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## Strange Science

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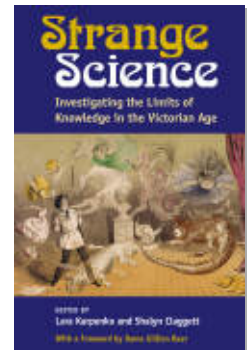
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CHAPTER 1

Victorian Orchids and the  
Forms of Ecological Society

*Lynn Voskuil*

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In “The Strange Orchid,” one of his late-century stories, H. G. Wells portrays the relationship between an orchid fancier and his newly acquired specimen. With dystopic finesse, Wells imagines a plant that expresses malicious intent and aggressive agency, one whose “tentacle-like aerial rootlets” eventually grow strong and long enough to choke the horticulturist in its parasitic grasp. While the fancier escapes with his life and the orchid expires “black . . . and putrescent,” the story plays on the popular Victorian perception of orchids as almost bestial, even human, in their forms and habits of growth—and thus (like humans) capable of inexplicably strange behavior.<sup>1</sup> This perception was shaped by a century-long tradition of “orchidology”—an enormous body of work accumulated by botanists, plant hunters, commercial growers, and ordinary gardeners—that explores, often with great sophistication, the morphology, physiology, and ecology of orchids. Throughout the nineteenth century, orchids appeared with increasing frequency in daily British life, with their own “orchid houses” and a growing population of enthusiasts dedicated to their care and feeding. Fascinated more by orchids than by any other plant, Victorians were attracted in great part to their apparent sensitivity, their capacity for responding dramatically to other elements in their environments, including humans. The minutely scripted, even intimate,

ecological relationships between horticulturists and their orchids capture the readiness of many Victorians to conceive of boundaries between species as fluid rather than absolutely fixed. By 1898, when Wells's story was published, orchids *per se* would thus no longer have been considered "strange." For *fin de siècle* readers, the horror of this story may well have resided more in its representation of botanic malevolence than in its violation of the limits between human and nonhuman species.

The fascination with species boundaries evident in Victorian orchid literature, including Wells's story, urges a precise grasp of the disciplinary frameworks put into play when we analyze these texts because the paradigms most applicable in this case are themselves variably concerned with cultural, epistemological, and ontological boundaries. On the one hand, the nineteenth-century, large-scale importation of orchids may be analyzed as an aspect of the British imperial project, with orchids as commodities that elevated Britain economically and as botanic objects that were perceived to confirm its cultural and scientific fitness for global rule. This paradigm, with its roots in the work of Edward Said, is premised on an awareness of the inflexible boundaries Britain erected between itself and its colonial "others," whether those "others" are understood to be indigenous peoples, conscripted animals, or plants ripe for plunder.<sup>2</sup> On the other hand, the readiness among Victorian horticulturists to rupture ontological boundaries may be interpreted as a prescient example of interspecies awareness, as evidence that Victorians were more intellectually and morally complex than has been historically acknowledged. This paradigm, grounded in the recent innovations of posthumanist studies, views boundaries between species as permeable, even continuous, and celebrates that fluidity as ethically commendable.

Both frameworks are invoked in this essay, but neither is implemented un skeptically because the complexities of human-orchid relationships in Victorian Britain elude the explanatory structures of these frameworks as they have been configured today. Rather than wholly conforming to either, Victorian orchid literature redirects our focus to the contours of ecological relationships as those were understood in the nineteenth century. At the same time that Victorians imagined themselves as bonded to orchids with affective singularity, they also envisioned particular roles for themselves, human horticulturists, in their understanding of what was then the emerging science of ecology. Victorian orchid literature thus organizes conceptual boundaries—between people and plants, between Britain and its colonies, between nature and culture—with an ideological flexibility that is unexpected and transcends its historical moment.

Such flexibility is consistent with new debates in the humanities that seek not merely to shift or blur boundaries between species but to question them altogether—along with the assumption of human exceptionalism that mandates such boundaries in the first place. Jane Bennett in particular has argued, with force and efficiency, for a notion of agency that no longer privileges human intention and will. “A lot happens to the concept of agency,” as she puts it, “once nonhuman things are figured less as social constructions and more as actors, and once humans themselves are assessed not as autonyms but as vital materialities.”<sup>3</sup> While Victorian orchid literature underscores the mutually constitutive effects of empire and environmentalism, then, it also shows how Victorian conceptions of other species might address the inadequacies of some current heuristic paradigms, most notably the boundaries that position plants and people in ranked relations to each other. Strange as it may seem, Victorians and their orchids may well have much to say about our own ecological and disciplinary commitments today.

### *Orchid Ontology*

The nineteenth century may be thought of as the century of the orchid, at least in the West. Lewis Castle, a Victorian historian of orchids, provides some rudimentary figures on its early introduction and cultivation in Britain. The first exotic orchid arrived in Britain in 1731, he says, as a dried specimen that was resuscitated; by the middle of the eighteenth century, there were still just four nonnative orchid species cultivated in Britain. Knowledge of exotic orchids was thus very limited, writes Castle, until Linnaeus published the second edition of *Species Plantarum* in 1763, in which he enumerated ninety-one species (itself far short of the hundreds of genera and thousands of species now classified as members of this family).<sup>4</sup> But by the end of the eighteenth century, notes Castle, there were approximately fifty species in British cultivation of both exotic and native origin.<sup>5</sup> These numbers grew quickly in the early nineteenth century. Whatever the accuracy of Castle’s figures, they capture the remarkable intensification of interest in exotic plants that was fueled by growing numbers of introductions into Britain in the late eighteenth and nineteenth centuries. The Horticultural Society of London (later the Royal Horticultural Society) was founded in 1804 and soon began sponsoring plant-hunting expeditions to secure new, exotic specimens for British gardens, while the Royal Botanic Gardens at Kew also import-

