Anthro-Pollination: The Nineteenth-Century Production of Hybrid Ornamental Plants

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Summary

John Dominy's creation in 1855 of the first artificial hybrid orchid (*Calanthe* × *dominii*) marked the beginning of a very particular mutualistic interaction between people and plants. In pursuit of novelty that would feed the booming market of exotic species, horticulturists turned into hybridizers—"anthro-pollinators" who interbred species that would otherwise never meet in nature. Observing the natural hybridization that occurs in plants with particular characteristics, such as orchids, begonias, and anthuriums, hybridizers sought to create desirable, ostentatious varieties. Without an understanding of the laws of genetic inheritance, however, hybridizers had to rely on repeated trial and error—and the resulting hybrids were difficult to allocate within the traditional taxonomic classification.

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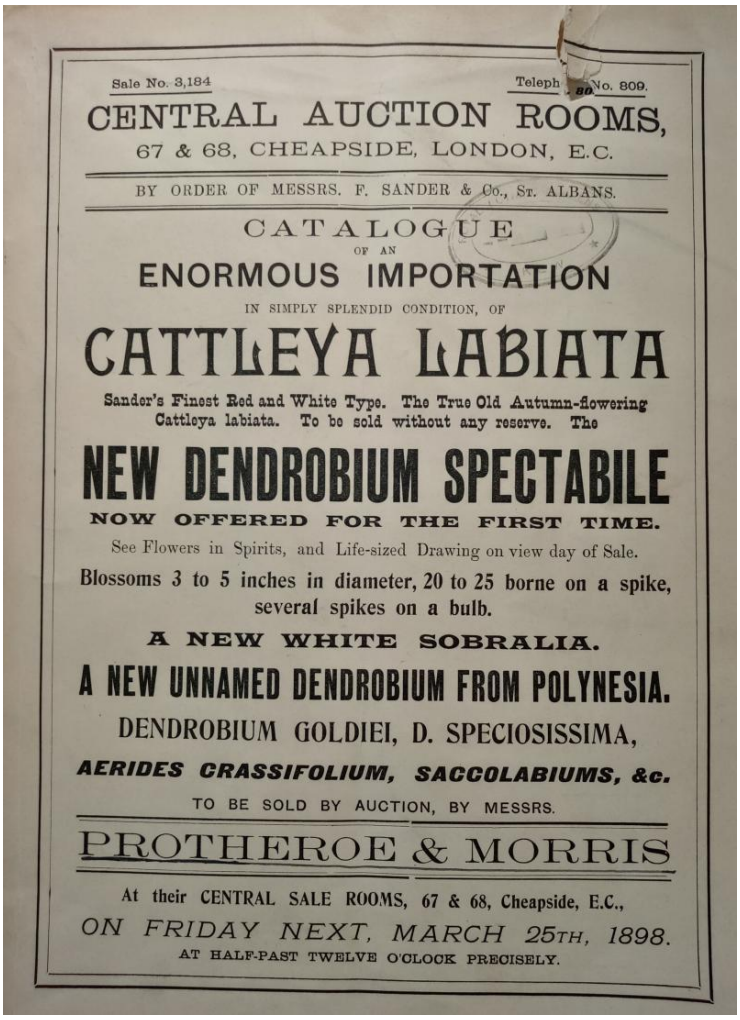
Fig. 1. *Calanthe* × *dominii*.

Originally from *Curtis's Botanical Magazine*, vol. 84 (Ser. 3 no. 14) pl. 5042. Click here to view Wikimedia source.

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In 1855, John Dominy (1816–1891), a horticulturist at Veitch Nurseries in Chelsea, London, used the pollen of *Calanthe furcata* to fertilize *Calanthe masuca*. The result: the first documented human-created hybrid orchid, *Calanthe* × *dominii*. Dominy's success marked the beginning of an unprecedented, capitalist-shaped mutualist relation whereby professional and amateur horticulturists turned into dedicated pollinators. Unlike nectar-seeking insects, the reward for these human pollinators was the beauty of often extravagant varieties of orchids, anthuriums, or begonias not found in nature. Once in the market, these new varieties provided the hybridizers and the nurseries they worked for a constant flow of money. Meanwhile, the plants (although transformed into another entity) ensured the persistence of their genetic material. This profit-driven creation of hybrids, however, unfolded without knowledge of the mechanisms governing interbreeding and heredity discovered by Gregor Mendel in 1866 (and first publicized in 1900). Without epistemological guidance, interbreeding was a blind process of trial and error in which hybridizers rarely knew the outcome of their experiments in advance.

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Fig. 2. Advertising calling for an auction of orchids in London, including a "new unnamed Dendrobium from Polynesia," 1898. Courtesy of the Kew Gardens Library

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This particular interaction between plants and Europeans was shaped by the nineteenth-century's growing bourgeois class, who embraced "exotic" plants as symbols of wealth, sophistication, and social status. While monarchs and their allies had long exhibited a devotion to non-European plants, the size of the bourgeois class pushed up demand, and the nurseries that had emerged during previous decades were ready to supply it. In the United Kingdom in particular, plant collectors extracted millions of plants from distant ecosystems for both imperial organizations such as Kew Gardens and private nurseries such as William Bull, Loddiges, and Veitch. After deforesting big areas and depleting entire populations of plants, these collectors sent their cargo to Europe. Once there, the plants were acclimatized and asexually replicated, before being advertized in high-end catalogues, in many instances without a defined name. The market for exotic plants was thus often fed with plants that had not been formally described through the taxonomic apparatus devoted to giving identity to every new species.

