

Swept Over an Etheric Niagara: The Persistence of the Etheric Hypothesis in Arthur Conan Doyle's Challenger Stories

Alex Moffett

Arthur Conan Doyle is often considered to be the exemplar of detective fiction authorship, the man who both created the most popular literary character in the history of the English language, and who crafted so many of the tropes that are present in similar fictions in literature, film, and television. However, if Sherlock Holmes had never existed, Doyle might principally be known as a writer of science fiction. The most popular of his science fiction stories are those featuring the brilliant and irascible Professor Challenger. Beginning in the immensely popular *The Lost World* (1912), and continuing in four further works of varying lengths, Doyle presented Challenger as an iconoclastic genius, one who exists outside the scientific establishment and who resists its hidebound conventionality. While Doyle prided himself on his scientific knowledge, to the first time reader this interest is not immediately evident in the Challenger stories; as Jacqueline Jaffe argues, "Doyle's stories use the atmosphere of science, or the trappings of science.... Science is merely the peg on which the adventure hangs" (91). However, there is an important scientific hypothesis present in four of the five Challenger stories. Each of these four stories relies upon the concept of the luminiferous ether, an invisible medium that was thought by some scientists to permeate empty space. The concept of the ether was rendered obsolete by the publication of Einstein's special theory of relativity, which did not require a fixed medium in space to be used as a point of reference. Since the special theory of relativity had not made much headway in the English-speaking world by 1913, the year the second Challenger science fiction novel *The Poison Belt* was published, Doyle's use of the luminiferous ether in that text is quite understandable. What is more remarkable, though, is his continued use of the ether in his Challenger stories of the 1920s, well after the first empirical verifications of Einstein's theories and their growing acceptance by both the scientific community and the educated British public more generally (Clark 295-310).

Why did Doyle continue with the etheric hypothesis for so long? In beginning to answer this question, it is worth noting that the ether is not merely tangential to the narratives of the later Challenger stories; rather, it is absolutely fundamental. The etheric hypothesis provides the essential underpinning for both the plots of the stories and for their collectively imagined universe. The events in these narratives could not possibly occur in a relativistic cosmos; these stories simply could not exist without the ether. Consequently, this persistent and crucial presence of the ether suggests that for Doyle, etheric theory represented something more significant than a convenient ad hoc plot device for these stories. This article explores this significance, and suggests that the presence of the ether in the Challenger narratives should be read neither as ignorance, nor intellectual laziness, nor a careless error, but rather as an essential component of the universe Doyle imagines. The ether functions as a mechanism for a fusion of the physical and metaphysical worlds, allowing Doyle to conceive a holistic cosmos that conjoins science and religion. This fusion is influenced by, and consonant with, Doyle's belief in Spiritualism, which also adumbrated a link between science and mysticism. More generally, Doyle's employment of the etheric hypothesis provides a cosmos more congenial to the masculine ethos that he admired. It asserts

presence, rather than absence, and substitutes an apprehendable and explorable universe for an empty void. The etheric cosmos these stories create is one that is antidotal to the sort of pervading meaninglessness that seemed much more real to the traumatized post-war world of the 1920s.

In nineteenth-century scientific circles, physicists generally believed in some version of a luminiferous ether.¹ Scientists generally agreed that the wave-like nature of light meant that there had to be a medium in which light propagated, just as sound waves propagate through the air. Consequently, they posited a medium that was both universal and invisible. To make this notion compatible with Newtonian physics, the medium had to be fixed in space, unchanging and immobile. The hypothesis had the advantage of intuitively seeming to be correct, a perception reinforced by its compatibility with a variety of long-existing religious and spiritual beliefs that posited some sort of ethereal medium. Scholars who have examined the place of the ether in intellectual history have noted the consonance between the classical conception of the ether and its rationalist manifestation in the wake of the Enlightenment. As Marina Warner argues, etheric imagery had already shaped the Western cultural imagination, and as such the idea of the luminiferous ether provided continuity with that previous tradition (88). The figure who provided the bridge between these two conceptions was Isaac Newton, whose theories relied upon an ethereal medium, and who therefore, as Joe Milutis has argued, provided the mathematical basis for conceiving of the ether as a site of "practical, empirical experimentation" (xviii-xix). The new etheric formulation resembled the old analogically, as well as genealogically. In comparing the medieval and modern versions of the ether, Thomas Vargish and Delo E. Mook observe that both "were constituted according to the physics of their times and functioned in support of their contemporary epistemology, embodying their culture's dominant values" (19). The modern etheric hypothesis richly suggested a connection between science and faith at an historical moment when the theories of Lyell and Darwin were seemingly creating an unbridgeable rift between the two fields.

However, by the early twentieth century, the etheric hypothesis was under attack. For a start, scientists were coming to uncomfortable conclusions about the properties of a medium that had no effect on solid matter passing through it but could nonetheless allow waves to propagate at the speed of light; the luminiferous ether would have to be both unimaginably rigid and entirely massless. Additionally, scientific experimentation could find no evidence of the ether's existence. The most famous instance of this lack of success was the Michelson-Morley experiment of 1881, which failed to detect an "ether wind": the seeming movement of the ether that would be generated by the motion of the Earth through it. Michelson and Morley hesitantly suggested that the failure of their experiment may have been a consequence of the Earth interacting with the ether in such a way as to "drag" a part of it along with the planet on its orbit, an idea that had been suggested by the physicist George Stokes in 1845 (Swenson 80). But this "ether drag" hypothesis created new problems with regard to the properties of the medium. The etheric hypothesis had gained currency in the nineteenth century as something of an intellectual convenience; however, by the turn of the century, it was becoming decidedly inconvenient.

