Printing and publishing the illustrated botanical book in nineteenth century Great Britain

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Abstract: In the nineteenth century there was an explosion of interest in gardening at all levels of English Society, including the new middle classes that had developed as a result of the Industrial Revolution. For several centuries botanical and gardening books had been available to the wealthier classes who could afford to buy them. These books were expensive to produce and could only be made available for sale in small editions. Coinciding with the craze for gardens and floraculture in nineteenth century Britain were developments in book making technology. After remaining the same since the time of Gutenberg, over the course of the century almost all aspects of book making were mechanized and books could be mass produced at a price that made them accessible to almost all economic levels of society. New cheaper methods of graphic illustration were developed which replaced the more expensive processes such as hand-colored engravings and aquatints. As a result, during the Victorian era, affordable scientifically accurate books that were also beautifully illustrated became more widely available. This paper discusses the developments in graphic illustration in the nineteenth century in relation to the botanical works by Priscilla Susan Bury, Jane Loudon, Anne Pratt, and James Shirley Hibberd. General trends in book illustration will be presented in relation to Bury’s *A Selection of Hexandrian Plants Belonging to the Natural Orders of Amaryllidae and Liliaceae* (1831–1834), Loudon’s *The Ladies Flower-Garden of Ornamental Bulbous Plants* (1841), Pratt’s *The Flowering Plants and Ferns of Great Britain* (1850–1857), and Hibberd’s *Rustic Adornments for Homes of Taste and Recreations for Town Folk in the Study and Imitation of Nature* (1857) and *Familiar Garden Flowers* (1879–1897).
1. Introduction
During the nineteenth century the people of Great Britain, no matter what their economic and social class, were wildly passionate about flowers and gardening. Plant collectors were sent off to America, Australasia, India, South Africa, Japan, and China to bring back botanical riches for their famous botanical gardens, employers, or their friends. Some were successful, well-known adventurers like Robert Fortune (1812–1880) who brought the double yellow rose to England from China. Others died from spear wounds inflicted by Aborigines or were just simply lost and not heard from again as were Ludwig Leichhardt (1813–1848) and his party who ventured into the interior of Australia. Home interiors from floor to ceiling were decorated with flower themes including carpets, wallpaper, fireplaces, ceiling ornaments, pottery, and tableware. Ladies adorned their hair with freshly cut flowers and gentlemen wore flowers in their buttonholes (Morgan & Richards, 1990, pp. 68–69). Even poor laborers had gardens with the plants that could survive the industrial smoke that filled the air of their neighborhoods. Lancashire textile workers were known for cultivating beautiful flowers in the 1850s. A laborer claimed he saved up money for his rose garden by avoiding the beer shops (Hole, 1880, p. 23). The growing middle classes, eager to follow the styles and trends of the aristocracy, aspired to have homes that reflected the latest in flower fashions. Ladies botanized, pressed plants, and painted floral designs on china. Private herbariums, books of pressed plants, were collected from travel destinations to serve as remembrances of trips. The wealthy vied with each other to maintain the most splendid gardens and heated conservatories to house the latest plants, like orchids, introduced from the warmer climates. The gardeners responsible for managing all aspects of the maintenance of the gardens and grounds of great estates were highly esteemed and held positions of great prominence and status. Even the Great Exhibition of 1851, the first international exhibition and one of the most notable events of the century, was influenced by flowers. The Crystal Palace, which housed the exhibition, was made of glass with a supporting framework based on the rib structure of the great Amazon water lily, *Victoria regia* (now *Victoria amazonica*), named for the Queen Empress herself.

The splendor of the soul of this age has been preserved and passed down to us in the many illustrated botanical and horticultural books produced throughout the nineteenth century. Some of these were expensively made with stunningly beautiful color plates that only those of wealth and privilege could afford. However, it wasn’t only the moneyed upper classes of Victorian Society who were eager for printed texts with illustrations. At the end of the eighteenth century in Europe growth in population and literacy led to a significant increase in the demand for cheap printed materials. The middle classes born of the Industrial Revolution were eager for books geared toward their needs and the size of their pocketbooks. The book trade was thus motivated to find ways to supply this new segment of their market. During the course of the nineteenth century, primarily during the reign of Queen Victoria (1837–1901), developments in book making and illustrative processes made it possible to produce popular gardening and flower books at affordable prices. Almost all people, no matter what their socioeconomic class, could take part in the excitement of the era through illustrated books and periodicals.

