Literature, Parasitism, and Science

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The Untold Worms of Stoker, Stevenson, and Doyle

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For
Yavar Abbas

the Satyajit Ray of Indian documentary filmmakers

All sufferers shall be physicians to me!

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Part III: Helices (Doyle)

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INTRODUCTION

A COLOSSAL TRIBUTARY

> Art in the blood is liable to take the strangest forms.
> Arthur Conan Doyle, "The Greek Interpreter," 193

> "Not so much about worms," said Sergeant Lumley. "You oughter know better than to talk about worms when a man's eating 'is breakfuss. It's enough to take anyone's appetite away."
> Dorothy L. Sayers, *Murder Must Advertise*, 278

> It installed itself cunningly, little by little; I felt a little strange, a little awkward, and that was all. Once it was established, it didn't move anymore, it lay low and I was able to persuade myself that there was nothing wrong with me, that it was a false alarm. And now it has started blossoming.
> Jean-Paul Sartre, *Nausea*, 13

This interdisciplinary monograph concerns parasitic worms, their ability to mold creative imaginations, and the literature that results from these vermicular formations. The representatives of these inscriptions are Bram Stoker (1847–1912), Robert Louis Stevenson (1850–94), and Arthur Conan Doyle (1859–1930), three of the most prominent authors of the long nineteenth century. This literary period comes under the spotlight because science was in transition and parasitology became a contested discourse both in and beyond the scientific realm. In the hitherto untold cases of Stoker and Stevenson, the parasitic worms are helminths, the epidemiological agents of helminthiasis and hydatidosis. In the hitherto untold case of Doyle, the wormlike parasites are spirochetes, the epidemiological agents of syphilis. As a means of interdisciplinary contextualization, the prescript and postscript to these fascinating cases concern Charles Darwin (1809–82), whose *Narrative of the Surveying Voyages of his Majesty's Ships* Adventure *and* Beagle *between the Years*

1826 and 1836 (1839) and *The Formation of Vegetable Mould through the Action of Worms, with Observations of Their Habits* (1881) bookend the main discussion.

In his *Narrative*, Darwin recalls entering a forest, while exploring the countryside inland of Rio de Janeiro in April 1832, and being struck by the beauty of certain ectophytes (external parasites of plants). "The trees were very lofty, and remarkable, compared to those of Europe, from the whiteness of their trunks. I see by my note-book, 'wonderful and beautiful, flowering parasites,' invariably struck me as the most novel object in these grand scenes" (3:24). Darwin draws withal the following comparison in June 1834, while the *Beagle* lay in Kelly Harbour, Tierra del Fuego. "If we compare [this] situation with countries in the northern hemisphere, the corresponding parallel crosses the Alps of Switzerland. Or we may state the case stronger, by saying that glaciers here descend to the sea within less than nine degrees of latitude, from where palms grow, less than two and a half from arborescent grasses, and (looking to the westward in the same hemisphere) less than two from orchideous parasites, and within a single degree of tree-ferns!" (3:285).

Ectozoa (external parasites of animals) were of some interest to Darwin too. He noted sightings of ectozoa during his time on the *Beagle*, while exploring (February 1832) St. Paul's Rocks, which lie in the Atlantic Ocean, some six hundred miles off the coast of Brazil, but did not commit these observations to print until the second edition of his *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of* H.M.S. Beagle *Round the World* (1845).[1] "We found on St. Paul's only two kinds of birds—the booby and the noddy." Their habitat is spartan. "Not a single plant, not even a lichen, grows on this islet." Floral scarcity has prevented faunal diversity. Apart from spiders, beetles, and woodlice, Darwin notes only two other species: "a fly (Olfersia) living on the booby, and a tick which must have come here as a parasite on the birds" (10). Darwin also emends in the second edition of his *Journal* the account of his explorations around Rio de Janeiro of April 1832. "Every path in the forest is barricaded with the strong yellow web of a species, belonging to the same division with the Epeira clavipes of Fabricius," with a previously unheralded inhabitant of these webs being of particular note. "A small and pretty kind of spider, with very long fore-legs, and which appears to belong to an undescribed genus, lives as a parasite on almost every one of these webs. I suppose it is too insignificant to be noticed by the great Epeira, and is therefore allowed

[1] St. Paul's Rocks are now called the Saint Peter and Saint Paul Archipelago.

to prey on the minute insects, which, adhering to the lines, would, otherwise be wasted" (36). Then, in the definitive sixth edition of *The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (1872), Darwin again cites the parasitic alongside the avian when discussing the phenomenon of coevolution, which he defines as the modification "of one organic being to another being." The resultant coadaptations are seen "most plainly in the woodpecker and the mistletoe; and only a little less plainly in the humblest parasite which clings to the hairs of a quadruped or feathers of a bird" (48).

Just as the passing nature of Darwin's interest in ectozoa was common among nineteenth-century naturalists, so was his reticence concerning entozoa (internal parasites of animals), with his overriding approaches to the parasitological being botanical and zoological rather than medical. *The Descent of Man and Selection in Relation to Sex* (1871), as Anne-Julia Zwierlein emphasizes in "From Parasitology to Parapsychology: Parasites in Nineteenth-Century Science and Literature" (2005), "very occasionally" (158) provides the exceptions to this rule. "Man is liable to receive from the lower animals, and to communicate to them," as Darwin contends in one such instance, "certain diseases as hydrophobia, variola, the glanders, etc." (1:11). In an emendation to the first edition that shows his awareness of straying into unfamiliar medical territory, Darwin defers in the next edition of *The Descent* (1874) to the expert testimony of physician and botanist Dr. W. Lauder Lindsay (1829–80) to underpin his earlier contention. "Man is liable to receive from the lower animals, and to communicate to them, certain diseases, as hydrophobia, variola, the glanders, syphilis, cholera, herpes, etc." (7), writes Darwin, acknowledging how "Lindsay has treated this subject at some length in the 'Journal of Mental Science,' July 1871; and in the 'Edinburgh Veterinary Review,' July 1858" (7n).