The special theory of relativity was first presented by Albert Einstein in his 1905 paper "On the Electrodynamics of Moving Bodies." The absolute invariance of the speed of light under special relativity provided an elegant solution to the problem posed by Michelson's and Morley's experiment; if the speed of light is the same in all reference frames, then they could not possibly have achieved anything but a null result.² However, Einsteinian theory was slow to penetrate the British scientific

community, and even as it was doing so it was initially understood to augment, rather than replace, the luminiferous ether hypothesis. As Stanley Goldberg has argued, the etheric hypothesis was so widely held among British physicists that "[t]he acceptance of the theory [of special relativity] hinged upon making it compatible with the concept of the ether. As paradoxical as that might be, there was almost unanimous agreement within the British physics community about such a program" (221).³ Very few British scientists were initially willing to cast away more than a century of scientific orthodoxy.

As a consequence, the astrophysics of Arthur Conan Doyle's second Professor Challenger novel, *The Poison Belt* (1913), are less fanciful than they might initially seem to a twenty-first century reader. Doyle had introduced Professor George Challenger the previous year in the phenomenally successful novel *The Lost World*, which imagined a plateau in the South American jungles where dinosaurs and primitive apes still lived. Doyle was, of course, already famous as the creator of Sherlock Holmes, and consequently was considered by the British reading public to be something of a champion of rational empiricism.⁴ *The Lost World* exemplifies this particular aspect of Doyle's worldview: despite the novel's fanciful plot, it is characterized by its engagement with scientific concepts and its efforts to imbue its narrative with some sort of scientific verisimilitude. In particular, critics such as Davies, Forman and Lampadius have noted Doyle's engagement with debates in evolutionary theory. Doyle brings this perspective to the plot of *The Poison Belt*, in which the concept of the luminiferous ether is central. The title refers to a region of the ether through which the earth is passing. This region gradually induces a cataleptic state in all animal life, a state so convincing that Challenger and his friends, who have survived the passage of the Earth through the belt by remaining in a heavily oxygenated environment, are convinced that all life has perished. Challenger is able to create this environment because he has correctly analysed a bizarre observed phenomenon: the Fraunhofer lines in the spectra of distant astronomical objects have become blurred.

In introducing the concepts of the ether and of Fraunhofer spectral absorption lines, Doyle is providing the narrative with more than a veneer of what was then scientific orthodoxy. However, the science of *The Poison Belt* takes a turn towards the imaginative when it tries to describe the ether in greater detail. Theorizing that absorption line blurring is caused by a change in the ether itself, Challenger likens the luminiferous ether to a vast intergalactic sea in an explanatory letter he writes to narrator Edward Malone's newspaper:

We will suppose ... that a small bundle of connected corks was launched in a sluggish current upon a voyage across the Atlantic. The corks drift slowly on from day to day with the same conditions all round them. If the corks were sentient we could imagine that they would consider these conditions to be permanent and assured. But we, with our superior knowledge, know that many things might happen to surprise the corks. They might possibly float up against a ship, or a sleeping whale, or become entangled in seaweed. In any case, their voyage would probably end by their being thrown up on the rocky coast of Labrador. But what could they know of all this while they drifted so gently day by day in what they thought was a limitless and homogeneous ocean? ... A third-rate sun, with its rag tag and bobtail of insignificant satellites, we float under the same daily conditions towards some unknown end, some squalid catastrophe which will

overwhelm us at the ultimate confines of space, where we are swept over an etheric Niagara or dashed upon some unthinkable Labrador. (169)

Because etheric theory arose from an attempt to explain the wave-like nature of optical light, Challenger's employment of water as an analogy for the luminiferous ether is a logical enough impulse. However, he takes this analogy a step further by specifically likening the ether to an ocean. This specificity brings with it certain implications, implications that Challenger is not reticent to address. The interstellar ether, we are told, has currents, amongst which we are slowly drifting; Challenger will later compare the poison belt to "a mephitic Gulf Stream" (200). These currents are inevitably going to run us aground. Gone is the static unchanging ether that provided a necessary fixed reference point for Newtonian mechanics. In its place is a medium with currents, waves, fluid dynamics ... and also peril. The nautical metaphor implies that the Earth is constantly in danger and will inevitably hit something of a different consistency to its etheric environment, something metaphorically solid. The homogeneity of the luminiferous ether, another assumption essential to the etheric hypothesis, is therefore lost here. Challenger is explicit on this point:

That it may be a change in the conducting medium, in that infinitely fine ether which extends from star to star and pervades the whole universe. Deep in that ocean we are floating upon a slow current. Might that current not drift us into belts of ether which are novel and have properties of which we have never conceived? (170)

In imagining blurred Fraunhofer lines as a means through which to convey the constitutive heterogeneity of the ether, Doyle is effectively constructing an optical version of an experiment where sound is distorted when passing through different media.

