



RESEARCH ARTICLE

Death of the Fairy: Children's Science Writing and the Reinvention of Fairyland in Nineteenth Century Britain

Sofia Lago

NYU Shanghai

<https://orcid.org/0009-0001-7734-662X>

ABSTRACT

In this article, I examine how the nineteenth-century British writers' insertion of fairies into children's science writing as a narrative device promoted Britain as a nation that had progressed past the age of superstition. Throughout the nineteenth and early twentieth centuries, science writers like Buckley framed their narrative through a folkloric lens rather than adopted a scientific lens through which to frame a folklore narrative. Through an analysis of children's science writing and connected texts, this article reveals the way in which the insertion of fairies and other folklore figures into educational works as a narrative device implicitly, or explicitly, promoted the image of Britain as a nation that had progressed past the age of superstition.

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Introduction

In the first "Lecture" of Arabella Buckley's 1879 children's book, *The Fairy-Land of Science*, she promises her young readers that she will reconcile science's "bundle of dry facts" with a fairyland that "is beautiful, and full of poetry and imagination".¹ Buckley was not alone in her agenda; throughout the nineteenth-century, children's science writers interwove familiar fairies or fairy tales with science in texts targeted toward a young audience, most notably of the middle class. This was a culmination of contemporary British society's shifting perspectives on childhood, popular science, and science education, as well as fairies themselves. Fairies were not solely for children's fancy, but they were a common feature in

¹ Buckley (1888, p. 2).

* **CONTACT** Sofia Lago Email: lago.sofie@gmail.com

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art, literature, and theater intended for young audiences and their parents.² Given the speed and readiness in which fairies percolated into British popular culture, it was perhaps inevitable that they also became a mechanism for teaching children scientific theories.³ Through analogy, Buckley and other popularizers of science utilized the British “fairy” not as folklore currently regarded as true, but as a representation for the natural world. The inclusion of fairies as metaphors for scientific processes in educational texts could either explicitly, or implicitly, placed British culture as a modern one that had advanced beyond an age of superstition.

Within British culture, the interest in fairies corresponded with a wider interest in both domestic and foreign folklore and fairy tales.⁴ Though the fairy tales from the Grimm brothers, Charles Perrault, Hans Christian Andersen, *The Thousand and One Nights*, and Greco-Roman myths also integrated into popular culture, the folklore of traditionally non-Western cultures remained objects to be researched in professional or amateur academic studies.⁵ Here, the emphasis will remain on the middle class, as these texts primarily targeted the children on that rung of the social ladder; middle-class children, after all, were more likely to afford scientific instruments and have the time to cultivate personal hobbies.⁶ Though the available examples that exhibit the interweaving of natural history and fairies are numerous, Buckley’s *The Fairy-Land of Science* and *Through the Magic Glasses* will act as the main texts threaded throughout the article. Other texts will be analyzed, but Buckley will be the focus, as her balance between technical language and fantastical imagery best displays the intersection between natural science, morality, and the cultural fascination with fairies in the nineteenth century.

Therefore, the article will begin with Buckley, detailing her role as a popularizer of Darwinian theory, her own interpretation of evolutionary theory, and the inclusion of fairies in her works and works like them. This will lead into an investigation of the changes occurring in science education and the acceptance of the study of the natural world as a pastime for children. There will then be an analysis of the microscope’s popularity and its tie to fairy worlds through the nineteenth-century miniaturization of fairies. The primary focus will be on the connection between the microscope, fairies’ miniaturization, and entomology, which will require a brief look at some literary examples, as well the non-fiction scientific texts. The connection springs from the common depiction of fairies as insectoid creatures belonging to nature, which allowed writers to imply or state directly that science was the death of the fairy;

² Silver (1999, p. 3).

³ Silver (1999, p. 4).

⁴ Silver (1999, p. 6).

⁵ Tales were an exception. Non-Western or Central European folk or fairy tales shifted between works for children, adults, and those intended for both.

⁶ Talairach-Vielmas (2014, p. 8).



thus, science became the new fairy tale. Ultimately, this contributed to both the explicit and implicit depiction of nineteenth-century Britain as having moved beyond superstition.

