’s poems on Coalbrookdale, the Shropshire village where Darby had first smelted iron with coal, is a good example. The sonnet “To Colebrook Dale” (1799) laments “the dark-red gleams” from the industrial fires on the hills, the sunbeams “shroud[ed] with columns large”

Of black sulphurous smoke, that spread their silk

Like funeral crape upon the sylvan robe

Of thy romantic rocks, pollute thy gales,

And stain thy glassy floods

(Seward 65)

This is an account of limited local environmental devastation. When Seward expands the poem's horizon to a global perspective, it is to describe the ambitious reach of international trade rather than of environmental pollution:

while o'er the globe

To spread thy stores metallic, this loud yell [of the Cyclops' forge]

Drowns the wild woodland song, and breaks the poet's spell.

(Seward 65)

Clearly, there is a parallel between the way the iron products of Coalbrookdale are "spread" around the world through trade and the way the smoke is "spread" across the local landscape; but this appears to be an imagined aesthetic connection if not an entirely coincidental one. However, the possibility that Seward is really suggesting that the local climate, as well as local products, could extend to be global in reach becomes more plausible when one recognizes that the "romantic rocks" and "glassy floods" are not just picturesque motifs but are relics of and testifiers to transformations in the planet's deep past, and could presage such transformations in the future.

Edge-Hill reveals that visions of climate change—not just historical climate change in the planet's deep past but also the potential future climate change that was implied by that past—were written into some of the earliest representations of industrialized fossil fuel use. The poem

makes visible, then, certain implications in modern cultural paradigms, narratives, and representational strategies for thinking about fossil fuels. *Edge-Hill* dramatizes the difficulty of naturalizing the fossil fuel industry by likening the processes of extraction to nonhuman processes: Jago attempts to use Earth history to naturalize and endorse fossil fuel extraction, only to find that endorsement haunted by spectres of catastrophe. Historicizing fossil fuels within deep time by emphasizing their nature as "fossils" in the modern sense, and historicizing climate change by emphasizing the climatic changes that have occurred in the planet's deep past, can be strategies for climate change denialism, drawing attention away from human agency and responsibility in the present and recent past. But *Edge-Hill* exposes the way that historicizing fossil fuels within planetary history has varied implications depending on how that planetary history is conceptualized: if it is violent and catastrophic, then future environmental change associated with extracting and consuming fossil fuels will carry traces of that violence. The narrative shapes that we give Earth history in turn shape how we perceive the wonders and horrors that come out of that Earth.

Works Cited

Aubin, R. A. *Topographical Poetry in XVIII-Century England.* The Modern Language Association of America, 1936.

Beck, Rudolf**.** "From Industrial Georgic to Industrial Sublime: English Poetry and the Early Stages of the Industrial Revolution." *Journal for Eighteenth-Century Studies*, vol. 27, no. 1, 2004, pp. 17–36.

Burnet, Thomas. *The Sacred Theory of the Earth*. 1684–90. London, John Hooke, 1719.

Catcott, Alexander. *A Treatise on the Deluge*. London, M. Withers, 1761.

Constantine, Mary-Anne. "Consumed Landscapes: Coal, Air and Circulation in the Writings of Catherine Hutton." *Romanticism*, vol. 27, no. 2, 2021, pp. 122–134.

Craske, Matthew. "Richard Jago's *Edge-Hill* Revisited: A traveller's prospect of the health and disease of a succession of national landscapes." *Pathologies of Travel*, edited by Richard Wrigley and George Revill, Brill, 2000, pp. 121–56.

Crawford, Rachel. *Poetry, Enclosure, and the Vernacular Landscape, 1700–1830*. Cambridge UP, 2010.

Crutzen, Paul J. and Eugene F. Stoermer. "The 'Anthropocene'." *Global Change Newsletter*, vol. 41, 2000, pp. 17-18.

Davies, Jeremy. "Introduction: Romantic Studies and the 'Shorter Industrial Revolution.'" *Studies in Romanticism*, vol. 61, no. 2, 2022, pp. 187–202.

Emig, Rainer. "Lust in the Ground: The Erotics and Politics of the Soil in Contemporary Poetry." *Critical Survey*, vol. 14, no. 2, 2002, pp. 3–48.

Feingold, Richard. *Nature and Society: Late Eighteenth-Century Uses of the Pastoral and Georgic*. Rutgers UP, 1978.

Ford, Thomas H. "The Romanthropocene." *Literature Compass*, vol. 15, no. 5, 2018, pp. 1–13.

Gold, Barri J. *ThermoPoetics: Energy in Victorian Literature and Science*. MIT Press, 2010.

Goodman, Kevis. *Georgic Modernity and British Romanticism*. Cambridge UP, 2004.

Heringman, Noah. *Romantic Rocks, Aesthetic Geology*. Cornell UP, 2004.

Jago, Richard. *Edge-Hill, or, the Rural Prospect Delineated and Moralized. A Poem. In Four Books.* London, J. Dodsley, 1767.

——. *Poems, Moral and Descriptive*. London, J. Dodsley, 1784.

Johnson, Samuel. *A Dictionary of the English Language*. London, W. Strahan, 1755.

Linthicum, Kent. "Rise of British Petroaesthetics in *King Coal's Levee*." *SEL Studies in English Literature 1500–1900*, vol. 60, no. 4, 2020, pp. 739–59.

MacDuffie, Allen. *Victorian Literature, Energy, and the Ecological Imagination*. Cambridge UP, 2014.

Malm, Andreas. *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*. Verso, 2016.

Menely, Tobias. *Climate and the Making of Worlds: Toward a Geohistorical Poetics*. U of Chicago P, 2021.

Miller, Elizabeth R. *Extraction Ecologies and the Literature of the Long Exhaustion*. Princeton UP, 2021.

Milton, John. *Paradise Lost*. 1667. Edited by Barbara K. Lewalski, Blackwell, 2007.

Nersessian, Anahid. *The Calamity Form: On Poetry and Social Life*. The U of Chicago P, 2020.

Pearch, G., editor. *A collection of poems in four volumes. By several hands*. London, G. Pearch, 1770.

Porter, Roy. *The Making of Geology: Earth Science in Britain 1660–1815*. Cambridge UP, 1977.

Reno, Seth T. *Early Anthropocene Literature in Britain, 1750–1884*. Palgrave Macmillan, 2020.

Seward, Anna. *Original Sonnets on Various Subjects; and Odes Paraphrased from Horace*. London, G. Sael, 1799.

Taylor, Carrie Anne. "The Re-Making of the English Landscape: Coal, Transport, and the Sense of Place in the Romantic Era." University of Chicago, PhD dissertation, 2023.

Thomson, James. *The Seasons*. (1730–1746). Edited by James Sambrook, Oxford UP, 1981.

Vaccari, Ezio. “Mining and knowledge of the Earth in eighteenth- century Italy.” *Annals of Science*, vol. 57, no. 2, 2000, pp. 163–80.

Warren, Erasmus. *Geologia: or, a Discourse Concerning the Earth Before the Deluge*. London, R. Chiswell, 1690.