In its motion and heterogeneity, then, Doyle has taken the established scientific version of the etheric hypothesis and made it more compatible with Challenger's world. The ether presented in *The Poison Belt* is transformed from an eternally unchanging plain to a differentiated landscape. Space itself now possesses the invisible equivalent of the mysterious topography of the South American jungles and plateau in the first Challenger novel *The Lost World* (1912), a geographical analogy that is buttressed by its evocation of a waterfall: we could be, says Challenger, "swept over an etheric Niagara" (169). And while Challenger cannot personally explore this ether-scape, as he did the South American jungles, he can be its discoverer, the unheeded prophet who perceives the truth. This is of course precisely the role he played in the opening chapters of *The Lost World*, and it is therefore appropriate that in *The Poison Belt* the acerbic Professor Summerlee should function as his intellectual antagonist, just as he did in the earlier novel. In rendering him as Challenger's foil, Doyle necessarily characterizes Summerlee as stubborn and hidebound, but in doing so, places him firmly in the mainstream of early twentieth-century scientific thought about the luminiferous ether. Noting that there are differences in how people around the world are responding to the phenomenon, Summerlee angrily rejects Challenger's theory:

"Really, there should be some limits to human folly!" cried Summerlee in a positive fury. "Is it possible that you do not realize that ether, if for a moment we adopt Challenger's preposterous supposition, is a universal substance which is the same here as at the other side of the world? Do you

for an instant suppose that there is an English ether and a Sumatran ether?"
(*The Poison Belt* 175)

Just as in *The Lost World*, Summerlee's objection combines curmudgeonly antagonism with scientific orthodoxy. However, unlike the previous novel, his mainstream views are driven not by incomplete observation – humans have not yet found the plateau of the dinosaurs – but rather theoretical necessity: the ether must be the same in all directions for it to exist as a propagator of light waves. In spite of this distinction, it is once again empirical observation that trumps Summerlee's conventionality. Malone paves the way for the undercutting of Summerlee's theoretical mastery by emphasizing the complete lack of human knowledge about the luminiferous ether: "But it does not take much common sense to see that, as we seem to know so little about ether, it might be affected by some local conditions in various parts of the world and might show an effect over there which would only develop later with us" (175). When Summerlee is similarly (and understandably) puzzled as to why pure oxygen should keep the effects of the belt at bay, Challenger will concede the theoretical unsoundness of the notion while reiterating that such speculative concerns are eclipsed by empirical observation:

My good Summerlee, this etheric poison is most certainly influenced by material agents. We see it in the methods and distribution of the outbreak. We should not a priori have expected it, but it is undoubtedly a fact. Hence I am strongly of opinion that a gas like oxygen, which increases the vitality and the resisting power of the body, would be extremely likely to delay the action of what you have so happily named the daturon. (190)

Doyle's willingness to imbue the luminiferous ether with a different set of properties from those hypothesized by physicists might well be read as an instance of Wellsian imagination unmoored from scientific verity, one that permits an exciting plot to be woven. However, the triumph of observation over theory in *The Poison Belt* is not only a justification for Doyle's version of the luminiferous ether, it is also an end in and of itself. By rendering the ether as a heterogeneous ocean of currents, Doyle opens up a world congenial to his own philosophical preferences, one where the bold empiricism of a Professor Challenger can be exalted. And this representation of the luminiferous ether also contains some other, less appealing, preferences as well. The poison belt affects more quickly "the less developed races" of Africa and Australia, while "[t]he Northern races have as yet shown greater resisting power than the Southern" (*The Poison Belt* 187). An example of the heightening of irrational human emotion that indicates the first symptoms of the poison is "Socialistic upheaval at Toulon" (187). Doyle's version of the ether, then, performs a certain amount of ideological work. Its very unknowability permits, perhaps paradoxically, the projection of a worldview upon it.

Challenger and his friends emerge from their oxygenated environment to discover that everyone else in the world has apparently perished. Malone narrates their harrowing journey to London to survey the devastation that the poison belt has wreaked: "those endless groups of drawn and grinning faces filled us with a shuddering horror. So vivid and mordant was the impression that I can live over again that slow descent of the station hill ..." (216). However, after they have given up hope, the seemingly dead populace returns to life, and Challenger announces that what they thought was death was in fact something closer to a cataleptic state. This

series of events bears a resemblance to the etheric hypothesis that underlies the plot of the novella. Challenger and his friends drive through a landscape seemingly characterized by death, whereas in actuality life still exists, a life that is not detectable by physical means. This sequence of events figurally suggests the ether itself: a presence amidst a seeming absence. Just as the apparent mass extinction in *The Poison Belt* is not death at all, so the emptiness of outer space turns out to be not so empty. This aspect of the text brings in a religious dimension that has not been present in either *The Lost World* or the earlier pages of *The Poison Belt*, an effect amplified both by Doyle's chosen title for the last chapter – "The Great Awakening" – and by the text's final assertion that the world has found a new cosmic awareness to replace our petty materialism: "But what will not be forgotten, and what will and should continue to obsess our imaginations, is this revelation of the possibilities of the universe, this destruction of our ignorant self-complacency, and this demonstration of how narrow is the path of our material existence and what abysses may lie upon either side of it" (229). The novella, which has hitherto been so scrupulous in grounding itself in science and empiricism, concludes with a sentence rooted in a quite different system of thought: "May [solemnity and humility] be the foundations upon which a more earnest and reverent race may build a more worthy temple" (229). That concluding word, with its connotation of religiosity – but not Christianity – points to the direction that Doyle would take both in his fiction and in his own personal life.