In *On the Transmission of Diseases between Man and the Lower Animals* (1858), his short treatise derived from his *Edinburgh Veterinary Review* article of July 1858, Lindsay concludes not only "that certain diseases of the lower animals are transmissible [. . .] to man," but also "that certain human diseases are transmissible [. . .] to various of the lower animals" (7). He does not specify parasites by name, but his conviction about "the important results likely to accrue from experimentation on the lower animals, in regard to our knowledge of such diseases as cholera, syphilis, small-pox, erysipelas, dysentery, &c." (15), implicitly touches on the parasitic, and Lindsay's tacit contribution to all editions of Darwin's *Descent* is plain to see. In "The Physiology of Mind in the Lower

Animals," Lindsay's article from July 1871 for the *Journal of Mental Science*, he argues that a mental continuity exists across animal species, and that humans owe suffering animals more than a modicum of natural sympathy. An anonymous reviewer of Lindsay's two-part *Mind in the Lower Animals in Health and Disease* (1879), volumes that draw heavily on his journal articles, would allege that "veracity seems to have been sacrificed, in some cases, to a spirit of romance" (280). Lindsay always retained his belief, however, that experiments on animals, especially on those that harbor or spread disease, could enhance the science of epidemiology.[2] "Experimental investigation on the lower animals," he observes in "The Physiology of Mind in the Lower Animals," "has already been productive of contributions of the highest value to our knowledge of diseased or disordered function in Man" (26). As he remarks in *Mind in the Lower Animals in Health and Disease*, "many experiments are performed for man by nature, by disease or injury in himself or other animals," although "their value or importance is seldom evident, unless to the accomplished or experienced physiologist, pathologist, or naturalist." Fortunately, "in the hands of such men," believes Lindsay, "these experiments of nature's may be reproduced artificially—by imitation; so that the lessons they are calculated to teach may be duly learned and applied. In other words, the results of human experiment may be made, when necessary or desirable, to imitate those of disease or injury; or the diseases or injuries themselves may be deliberately produced" (1:36).

Darwin draws on Lindsay to confirm his belief in the parasitic omnipresence that blights humankind. "It is note-worthy, that in the cases of herpes, scabies, and anders, the material or medium of communicating the disease is something tangible and visible," asserts Lindsay in *On the Transmission of Diseases between Man and the Lower Animals*, "something more substantial and satisfactory than an undefined volatile poison, as in cholera. In herpes we have the sporules of a fungus, in scabies the ova of an insect, and in anders, probably, as in glanders and hydrophobia, contact with diseased secretions or excretions—the pus of the pimples or pustules, which, in a sense, constitute the disease. This class of cases is, therefore, distinctly separable from such affections as cholera, where the germ of the disease is intangible, invisible, inappreciable, except in its effects" (13). Darwin's conclusion in the first (and subsequent) editions of *The Descent of Man* is more sweeping: "man is infested with internal parasites, sometimes causing fatal effects, and is plagued by

[2] The reviewer was probably either Henry Maudsley or John Sibbald, who edited the volume of the *Journal of Mental Science* in which Lindsay's "Physiology of Mind in the Lower Animals" had appeared.

external parasites, all of which belong to the same genera or families as those infesting other mammals" (1:12). Having established this medical perspective on parasitism, Darwin turns to anecdotal evidence later in the second edition of *The Descent* (64n)—correspondence from Sir William Denison's *Varieties of Vice-Regal Life* (1870)—to demonstrate the extreme measures taken by humans to rid themselves of potentially harmful ectozoa. Writing to Sir Roderick Murchison (3 May 1858) of Norfolk Islanders of the Pacific Ocean, Denison recounts how "the rainy weather last year tempted a tribe or family of natives from the west side of the continent to push eastward. They came across in nine months, and are said to be without *any hair*: the Commissioner of Crown Lands, who saw one of them, reported him to be absolutely without hair. It is said to be a practice with the natives, when the vermin get troublesome, to singe themselves" (1:440; emphasis original).[3]

Darwin's deference to Lindsay, his resort to anecdote, and his otherwise voluminous discourse affirmed a reticence concerning the parasites of humans, and especially toward their entozoa, which almost silently and anxiously spoke of their ubiquity. Darwin was "the most celebrated naturalist of our day," as Lindsay remarks in *Mind in the Lower Animals in Health and Disease* (2:216), and Darwin's stature meant this reticence set a standard, becoming common (though not absolute) among his confrères. Concerning human entozoa, Darwin's deference to other learned sources, his reliance on anecdotal evidence, and his otherwise extensive discourse affirmed his aversion to the internal parasites of humans, an aversion that silently and anxiously spoke of their ubiquity. Some notable physicians, however, were less reserved. They repeatedly emphasized not only the omnipresent, but also the recursive nature of parasitism. "It has been said," observes English physician John Elliotson (1791–1868) in *Lectures on the Theory and Practice of Medicine: Delivered at the London University* (1833), "that nature has provided every animal with other animals to prey upon it, and make a habitation of it. It is even said that a flea has its flea, and if so, I suppose, the latter would have its flea's flea" (688–89). Robley Dunglison (1798–1869), an Anglo-American medical contemporary from the University of Virginia, found no reason to question Elliotson's judgment: "all animals and vegetables, and every part of them," he agrees in *The Practice of Medicine: A Treatise on Special Pathology and Therapeutics* (1842), "are

[3] The Commissioner of Crown Land was cognisant of this practice," but in this instance, "affirmed that the man had not been singed," sporting "merely a little down instead of hair" (1:440).

liable to be infested by parasites" (1:187).[4] The unlimited nature of parasitic recursion is a moot point. "How far this goes," remarks Elliotson, "I cannot say" (689). More to the point, as Elliotson, Dunglison, and the majority of their confrères recognized, was the distressing fact that invermination or helminthiasis—the presence en masse of intestinal parasitic worms—was common among children on both sides of the Atlantic.