ed numerous new species for scientific study. Where orchids in particular were concerned, early nineteenth-century collections, established initially by aristocratic fanciers with the means to fund their pursuits, were instrumental in solidifying orchid culture in Britain. Large, commercial nurseries soon began funding their own plant hunters and importing their own orchid stock; Conrad Loddiges and Sons opened a nursery in Hackney in the early part of the century, followed by James Veitch and Sons with the Royal Exotic Nursery in Kensington and Benjamin Samuel William with the Victoria and Paradise Nursery in Holloway—all of which made orchid culture possible for the average, middle-class, and (eventually) even working-class gardener. By 1840, the enthusiasm was already intense, leading collector James Bateman to proclaim that an “*Orchido-Mania* . . . now pervades all classes . . . to a marvelous extent.”<sup>6</sup>

The nineteenth-century orchid literature that documents this “mania” is large and variable. Orchids were cataloged and described in both horticultural and botanical sources; this mix reflects the blended intellectual culture of nineteenth-century Britain, when the practices of horticulturists and botanists still overlapped to a great degree and science was often a popular pursuit. The career of John Lindley is exemplary in this regard, with its orientations toward both amateur gardeners and professional botanists. He was instrumental in classifying and describing newly introduced orchid species in the 1830s and 1840s, with volumes like *Folio Orchidacea* analyzing them for more scientifically inclined readers, and others, like *Sertum Orchidaceum*, targeting readers interested in the aesthetic qualities of orchids.<sup>7</sup> Journals that featured exotic plants—*Curtis’s Botanical Magazine*, for example, and the *Botanical Cabinet*—spread the word about many newly introduced orchid species, and later in the century, periodicals like the *Orchid Review* and *Orchid Album* focused exclusively on orchids; general gardening magazines like the *Gardeners’ Chronicle* (cofounded by Lindley) frequently ran articles on orchid cultivation.<sup>8</sup> Finally, many plant hunters published memoirs about their adventures that featured harrowing narratives, while scores of growers published manuals of orchid care aimed at the general reader.

Like the thousands of other exotic plants imported into eighteenth- and nineteenth-century Britain, orchids may be understood as artifacts of empire. Scholars have amply demonstrated that plants figured in the Western imperial mission, a mission that included the uses of botanic language and taxonomic systems to promote “European global expansion and colonization.”<sup>9</sup> Predictably, many orchid sources betray an imperialist sensibility, revealing their contributions to the popular diffusion of



Fig. 1.1. *Dendrobium*  
*Albo-Sanguineum*,  
*Curtis's Botanical*  
*Magazine* 85 (1859):  
Tab. 5130. (Courtesy  
Huntington Library.)

empire characteristic of nineteenth-century culture at large. Plant hunters, for instance, often exhibited a blatant disregard for the effects of large-scale plunder in their pursuit of lucrative species. One collector, in search of *Odontoglossum* orchids in a dense Andean forest, describes the methods he used to secure specimens “high up out of reach of the native climbers.” With his goal of gathering as many plants as possible, he “provided [his] natives with axes and started them out on the work of cutting down all trees containing valuable orchids.” After about two months’ work, he concludes, “we had secured about ten thousand plants, cut-

ting down to obtain these some four thousand trees, moving our camps as the plants became exhausted in the vicinity.”<sup>10</sup> Such a sensibility was, of course, one of the primary engines of empire in the nineteenth century, and orchid fanciers were not immune to it. And with its emphasis on British exceptionalism—the conviction that Britain in particular was uniquely qualified, even obliged, to discover and plunder the natural resources of other global regions—this sensibility relies on the erection of firm cultural boundaries and hierarchies between the British Empire and the people and resources it colonized.

At the same time, orchid literature bespeaks competing attitudes that challenge such boundaries, attitudes that manifest an early ecological awareness of human engagement with other species and a different sense of the boundaries between them. This emerging awareness laid the groundwork for conceptions of a social life organized around ecological alliances rather than, say, kinship ties or social contracts; and the concept of ecology itself opened the door to the idea of social relationships between humans and nonhuman organisms and things. The term “oecologie” was coined by German zoologist Ernst Haeckel in 1866 to name and advance a new science “of the relations of the organism to the environment including, in the broad sense, all the ‘conditions of existence.’” In Haeckel’s formulation, these “conditions” could be either organic (other organisms) or inorganic (climate, nutrients, surrounding physical and chemical elements).<sup>11</sup> Either way, his understanding of “ecology” was strongly Darwinian in its adaptations of the “economy of nature”—a term Darwin himself derived from Linnaeus—among other concepts.<sup>12</sup> While these ideas are central to *On the Origin of Species*, they also figure significantly in Darwin’s *The Various Contrivances by which British and Foreign Orchids Are Fertilised by Insects*, a volume that he considered to be an evidentiary foundation for certain points in *Origin* but that was also taken up by many orchid enthusiasts and referenced in many orchid manuals.<sup>13</sup> By 1860, then, well before Haeckel coined his term, the general sense of “ecology” was already in wide circulation in Britain, as the study of how organisms interact with each other and additional elements in their environments, including humans. And the mainstream popularity of this idea—its currency with gardeners and farmers as well as botanists and zoologists—guaranteed a degree of practical awareness and cultural diffusion that would have eluded a more strictly scientific dissemination of the concept.