The final connection that *The Poison Belt* makes between knowledge of the ether and a heightened sense of spirituality helps explain why Doyle would return to the luminiferous ether hypothesis in the Challenger stories of the twenties, in spite of the fact of that Einsteinian relativity theory had become firmly entrenched in both the scientific mainstream and the popular public consciousness; as Holly Henry has noted, such was Einstein's fame in the twenties that "relativity limericks and cartoons appeared in local papers, and one apparently could purchase relativity pottery" (28). The speed with which Einstein gained fame in Britain was due largely to English physicist, and Secretary of the Royal Astronomical Society, Arthur Eddington. An advocate of relativity theory even during the First World War, when anti-German sentiment added a further impediment to the acceptance of Einstein, Eddington believed that testing the gravitational deflection of light predicted by Einstein would be a way of providing empirical evidence in support of his General Theory. The best way to acquire this evidence was to measure the deflection of a star that appears very close to the sun during a solar eclipse. In May 1919, Eddington organized an expedition to Sobral in northern Brazil and the African equatorial island of Principe in order to witness just such an event. The result was the first scientifically acquired data in support of Einstein's theory. Word of the results of Eddington's expedition gradually filtered through British intellectual circles in 1919. A 22 April notice in the *Astronomical Bulletin* of the *Times* first provided a brief but detailed account of the planned expedition and its purpose. The bulletin even mentions Einstein himself, the newspaper's first reference to him in the context of his work on relativity theory.⁵ Shortly thereafter, J.W.N. Sullivan wrote a series of articles about relativity in John Middleton Murry's journal the *Athenaeum* (Whitworth 37-38), a periodical that reached a general intellectual audience. On 6 November the Royal Astronomical Society met to discuss the results of Eddington's expedition. Summarizing the proceedings of this meeting a day later, the *Times* printed an article entitled "The Fabric of the Universe" which stated, "It is confidently believed by the greatest experts that enough has been done to overthrow the certainty of ages and to require a new philosophy of the universe, a philosophy that will sweep away nearly all that has

hitherto been accepted as the axiomatic basis of physical thought" (see: "The Fabric of the Universe"). It is clear from the language of the article that relativity was no longer considered an outré foreign theory. Within a month, Einstein and his theory of relativity were common subjects in the British press. And, with their emerging acceptance of relativity theory, the British scientific community increasingly saw the concept of the luminiferous ether as being either obsolete or irrelevant.⁶

Eddington's expedition not only provided experimental evidence to support Einstein's theories, it also sugared the relativistic pill that the British educated public were being asked to swallow. The distress of having Sir Isaac Newton, a British intellectual hero, displaced by a German-born Jew was eased by the contribution and advocacy of Eddington (Whitworth 204). From that point forward, relativity was firmly in the scientific mainstream in Britain. However, there were a few who clung to the etheric hypothesis, and of these, none clung so firmly nor so publicly as celebrated physicist Sir Oliver Lodge, a close associate of Doyle. The very same day that "The Fabric of the Universe" appeared in the *Times*, Lodge penned a letter to the newspaper, printed in the 8 November edition, in which he expressed the hope that the results of the Eddington experiment "may be accounted for, with reasonable simplicity, in terms of the ether of space" (see: "Ether of Space"). Lodge would go on to defend publicly the etheric hypothesis against relativity theory on two more occasions that month alone (on 25 and 29 November), both generating detailed reports in the *Times*.

What Lodge and Doyle shared was a profound belief in Spiritualism, a belief that grew from a predilection when each man lost a beloved son during the First World War. Both men were committed members of the Society for Psychical Research, and therefore had a personal investment in the concept of ether. For Lodge, the etheric hypothesis posited by previous generations of physicists possessed a spiritual component with which it was inexorably intertwined. The luminiferous ether through which light waves propagated was the same ether through which spirits could move and communicate. Lodge had first studied psychic phenomena as far back as the 1880s and by 1908 had formulated a concept of an "ethereal body," the imprint of our consciousness in the ethereal realm (Wilson 34). This ethereal body acts as the mediator between our will and our physical body; it is the principle that resolves the conundrum of Cartesian dualism (Lodge, *My Philosophy* 223). For Lodge, it is communication between these ethereal bodies that creates the phenomenon of telepathy (see: *My Philosophy* 244). More crucially, the ethereal body is also the guarantor of our immortality. In his final work, *My Philosophy* (1933) Lodge writes that, after death,

[w]e shall have a body or mode of manifestation suited to our new surroundings and shall be fully perceptible to our fellows in like case. My hypothesis is that this body or more refined mode of manifestation will be composed of ether, and may be properly spoken of as an etheric body, or what St. Paul called a spiritual body. (220)

In this way, the belief of centuries of Christian thought dovetail perfectly with the theories of electromagnetism. It is little wonder that Lodge was so reluctant to give up the ether, and that he spent much of the twenties and early thirties seeking a reconciliation of etheric theory with Einsteinian relativity.