Hence, while addressing British Association for the Advancement of Science in 1862, as he reports in *Entozoa: An Introduction to the Study of Helminthology* (1864), Thomas Spencer Cobbold (1828–86) argued "in favour of a more extended prosecution of experimental research in the department of human helminthology" (145). Human healthcare demanded this investigatory advance. "On all hands," asserts Cobbold, "it is conceded that the subject of Entozoology has an important bearing on questions affecting the maintenance of public health" (vii). For, "as man is infested by a great variety of internal parasites, and some of them prove exceedingly troublesome," so "it is evident that a large amount of practical good would ensue if we were more perfectly informed respecting the origin and economy of these creatures" (145). Cobbold had begun his researches at the Zoological Society of London. "He spent 1857–1860," as Abigail Woods chronicles, "attempting to harvest and classify parasites found in the bodies of their zoo animal hosts" (50), knowing that enhanced parasitological knowledge would benefit withal the subjects of animal husbandry and domestication. "For not only are our personal interests directly affected by [the] intrusion" of parasites, he avers in *Entozoa*, "but we also suffer indirectly from the injury and destruction they occasion amongst our domesticated animals" (145). Thanks to Cobbold's exhortation, and his tireless research, the subject started to flourish in Britain, and within two years, he could boast: "no department of Natural History science has attracted more attention than that of the study of internal parasites" (3).

Despite this advance, and effectively retreating from the parasitic worms of Cobbold to the nonparasitic annelids of *The Formation of*

[4] Elliotson and Dunglison were aware of each other's work, and concerning "summer bronchitis," the latter specifically cites the former (1:291). "The following letters from intelligent individuals, themselves sufferers under the malady, will best exhibit its course and character," writes Dunglison in *The Practice of Medicine*. "The first is from a practitioner of Bristol, England, to Dr. Elliotson. 'I knew nothing,' he remarks, 'about hay-fever as any definite disease; but your description of it is, with little exception, a very accurate description of what I suffered, every June, for several years'" (1:291).

Vegetable Mould through the Action of Worms, Darwin never discussed helminths in print. Indeed, for most of the nineteenth century, as Janelle A. Schwartz traces in *Worm Work* (2012), "worms were recognized as much for their literal ability to break down and cast up organic structures as for their figurative utility in the disruption of man-made systems like the classification of organisms and conventional aesthetic judgments" (xv). The appeal of terrestrial annelids (earthworms) to the artistic imagination comes "in part," as Schwartz explains, from "their capacity to decompose dead matter and so continue to represent the cycle of decay and generation intrinsic to imagining nature as an organic whole" (xxiv). In contrast, helminths parasitize living hosts, and most do so without causing fatal consequences. Unlike earthworms that ingest, break down, and cast up organic structures, their parasitic counterparts survive within their hosts through a combination of intrusion, expropriation, and intervention. The entozoa of humans mark their systemic presence through physiological interference that can seed their hosts with all manner of psychological complements. Thus, while terrestrial annelids "expose the potential for creating or actualizing—as opposed to merely discovering—anomaly in nature" (Schwartz xxiv), helminths and other entozoa expose the potential for discovering the presence of coevolution, questioning at once human narcissism and human structural desires, exposing the potential for challenging the structures and creations of the artistic imagination.

Darwin's contemporary Thomas Henry Huxley (1825–95) touches on the helminthic blow to narcissism in "The Conditions of Existence as Affecting the Perpetuation of Living Beings," his fifth of six lectures *On Our Knowledge of the Causes of the Phenomena of Organic Nature* (1863), which he originally delivered in London at the Museum of Practical Geology. In this lecture, Huxley discusses the fundamental conditions of existence, which he divides between the inorganic and the organic. Inorganic conditions furnish climate, station, and food. Huxley "mean[s] food in the broadest sense, the supply of the materials necessary to the existence of an organic being; in the case of a plant the inorganic matters, such as carbonic acid, water, ammonia, and the earthy salts or salines; in the case of the animal the inorganic and organic matters" (120). As well as food, organic conditions furnish "the conditions which depend upon the state of the rest of the organic creation, upon the number and kind of living beings, with which an animal is surrounded." Huxley divides this living environment between beings that "operate as *opponents*" and those that "operate as *helpers* to any given organic creature." He further subdivides both opponents and helpers into two kinds. In the first class, "there are the *indirect opponents*, which are what

we may call *rivals*; and there are the *direct opponents*, those which strive to destroy the creature; and these we call *enemies*." The second class "may also be regarded as direct and indirect: in the case of a carnivorous animal, for example, a particular herbaceous plant may in multiplying be an indirect helper, by enabling the herbivora on which the carnivore preys to get more food, and thus to nourish the carnivore more abundantly." Huxley deems parasites the best illustrators of direct help. The particular example he chooses is the tapeworm. "The tape-worm exists in the human intestines, so that the fewer there are of men the fewer there will be of tape-worms, other things being alike" (121; emphasis original). The direct helper is not the tapeworm, but its host; this conclusion admittedly discomforts Huxley: "it is a *humiliating* reflection, perhaps, that we may be classed as direct helpers to the tape-worm, but the fact is so: we can all see that if there were no men there would be no tape-worms" (121–22; emphasis added).