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Fig. 3. Natural diversity in the orchid genus *Pescatorea*.

Source: *Atlas en Couleurs des Orchidées Cultivée* by Julien Constatin, 1912.

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The emergence of hybridization radically altered the dynamics of this market, which until then had relied on the limited diversity in wild plant communities (Figure 3). Hybrids represented a theoretically limitless source of novelty. Created by a sort of genetic permutation, the mixing of species added new shapes, colors, and sizes to the catalogue of exotic plants, expanding the range of available ornamental species. Importantly, this could only happen because plants such as orchids, begonias, bromeliads, and anthuriums hybridized naturally. Their large, vibrant, and unique flowers and leaves had already given them a central place in the market for "exotic" plants, and horticulturists now exploited their natural tendency for hybridization for experimentation and profitability through the creation of novel varieties. In turn, some of the genetic identity of the plants survived in a kind of botanical disguise.

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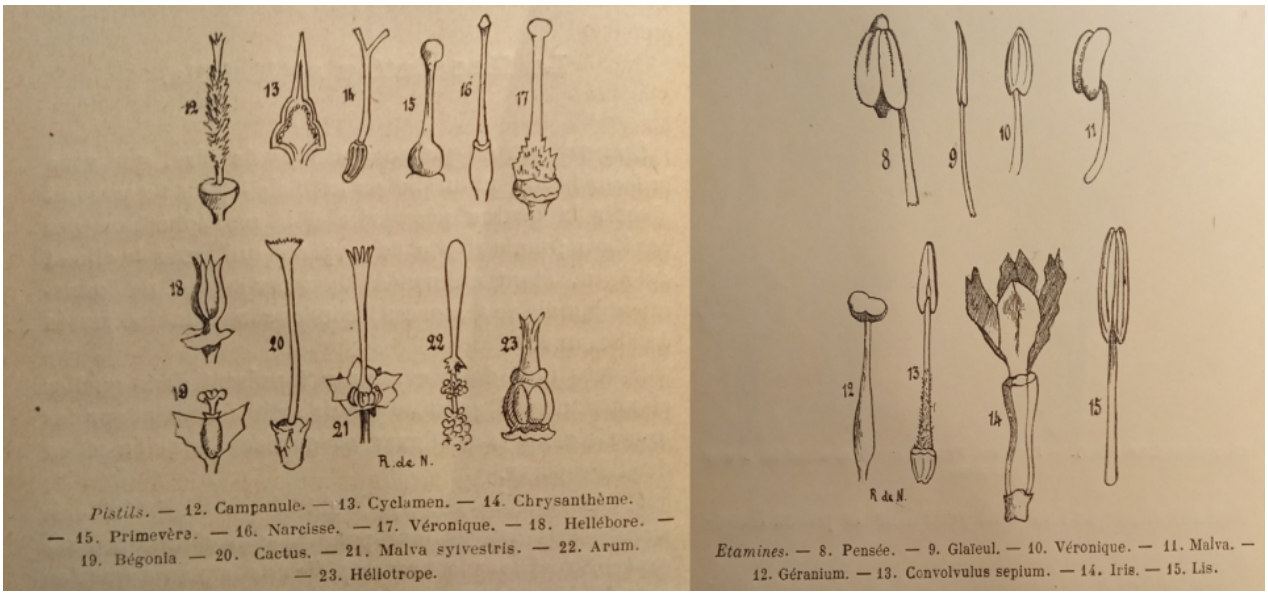


Fig. 4. Study on pistils and stamens, 1857.

Source: *L'Hibridisation des Plans* by Raphael de Noter, 1857.

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In this mutualistic interaction between plants and their hybridizers, the latter became pollinators. Their work involved facilitating sexual connections between plants that, as inhabitants of entirely different environments or even separate continents, would never have come into contact otherwise. As a result, many hybridization manuals show how this "anthro-pollination" of ornamental plants brought about a renewed focus on the sexual organs of plants, much as Linnaeus's *Species Plantarum* had done. Interestingly, these guides, which detailed practical methods for breeding plants, also introduced a conceptual universe that conflated animal sexuality with that of plants. For instance, with the active hybridization of orchids, anthuriums, and other plants, terms such as "emasculated" or "castrated" flowers, which had been initially used during the seventeenth and eighteenth centuries, regained currency. This hyper-focus on the sexuality of plants may be attributable to the lack of knowledge of the patterns governing heredity, later discovered by Mendel. The evidence also shows that the careful selection of parent plants, cross-pollination, and years of cultivation meant hybrids were slow to produce, and their outcomes remained unpredictable. This made them unique exponents of rare diversity and elevated them to the status of luxury goods for the elite.