1. Arabella Buckley, Darwin, and Morality

In the wake of the publication of *Origins*, popularizers of Darwinian evolution released endorsements of the theory for the scientific community and the wider public but had first to reconcile it with their own religious or materialistic beliefs. Additionally, external works promoting Darwinian evolution often rejected individual aspects of the theory, such as natural selection, if they too strongly contradicted the popularizer's pre-existing understanding of the natural world's development or could not reasonably explain the evolution of moralistic thinking and intelligence. What marks Arabella Buckley as unique is that she did neither. As Barbara T. Gates demonstrates, Buckley situated her views of Darwinian evolution alongside her spiritualist faith, which resulted in her characterisation of natural selection as the groundwork for morality in nature.⁷ Gates, however, largely excludes the influence of religion in her analysis of Buckley's narrative technique, which, as Bernard Lightman argued in his own work on Buckley, dampens the effectiveness of Gates' conclusions.⁸ Buckley was a spiritualist, which shaped how she perceived and understood the natural world, thus impacting her depiction of it in her writing; this appears most obviously in those targeted towards children.⁹ Unlike her correspondent and fellow spiritualist, Alfred Russell Wallace, who initially came to his own conclusion on natural selection independently of Darwin before later renouncing the theory, Buckley was able to harmonize her acceptance of natural selection and her spiritualism.¹⁰ Wallace, as well as others, argued that Darwin's natural selection did not explain the development of human mortality. Buckley, alternatively, believed that morality and evolution were not mutually exclusive. The intersection came through her belief in traducianism, which is a theological Christian tradition that proposes the idea that the human soul develops throughout generations, so a child therefore owes both their soul and body to their parents.¹¹ As a result, Buckley told the common evolutionary narrative as one acting not only towards life's preservation, but also "that of mutual help and benefits".¹² She declares this unequivocally in the conclusion to her 1883 work, *Winners of Life's Race*, where she writes of "The great moral lesson taught at every step in the history of

⁷ Gates (1998, p. 59).

⁸ Lightman (2007, p. 239).

⁹ Flannery (2015, pp. 102-103).

¹⁰ Flannery (2015, pp. 74-76).

¹¹ Buckley (1879, pp. 1-10).

¹² Buckley (1888, p. 351).



the development of the natural world, that amidst the turmoil and suffering, struggle and death, the supreme law of life is the law of SELF-DEVOTION AND LOVE”.¹³

At the age of 24, in 1864, Buckley took on a role as the geologist Sir Charles Lyell’s secretary, a position she retained until his death in 1875.¹⁴ Under his employ, she managed his correspondence and copied his work meant for publication, while also maintaining her own correspondence and acquaintance with significant members of the scientific community. Her contacts included Wallace and Darwin, who praised her work.¹⁵ This time period, like her spiritualism, clearly influenced her perception of the contemporary debates and theories on natural history. Together, her spiritualism and her familiarity with the developments surrounding Darwinian theory informed the way in which she connected evolution and natural selection with the evolution of human morality. In an 1871 *Macmillan Magazine* article titled “Darwinism and religion,” she argued that Darwinism and the development of conscience were not mutually exclusive. Challenging the view that two were contradictory, she writes:

Many who would concede without hesitation the evolutionary origin of their bodily frame, shrink with great pain from such a derivation of their mental and moral nature. They fear that if the noble gift of conscience can be traced back in all its gradations to the humble instincts the human race will become the victim of a gross Materialism [...] I believe that this fear, if it be founded upon the theory of the moral sense, as set forth in the ‘Descent of Man’, is a groundless one.¹⁶

She saw Darwinian evolution as “[elevating] the unselfish virtues to the highest rank,” a belief she carried through into her popular, educational works for children.

2. Imagination in Children’s Science

In her works, Buckley additionally promoted the idea that her children readers must apply their imaginations as well as their objective observational skills in order to study the natural world. Showcasing scientific understanding and imagination’s close connection, she mirrored fairies and magic to aspects of natural history, subsequently creating an underlying narrative within her overarching lessons that likened the combination of scientific study and morality’s development to a fairy tale. She was not alone in combining natural history and fairies in scientific texts intended to teach children a moralistic and scientific lesson. Though Charles Kingsley’s 1862-3 *Water Babies*, an evolutionary narrative for children, teaches the

¹³ Buckley (1888, p. 353).

¹⁴ Gates (1998, p. 51).

¹⁵ Gates (1998, p. 52).

¹⁶ Buckley, (1871, p. 46).



theory through an allegorical fairy tale rather than as nonfiction “lectures,” it retains the same three key elements as Buckley’s *The Fairy-Land of Science*, which are Darwin’s theory of evolution, a moral lesson, and fairies as representatives of nature. Other educational works for children, especially those which combined natural history and fantasy, such as Margaret Gatty’s 1855 anti-Darwinian *Parables of Nature* or Albert and George Gresswell’s 1884 *Wonderland of Evolution*, also tended to rely on the latter two core elements. Like Buckley, many of these works ask their readers, “Can science bring any tale to match [fairy tales]?” before detailing how children can, and should, view the natural world through an imaginative lens.¹⁷ Nevertheless, imagination is only meant to be a lens; the question and its answer depict it as a tool for understanding the material, but not as a replacement for objective study.