The helminthic blow to narcissism follows in the wake of what Jacques Derrida in *Specters of Marx* calls "the *biological* trauma" constituted by "the animal descent of man discovered by Darwin" (97). Huxley, as "Darwin's Bulldog" openly admitted this supposed humiliation, but his "Master" remained practically mute on the subject, and Darwin's reticence helped fuel Swiss-American biologist Louis Agassiz's (1807–73) misguided criticism of the evolutionary paradigm. "Darwin's fundamental idea," writes Agassiz in his "Review of *On the Origin of Species*" (July 1860), "is that species, genera, families, orders, classes, and any other kind of more or less comprehensive divisions among animals do not exist at all, and are altogether artificial, differing from one another only in degree, all having originated from a successive differentiation of a primordial organic form, undergoing successively such changes as would at first produce a variety of species" (142–43). In denying this concept, Agassiz argues that "species are based upon relations and proportions that exclude, as much as all the preceding distinctions, the idea of a common descent" (143). Agassiz professed to having expended much effort on "a consideration of individuality and of the extent and importance of specific differences among the Acalephs" (142), or aquatic invertebrates, and wished his contemporaries of an evolutionary persuasion would educate themselves by undertaking similar work:

> Would the supporters of the fanciful theories lately propounded, only extend their studies a little beyond the range of domesticated animals, would they investigate the alternate generations of the Acalephs, the extraordinary modes of development of the Helminth, the reproduction of the Salpae, etc., etc., they would soon learn that there are, in the world, far

> more astonishing phenomena, strictly circumscribed between the natural limits of unvarying species, than the slight differences produced by the intervention of men, among domesticated animals, and perhaps, cease to be so confident as they seem to be, that these differences are trustworthy indications of the variability of species. (152–53)[5]

Despite Agassiz's exhortation, the paradigm shift produced by Darwin's evolutionary concept was already undercutting human vanity, with the notion of coevolution furthering that transition in accounting for parasitism. Darwin left the open announcement of the helminthic blow to narcissism to others, and Huxley, as one of the first to do so, acknowledged that parasites could traverse, ignore, or evade structural limits (and common perceptions of those limits). "Whereas the lower organisms disturbed epistemological concerns of eighteenth-century natural history," writes Schwartz of both nonparasitic and parasitic worms, "the vermiforms' ability to cross and elide boundaries provides an extended metaphor of mutability on which to build Romantic literary discourse" (xxv). By the last quarter of the next century, scientific recognition of the coevolutionary success of entozoa was beginning, in a small but noteworthy manner, to disturb ingrained social structures, entrenched opinions, and inculcated assumptions in both Britain and the British Empire. The burgeoning of homegrown parasitological discourse raised questions of identification and preeminence: who was the host, who was the parasite, and which one ultimately exercised control?

Hence, while parasitologists were trying to assimilate the organisms they studied into the wider cultural landscape, the gatekeepers to the lay community were desperate to overcome this attempt. One of these self-appointed sentinels, a discursive controller from the arts, John Ruskin (1819–1900), fought to maintain the British taboo on parasitology. He wanted to prevent the disciplinary penetration of the boundaries of propriety. In consequence, human invermination remained a taboo in the

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[5] Agassiz supported the divine paradigm. "The fact is that throughout all geological times each period is characterized by definite specific types, belonging to definite genera, and these to definite families, referable to definite orders, constituting definite classes and definite branches, built upon definite plans. Until the facts of Nature are shown to have been mistaken by those who have collected them, and that they have a different meaning from that now generally assigned to them, I shall therefore consider the transmutation theory as a scientific mistake, untrue in its facts, unscientific in its method, and mischievous in its tendency" ("Review" 154). Despite increasing support to the contrary from geological, paleontological, and anatomical sources, Agassiz did not waver in this consideration.

wider discursive community, and the resultant psychic outfall could not help but find literary expression. "If we are to understand how scientific ideas were woven into the texture of nineteenth-century cultural life," write Geoffrey Cantor and Sally Shuttleworth, "we need to examine how scientific language and concepts permeated the entire range of periodical content, from glancing asides to elaborate fictional conceits" (4). Extending this advice to the fiction of the period is warranted. As Zwierlein argues in her Introduction to *Unmapped Countries. Biological Visions in Nineteenth-Century Literature and Culture* (2005), "focusing on the exchange between biology, literature and culture in the nineteenth century" is important, in part, because this was the "period when the distinction between 'professional science' and 'cultural science' was beginning to take shape" (4). Parasitology widened yet bridged the resulting discursive gap.

Helminthology became one of the significant subdisciplines of parasitology. In commending Cobbold's foundation of this significance, Lindsay summed up what was at helminthological stake, especially the health implications of invermination. "The influence of *entozoa* as a source of cerebral disturbance, including insanity, has been pointed out in this country by Cobbold," he remarks in *Mind in the Lower Animals in Health and Disease*.

> The possible presence of intestinal parasitic worms, of nematode entozoa, as a cause of conjoint mental and physical disorder, is a subject deserving to be kept constantly in mind by veterinarians; for there can be no doubt that the effects of their presence are frequently mistaken for rabies or other supposed incurable forms of madness or distemper, and the lives of valuable animals—such as the horse, ox, and dog—are sacrificed to this professional error. According to our first, and indeed our only, British authority on the entozoic diseases of man and other animals, worms in the lower animals produce the following group of symptoms:—General cerebral disturbance; apparent bewilderment; uncertainty of movement; convulsive twitchings; deafness; dumbness; amaurosis; mental imbecility; mania; and paralysis—all of which symptoms may be dissipated, the seemingly serious disease cured, by the simple remedy of an aperient. On the other hand, however, worms in the dog may produce no symptoms at all, or symptoms that are as sudden in their incidence as fatal in their issue. (2:215)

Although clinicians during the early decades of the twentieth century reverted to dismissing the dangers of invermination, recent global studies have corrected this lapse. "Human diseases caused by animal parasites remain, on a worldwide basis, among the principal causes of morbidity and mortality" (ix), avers William Trager in his Foreword to *Parasitic*

Diseases (1982), because despite advances in treatments, these organisms are superbly adapted to their environments and continue to avoid global eradication. Even "parasitic helminths (worms belonging to several metazoan phyla)," as Richard E. Davis, Angelica Parra, *et al* relate in *Proceedings of the National Academy of Sciences of the United States of America* (1999), "cause considerable morbidity and mortality in humans. They are an important veterinary problem, and they result in significant economic losses in animal grazing and agriculture" (8687). "There is now wide agreement in the clinical and biomedical science communities," assert D. W. T. Crompton and Lorenzo Savioli in *Handbook of Helminthiasis for Public Health* (2006), "that helminthiasis has greater public health significance than was previously thought" (3); untreated helminthiasis results in "serious, chronic, life-threatening, and invariably fatal illnesses" (59); and "economically impoverished" (3) communities are most at risk.