For his part, Doyle also conceived of the ether in both spiritual and scientific dimensions. The link between these two aspects was critical to him, as Spiritualism's

supposed connections to science formed the backbone of Doyle's ongoing defence of his newfound faith. As he tirelessly wrote about Spiritualism in the late 1910s and early 1920s, he often invoked scientific rhetoric in order to convince sceptical audiences. For instance, in *Wanderings of a Spiritualist* (1921), Doyle presents a hypothesis of the nature of the etheric body that sounds not at all unlike one of Challenger's explanations to Malone. After having considered an electric fan, noting that the propeller blades are visible when it is slowly moving but blur together when it is at speed, Doyle offers this premise as to how only clairvoyants perceive etheric phenomena:

Can we not imagine then that some objects may emit the usual light waves, long enough and slow enough to leave a picture, but that other objects may send waves which are short and steep, and therefore make so swift an impression that it is not recorded? [...] It is but a feeling out into the dark, but it is a hypothesis which may serve us to carry on with, though the clairvoyant seems to be not a person with a better developed physical retina, but rather one who has the power to use that which corresponds with the retina in their own etheric bodies which are in harmony with etheric waves from outside. (*Wanderings of a Spiritualist* 31)

Here, Doyle renders his Spiritualist ideas with a veneer of legitimacy by conflating ether as a scientific hypothesis with ether as a spiritual concept. By invoking the concept of light waves, his theory seems to continue in the vein of scientific discussion of the ether prior to the general acceptance of Einsteinian relativity, and in doing so asks the reader to imagine Doyle himself as a scientist, empirically exploring this unseen world. This sort of rhetorical self-construction occurs often in his defences of Spiritualism, and is often linked to a larger critique of the scientific mainstream, which, in Doyle's opinion, is too hidebound to accept the discoveries made by decades of Spiritualist research. For instance, towards the end of his 1924 autobiography *Memories and Adventures*, Doyle criticizes scientists both for their obstinate scepticism, and for their narrow specialization, which, he claims, creates:

a confusion of thought. The fact that a man is a great zoologist like Lankester, or a great physicist like Tyndall or Faraday, does not give his opinion any weight in a subject which is outside his own specialty. There is many an unknown Smith and Jones whose twenty years of practical work have put him in a far stronger position than that of these intolerant scientists.... (349)

Passages like this one go a long way in explaining how the Doyle who created Sherlock Holmes and championed deductive reasoning could be the same person as the Doyle who tirelessly evangelized for Spiritualism. In Doyle's view, the problem was not that he had abandoned the scientific method; it was that the scientists of his day did not have the requisite expertise outside of their own areas of knowledge.

Doyle's third Challenger novel, the proselytistic *The Land of Mist* (1926), is heavily influenced both by his friendship with Lodge and by his ongoing efforts to explain Spiritualism to a sceptical world. The connection between Doyle and Lodge – and thereby between Spiritualism and scientific legitimacy – emerges in a couple of episodes in the novel. Lodge's beliefs about the ethereal body accord very closely with those uttered by the Reverend Charles Mason in the novel: "It is usually allowed that there is the natural body, as St. Paul called it, which is dissolved at death, and the

etheric or spiritual body which survives and functions upon an etheric plane" (*The Land of Mist* 312). Like Lodge in his scientific writing, the fictional Mason forges a connection between Spiritualist belief and Christian revelation, a pressing concern for Doyle since much of the opposition to Spiritualism came from established Christian churches. It is upon this religious dimension of the ether that *The Land of Mist* concentrates. The ether plays an essential role in the novel, since it is through the etheric medium that the various spirits of the text move and communicate. Unlike *The Poison Belt*, which emphasized the ether as a scientifically verifiable phenomenon, *The Land of Mist* does not explicitly engage with the scientific hypothesis of the ether. However, while the physics of the ether are not important in the novel, the acceptance of the scientific community is, and it is for this reason that one of the primary narrative threads of the text is the conversion of Professor Challenger to Spiritualism.

To this end, Doyle invokes the name of Oliver Lodge himself on a number of occasions, just as he does in a number of his non-fictional Spiritualist writings. Challenger's young friend Edward Malone, here rendered in third person as a character rather than presented as a narrator, is more receptive to Spiritualism and in the first chapter, cites Lodge's support as a reason for his receptivity to the notion: "'None the less,' said Malone, 'some good men support them. I don't see that you can laugh at Lodge and Crookes and the others'" (*The Land of Mist* 236). Challenger's initial response is to growl that "[e]very great mind has its weaker side" (236). In *The Lost World*, Challenger was famously at odds with the scientific community; however, Challenger's concession that Lodge has a great mind is the first indication that the Challenger of *The Land of Mist* is quite capable of being swayed by the weight of Lodge's authority. Later in the novel, Malone uses that status to draw in Challenger:

Sometimes it was Lodge that Malone would use as a trap. "I suppose you think highly of him."

"The first brain in Europe," said Challenger.

"He is the greatest authority on ether, is he not?"

"Undoubtedly."

"Of course, I only know him by his psychic works."

Challenger would shut up like a clam. (376)

Here, Malone invokes the scientific aspect of the ether to provide the smooth transition from the subject of Lodge's genius to that of his belief in Spiritualism. Challenger seems already to accept ether as a scientific concept, and Malone pushes him to use that acceptance as a stepping stone to a more spiritual conception of ether. Malone's effort, coupled with the events of the narrative, bears fruit by its last chapter, by which time Challenger is among the believers:

with characteristic energy, he had plunged into the wonderful literature of the subject, and as, without the prejudice which had formerly darkened his brain, he read the illuminating testimony of Hare, de Morgan, Crookes, Lombroso, Barrett, Lodge, and so many other great men, he marvelled that he could ever for one instant have imagined that such a consensus of opinion could be founded upon error. (396)

Challenger is of course a stand-in for Doyle himself, whose enthusiastic embrace of his newfound creed was similar to that of his fictional character. Unlike Doyle, Challenger is swayed by an argument from authority, a classic fallacy. However, by

using it, Doyle is able to dodge the sticky question of the scientific validity of the luminiferous ether hypothesis, which is taken as an a priori assumption by Challenger.