At this time, the inclusion of imagination in the study of science was also part of a broader debate, which overlapped children’s literature and educational texts, professional and popular study, and adult and children’s education. In 1870, the physicist John Tyndall published a series of lectures under the title *Essays on the Use and Limit of the Imagination in Science*, which resulted in a public warning from the Church of England that “a consequence of [his] impiety, the bolts of heaven were in a state of potential suspension above [his] head”.¹⁸ Tyndall was an active proponent of science education, both within school settings and through popular lectures and publications intended for interested audiences who did not “possess any special scientific culture”.¹⁹ In *Imagination in Science*, Tyndall writes that imagination is

the divining rod of the man of science. Not, however, imagination which catches its creations from the air, but one informed and inspired by facts [...] If such a principle be adequate to account for all the phenomena, if from an assumed cause the observed facts necessarily follow, we call the assumption a theory, and once possessing it, we can not only revive at pleasure facts already known, but we can predict others which we have never seen. Thus, then, in the prosecution of physical science, our powers of observation, memory, imagination, and inference, are all drawn upon. We observe facts and store them up; imagination broods upon these memories, and by the aid of reason tries to discern their interdependence.²⁰

For children, Buckley writes, entwining imagination and observation is a lesson they need to learn, as many of them “have this glorious gift [...] This is why they are sure to love

¹⁷ Buckley (1888, p. 2).

¹⁸ Tyndall (1870, p. i).

¹⁹ Tyndall (1870, p. xxvii).

²⁰ Tyndall (1870, p. 4).



science if its tales are told them aright”.²¹ Before her readers “can learn to know [the fairies of sciences],” she writes, they “must have *imagination*,” which does not “mean mere fancy [...] but imagination, the power of making pictures or *images* in our mind, of that which *is*, though it is invisible to us.” Though the sentiment that is the foundational concept between the two statements is more or less the same, Tyndall, as Daniel Brown explains, carefully outlined a perspective of nature’s origin that did not necessitate the intervention of a divine figure.²² This sits in opposition to the religious-based lessons found in Buckley and other authors of educational children’s texts.

3. Reforms for Science Education

The difference in Buckley and Tyndall’s views on a divine creator’s role in evolution was the pre-existing debate surrounding morality and religion’s place within science. Like Tyndall’s public lectures, the debate touched on how science was taught to all levels of society. Markedly agnostic naturalists, including Tyndall, Leslie Stephen, and Thomas Henry Huxley, viewed religion, along with the arts, as belonging to the sphere of feelings and ethics, while the sciences were part of the intellectual sphere.²³ In addition, English Nonconformists advocated the disestablishment of the Anglican Church’s authority in favor of investing in a secular state, a process which would, in turn, affect the British education system.²⁴

In a formal educational setting, attempted secularisation and separation perhaps first appears through the creation of a standardized examination system. Between the early 1850s to the late 1870s, the “mania” over written examinations was at its height, with promoters of the system such as Huxley believing, at least in the early years, that exams were more indicative of a student’s learning than non-standardized oral testing.²⁵ The system’s supporters believed that firstly, written exams, which could be reprinted identically and dispersed on a wide scale for later abstraction of the students’ knowledge, indicated whether or not the examinee actually learned that curriculum’s material because the questions effectively acted as the examiner’s curriculum for teachers and students. Secondly, written standardized exams on the sciences largely stripped the question of morals or religion from natural history. Students taking Huxley’s biology exam, for example, had to carefully study his work if they wished to further their careers. As James Elwick states, Huxley was unlikely to reward any marks to a student who answered one of his questions in the language of natural theology.²⁶

²¹ Buckley (1888, p. 8).

²² Brown (2013, p. 148).

²³ Lightman (1987, pp. 82, 131-134).

²⁴ Turner (1993, pp. 31-32).

²⁵ See for a more detailed account Elwick (2014, pp. 131–156, esp. pp. 132–133).

²⁶ Elwick (2014, p. 132).



Soon, Huxley and other examiners grew disillusioned with the system. After, he pushed for new science education reforms within the school setting. Through the X Club and like-minded popularizers of natural science, there was a steady influx of periodical publications, popular literature, and public lectures intended to disseminate current theories to general, predominantly adult audiences, but by the 1870s, Huxley began to work in earnest to integrate science education on an institutional scale.²⁷ He and his allies saw an expanding network of science education as essential to reshaping British society's view on natural science. To achieve this, they needed to guarantee that all levels had access to lessons on the sciences, from public and free secondary and elementary schools to universities to evening lectures for working-class adults.²⁸ Operating within his position in the Royal Commission on Science Instruction and the Advancement of Science, Huxley called on a witnesses to provide testimony in the early 1870s to prove the need for an overhaul of the British elementary and secondary school education, and a corresponding increase in the sciences' role in universities. Among his inquiries was the matter of age; he protested the belief that children lower than twelve could not learn science, proposing first that surely children of ten were capable, then gradually decreasing the age further.²⁹