The attitude of early twentieth-century clinicians also accounts in part for an attendant reticence among scholars of medical history. "There is no book on the history of parasitology in English," wrote William Derek Foster in *A History of Parasitology* (1965), "and I am not aware of one in any other language" (v). Foster set out to remedy that lack, but despite his intention and the thoroughness of his monograph, the taboo on talking about the parasitic infestation of humans apparently remains in force. Michel Serres addressed this silence from a blend of philosophical and poststructural perspectives in *The Parasite* (1980). The facilitating taboo "has to do with history, the history of science in particular: whoever belongs to the system perceives noises less and represses them more, the more he is a functioning part of the system" (68); as such, as Zwierlein remarks, "there are no sustained attempts to link nineteenth century literature with contemporary parasitological studies" (157). Possibly not the most edifying of subjects, parasitology remains an important discourse in epidemiological terms, literature owes much to parasitic cases, and the taboo surrounding the parasites of humans needs breaking for good. Schwartz's *Worm Work* has recently promoted the worm as an archetype through which to read literature, but that promotion concentrates on earthworms rather than parasitic worms, and does so by focusing on the period from 1740 to 1820, as *Recasting Romanticism*, the subtitle of her book, announces. The present volume breaks that silence in linking late nineteenth- and early twentieth-century literature with contemporary parasitological studies. This sustained process unmasks hidden, but telling literary delineations of invermination in the works of three authors environed by and alerted to the parasitic, the discourses and practices of

medicine, and the parasitological: Bram Stoker, Robert Louis Stevenson, and Arthur Conan Doyle.

The era across which these authors wrote was a transitional period characterized by what Max Saunders calls an "explosion of literary activity where the borders between autobiography, biography, and fiction intersect" (17). The intersectional endeavors of Stoker, Stevenson, and Doyle reveal a common but generally unseen thread, an invisible suture that helped to maintain an evolving literature that recognized, negotiated, and informed epistemological change. That common thread, which denies a sharp break between Victorianism and modernism, is parasitical. Toward the end of this transitional period, in *The Revolutionary Simpleton*, the first volume of *Time and Western Man* (1927), Wyndam Lewis would criticize Ezra Pound for his parasitism. "Ezra is a crowd; a little crowd. People are seen by him only as types. There is the 'museum official,' the 'norman cocotte,' and so on. *By himself* he would seem to have neither any convictions nor eyes in his head. There is nothing he intuits well, certainly never originally," states Lewis. "Yet when he can get into the skin of somebody else, of power or renown, a Propertius or an Arnaut Daniel, he becomes a lion or a lynx on the spot. This sort of parasitism is with him phenomenal" (86; emphasis original). Lewis figures Pound as an eyeless parasitic worm (or helminth); "the hosts of this great intellectual parasite, then, are legion" (86); thus, "it is obvious how unfit he is to deal with living material at all" (87). According to Harold Bloom, the anxiety of influence dominates the creative writer, who wishes to be original, but cannot throw off, let alone dispense with, masterly past practice. What results is "the melancholy of the creative mind's desperate insistence upon priority" (13). Most artistic productions, when considered as the descendants of past masters, are parasitic. "Real production," as Serres comments in *The Parasite*, "is undoubtedly rare, for it attracts parasites that immediately make it something common and banal. Real production is unexpected and improbable; it overflows with information and is always immediately parasited" (4). Looking from a biological perspective, however, as the present volume does, parasites are fit to deal with living material, and as the following pages evince, creative writers are fit to deal with parasites.

"One danger in assessing the relationship between literary and scientific contexts," as Andrew Smith makes clear, "is that they could become crudely mapped on to each other" (5). This superimposition produces what Robert Mighall in *A Geography of Victorian Gothic Fiction: Mapping History's Nightmare* (1999) calls "a monolithic cultural 'context,'" a rigid, all consuming construct that in Mighall's estimation "suppresses" the

"important differences" between "different professional and epistemological agendas and obligations" (167). Bearing this danger in mind, the intention of the present volume is to chart the evolving scientific context of the authors' time in a prolonged meditation that brings forward enough evidence, both historical and textual, to identify, trace, and analyze the parasitic stimulation and penetration of fictional production. To that end, this book dedicates one part to each author, his relationship to the parasitic, and the results of that association, analyzing from a hitherto unrecognized angle canonical works of persistent cultural influence with the precision and dedication that that significance demands. *Literature, Parasitism, and Science: The Untold Worms of Stoker, Stevenson, and Doyle* hereby brings to light the contesting professional and epistemological agendas and obligations of the period in which Stoker, Stevenson, and Doyle lived and worked.

Part I ("Helminths (Stoker)") examines Stoker's canon, drawing on Cobbold's explicit challenge to the nineteenth-century taboo on parasitology in England, Ruskin's wish to maintain that silence, and the Stoker family's intriguing links to the triune of biological contagions that troubled the Ireland of their upbringing: the cholera epidemic (1832–33) of Charlotte Stoker's youth, the potato blight of the Great Famine (1845–52) during which she delivered Bram, and the invermination that environed nineteenth-century Irish life. Gatekeepers to the lay community, discursive controllers from the arts, such as Ruskin, and from the sciences, such as zoologist E. Ray Lankester (1847–1929), fought for the containment of parasitology; human invermination remained, therefore, practically tabooed in the wider community. Part I investigates that silence, drawing on the discursive history of parasitology to unmask hidden, but telling literary delineations of helminthic infestation in the works of Stoker, as an author environed by and alerted to the parasitic. The resulting connections help to unearth figurations of the vermicular across his corpus from *The Primrose Path* (1875) to *The Lair of the White Worm* (1911).