The evasion of the scientific dimension of the ether in *The Land of Mist* is perhaps unsurprising given its focus on the spirit world and its proselytizing aims, but it is also a convenient non-response to the burgeoning reputation of Einstein, whose relativity theory had largely rendered the concept of the luminiferous ether obsolete, in both the scientific community and in intellectual circles more generally. For his part, Doyle seems to have had nothing to say about Einstein, an odd omission considering the pride he took in his understanding of science (Lycett, *The Man Who Created Sherlock Holmes* 443). An avid reader of the daily newspapers (Booth 336), Doyle certainly could not have failed to encounter the notice that was being taken of Einstein in the popular press. However, another development he also would have noted was a mild resurgence in attention to the scientific etheric hypothesis in the mid-twenties, very shortly after *The Land of Mist* was completed.⁷ Unsurprisingly, this resurgence was spearheaded by Lodge, who published two significant pieces pertaining to the ether in that period: the book *Ether and Reality* (1925) and, perhaps more significantly, an entry for ether in the thirteenth edition of the *Encyclopedia Britannica* (1926). This edition was a supplement that added up to date entries on current topics. Therefore, the mere presence of any entry on ether in the thirteenth edition posited it as a contemporary topic of ongoing study. This impression was bolstered by the confident tone of Lodge's writing. Space, writes Lodge, has "physical properties, of which the complete investigation has hardly begun," properties about which "there is now no doubt of their existence, even among those who still prefer to use the term space" (*Ether and Reality* 1026). Both gravitational force and the propagation of light are "entirely dependent upon the properties of the ether" (1026, 1027). The section on Einstein's theory of relativity emphasizes that space must have some sort of physical structure for gravitation to have the effects predicted by general relativity (1027). If relativity casts doubts on the existence of the luminiferous ether, Lodge reassures us that such a belief is held only by "some people – not many of the leaders of thought..." (1028). And while Einstein's theory may provide elegant mathematical solutions, "the idea that any mathematical scheme is more than a powerful method of exploration, and that a universe can be thus constructed in which physical explanations can be dispensed with, involves too simple and anthropomorphic a view of nature" (1028). Throughout the discussion of relativity, Lodge's implication is that Einstein's mathematical explanations are all well and good, but that the true laurels will go to those in the future who will empirically record the physical properties of etheric space.

While such a speculation could be dismissed as the wishful thinking of a scientist at the end of his career clinging to an outdated mode of thought, there was an unexpected piece of empirical evidence in support of etheric theory in the mid-1920s. A physicist at Case Western Reserve University, Dayton C. Miller, had been performing a series of interferometer experiments at Mount Wilson Observatory throughout the 1910s and 1920s. Using an apparatus that was more sensitive than that originally employed by Michelson and Morley, Miller obtained a positive value for the ether drift, a result that he interpreted as disproving the notion that the speed of light was constant, thereby casting doubt on the theory of relativity that it undergirded. He published these results in 1925, and while they were largely discounted by the scientific community as anomalous (Polanyi 13), they were presented somewhat more positively in the British press.⁸ The 18 April 1925 issue of the *Illustrated London News* provided a drawing of Miller's interferometer apparatus

and announced that it "has given the only definite results of the existence of an ether" ("Measuring the Stars" 677). The *Times* reported on Miller's findings in a detailed article entitled "The Progress of Science" in the 20 July edition. While the article does note the provisional nature of Miller's findings, its tone is rather optimistic. After a description of Miller's apparatus, one that emphasizes its superiority to that originally employed by Michelson and Morley in the 1880s, the article goes on to say that "[t]he implications of this new work are far reaching" and that "if it be confirmed Dayton Miller's achievement will rank among the most important contributions to knowledge of the universe" (18). Six months later, the *Times* would go on to report that Miller received an award from the American Association for the Advancement of Science for his paper on ether drift ("Ether Experiments" 11). While the scientific community may have been largely sceptical of Miller's work, the impression conveyed in the popular press was that there was a vibrant debate taking place, one in which the concept of the ether possessed some degree of renewed momentum.