One of the primary ecological markers for orchid enthusiasts was the effects of orchids on themselves, effects that promoted the awareness of

an interspecies exchange with crucial impact on humans. Perhaps no other botanic family was perceived to touch its growers so palpably—in both physiological and affective terms—as the orchid. This effect is evident, first of all, in the episodes of discovery in orchid-hunting narratives, accounts of the moment when years of pursuit and travail are finally rewarded by the location of a rare specimen. As something of a set piece in these texts, these accounts often stress the moment of discovery as a sensory-laden experience that transports and sometimes even overwhelms the seeker. In one late-century narrative, for example, an orchid hunter is simultaneously seduced by the brilliant coloration of massed blooms and overcome by their putrid smell in his pursuit of an ultimately unattainable specimen. Lured by accounts of a “demon flower” deep in the Amazon rain forest, he pushes his team forward for weeks, only to have three of them eventually fall senseless in response to a “peculiar sickening odour pervading the heavy, heated air.” The odor is the scent of the “great mass of Orchids,” a glamorously colored species that was bending the trees and plants with its heavy, refulgent weight.<sup>14</sup> The “demon flower” finally could not be collected, its exhalations preventing anyone from approaching it closely. Other accounts note mammoth orchids with blooms far larger than any cultivated in Britain; caches of plants where they were least expected to be found; and “immense clumps” that astonished “even the most stoical observer.”<sup>15</sup>

These episodes often serve as narrative climaxes in orchid-hunting texts where suspense is structured around botanic discovery, a function that led to heightened sensory language. But they also underscore the disorienting effects of orchids on humans, drawing on a convention of naturalist writing about the tropics that had been in use at least since Alexander von Humboldt published his *Personal Narratives of Travels to the Equinoctial Regions of the New Continent* in the early nineteenth century. In this text, Humboldt expresses a destabilizing sense of scale and quantity when he encounters the lushness of the tropical forest.<sup>16</sup> The episodes of discovery in later orchid literature reprise these scenes in provocative ways, emphasizing not only the stupefaction of travelers unaccustomed to rain forest habitats but also the vigorous, even forcible, habits of orchid growth. The “demon flower” exemplifies these traits with particular clarity, its fetid smell forbidding approach and preventing its transport to Britain. In similarly compelling ways, other specimens seemed to lure collectors to them with their “uncanny” features.<sup>17</sup>

Recalling the qualities of Wells’s “strange orchid,” these traits were bound up in the variable and fantastic shapes of orchid form, form that



was experienced as assertive and even communicative by Victorian growers. The term “form” appears with striking frequency in orchid sources. Orchid fanciers were astonished by the “endless varieties of form” that orchids assumed, and their professions of astonishment became a convention of orchid literature.<sup>18</sup> Darwin himself made a reflexive nod to this practice on the very first page of his own volume when he noted, “Orchids are universally acknowledged to rank amongst the most singular and most modified forms in the vegetable kingdom.”<sup>19</sup> To some degree, the attention to form reflects the reach of the science of “morphology,” which Darwin called “the most interesting department of natural history,” and it is no surprise that the term “form” also appears frequently in *Origin*.<sup>20</sup> The mention of form in the orchid volumes, though, is more than a convention. More crucially, the obsessive focus on the intricate and variable forms of orchids in horticultural and botanic literature shows how this botanic family figured in nineteenth-century ecological thought. In the formal variety of orchids, botanists and growers found not only scientific and aesthetic curiosities but also the evidence for different forms of response to the conditions of existence that orchids experienced. The variable forms of orchids were perceived in turn to affect their growers in different ways, with fancier and bloom both shaped by the mutually constitutive ecological relationship.

The earliest nineteenth-century collectors were immediately receptive to what Bateman called the “magic influence” of orchid form. For him, orchids represented an “encroachment” on the animal kingdom, so potent was their mimic capacity.<sup>21</sup> For Frederick Boyle, their readiness to mutate resulted in “glorious freaks” that were seen in no other “realm of [nature’s] domain.”<sup>22</sup> Even Lindley, ambitious to establish botany as a professional science, lapsed into colorful prose when describing “the extremely remarkable forms of some species.”<sup>23</sup> Of the microscopic *Oberonia rufilabris*, he wrote (echoing Bateman), they are “all so different from other plants that one might almost doubt their even belonging to the vegetable world. . . . Pythagoras would have found living evidence of animals transmuted into plants.”<sup>24</sup> The structure of *Cynoches maculatum* amazed him even more. “Did any one ever see such a flower before?” he wondered. “Which is the top, which is the bottom? What are we to call that long club foot, which is cloven too; and what the crooked fingers dagged with blood, which spread from the middle of one of the leaves, as if about to clutch at something? And what moreover *can* they all be *for*?”<sup>25</sup> The qualities attributed to orchid form—assertion, compulsion, mimicry, sensuality, even (for Wells) agency—led some orchid fanciers



Fig. 1.2. *Cypripedium Lowii* with face-like structure. Thomas Appleby, *The Orchid Manual, for the Cultivation of Stove, Greenhouse, and Hardy Orchids* (London, [1865]): n.p. (Courtesy Huntington Library.)

to take the next step and imagine their plants not merely as bestial but as hominid.<sup>26</sup> “Their intelligence is almost human,” wrote one enthusiast.<sup>27</sup> Another interpreted their form as akin to the human face. “The element, the base, the constituent idea of an orchid is that of a life, of organization, of a being, of a face with all its parts, its line and expression,” he wrote. “They look at us, indeed they have faces, and so many thousands and hundred thousands of orchids with which I have been face to face, I never yet tired to again and again study the character of their kind. They have faces.”<sup>28</sup>