As Huxley and others pushed for reform in science education, the number and rate of production of material for children about and inspired by natural history increased. However, though the question of age in institutional educational settings did not arise formally until the late nineteenth century, the study of natural science had been considered an appropriate pastime for school-age children since the beginning of the century. This occurred chiefly, but not solely, among the middle class.³⁰ Engaging in hands-on, practical natural history neatly fit into the niche of the ideal middle-class pastime, which healthily combined intellectual pursuit with outdoors activity.³¹ Variations of the pastime often fell more on one half of the combination than the other, whether by choice or by design, but natural science principally required both as its point of separation from the laboratory-based sciences. Moreover, the rising popularity of natural history as an agreeable pastime coincided with the growing allure of fairies in British culture. They appeared in nonfiction and fiction for children as well as adults through authors such as Andrew Lang and Charles Dickens, leading to the "Golden Age of Children's Literature".³² Correspondingly, for both children and adults, contemporary writers and popularizers of natural science published works which used fairies as allegories

²⁷ Lightman (2014, pp. 101-130).

²⁸ Barton (2018, pp. 362-444).

²⁹ Lightman (2014, p. 112).

³⁰ Perhaps the most well-known example of a child with an interest in natural history is Mary Anning from Dorset, who collected fossils with her father and brother along the Jurassic Coast in the early nineteenth century, and helped uncover an ichthyosaur skull when she was twelve. Massare & Lomax (2014, pp. 21-28).

³¹ Talairach-Vielmas (2014, p. 5).

³² Straley (2016, p. 8).



for lessons on specific branches of natural history or to teach more nebulous scientific concepts. Here, too, they appeared as fiction and as nonfiction, blurring the line between fancy and fact. Of the texts with a particular focus, entomology and microscopy were particularly fashionable branches for popular study.

4. Microscopy and Miniature Worlds

Microscopy either could or could not involve a foray into the outdoors for personal collection, but it was nevertheless an intellectual interaction with the natural world. By 1851, when the microscope appeared in a display in the Great Exhibition, the price was £5, which was within the limits of the middle-class budget.³³ Wary of amateur research undermining important microscopy research, laboratory scientists wrote textbooks detailing exactly how to use a microscope and emphasizing the necessity of focus, correct technique, and patience. Inevitably, these works, including John Quekett's 1848 *A Practical Treatise on the Use of the Microscope* and William Benjamin Carpenter's 1856 *The Microscope: and its Revelations* were not intended for children, but adults who, even non-professionally, could contribute meaningfully to the discipline if they "[were to] concentrate their attention upon some particular species or group, and work-out its entire history with patience and determination".³⁴ In perfect contrast to Tyndall's later *Imagination in Science*, Carpenter explicitly discouraged any user from drawing upon imagination to bridge the gaps left between the partial information that direct observations through a microscope afforded. Despite Carpenter and his colleague's best efforts, though, naturalists accepted, or even encouraged, the connection between the imagination and the microscope, leading to new, plain-language popular guides. Agnes Catlow's 1851 *Drops of Water: Their Marvellous and Beautiful Inhabitants Displayed by the Microscope* appeared in print congruently with the more specialized manuals; Philip Henry Gosse's 1859 *Evenings at the Microscope*, Reverend John Wood's 1861 *Common Objects of the Microscope*, and Mary Ward's 1864 *Microscope Teachings* appeared soon after.

What a person was able to view at the end of a microscope's lens ranged from a fish's scale to a dust speck, to the "animalcules" caught in a drop of water. Buckley, in *Through the Magic Glasses*, writes that the microscope "could carry its master into an unseen world, hidden to mortal eye by minuteness instead of by distance. If in the stillness of night the telescope was his most cherished servant and familiar friend, the microscope by day opened out to him the fairyland of nature".³⁵ The "master" is a magician, and though the book discusses the spectroscope, camera, and telescope as well, the microscope is the

³³ Armstrong (2002, p. 30).

³⁴ Carpenter (1856, p. 25).

³⁵ Buckley (1890, p. 4).



instrument which reveals that “the slime from a rock-pool teems with fairy forms”.³⁶ At the start of the text, the magician and his workshop are a vehicle to introduce the “magic glasses,” but Buckley primarily teaches through her own voice, written in first person, or through short fictional narratives, written in third person, based around an instructor and school-aged students. For instance, Buckley begins the section on fungi, called “Fairy Rings and How They Are Made,” with a scene of a “Principal” and an unspecified number of “youngsters” collecting mushrooms from a fairy ring in Devon to study beneath a microscope, and ends with the Principal saying, “Here are our fairies, boys. I am going to take a few home where they can be spared from the ring, and to-morrow we will learn their history”.³⁷ Buckley then transitions into a lesson the following day, where the Principal explains that “we were not so far wrong when we called [the fairy ring’s creators] pixies or imps, for many of them are indeed imps of mischief, which play sorry pranks in our stores at home and in the fields and forest abroad”.³⁸ He shows the students three “fungus-imps,” which under the microscope, have spores that appear “like the beads of a necklace one above the other on the top of the upright tube” or as “a most lovely silvery mould” that “bears [the spores] on many rows branching out from the top of the tube like the rays of a star”.³⁹