The tapeworm is a particular kind of helminth, and its larval form, the hydatid, presents specific dangers. Part II ("Hydatids (Stevenson)") considers the confluence of two medical discourses, the burgeoning one of parasitology and the nascent one of psychoanalysis, charting how these two sciences exposed, identified, and treated the parasitic during the late nineteenth century. Within the context of science in transition, speculation about the reawakening of a helminthic trauma invokes the emerging scientific discourse of psychoanalysis. In his "Preface to the First Edition" (1900) of *The Interpretation of Dreams*, Sigmund Freud (1856–1939) describes himself as "a man of science" (4:xxiv), and Freud's greatest

intellectual descendant Jacques Lacan (1901–81) confirms that psychoanalysis is a science, because scientific disciplines study particular objects and the object of study in this case is the unconscious.[6] In *Literature, Parasitism, and Science*, the psychoanalytical meets the parasitological, with each discourse informing the other of the systemic noise seeded by parasitism. The system associated with the former discourse is the psyche; the system associated with the latter discourse is the body; their discursive confluence recognizes the human para-site and its inner frailties. Drawing on Stevenson's "A Chapter on Dreams" (1888), Part II illustrates how a receptive mind can exploit these weaknesses to produce works of artistic account, with Stevenson's *The Strange Case of Dr Jekyll and Mr Hyde* (1886) manifesting this expression in his treatment of the tapeworm and its larval form. This treatment owes as much to his wife Fanny's obsession with the *Lancet* as it does to Stevenson's own invermination.

The analyses of Stoker's canon in Part I and Stevenson's *The Strange Case* in Part II draw on the parasitic intimacy of helminths, but more intimate still are protozoic, or unicellular, parasites. "The novelist," complains Dr. Theodore Foster in Doyle's "A Medical Document" from *Round the Red Lamp: Being Facts and Fancies of Medical Life* (1894), "never strikes below the belt" (216), but as Part III ("Helices (Doyle)") speculates, the knowing Doyle was all too aware of the most intimate of psychopathologies, those induced by the spirochetes (or wormlike helical agents) of syphilis. Indeed, the examination that follows reveals that Sherlock Holmes investigates a number of cases, including those detailed in *A Study in Scarlet* (1887), *The Sign of Four* (1890), "The Adventure of the Speckled Band" (1892), and "The Resident Patient" (1893), which contain coded references to syphilis. A reading of the non-Holmes story "The Third Generation" (1894) then examines Doyle's explicit references to the medical effects of congenital syphilis. A psychoanalytical preamble suggests that these works express a familial fear. Biographers have usually attributed the ill health and troubling death of Doyle's father Charles Altamont Doyle (1832–93) to alcoholism, but his son's obsession with

[6] "I must ask the reader's indulgence for [any] deficiencies," remarks Freud in his "Preface to the Third Edition" (1911) of *The Interpretation of Dreams*: "they are the results and signs of the present increasingly rapid development of our science" (4:xxvii). "If psycho-analysis is to be constituted as the science of the unconscious," writes Lacan in *The Four Fundamental Concepts of Psycho-Analysis* (1973), "one must set out from the notion that the unconscious is structured like a language" (203), and this notion is one of the major departure points for Lacan's work.

syphilis, as a medical student, a qualified doctor, and a writer of fiction, suggests a different attribution: the wormlike helical agents of syphilis.

Helping to link late nineteenth- and early twentieth-century literature with contemporary parasitological studies, the present volume thus confirms Serres's prophecy from *The Parasite*: "here is a colossal tributary of our own history; we will soon be astonished that it had not been recognized earlier" (9); and that recognition ought to recast the understanding of parasitism: an involute and intense conception of parasitologically accompanied life ought to replace the uninflected notion of parasitic attack. Victorian and Edwardian authors who effectively understood the human condition, authors such as Stoker, Stevenson, and Doyle, knew better than to dismiss the unfitness of the parasitic to deal with living material. In effect, they understood the ever-presence of coevolution and the effects of coevolutionary struggle, and in the twenty-first-century parlance of sociobiology, this practice amounted to the propagation of parasitic *memes*, with the *genomes* of parasitic worms contributing at a fundamental level to the *memomes* that delineate and contextualize Lady Arabella March, Dr. Henry Jekyll and Mr. Edward Hyde, and Dr. Grimesby Roylott, memorable characters from three bodies of work replete with the (until now) untold cases of parasitic worms.[7]

Michael Wainwright, Shepperton, 2022

[7] If sociobiology posits the gene as the "truth" of biological inheritance, then the equivalent item of cultural heredity is what Richard Dawkins in *The Selfish Gene* (1976) calls the "*meme*" (192). Natural selection works by the rejection of unstable genes; survivors replicate and tend toward stability. Cultural transmission has similarly given rise to a form of evolution, but a movement that outpaces its biological counterpart by orders of magnitude. Language is the basis of this environment. If a single word, name, or phrase is sufficiently distinctive and memorable to be abstractable from its particular context, then it is one meme. Unlike genes, memes do not carry a reproductive mechanism, but the major advantage of memes over genes is their ability to survive in exogenetic forms. Books, compact discs, memory drives, and other storage media set memes free from living human brains.