This horticultural language anticipates several strands of posthumanist studies today, most notably the blurring of species boundaries and the emphasis on alternative epistemological models. As Cary Wolfe puts it, posthumanism “fundamentally unsettles and reconfigures the question of the knowing subject and the disciplinary paradigms and procedures

that take for granted its form and reproduce it.”<sup>29</sup> For Wolfe, this shift marks a recent and profound break with previous, deeply entrenched ways of understanding epistemology and subjectivity. Paul Outka, however, has located the roots of posthumanist studies not in contemporary animal studies (as Wolfe does) but in the nineteenth-century embrace of materialism, specifically in “episodes when an individual experienced and recorded an often profoundly disconcerting awareness of the radical material identity between his or her embodied self and the natural world.” For Outka, these episodes demonstrate that a “nascent post-human consciousness” emerged far earlier than contemporary post-humanists allow, thereby exposing the “ahistorical hubris” and radical claims of newness characteristic of some versions of current posthumanist thought.<sup>30</sup> Orchid-human relationships in the nineteenth century manifest several aspects of this emerging sense of oneness with material nature. While those relationships may thus be understood as an example of the now-familiar Enlightenment practices of recording and documenting the natural world, including its difference from and submission to the human, they were also encounters that troubled the certainties that separated “civilized” or “evolved” humans from other living things. This latter quality may be traced in particular in the impression of intimacy these relationships registered, the sense that human and orchid development is inextricably intertwined.

This sense was grounded in what was, by the 1860s, respectable science, most notably the concept of coevolution as Darwin explained it particularly in *The Various Contrivances by which Orchids are Fertilised by Insects*.<sup>31</sup> The volume provides episode after intricate episode of insects and orchids evolving together to ensure the survival of both animal and plant. Darwin’s description of *Angraecum sesquipedale*, an orchid native to Madagascar, famously illustrates this principle. Puzzled by the existence of a nectary in this orchid of “disproportionate length,” he eventually hypothesized a large moth with a long proboscis as the agent of fertilization, pointing out that the extinction of either orchid or moth would entail the extinction of the other.<sup>32</sup> In this case, the formal characteristics of both species had evolved in precise, even intimate relation to the other. Like Lindley, his fellow botanist, Darwin found orchid form astonishing in its variability and especially in its capacity to compel ecological interaction. Following a long, intricate discussion of the pollination process of *Orchis pyramidalis*, for example, he describes the attractions of the bloom for the moth that enables fertilization. “As the flowers are visited both by day and night-flying Lepidoptera,” he says, “it is not

fanciful to believe that the bright-purple tint (whether or not specially developed for this purpose) attracts the day-fliers, and the strong foxy odour the night-fliers.” He goes on to describe how the long nectary of *O. pyramidalis* requires the visiting moth to suck nectar slowly and thus take on a large, firmly attached load of pollen before it leaves one bloom to visit another. The orchid’s form and properties thus enables the insect to “effect a union between two distinct individuals.”<sup>33</sup> In the case of *O. pyramidalis*, visiting Lepidoptera are lured by color, odor, and form, much as the orchid hunter had been seduced by the “demon flower” in the Amazon rain forest; the narrative of this orchid’s pollination, in other words, foregrounds the experience of the moth in much the same way that it was emphasized for the orchid hunter in the adventure tale.

For many Victorian fanciers, it was but a short step from orchid-insect relationships to orchid-human relationships, especially after the process of orchid hybridization was discovered in the 1850s. John Dominy, a gardener at the Veitch nurseries, began experimenting with the process in the early 1850s and brought the first hybrid to flower in 1856.<sup>34</sup> This event is significant because, in the act of hybridizing, the human grower manually places the pollen from one plant on the stigma of another, thus replacing the insect agent in the process of pollination and becoming even more intimately involved in the orchid’s life cycle. The process of hybridization alerted cultivators to habits of orchid form and growth that seemed to confirm their almost human quality. Boyle, for example, tells the story of a fancier who “amused himself with investigating the structure of a few Cypripeds, after reading Darwin’s book, and he impregnated them. To his astonishment, the seed-vessel began to swell,” with the grower assuming he would soon have viable seeds. Unfortunately, Boyle continues, he did not yet know that “pseudo-fertilization can be produced, actually, by anything. So intensely susceptible is the stigmatic surface of the Cypriped that a touch excites it furiously . . . it will go sometimes through all the visible process of fecundation . . . but, of course, there is no seed.”<sup>35</sup>

Clearly, this eroticized strain of horticultural writing genders and sexualizes the relationship between specimen and fancier. Related examples of eroticized style are also evident in Darwin’s work, including an account of the *Catasetum* orchid, a species that ejects its pollinium so forcibly as to shoot it “to the distance sometimes of two or three feet.”<sup>36</sup> Often, such discourses confirm traditional ideologies of sex and gender, as Boyle’s text demonstrates: the (male) grower inserts pollen into the (female) bloom, exciting the “susceptible” stigma so “intensely” that the

flower behaves as if “impregnated.”<sup>37</sup> At the same time, much orchid literature plays into the tendencies of nineteenth-century writing in general to exoticize and orientalize non-Western regions and peoples. This tendency is conspicuously illustrated in some of the orchid texts already cited here, texts that emphasize the exotic provenance of some orchid species, their sensual appeal, and the habits of growth that distinguish them from more sedate Western plants. These features of orchid literature reinforce scholarship of the past several decades, work that has persuasively illuminated the entangled ideologies of race, gender, and empire in nineteenth-century Western texts.