Buckley’s similes are imaginative, encouraging similar imaginative thinking among her readers, as does her use of a magician to introduce the instruments and their functions. She analogizes the fungi to mischief-making fairies first in the collection scene, and maintains the association throughout the section, continuing the theme of “the fairyland of science” that is consistent in her other works for children. Further, the use of the *Marasmius Oreades*, or the Scotch-bonnet, as the titular mushroom for her fungi section to create a link between childhood fantasy and science education conveys an expectation that her readership already had full familiarity with the concept of fairy rings. Buckley then returns to fairies in her section on tide pools, where she writes that the animals ‘easily seen with the naked eye’ number only a few of a pools’ inhabitants, but

for [the rest] we must search with a magnifying-glass, which will reveal to us wonderful fairy-forms, delicate crystal vases with tiny creatures in them whose transparent lashes make whirlpools in the water, living crystal bells so tiny that whole branches of them look only like a fringe of hair, jelly globes rising and falling in the water, patches of living jelly clinging to the rocky sides of the pool, and a hundred other forms, some

³⁶ Buckley (1890, p. 28).

³⁷ Buckley (1890, p. 58).

³⁸ Buckley (1890, p. 60).

³⁹ Buckley (1890, p. 63).



so minute that you must examine the fine sand in which they lie under a powerful microscope before you can even guess that they are there.⁴⁰

In the passage, she gradually narrows the scope of vision necessary to view the layers of the microcosm. First is the emergence of the pool itself, which only exists when the “widespread ocean” recedes for the low-tide, which allows the animals to become visible “with the naked eye.” Next is the world under the magnifying glass, where there exists “wonderful fairy-forms” so delicate that they require the descriptor “tiny” twice. Finally, there is a world “so minute” that observing it obliges the viewer to acquire a microscope.⁴¹ The manner in which Buckley toys with scale mimics the evolution of fairyland and its inhabitants that appeared earlier in the century, when the fairy’s image in British popular culture underwent the process of miniaturization.

5. Miniaturization of the Fairy

By the 1870s, when Buckley published *The Fairy-Land of Science*, writers, editors, advertisers, and artists had already been using the term “fairy” synonymously with “wonderful,” or, more relevantly, “delicate” or “small”.⁴² As a result, her picture of the “fairy-forms” creates a dual connotation for the portrait of the world she paints: the one of miniature animalcules in a water droplet, and the one of fantasy, both of which are unseen. The cultural conflation between minuteness, the natural world, and fairyland, which Buckley capitalizes upon in her descriptions of Scotch-bonnets and tide pools, began with the Romantics in the late eighteenth century. This was in part because of the nationalistic Shakespearean revival, partly because of a renewed, similarly nationalistic attraction to local fairy lore, and also, from the romantic draw to nature.⁴³ As these interests coalesced in, most strikingly, art and literature, they became the bedrock for the distinctly intense draw towards fairies found in British culture after the 1830s. For paintings, the integration of the miniature fairy in popular culture largely began with the 1789 London-based Boydell Shakespeare Gallery and other non-affiliated but Shakespeare-inspired artwork.⁴⁴ One the earliest was Sir George Romney’s painting of *The Tempest*’s first act, commissioned in 1790, where he imbedded into the sky semi-translucent Ariel figures that became part of the scene’s light source; a later example is from Joseph Severn, who also reimagined the sprite Ariel as being small enough to ride on a bat in 1829.⁴⁵ Art was, as Laurence identifies, the ideal medium through which to present the

⁴⁰ Buckley (1890, p. 175).

⁴¹ Buckley (1890, pp. 173-175).

⁴² Brown (2013, p. 3).

⁴³ Silver (1999, pp. 9-32).

⁴⁴ Brown (2013, p. 6).

⁴⁵ Silver (1999, p. 19).



close entanglement of the natural and unnatural worlds, as on canvass, it was possible to visually play with scale and place fairies alongside birds or insects.⁴⁶

Even so, it was in literature that the miniature insect-fairy first concretely appeared. Its birth was at the turn of the seventeenth century, when writers and playwrights, as Ronald Hutton explains, scaled down the faeries' physical size to imaginatively explore a whimsical world populated by very small beings.⁴⁷ The nineteenth-century version is the effect of the eighteenth century's Shakespearean revival, with Alexander Pope's 1710s poem *Rape of the Lock* acting as the century's first work to famously grant feyish beings insect traits. This occurs through the described "unnumbered spirits." The poem reads, "Some to the sun their insect wings unfold/Waft on the breeze, or sink in clouds of gold/Transparent form, too fine for mortal sight/Their fluid bodies half-dissolved in light".⁴⁸