PART I

HELMINTHS (STOKER)

Perhaps he had some ascarids, stomach-worms or vermes in his body. Perhaps he suffered (as is common and usual in Egypt in the confines of the Sea of Erythraea) from a puncturing of the flesh of his arms or legs by the smaller speckled guinea-worm which the Arabs call *meden*.
François Rabelais, *The Third Book of Pantagruel*, 494

CHAPTER 1

A DISCOURSE TO A VOID

> Civil dissension is a viperous worm
> That gnaws the bowels of the commonwealth.
> William Shakespeare *The First Part of King Henry VI*, 3.1.72–73

This chapter focuses on a discursive phenomenon that plagued nineteenth-century science in England: the taboo on parasitology. The discussion draws on Thomas Spencer Cobbold's (1828–86) explicit challenge to that silence, on the one hand, and John Ruskin's (1819–1900) wish to maintain that reticence, on the other hand, in order to speculate on the manner and extent of Bram Stoker's (1847–1912) parasitological embedment. To this end, the immediate discussion concerns helminths (or entozoic worms) rather than annelids (or earthworms), Erasmus Darwin (1731–1802) rather than Charles Darwin (1809–82), and eighteenth- rather than nineteenth-century parasitological discourse.[8] Erasmus Darwin's *Zoonomia; or, The Laws of Organic Life* (1794) emphasizes the fact that helminths, as a parasitic class that includes the threadworm, the roundworm, and the tapeworm, have deleterious effects on their hosts. Within ten years of Darwin's publication, Italian parasitologist and physician Valeriano Luigi Brera (1772–1840) endorsed this opinion in a pair of monographs: *Lezioni medico-pratiche sopra i principali vermi del corpo umano vivente e le così dette malattie verminose* (1802), which respects "the esteemed Darwin" (121), and *Traité des maladies vermineuses, précédé de l'histoire naturelle des vers et de leur origine dans le corps humain* (1804), which defers to "the wise reflections of Darwin" (264).[9]

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[8] "Taking the class of Worms in the widest sense," notes Swiss-American biologist Louis Agassiz in *An Essay on Classification* (1859), "it would thus embrace the Helminths, Turbellariae, and Annulata" (114). Turbellariae comprise free-living flatworms. Annulata include marine annelids, terrestrial annelids (earthworms), and leeches.

[9] Other names for threadworms include pinworms and seatworms.

Brera's expositions were the first major European works of the nineteenth century devoted to the subject of helminths. Over the next fifteen years, Swedish-born naturalist Karl Asmund Rudolphi (1771–1832) published two fundamentally important treatises of related interest: *Entozoorum*, *sive vermium intestinalium: historia naturalis* (volume 1 [1808]; volume 2 [1810]) and *Entozoorum synopsis cui accedunt mantissa duplex et indices locupletissimi* (1819). "By far the most important parasitological works of the early nineteenth century," avers William Derek Foster in *A History of Parasitology* (1965), "were those of C. A. Rudolphi" (17).[10] As "the foremost parasitologist of his day," agrees G. C. Cook in "History of Parasitology" (2003), Rudolphi "contributed the most important parasitological work[s] of the early nineteenth century" (2). Rudolphi's natural history of entozoa confirmed its author as the father of helminthology; his entozoic synopsis consolidated that status. Indeed, as Fatik Baran Mandal documents, "Rudolphi coined the word, 'Entozoa' to describe parasitic worms living inside the bodies of other animals" (139). French biologist Félix Dujardin (1801–60), whom Rudolphi's studies of entozoa greatly influenced, published the next significant volume on the subject, his own version of the natural history of helminths, *Histoire naturelle des helminthes ou vers intestinaux* (1845). Yet, as Foster observes, "of parasitological literature in English there was at this period virtually nothing" (19), excepting *A Treatise on the Nature and Cure of Intestinal Worms in the Human Body* (1829), a slim volume by Scottish surgeon, member of the Royal Medical Society of Edinburgh, and scriptural geologist William Rhind (1797–1874).

The emerging void of which Foster complains resulted from a contextually specific form of discursive demarcation. As a transpersonal language system that embodies the ideas, values, and vocabulary of a discipline (or community of knowledge), a discourse operates according to concomitant constraints, which aim to retain disciplinary links between the signifieds and signifiers of certain signs.[11] These restrictions facilitate a specific set of users. Scientific discourses exemplify such restrictions; "that is," as Michel Serres expatiates in *Malfeasance* (2008), boundary markers indicate where scientists "*reign supreme as the owner*[*s*]" of those discourses (64; emphasis original); and this well-defined possession protects against unimpeded access and unchecked intervention. Being twofold, the demarcation of English parasitology at the beginning of the

[10] Foster anglicizes Rudolphi's first name.

[11] See Derek Hook's *Foucault, Psychology and the Analytics of Power* (2007), 100–37, or Paul H. Fry's *Theory of Literature* (2012), 16–17, for a discussion of this Foucauldian understanding of discourse.

nineteenth century was exceptionally restrictive—on the one hand, Erasmus Darwin's laws of organic life had seemingly left no room for further discursive consideration; on the other hand, the subject of parasites remained muted among the English scientific community—and a taboo resulted.

"Taboo," as Mary Douglas explains, "protects the local consensus on how the world is organised" (xi). The internal, structural necessities of language make external, interrelational communication possible, but this potential facilitates semiotic contagion as well as unadulterated exchange. Social and religious prohibitions attempt to preempt discursive infection, and the attendant safeguards, which threaten dangers if not respected, relate to both physical and discursive bodies. In the first instance, "some of the dangers which follow on taboo-breaking spread harm indiscriminately on contact." In the second instance, "feared contagion extends the danger of a broken taboo to the whole community." Taboo fragments the discursively unpalatable, and where possible, imposes silence, withholding discursive accreditation from external users. Criticism is "suppressed," as Douglas concludes, "whole areas of life become unspeakable" and even "unthinkable" (xiii). Taboo shores up territorial vulnerabilities by protecting against intercorporeal and interdiscursive creep—and the parasitological void in English science after the publication of *Zoonomia* silently spoke volumes.