Here again, however, orchid literature is twofold and contradictory: it confirms our twentieth-century scholarship about British representation of race, gender, and empire on many fronts, yet it also makes available other circulating explanatory paradigms, most notably those that question the subordination of plants to people and the maintenance of stringent boundaries between them. Victorian orchid growers were so fascinated by orchid sex because it violated their expectations of both botanic behavior and botanic ontology. While there were biological explanations for the false pregnancy that Boyle observed in his excitable orchid, it seemed to confirm the sense of volition, even duplicity, in plants, and some Victorian scientists began to theorize provocatively along these lines. W. Lauder Lindsay, for example, argued that “some form or degree of Consciousness exists in plants” and built on Darwin’s work in *The Movements and Habits of Climbing Plants* to analyze certain botanic behaviors as examples of “choice,” “selection,” and “preference.”<sup>38</sup> He also speaks to the kinds of ecological interactions that horticulturists observed practically. “Attachment to place or things, which are obvious in the case of many climbers, may, perhaps, in other plants explain much that the botanist, horticulturist, aboriculturist, floriculturist, or agriculturist cannot otherwise satisfactorily account for,” he observed. “Plants exhibit occasionally *individuality*, and even *eccentricity*, for which we cannot account, any more than we can for similar peculiarities in man or other animals.”<sup>39</sup> For orchid fanciers closely attuned to the preferences of their own plants, such concepts seemed only to tighten the affective tie that they believed bound their orchids to them. “It is said of Orchids that they, like domestic animals, soon find out whether they are under the care of one who is really fond of them, and that they respond by thriving or failing according,” wrote W. H. White. He also argued that this care must be “unfeigned” by the grower—because, presumably, the orchid could see through counterfeit affection.<sup>40</sup>

What is at stake in such seemingly eccentric pronouncements from little-read nineteenth-century horticultural literature? They challenge, first of all, the theoretical confines of species, a challenge that Victorians themselves recognized. Once the process of hybridization was perfected, it was found to be a straightforward practice, reinforcing the conclusions of those horticulturists who questioned the species boundaries that botanists had erected taxonomically. Following Dominy's initial success, Donald Beaton, an eminent gardener and horticultural journalist, reportedly observed, "There is not such a thing in nature as a species as meant by botanists."<sup>41</sup> If the creation of new hybrid species and even genera was so simple, how should these categories be conceived? The apparent cooperation of orchids in the process—and the intimate effects of specimen and grower on each other—reinforces such questions and raises new ones about agency and subjectivity. Mel Chen has recently explored related issues in her discussion of "animacies," drawing on Bennett's conception of "vibrant matter" to question long-standing Cartesian divisions between mind and body. "It is possible," Chen insists, "to conceive of something like the 'affect' of a vegetable, wherein both the vegetable's receptivity to other affects and its ability to affect outside of itself, as well as its own animating principle, its capacity to animate itself, become viable considerations."<sup>42</sup> Victorian orchids and their growers, as both are described in nineteenth-century horticultural literature, exemplify such affective mutuality.

### *Orchid Ecology*

Even as Victorian orchid literature raises significant questions about species relationships and ontology, it does not wholly relinquish the dominant, or at least differentiated, role of humans in ecological exchange with plants. Lindsay's reflections about "mind" in plants, for example, clearly anthropomorphize botanic behaviors, while the notion of facial form in orchids explicitly patterns their structure on human form. Bennett has argued that the penchant for anthropomorphizing nonhuman organisms and things is not necessarily a mark of human-centered thinking—and in fact can promote the practice of thinking across ontological boundaries. "A chord is struck between person and thing," as she puts it, with the human "no longer above or outside a nonhuman 'environment.'"<sup>43</sup> Such challenges to humanist ideas may be functional in nineteenth-century orchid literature, at least to a certain degree.

But the imperialist framework of nineteenth-century global operations made it very difficult to question the certainty of British—and human—exceptionalism, with the result that horticulturists retained a firm, dominant role in most orchid literature. The tendency to anthropomorphize orchids thus largely preserved the centrality of humans in the ecological imaginary, understanding the orchid (and, in some cases, other plants as well) as if it were, at most, a subordinate hominid form. Much orchid literature thereby extended human ways of being-in-the-world.

For at least some Victorian horticulturists, however, human exceptionalism entailed human responsibility as well. These horticulturists began to ponder the particular responsibilities of humans in a rapidly changing global landscape, a concern that mitigated the imperialist impulse to some degree. Such viewpoints are less visible to traditional historians of botany like Drayton, who tend to focus on the rise of professional science and state-sponsored botany, devoting little attention to amateur horticulture. It is the horticultural literature, however, that manifests these attitudes most obviously because gardeners and nurserymen were closely attuned to the conditions under which individual plants grew and thrived; they were thus particularly sensitive to the effects of their own actions on the plants they collected and cultivated. Orchids underscored these ecological concerns because they responded so dramatically to human intervention in both their artificial and indigenous habitats. In the process of working through some of these issues—in both books and gardens—orchid fanciers in particular developed sophisticated forms of ecological awareness that suggest new models of agency and human responsibility.

By the final two decades of the nineteenth century, a number of writers were already lamenting the despoliation of orchid habitats in the wild. Frederick Boyle, a well-known fancier who published several books on orchids, wrote extensively on this issue. “The English demand has stripped whole provinces,” he notes, “and now all the civilized world is entering into competition.” While some species of orchids repropagate freely, others—like *Odontoglossum*, one of the most prized Victorian genera—grow slowly and are difficult to cultivate from seed. Boyle was thus very concerned “that *Odontoglossums* [*sic*] carried off will not be replaced for centuries.”<sup>44</sup> Boyle also commented on the practice of razing mature exotic hardwoods to secure orchids in their uppermost branches. “It is a terribly wasteful process,” he observes. “If we estimate that a good tree has been felled for every three scraps of *Odontoglossum* which are now established in Europe, that will be no exaggeration. And

for many years past they have been arriving by hundreds of thousands annually!”<sup>45</sup> Boyle even had the prescience to consider the situation in decades to come in his discussion of *Cypripedium*, a genus that is far easier to cultivate and hybridize than *Odontoglossum*. Noting the disappearance of several species of this orchid in the wild, he emphasized the loss as a “serious warning.” “In seventy years we have destroyed the native stock of two orchids, both so very free in propagating that they have an exceptional advantage in the struggle for existence,” he lamented. “How long can rare species survive, when the demand strengthens and widens year by year, while the means of communication and transport become easier over all the world?”<sup>46</sup> Here ecological sensitivity is paradoxically driven by human acquisitiveness: to love and cultivate an orchid necessitated an awareness of the larger ecosystems in which they flourish.<sup>47</sup>