By the mid-nineteenth century, the process of miniaturization was essentially complete. In written works, shrinking and enlarging the world required more explanation than it did on canvass. Though not a story intended for children, Fitz-James O'Brien's 1858 short story, "The Diamond Lens," confines the shifting size of the everyday human world to a micro-fairyland that the narrator, a scientist called Linley, sees down the microscope's isolated lens. Linley's microscope is exceptionally powerful, and one day, when peering through it, he discovers a delicate, beautiful fairy trapped inside a water droplet on a slide. In the end, his obsessive love for her is what kills her, as he does not replace the water that she needs to live. The fairy, Animula, is the personification of the animalcules that so entranced the cultural imagination, and her death is the effect of Linley's careless treatment of life and systematic microscopy practice. For children, just a few years later, Kingsley released his evolutionary parable, where the young chimney sweep Tom transforms into a miniature "water baby." Then, in 1865, Lewis Carroll published his fairy tale *Alice's Adventures in Wonderland*, a mathematical satire, where changes in size are integral to the narrative. These works, along with Buckley's, are just a few examples, but they show that the process of miniaturization that Pope and the Romantics began in the eighteenth century solidified as the accepted cultural perception of the fairy by the 1850s.

Fairies by that time had also become entwined with insect life, which paired well with the cultural acceptance of entomology as a suitable pastime for children and adults alike. Insects were, as Buckley describes, "aërial and fairy-like" and "form so large a portion of the life upon our globe".⁴⁹ This, too, can be traced back to Pope and the eighteenth century, when in the late 1790s, Thomas Stothard determined on a friend's suggestion that he would depict the fairies in his illustrations for Pope's poem with butterfly wings, and that, more importantly,

⁴⁶ Talairach-Vielmas (2014, p. 8).

⁴⁷ Hutton (2014, p. 1152).

⁴⁸ Pope (1798, p. 19, ll. 59-63).

⁴⁹ Buckley (1889, p. 134).



he would paint the wings directly from a physically present butterfly model.⁵⁰ In this way, he would ensure his fairies had anatomically accurate wings, which would ground fantasy in reality. Though historically, British fairies and nature had long been linked, it was this preoccupation with correctly rendering the natural world where they resided that marked the transition into how they took shape in the nineteenth century.

6. Fairies and Entomology

Insect-fairies appeared in educational texts before and after Buckley's publications, in poetry, art, and literature. Perhaps one of the clearest textual examples of the insect-fairy is from Andrew Lang and May Kendall's 1885 scientific fable, *The Very Mab*, where Queen Mab returns to England from Samoa after several centuries away to find the country "a good deal altered".⁵¹ While sitting camouflaged in a tree in Epping Wood, she spies an entomologist with a butterfly net, and when startled, she tumbles from her branch towards the pond below her. The narrator states, "She had wings, of course, and half petrified with horror though she was, she yet fluttered away from that stagnant water. But alas, in the very effort to escape, she had caught the eye of the Professor; he sprang up—pond, animalcule all forgotten in the chase of this extraordinary butterfly," and that when the Professor returned home, he placed her "straight into a tall glass bottle, and began to survey her carefully, walking round and round. Truly, he had never seen such a remarkable butterfly".⁵² In the same section, *The Very Mab* teaches its readers to treat nature kindly, to remember to observe the natural world, and to be willing to learn new ideas, which were all moral lessons that were familiar to nonfiction educational works. A second similarity is present in how Kendall and Lang layer a world with what is seen and what is unseen. Theirs, though, involves not only scale, but also the Professor's willingness to accept (or not accept) that Queen Mab is part of the "extraordinary" rather than just an "extraordinary butterfly" that could be imprisoned behind glass for his personal view.

The fairy's fate relates to the practical aspects of an entomological pastime: observing, searching, collecting, bottling, pinning, analyzing, displaying, and discussing. There were periodicals, which typically reached a wider audience than other mediums, and books focused on entomology, fostering a community of professionals and non-professionals that grew as the century progressed. The divide in the community was persistent, distinct, and an oversimplification, but effectively separated "true entomologists" from those who collected as a pastime.⁵³ Despite its popularity, entomology struggled to gain a foothold as a science that was not "futile and childish," perhaps because it abstained from

⁵⁰ The Artist and the Butterflies (1852, p. 3396).

⁵¹ Kendall & Lang (1885, p. 13).

⁵² Kendall & Lang (1885, pp. 32-33).

⁵³ Wale (2019, p. 405).



following the movement towards laboratory-based study.⁵⁴ When the Royal Society elected Henry Tibbats Stainton, editor and establisher of the periodical *The Entomologist Intelligencer* and collector of insects, as a fellow, it was an unusual honor.⁵⁵ As a consequence of the outside perception that entomology was childish and the community's division, a number of professional and amateur entomologists released specialized and plain-language guides in a similar fashion to the ones for the microscope throughout the century.