"A void that is not nothing," as Julia Kristeva expounds in *Powers of Horror* (1982), "indicates, within its discourse, a challenge to symbolization" (51), and orthodox science in early nineteenth-century England bridled at "foreign" ideas, or ideas deemed "dirty" in themselves, infecting an accepted discourse. This negative desire was particularly intense because entozoa and parasitology, like the social prohibitions taboos erect, concern bodily and discursive margins. Helminths, excrement, and their equivalents, such as infection, disease, and decay, "stand for the danger to identity that comes from without: the ego threatened by the non-ego, society threatened by its outside, life by death" (Kristeva 71), the host by its parasite. "The orifices of the body," as Douglas reasons, "symbolise its specially vulnerable points" (150), and helminths transgress, occupy, and irritate these physiological openings. These marginal effects had been cited in medical discourse as early as the seventh century—Alexandrian physician Paulus Aegineta (Paul of Aegina) notes how "ascarides [. . .] are a kind of intestinal worms resembling earth-worms, being formed about the extremity of the rectum and the beginning of the sphincter ani, and occasioning a great itching of the parts" (2:144)—but mainstream early nineteenth-century English science, tacitly aware that "any structure of

ideas is vulnerable at its margins" (Douglas 150), avoided discussing these bodily consequences.

Unlike the explanation of taboo offered by Sigmund Freud (1856–1939), in which public rituals are adult manifestations of infantile fantasies, an anthropological explanation of customary prohibition draws selectively on body symbolism, thereby appreciating the cultural specificity of bodily and discursive margins; as a result, anthropology posits a contextually specific, rather than a universal, response to the parasitism of humans. "In Europe in the eighteenth century," as Foster chronicles, "the presence of worms in children was regarded as beneficial by many peoples" (3), but by the following century, increasing governmental intervention in the management of public health had altered this attitude. Meanwhile, in nineteenth-century Ethiopia, "almost 100 per cent. of Abyssinians were infested with *T. saginata*," the beef tapeworm, but Ethiopians "regarded infestation as a normal condition and considered it unhealthy not to have a tapeworm" (49). Cultural environment prescribes the bodily margins to which a belief system attributes power. What a community considers dangerous informs that community's concern with particular access points and interstitial spaces (at both individual and communal levels), and these considerations are liable to alter over time as well as according to differences in cultural and political governance.

In the early years of Queen Victoria's reign, some public figures in Britain sensed that foreign agitators, as undesirable counterparts to the Queen's consort, Prince Albert of Saxe-Coburg and Gotha, were exerting an unhealthy influence on the constitutional body. Prominent among these commentators were Benjamin Disraeli, John Henry Newman, Thomas Carlyle (1795–1881), and John Ruskin, men of different backgrounds, men who did not necessarily share a common response to this inner influence of outer origin, but men who sensed a parasitic influence within British politics. Friedrich Engels (1820–95) and Karl Marx (1818–83), who in effect constituted flagellators of an alien class, were prominent targets for these commentators. Engels had spent two years in Manchester between November 1842 and August 1844; Engels and Marx had jointly visited leading Chartists in July 1845; and four years later, Marx would settle in London. "In 1848, when Marx and Engels issued the Communist Manifesto, Disraeli was assuming the leadership of the Tory party," as Russell Kirk documents, "and Newman, at the Oratory in Birmingham, was on the eve of his struggle to establish a Catholic University in Dublin." Interestingly, the difference in approach that separated Marx and Engels from Disraeli and Newman was less about alien philosophy and more about the consequences of implementing that thinking; but while

both parties protested against Liberalism, the disagreements between their outlooks were decisive. “Marx looked forward with a ferocious joy to [the] consummation and demise of middle-class ascendancy; Disraeli and Newman endeavored to save piety, order, and freedom by restoring the balance which Utilitarianism had overthrown” (262).

In addition to perceived internal threats to Britain, administrators of the British Empire remained anxious not only about foreign pressures against its expanding colonial boundaries, but also about the aliens absorbed into its growing imperial body. Hence, political and scientific domains faced comparable situations; each wished to maintain control of its respective domain; but each desire foundered in 1857. That year witnessed both the First Indian Rebellion (or Sepoy Mutiny) and the publication in English by the Sydenham Society of German parasitologist Friedrich Küchenmeister’s (1821–90) *Manual of Animal and Vegetable Parasites* alongside German physiologist and zoologist Karl Theodor Ernst von Siebold’s (1804–85) *On Tape and Cystic Worms*. The link between these sociopolitical and parasitological events might seem tenuous, but as the details adduced and developed as one of the strands of the following chapters confirm, concomitant contexts nurtured relatable thoughts on host–parasite relations that bore some order of equivalence between them.

Although treatises on parasitology were now available in English, these translations were transitive discourses, which shifted meaning from their textually original sites to neighboring or para-sites; as such, their ability to convince their readers remained vulnerable to intercultural disparagement. In fine, reacting against this newfound availability, the discursive taboo on parasitology in England continued to resist even tentative forays into that epistemological realm. To break this silence required a multidirectional and simultaneous invasion of the scientific mainstream analogous to that of helminths within their hosts. This need potentialized the efforts of gentlemen scientists. Unlike their European contemporaries, who belonged to their respective scientific communities, the notable figures of English parasitology were (at least initially) marginal players who found themselves ranged against the gatekeepers of Victorian respectability. Whereas Rudolphi and Siebold held university chairs in Germany, Charles Darwin and Thomas Spencer Cobbold were independent scientists in England, forming a force on the periphery of current scientific governance; a peripheral presence, however, of notable social standing.

Darwin initially studied medicine at the University of Edinburgh between 1825 and 1827. “While at Edinburgh Darwin discerned that his father would leave him enough property to live in comfort, thus dispelling