This burgeoning ecological awareness motivated both the preservation of indigenous systems and the creation of artificial ones in new global regions, involving entities as large as the British government and as small as the individual fancier. For Boyle, one important response to the threat of extinction was government intervention, a step he called for on more than one occasion.<sup>48</sup> But he and other growers also explored the ecological significance of artificial cultivation on the future of orchids as a global botanic family. Virtually every British orchid manual—whether or not it professed environmental awareness and concern—offered advice to the home grower about the conditions that would enable exotic orchids to thrive in the British climate.<sup>49</sup> Some growers were even consciously and acutely aware of the role horticulturists and hybridists might be called upon to play in a future world where orchid habitats in the wild had been destroyed. Echoing Boyle, William Watson observed, “Though the process of extinction may be slow, it is sure. It is thus, then, that we shall have to depend on the work of the cultivator to retain the species by raising them from seed, as well as by procuring new sorts by means of cross-fertilization.”<sup>50</sup> He followed these observations with detailed instructions on hybridizing orchids, sowing seeds, and potting up the seedlings. Boyle himself mitigated his own dismal predictions of orchid extinction by imagining a world where orchids evolved to rely on human intervention. His case study focused on the genus *Cypripedium*, the easily cultivated orchid whose near extinction in the wild he had previously lamented. Drawing on Darwin, he noted that this genus is a primitive one, incapable of self-fertilization and attractive to few insects that can easily fertilize it. “Its time has passed—Nature is improving it off the face of the earth,” Boyle observed. In response, he accorded



human cultivators a special role in its preservation. “A gradual change of circumstances makes it more and more difficult for this primitive form of orchid to exist, and, conscious of the fate impending, it gratefully accepts our help.”<sup>51</sup> In this view, horticulturists have the opportunity not merely to right a wrong—to preserve a species whose habitat humans had destroyed—but even to involve the orchid in new modes of coevolution with humans. “Darwin taught us to expect,” Boyle concluded, “that species which can rarely hope to secure a chance of reproduction will learn to make the process as easy and as sure as the conditions would admit—that none of those scarce opportunities may be lost. And so it proves.”<sup>52</sup> The ease with which the genus *Cypripedium* could be hybridized and germinated demonstrated to Boyle that at least one orchid had already coevolved with humans to the point where its seemingly certain path to extinction had been reversed.

Such ideas are open to variable interpretations. One, of course, is that orchid collecting and cultivation served only to confirm the Victorian impulse to colonize the world—including the botanic world that had expanded so rapidly and exponentially in the nineteenth century. The practical knowledge developed by horticulturists, however, accentuates the complex affiliations of empire and environmentalism and shows that the collection of exotic species promoted ecological awareness even as it satisfied certain territorial appetites. The view of orchids as individual specimens with affective sensibilities, for example, prompted horticulturists to imagine themselves as sympathetically and ecologically linked to their plants in a mutually constitutive relationship. However strange this may seem, it anticipates recent botanical research that analyzes “plant intelligence” and conceives of plants not as passive beings but as “behavioral organisms with a capacity to receive, store, share, process, and use information from the abiotic and biotic environments.”<sup>53</sup> This research, like the Victorian research that preceded it, has reorganized our awareness of how humans and animals interact with plants and share global space with them, thereby mounting a challenge to what Robert Markley has recently described as “a kind of eukaryotic provincialism that reinscribes a host of self-congratulatory assumptions and values about *homo sapiens* as the shepherd, manager, and conservator of the planet’s biota.”<sup>54</sup> While Victorian growers may still have placed themselves at the center of the horticultural universe, their vast knowledge of orchids—including the many environmental elements and practices that guaranteed either the health or death of their specimens—alerted them

to the consequences of unchecked imperial expansion and the need for ecological action.

Victorian orchid literature also complicates the boundaries we have both erected and removed in our own disciplinary considerations of earlier eras. In many respects, Victorians conceived of orchids not as colonizable “others” but as companionate species that share many human features and attributes—and that affect humans with both physiological and affective force. Such conceptions enable the imagination of what anthropologist Anna Tsing, echoing Bennett, has described as a form of “distributed agency” that focuses on the “entwined relations of humans and other species.”<sup>55</sup> By questioning the necessary linkage of agency with intention, Tsing’s notion unsettles the logic that privileges human subjectivities and that separates them from variably constructed “others,” including botanic others. Both Tsing and Bennett, as well as Chen, loosen and even dissolve the boundaries that have promoted the view of plants as radically discontinuous with human ontology. Without such boundaries, concepts of community and social life are altered as well. Bennett theorizes a form of “political ecology” that would acknowledge the corelationships of humans with nonhuman entities and re-form itself as social circumstances and problems shifted. “If human culture is inextricably enmeshed with vibrant, nonhuman agencies,” she writes, “and if human intentionality can be agentic only if accompanied by a vast entourage of nonhumans, then it seems that the appropriate unit of analysis for democratic theory is neither the individual human nor an exclusively human collective but the (ontologically heterogeneous) ‘public’ coalescing around a problem.”<sup>56</sup> In her view, a sense of public responsibility would be intensified rather than attenuated by this form of “political ecology” because it builds on a strengthened sense of human identification with nonhuman entities.