Between 1849 and 1851, Louise M. Budgen released a three-part introduction to entomology that used different narrative forms of “the allegorical fable, poetic association, and moral analogy,” as well as fanciful illustrations to teach predominately young readers about insects.⁵⁶ She published the work under the name “Acheta Domestica.” She took not only butterflies and dragonflies, which were already in vogue as creatures of children's hobbyist study, but also the members of the insect class often seen as unsavory, and redressed them in a more congenial guise. In the first volume, she describes moths as “veritable [Fairies],” having “fairy-like forms,” and as “one of the fairy elves, fabled to hold their moon-light revels beneath the oak”.⁵⁷ In the second volume, she expands her fairy comparisons to include flies. Of the lace-wing fly, Budgen writes,

It was not exactly a fairy who had come to visit us; but it was a little creature, both in form and attire, of most fairy-like seeming. It was none other, in short, than a lace-winged fly, the most graceful insect of its elegant and graceful tribe [...] Only suppose, thought we, pursuing the train of fancy brought and left behind by the gauze-winged sylph; suppose, that by the touch of some Circe's wand, all the insect forms creeping and flying and floating around us—now less *seen* than *heard* and *felt*—were all at once enlarged to the proportions they assume to the eye in that amusing raree-show, the solar microscope—verily we should feel somewhat ill at ease in the strange company wherein we should figure then.⁵⁸

Though there are other examples in the text, this passage acts as a showcase of Budgen's intention to offer her readers an imaginative way of viewing nature. Throughout it, the tone is not unlike Buckley, nor *The Very Mab*. The language is closer to a fictional piece than much of Buckley's works, both because that is Budgen's style and because the section, “A Summer Day's Dream,” is one of the allegorical fables.⁵⁹ She utilizes allusion to Greco-

⁵⁴ Kirby & Spence (1843, p. v).

⁵⁵ Wale (2020, p. 206).

⁵⁶ Budgen (1852, p. vii).

⁵⁷ Budgen (1852, pp. 275-276).

⁵⁸ Budgen (1852, pp. 254-255).

⁵⁹ Budgen (1852, pp. 252-271).



Roman mythology (“Circe’s wand” and “sylph”), adjectival phrases connoting delicacy (“elegant and graceful tribe,” “gauze-winged,” and “fairy-like”), and the narrator’s proposed “train of fancy.” Budgen also plays with the reader’s perspective of scale, transitioning from the small, but visible, fly that is “not exactly a fairy” to a level of the natural world that is “less seen than *heard* and *felt*,” then enlarging that world to hyperbolic proportions, and finally miniaturizing it to what only the microscope can reveal.⁶⁰ While they are presented as the different levels of the natural world, her emphasis on exaggerated size and encouragement for an imaginative interpretation of insects reframes the scene as a version of a nature-based fairyland built upon humanity’s moral integrity.

7. Modernisation Kills the Fairy

For Budgen, her fairyland was largely implicit, but for Buckley in her series’ first book, it was an explicit extended metaphor. She personifies every aspect of nature that she analyzes, primarily through verbs, and aligns natural processes with fairies. In her introduction, Buckley quotes from *The Tempest* the segment of Ariel’s song that inspired Stothard: “Where the bee sucks, there suck I/In a cowslip’s bell I lie/There I couch when owls do cry/On the bat’s back I do fly/After summer, merrily”.⁶¹ She references specific and well-known fairy tales, with “Sleeping Beauty” as the first to lead into her instruction near the end of her introduction. Here, Buckley states that for a child to properly enter the fairyland of science, they must, like “the knight or peasant in the fairy tales, [...] open [their] eyes”.⁶² Her conclusion ends with a claim that her reader has hardly “passed through the gates,” as there is still so much to learn, but she then largely retreats from the fairy metaphor when Buckley writes,

Neither is it pleasure alone which we gain by a study of nature. We cannot examine even a tiny sunbeam, and picture the minute waves of which it is composed, travelling incessantly from the sun, without being filled with wonder and awe at the marvellous activity and power displayed in the infinitely small as well as in the infinitely great things of the universe. We cannot become familiar with the facts of gravitation, cohesion, or crystallization, without realizing that the laws of nature are fixed, orderly, and constant, and will repay us with failure or success according as we act ignorantly or wisely; and thus we shall begin to be afraid of leading careless, useless, and idle lives.⁶³

⁶⁰ Budgen (1852, pp. 254-255).

⁶¹ Buckley (1888, p. 5).

⁶² Buckley (1888, p. 13).

⁶³ Buckley (1888, p. 237).



Though Buckley maintains the extended metaphor throughout the work, she also consistently sustains the sentiment found in this passage, which is that what the reader is truly viewing is laws of nature, as the extension of a divine will, at work.