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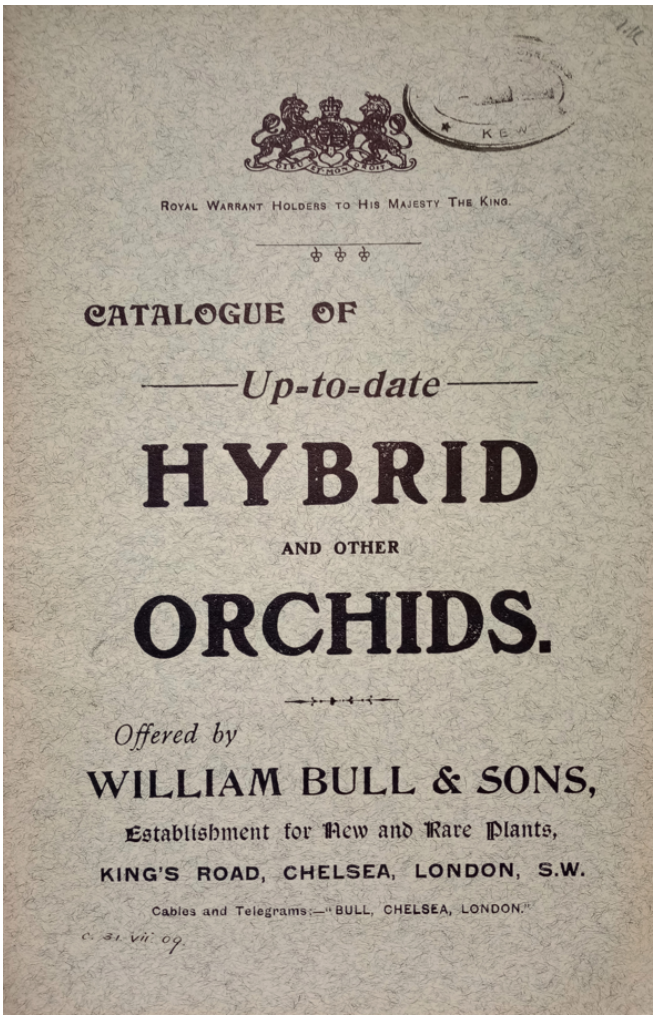


Fig. 5. William Bull's 1904 catalogue of hybrid orchids.

Courtesy of the Kew Gardens Library.

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The opportunities that hybrids brought to the ornamental plant market were not necessarily celebrated by taxonomists. The dual nature of hybrids did not fit within the architecture of taxonomic practice, which was structured around types with a set of discrete traits that delimited the extension of what could be named as a species. Joseph Dalton Hooker, Director of Kew Gardens (1865–1885), observed how hybridization was "an agent in confusing species." For Hooker, these "spurious" hybrids challenged the taxonomist's conception of the natural order. Simply put, they did not fit into a world compartmentalized by fixed species boundaries, necessitating the creation of a new taxonomy for these plants. The naming conventions for these plants reflected not only the parental species of each hybrid but also the person by whom and place in which they were developed. Half product of nature and half product of hybridizers, these chimerical plants were the result of economic, social and biological forces—and they were "artificial" botanical entities in the eyes of taxonomists.

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Fig. 6. *Anthurium x desmetianum*, a product of the hibridization of *A. scherzerianum* and *Anthurium andraeanum*.

Source: *L'Illustrastration Horticole*. Courtesy of the Kew Gardens Library.

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The nineteenth-century hybridization craze, driven by market forces and experimentation, reshaped both the ornamental plant market and scientific conventions. Without a guiding framework, hybridizers relied on empirical methods to create a vast diversity of plants. However, the fever for "exotic" plants began to decline by the end of the century, when tastes shifted toward native species and "naturalistic" gardens. Paradoxically, it was in 1900 that Mendel's work was rediscovered, sparking a new era in genetics. Had it been acknowledged earlier, it could have guided the hybridization efforts. Nevertheless, as exemplified by the omnipresence of *Anthurium andraeanum* varieties in today's supermarkets, the hybrids produced then remain enduring symbols of this unique era of collaboration between plants and their hybridizers.

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Arcadia Collection:
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- https://darwin-online.org.uk/converted/pdf/1853_Hooker_New_Zealand_CUL-DAR.LIB.291.pdf

Websites linked in image captions:

- https://commons.wikimedia.org/wiki/File:Calanthe_%C3%97_dominii_-_Curtis%27_84_%28Ser._3_no._14%29_pl._5042_%281858%29.jpg

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Diego is a British Academy Postdoctoral Fellow at Royal Holloway, University of London, and a Visiting Researcher at the Royal Botanic Gardens, Kew. After working as a botanist in Colombia, he shifted his focus to the environmental humanities. Using a dialogue between images, texts, and botanical collections, his research explores the historical relationships between people and plants in tropical environments. He is currently investigating the nineteenth-century transatlantic exchange of ornamental plants used in garden design in the Andes and Europe, and their transformation into commodities. Diego was previously a Landhaus Fellow at the Rachel Carson Center, Munich.
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