The renewed consideration of the etheric hypothesis that took place at this time may have emboldened Doyle to return to the concept in two Challenger stories written in the late 1920s. In contrast to *The Land of Mist*, "When the World Screamed" (1928) and "The Disintegration Machine" (1929) constitute a return to the scientific ethos of the early Challenger stories. Both of the plots of these short stories rely upon the scientific dimension of the luminiferous ether in a manner not dissimilar to the way it was employed in *The Poison Belt*. The first of these stories, "When the World Screamed" has garnered some recent attention from scholars interested in ecocritical approaches because its conceptualization of the Earth as a living organism anticipates the Gaia hypothesis.⁹ In describing the ecosystem the Earth inhabits, Professor Challenger claims that it gains nourishment from the ether, much as a sea urchin does as it moves through the ocean. Challenger explains this concept to Peerless Jones, the engineer whom he is contracting to dig through the Earth's crust, thusly: "The earth browses upon a circular path in the fields of space, and as it moves the ether is continually pouring through it and providing its vitality. Quite a flock of other little world-echini are doing the same thing, Venus, Mars, and the rest, each with its own field for grazing" ("When the World Screamed" 428-29). In choosing a sea urchin as his model for a living Earth, Challenger is modifying the same oceanic metaphor he employed in *The Poison Belt*. Once again, the ether moves of its own accord, but instead of carrying it along like a cork in the ocean, it flows through the Earth. The source of the "vitality" that it is providing is unclear, but the oceanic metaphor renders it almost as some kind of invisible interstellar plankton. What this description strongly implies is that, as in the previous novels, the etheric world has a strong effect on the material world; in fact the entirety of the material world depends upon the etheric medium for its sustenance. This notion aligns the scientific basis of "When the World Screamed" with Doyle's more Spiritualist iterations of the etheric concept, such as in *The Land of Mist*.

"The Disintegration Machine" applies the etheric concept in a somewhat different manner. The titular device has been constructed by the nefarious Theodore Nemor, who has found a way to make matter disappear and then reconstitute itself. In explaining this concept to Challenger, who has arrived with Malone at Nemor's laboratory to investigate his claims, Nemor says that his machine can reconstitute matter because the universe possesses an "invisible framework," which causes "every brick [to fly] into its true place" ("The Disintegration Machine" 414). To further explain the concepts that govern his machine, he indicates that its effect merely recreates what already takes place in certain paranormal practices:

There is another case which I would impress upon you, gentlemen, and which may help you to grasp the idea. You have heard both in Oriental magic and in Western occultism of the phenomenon of the apport when some object is suddenly brought from a distance and appears in a new place. How can such a thing be done save by the loosening of the molecules, their conveyance upon an etheric wave, and their reassembling, each exactly in its own place, drawn together by some irresistible law? (414)

In imputing this property to the ether, Doyle is of course drawing on his own knowledge of supernatural belief, but there was also scientific speculation about movement through the ether that provided a possible paradigm for Nemor's machine. In his *Ether and Reality*, published just four years before "The Disintegration Machine," Oliver Lodge suggests that there could be moving pulses in the ether, much like knots that can move along a rope (94). As Michael Whitworth points out, this idea is essentially a restatement of a speculation that Joseph Larmor had made years before (162). While Nemor's machine does not transport individuals through space in precisely this manner, it does cause matter to disappear into some invisible etheric space and then reconstitute itself. Both Malone and Challenger briefly spend time in this machine as unconstituted atoms, before being reassembled. In Malone's perception, it creates "a mist before [his] eyes," during the time when he was being conveyed through the ether ("The Disintegration Machine" 415). Likewise, when Nemor disappears at the end of the story, all that remains is "a slight oleaginous mist" (419). Both these descriptions align the story of the Spiritualism-influenced version of the ether in *The Land of Mist*, indicating that once again Doyle is imagining an interstice between the physical world and etheric space.

This alignment may perhaps modify the reader's views of the conclusion of "The Disintegration Machine," in which Challenger tricks Nemor into using the machine, and then decides not to reconstitute him, explaining that "the first duty of the law-abiding citizen is to prevent murder" (419). Most readers have seen this moment as cold-blooded murder in its own right; for instance, Michael Dirda considers Challenger's justification to possess "the jejune morality of the first strike.... One can almost hear the sanctimonious whisper, 'The end justifies the means'" (47). At the very least, Challenger's decision might seem out of character for a man whom Doyle has always rendered as possessing an ethical core beneath his misanthropic exterior. However, if the invisible ether of "The Disintegration Machine" is the same as that in *The Land of Mist* then perhaps this is not truly murder after all. The story was written during Doyle's last years, a time when he was preparing for his own death, which he perceived less as an ending than as a transformation. In "The Disintegration Machine," the experience of disintegration is most frequently described not in terms of death, but rather as some sort of brief voyage into the non-corporeal universe: an "excursion into the cosmos," as Nemor characterizes it (418). Suspended in the ether, Nemor has merely been prematurely rendered to that etheric space, so that he can no longer be a threat to the established political order.

Aside from the presence of Challenger and Malone, "The Disintegration Machine" seems at first to possess relatively little in common with *The Land of Mist*. The former is a relatively straightforward short work of science fiction, while the latter is a religious polemic barely concealed as a novel. However, what links these texts is the presence of an etheric medium that is coexistent with the physical universe

and that enables various potential modes of communication and travel. Likewise, the other Challenger stories after *The Lost World* rely upon the ether: the titular region of *The Poison Belt* is merely a toxic province of the "land of mist" described in the later novel, a larger region from which the living Earth of "When the World Screamed" gains its sustenance. Connections such as this one between these four stories suggest that Doyle's use of the ether was not simply a matter of convenience. Likewise, we should not think of the ether just as a manifestation of his beliefs about Spiritualism, heartfelt and earnest though those beliefs apparently were; after all, *The Poison Belt* predates Doyle's conversion to Spiritualism. Rather, the etheric hypothesis provides the scientific and epistemological foundation for each of these four stories, one that renders them as linked narratives in a coherently conceived universe. This universe is transformed from the impersonal, uncaring cosmos that was gradually being revealed by modern science to one that is altogether more congenial to the aspirations of humanity. The existence of the ether means that there is always presence rather than absence, always something rather than nothing. In this way, the ether is the marker of an optimistic cosmos, one that leaves room for both Spiritualism and rationality.