Most Victorian horticulturists would not share Bennett’s conclusions, for even as they identified with their orchids, they also maintained a firm sense of their own exceptionalism. That sense of exceptionalism, however, sometimes prompted a corresponding sense of responsibility that may well have been motivated by the awareness that their ecological fortunes were intertwined with those of orchids and other botanic species, both exotic and native. For Kate Soper, the very concept of human exceptionalism addresses the looser, fuzzier versions of posthumanist thought without blunting its political force. “To point out that we are all inter-connected in ‘nature’ and share much more with other

animals [and plants] than we previously thought is all very well,” she observes. “But what is important *eco-politically* is recognition both of the role of humans in bringing about ecological collapse, and of the distinctive capacities humans alone have to monitor, and in principle, to adjust their behaviour and environmental impact.”<sup>57</sup> Clearly, Soper and Bennett would part ways at certain points in (post)humanist arguments. Yet their discord serves to highlight the rich potential of such thought and shows how Victorian ecological advances anticipated and even prepared the ground for such arguments. For Victorian horticulturists attuned to their orchids, humans were indeed exceptional—in their capacity both to destroy and to sustain fragile species and environments. If their ecological theory was not yet fully formed, its taxonomic, ontological, and epistemological ambiguity complicates our current views of them and even addresses our own ideologies and political commitments. What makes Victorians and their orchids seem so very strange is precisely what makes them significant today.

### Notes

1. H. G. Wells, “The Strange Orchid,” in *Thirty Strange Stories* (New York: Harper and Brothers, 1898), 11, 14.

2. Of Edward Said’s many works that employ this paradigm, see in particular *Orientalism* (New York: Random House, 1978).

3. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010), 21.

4. Unless otherwise indicated, the term “exotic” in this essay is used to indicate a nonnative species.

5. Lewis Castle, *Orchids: Their Structure, History, and Culture* (London: “Journal of Horticulture” Office, [1866]), 40.

6. James Bateman, *The Orchidaceae of Mexico and Guatemala* ([London: James Ridgway, 1837–54]), 3.

7. Lindley published several important volumes on orchids, a lifelong interest of his, and provided crucial impetus for orchid culture in nineteenth-century Britain. See [John] Lindley, *Folia Orchidaceae: An Enumeration of the Known Species of Orchids*, vol. 1 (London: Published for the author, by J. Matthews, 1852–55); John Lindley, *The Genera and Species of Orchidaceous Plants* (London: Ridgways, 1830–40); John Lindley, *Sertum Orchidaceum: A Wreath of the Most Beautiful Orchidaceous Flowers* (London: James Ridgway and Sons, 1838). Other botanists were instrumental as well in furthering knowledge and cultivation of exotic orchids in Britain. See, for example, J. D. Hooker, “A Century of Indian Orchids Selected from Drawings in the Herbarium of the Botanic Garden, Calcutta,” *Annals of the Royal Botanic Garden, Calcutta* 5, no. 1 (1895): 1–16; Bartle Grant, *The Orchids of Burma (Including the Adaman Islands)* (Rangoon: Hanthawaddy Press, 1895); G. King and R. Pantling, *New Orchids from Sikkim* (Calcutta: Baptist Missions Press, 1895).

8. Curtis's *Botanical Magazine, or Flower-Garden Displayed* (London: [various publishers], 1801–1920); Conrad Loddiges and Sons, *Botanical Cabinet* (London: John and Arthur Arch, 1817–33); Robert Warner and Benjamin Samuel Williams, eds., *Orchid Album* (London: B. S. Williams, 1882–97); *Orchid Review* (London: West, Newman, 1893–1923); *Gardeners' Chronicle and Agricultural Gazette* (London, 1844–73); *Gardeners' Chronicle: A Weekly Illustrated Journal of Horticulture and Allied Subjects* (London, 1874–1922); "Phalaenopsis Rosea," illustration in Curtis's *Botanical Magazine* 2 (1860): 5212.

9. Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004), 195. See also Richard Drayton, *Nature's Government: Science, Imperial Britain, and the "Improvement" of the World* (New Haven: Yale University Press, 2000) and Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: University of Chicago Press, 2008).

10. Albert Millican, *Travels and Adventures of an Orchid Hunter: An Account of Canoe and Camp Life in Colombia, While Collecting Orchids in the Northern Andes* (London: Cassell, 1891), 149–51.

11. Ernst Haeckel, *Generelle Morphologie der Organismen: Allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwin reformirte Descendenz-Theorie*, vol. 2 (Berlin: Reimer, 1866), 286, quoted in Robert C. Stauffer, "Haeckel, Darwin, and Ecology," *Quarterly Review of Biology* 32, no. 3 (1957): 140. The quoted section from Haeckel was translated by Stauffer.

12. Stauffer, "Haeckel, Darwin, and Ecology," 139–40, 143. See also Frank N. Egerton, *Roots of Ecology: Antiquity to Haeckel* (Berkeley: University of California Press, 2012), 80–84, 198–200.

13. Charles Darwin, *On the Origin of Species by Means of Natural Selection*, ed. Joseph Carroll (Peterborough, ON: Broadview Press, 2003); Charles Darwin, *The Various Contrivances by Which Orchids Are Fertilised by Insects*, 2nd ed. (London: John Murray, 1890).

14. "A Newspaper Correspondent on Orchids." *Orchid Review* 4, no. 7 (January 1896): 203.

15. F. W. Burbidge, *Gardens of the Sun: Or a Naturalist's Journal on the Mountains and in the Forests and Swamps of Borneo and the Sulu Archipelago* (London: John Murray, 1880), 212; Ashmore Russan and Frederick Boyle, *The Orchid Seekers: A Story of Adventure in Borneo* (London: Frederick Warne, n.d.), 160; Frederick Boyle, *The Woodlands Orchids Described and Illustrated, with Stories of Orchid Collecting* (London: Macmillan, 1901), 246–47; Millican, *Travels and Adventures*, 118.