In maintaining the dichotomy, Buckley implies that, while her readers should use fairyland as an imaginative tool for learning, they must also not forget that it is a veneer of fantasy stretched atop “fixed, orderly, and constant” natural systems.⁶⁴ By the late nineteenth-century, when *The Fairy-Land of Science* was published, a common perception of the fairy and fairyland in British popular culture was that they *were* disappearing or *had* disappeared already as an effect of modernisation.⁶⁵ At the turn of the century, the image of the fairy was a nostalgic one, as artists, writers, and folklorists presented fairies as aspects of Britain’s various disappearing, “authentic” rural cultures. However, by the 1860s, popular culture associated fairies with scientific naturalism and evolution, though the association’s base theory could come in either Darwinian or non-Darwinian forms. More than that, fairies were the victims of industrialisation and modernisation, which led to destruction of what contemporary culture deemed their natural habitat.⁶⁶ Together, these two concepts often gave rise to the notion that science had not only “killed” the fairy, but also replaced it.

The Very Mab is direct in stating, and in showing, the idea that science usurped the fairy’s place in Britain’s cultural imagination. After Queen Mab arrives in England, she gathers no support among the local wildlife, until she meets the Owl. Now that she is there, she is, according to the narrator, “an anachronism”.⁶⁷ Prior to meeting the Owl, the ant and the bee she encounters cannot abide by “vulgar superstition, like faith in fairies,” and recommend that she read “various works in the International Scientific Series”; the ant goes so far as to hurry away, as it “did not care to be seen talking to a fairy.” Where the “end of fairies” is openly stated is in her conversation with the Owl before her capture, which reads,

“And does nobody believe in fairies?” sighed Queen Mab.

‘No, or at least hardly anyone. A few of the children, perhaps, and a very, very few grown-up people persons who believe in Faith-healing and Esoteric Buddhism, and Thought reading, and Arbitration, and Phonetic Spelling, can believe in anything, except what their mothers taught them on their knees. All of these are in just now’.⁶⁸

The Owl’s final statement further implies that for “very, very few grown-up people” who still believe in fairies, that belief may only last for as long as it is a current cultural fad. Though

⁶⁴ Buckley (1888, p. 237).

⁶⁵ Talairach-Vielmas (2014, p. 10).

⁶⁶ Talairach-Vielmas (2014, p. 10).

⁶⁷ Kendall & Lang (1885, p. 13).

⁶⁸ Kendall & Lang (1885, p. 22).



fairies certainly were still “in” by 1885 and for several decades after, so was their death. A fairy’s literal death appeared in “The Diamond’s Lens,” while in other works, like *The Very Mab*, “death” was metaphorical. When science replaced them, it was not necessarily because microscopy or entomology, for instance, drew more public attention, but because a person could understand the disciplines as a new type of fairy tale.

Buckley wrote three books to prove science was a modern fairy tale for a modern readership. Earlier, in the mid-nineteenth century, John Cargill Brough, in his 1859 *The Fairy-Tales of Science*, claimed at the start of his work that the “monsters of romance were nowhere to be found” because “science had banished them from the realms of fact”.⁶⁹ Brough sought to transform the palaeontological discoveries of the past century into mediaeval dragons, posing the prehistoric as one fraught with dramatic conflict between massive creatures. Like Buckley or Budgen, Brough played on dinosaurs’ similarity to the “monsters of romance,” but he presented the palaeontological research to his readers as a marvel in its own right.⁷⁰ More generally, the advances and discoveries of the natural sciences presented the natural world from a new perspective that was as delightful and mysterious as the old one. The new perspective came from how Darwin envisioned nature, which Darwinian popularizers largely continued to evoke, because it left room for the yet undiscovered or the invisible.⁷¹ It also left room for imagination and reinterpretation, which authors of children’s scientific literature utilized in order to reinvent the function of fairies and fairy tales.

Conclusion

Though similar sentiment and scientific fairy tales existed elsewhere at this time, the material released in Britain was mainly for a British audience. The works relied on familiar national or regional folklore, the British countryside, and references to popular culture to connect with their young target audience and their parents. This is true whether the work was fiction or nonfiction. Buckley, Budgen, and *The Very Mab* name specific locations or geographical features; Kingsley briefly introduces a character meant to represent Huxley; fairies and their associated lore, like fairy rings, underwent a considerable transformation, but still had an extensive cultural history.⁷² Even for the folk and fairy tale references that were either generic, like dragons, or originated elsewhere, like “Sleeping Beauty” or Greco-Roman myths, they were, by the mid-nineteenth century, familiar enough in children’s and adult’s art, literature, and theater that they were also entrenched in British popular culture. Writers of educational science texts for children or of scientific fairy tales utilized what was known to teach the relatively unknown, encouraging in their readers imaginative thought. The imagery and style

⁶⁹ Brough (1859, p. 3).

⁷⁰ Brough (1859, p. 3).

⁷¹ Talairach-Vielmas (2014, p. 11).

⁷² Straley (2007, p. 584).



of the texts, though they differ from one another, shows that popularizers of science metamorphosed the fairy into an allegory for nature in order to enchant their young audience in the same way that Darwin had re-enchanted adults with the natural world.

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