This notion is compatible with Doyle's oeuvre more generally. In the Sherlock Holmes stories, Holmes takes chaos and uncertainty of a crime scene and, using empiricist principles, transforms that chaos into order and meaning. Likewise, in the Challenger stories, voids are always meant to be filled by empirical discovery: the blank spaces on the map of South America are completed by Challenger's explorations in *The Lost World*, and the blank space after death is revealed to be not so empty after all in *The Land of Mist*. Essentially, Holmes's solutions and Challenger's discoveries are restorations of order; both men reveal the logic of the universe that previously was either invisible or indecipherable. An etheric universe, in which there is an underlying invisible order and structure, is the ideal environment for this sort of operation.

There is another dimension of Doyle's worldview that is compatible with the luminiferous ether: Doyle's investment in a masculine ideal. Much of Doyle's earlier fiction celebrates ethical behavior that was rooted in masculine principles, and indeed the epigraph of *The Lost World* is dedicated to "the boy who's half a man, / Or the man who's half a boy." Such sentiments might seem incompatible with the Spiritualist yearnings of Doyle's latter years. However, in arguing for an integrated perspective on Doyle's worldview, Diane Barsham claims that his later Spiritualism is a "continuation ... by other means, [rather] than a repudiation," of the rugged masculinity of his earlier writings (242). In the context of Barsham's argument, the ether provides the ideal metaphorical environment for a masculine ethos; it exemplifies presence and abhors emptiness. The etheric hypothesis is, to use Jacques Derrida's term, phallogocentric, in that it provides a describable underlying cosmic order for the bold manly empiricist to explore and in doing so rejects notions of a feminized void.

Such a reading of the presence of the ether in the Challenger corpus forges a connection between the scientific optimism of *The Lost World* and the spiritual yearnings of *The Land of Mist*. It provides the connective tissue between Professor Challenger's faith in rational science to tell us something about the physical world, and Doyle's desire for a metaphysical reality beyond it. And by employing the etheric hypothesis in this way, Doyle forges another kind of connection. Always characterized as the leftover Victorian, a paragon of the values of a distant century, Doyle is in a sense performing a move more characteristic of modernist artists of the early twentieth century, albeit by employing a nineteenth-century episteme. In turning

to the ether as a source of presence and order in a world of emptiness and fragmentation, Doyle is affecting his own version of the modernist search for alternative centers of meaning. But while the modernists were leery and halting in their respective searches, Doyle was characteristically full-throttled. The representations of the etheric hypothesis in the Challenger stories constitutes Doyle's attempt to achieve a modern version of the synthesis of faith and reason so earnestly sought by medieval scholastic philosophers. Doyle had faith in abundance, but it is his tragedy that the science that comprised the other half of that synthesis was rendered obsolete by the discoveries of twentieth-century physics.

Notes

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1. Marina Warner quotes Logie Barrow as saying that, after the posthumous publication of Newton's ideas on ether in 1744, "all significant British electricians [i.e. physicists] postulated a special electrical matter identical with, or similar to, the springy, subtle, universal Newtonian aether" (Warner 88).

2. Michael Whitworth points out that Einstein's objection to etheric theory was as much aesthetic as it was scientific, and that relativity appealed as much for its intellectual beauty as any other quality (131).

3. Goldberg attributes this unity of opinion to the conformity generated by the mathematics and physical science programs at Cambridge (236-40). José Sánchez-Ron differs with this conclusion, and argues that belief in the etheric hypothesis among the British scientific community of the early twentieth century was not as monolithic as Goldberg suggests (27).

4. Doyle's later very public conversion to Spiritualism would complicate that view considerably. Andrew Lycett argues that the rationalist and spiritual strains in Doyle's worldview were intertwined from early in his career ("The Strange Case" 141).

5. In the 2 October article in the *Times*, Georg Friedrich Nicolai mentions Einstein's role as a co-signatory of the pacifist manifesto *Aufruf an die Europäer* (6).

6. Ronny Desmet pushes back against the notion that relativity theory completely eliminated the need for a luminiferous ether by saying that Einstein's general theory of relativity allowed him to reconceptualize the notion of the ether (2).

7. According to Lycett, Doyle completed *The Land of Mist* on 24 February, 1925 (*The Man Who Created Sherlock Holmes* 432).

8. Accounts written by scientists and philosophers, rather than by journalists, were considerably more sceptical. For instance, writing in the monthly magazine the *Nineteenth Century and After*, Herbert Wildon Carr cast doubt on the value of Miller's experiments, even as he conceded their accuracy. Carr writes that the ether suggested by Miller's experiments is a meaningless concept: "an ether which can be caught up and dragged by a moving mass is not a real ether" (566).

9. Cedric Watts briefly mentions this connection in his intro to the Wordsworth Classics edition of *The Lost World and Other Stories*. Jana Nittel discusses this connection in greater detail (43-44). In another ecocritical reading of "When the World Screamed," Ingrid-Charlotte Wolter argues that the story "questions the relationship between human beings ... and the planet we are born on" (263).

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