16. Alexander von Humboldt, *Personal Narrative of Travels to the Equinoctial Regions of the New Continent, during the Years 1799–1804*, 2nd ed., trans. Helen Maria Williams, vol. 2 (London: Longman, 1818). For an analysis of Humboldt's response to the tropical forest, see Lynn Voskuil, "Sotherton and the Geography of Empire: The Landscapes of Mansfield Park." *Studies in Romanticism* 53, no. 4 (2014): 591–615.

17. Boyle, *Woodlands Orchids*, 253.

18. Frederick Boyle, *About Orchids: A Chat* (London: Chapman and Hall, 1893), 86.

19. Darwin, *Various Contrivances*, 102.

20. Darwin, *Origin of Species*, 364.

21. Bateman, *Orchidaceae of Mexico*, 6.

22. Boyle, *About Orchids*, 206.

23. Lindley, *Sertum*, n.p.

24. *Ibid.*

25. Ibid.
26. "Cypripedium Lowii," illustration in Thomas Appleby, *The Orchid Manual, for the Cultivation of Stove, Greenhouse, and Hardy Orchids* (London: Journal of Horticulture and Cottage Gardner Office, 1861), 51.
27. Mrs. Talbot Clifton, *Pilgrims to the Isles of Penance: Orchid Gathering in the East* (London: John Long, 1911), 306.
28. Geo[rge] Hansen, *The Orchid Hybrids. Enumeration and Classification of All Hybrids of Orchids Published up to October 15, 1895* (London: Dulau, 1895), 48–49.
29. Cary Wolfe, *What Is Posthumanism?* (Minneapolis: University of Minnesota Press, 2010), xxix.
30. Paul Outka, "Posthuman/Postnatural: Ecocriticism and the Sublime in Mary Shelley's *Frankenstein*," in *Environmental Criticism for the Twenty-First Century*, ed. Stephanie LeMenager, Teresa Shewry, and Ken Hiltner (New York: Routledge, 2011), 31, 32.
31. For an excellent analysis of Darwin's work with orchids, see Devin Griffiths, "Flattening the World: Natural Theology and the Ecology of Darwin's Orchids," *Nineteenth-Century Contexts* 37, no. 5 (2015): 431–52.
32. Darwin, *Various Contrivances*, 163, 165.
33. Ibid., 23, 25.
34. James H. Veitch, *Hortus Veitchii: A History of the Rise and Progress of the Nurseries of Messrs. James Veitch and Sons* (London: James Veitch & Sons, 1906), 99.
35. Boyle, *About Orchids*, 233–234.
36. Darwin, *Various Contrivances*, 180.
37. Justin Prystash, however, has demonstrated the role of Darwin's eroticized botanical writing in feminist thinking as well. See "Fertilizing Darwin's Flowers: Feminist Narratives of Evolutionary Botany," *VJ: Victorians Institute Journal* 39 (2011): 227–57.
38. W. Lauder Lindsay, "Mind in Plants," *British Journal of Psychiatry* 21, no. 96 (1876): 521, 525; Charles Darwin, *On the Movements and Habits of Climbing Plants* (London: Longman, Green, Longman, Roberts and Green, 1865).
39. Lindsay, "Mind in Plants," 523.
40. W. H. White, *The Book of Orchids* (London: John Lane, The Bodley Head, 1902).
41. [Donald] Beaton, [no source], quoted in Castle, *Orchids*, 44.
42. Mel Y. Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham, NC: Duke University Press, 2012), 4.
43. Bennett, *Vibrant Matter*, 120.
44. Boyle, *About Orchids*, 64.
45. Ibid., 71–72.
46. Ibid., 112.
47. Boyle's ecological leanings are not unique even among colonialists and imperialists. As Richard H. Grove has discussed and amply documented, environmental thinking and practice was often spurred by the experience of Europeans living and working in various colonial and global outposts. See Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge: Cambridge University Press, 1995) and Grove, "Conserving Eden: The (European) East India Companies and Their Environmental Policies on St. Helena, Mauritius and in Western India, 1660–1854," *Comparative Studies in Society and History* 35, no. 2 (1993): 318–51.

48. Boyle, *About Orchids*, 112; *Woodlands Orchids*, 145.
49. See, for example, James Britten and W. H. Gower, *Orchids for Amateurs: Containing Description of Orchids Suited to the Requirements of the Amateur* (London: "The Country" Office, [1878]); F. W. Burbidge, *Cool Orchids, and How to Grow Them* (London: Robert Hardwicke, 1874); Benjamin Samuel Williams, *The Orchid-Grower's Manual*, 4th ed. (London: Victoria and Paradise Nurseries, 1871).
50. W[illiam] Watson, *Orchids: Their Culture and Management*, 2nd ed. (London: L. Upcott Gill, 1903), 21.
51. Boyle, *About Orchids*, 224–25.
52. *Ibid.*, 228.
53. Eric D. Brenner et al., "Plant Neurobiology: An Integrated View of Plant Signaling," *Trends in Plant Science* 11, no. 8 (2006): 414, 417. See also Michael Pollan, "The Intelligent Plant: Scientists Debate a New Way of Understanding Flora," *New Yorker*, December 23, 2013.
54. Lucinda Cole et al., "Speciesism, Identity Politics, and Ecocriticism: A Conversation with Humanists and Posthumanists." *Eighteenth Century* 52, no. 1 (2011): 96–97.
55. Anna Lowenhaupt Tsing, "Strathern beyond the Human: Testimony of a Spore," *Theory Culture Society* 31, nos. 2–3 (2014): 223, 224.
56. Bennett, *Vibrant Matter*, 108.
57. Kate Soper, "The Humanism in Posthumanism," *Comparative Critical Studies* 9, no. 3 (2012): 367.