2. Queen Victoria
Alexandrina Victoria became Queen on 20 June 1837 upon the death of her uncle, King William IV (1765–1837). She was the daughter of Edward, Duke of Kent, the fourth son of George II. In 1751, a private botanic garden at Kew was established by George II’s mother, Princess Augusta of Saxe-Gotha. Queen Adelaide, the wife of William IV, and Victoria’s mother, the Duchess of Kent had connections with a flower painter called the “Flower Painter in Ordinary” (Scourse, 1983, p. 9). Queen Victoria pressed flowers as did Queen Charlotte, the wife of George III, but not for the purposes of...
academic flower classification. Victoria’s pressed flowers represented a collection of memories (Scourse, 1983, pp. 9–10). For sixty-four years, she reigned as queen of the United Kingdom of England, Scotland, and Ireland and of British possessions overseas. During the years of her rule the Industrial Revolution brought social and technological changes that impacted most every aspect of daily existence. These technological changes impacted the culture of gardening in Great Britain. Queen Victoria came to symbolize the power of the British empire, longevity and personal morality. Her era witnessed the development of the modern world.

Victoria grew up in the apartments of Kensington Palace secluded from society and began her formal education at the age of four. Early on she was exposed to evangelical beliefs through the writings of Sarah Trimmer (1741–1810) who wrote for evangelical parents who wanted to educate their children at home. Although she was studious and very well educated, Victoria was not a Renaissance woman like Elizabeth I and she did not benefit from the same classical education that the men of the political classes received (Reynolds, 2004). She had piano, singing and dancing lessons and was tutored in painting and drawing, activities considered appropriate for ladies at that time. When she was fourteen years old her uncle, Leopold I (1790–1865), the future king of Belgium, began to prepare her for duties she would assume as queen. Although the biographical accounts of her universal popular acclaim are most likely exaggerated, large and enthusiastic crowds turned out to see the Queen on her coronation day in 1838 (Reynolds, 2004). However, it should be noted that her coronation was celebrated in street ballads and periodicals as a new beginning for economic and political reasons (Hewitt, 2012, p. 4). Her youth was reflected in the mood of the new sentimental flower books (Scourse, 1983, p. 9). Louisa Anne Twamley (1812–1895) wrote a poem personifying Victoria as a rosebud that appeared in her Flora’s Gems (1837). The first stanza begins:

ROSEBUD of ENGLAND! young and cherished Flower,
To thee a sisterhood of Flowers we bring,
And pray thee to receive the offering
Which simple Song, and Art’s most gentle power,
Have blent to form thee (Scourse, 1983)

Victoria ruled as a single woman until February 1840 when she married her first cousin, Prince Albert of Saxe-Coburg-Gotha (1819–1861).

Queen Victoria began her married life intending to maintain her independence and rule alone without Albert’s counsel. However, Albert’s influence grew and together he and Victoria functioned as an informal dual monarchy (Weintraub, 2004). He strove to be the master of his home, in accordance with the social structures of the era, even though he could not be king. Victoria subscribed to the prevailing roles of the sexes, believing that women were inferior to men and dependent upon them. She considered it her duty to adore and be submissive to her husband. As queen, she overshadowed the dominant role of her husband and she often regretted the unnatural order of her household. Although one would never have guessed based on their public appearances, behind closed doors their strong personalities collided. Victoria bore Albert nine children and together they worked to provide a role model for family life. She became connected to the major Continental dynasties through the marriages of her children and grandchildren and was referred to as the “grandmother of Europe” (Mitchell, 2009, p. 11).

Albert devoted himself to public works in addition to the responsibilities he shouldered as head of the royal family, husband, and an active partner in ruling the nation. His greatest undertaking was helping to organize the Great Exhibition of 1851. Victoria and Albert visited the Great Conservatory built by Joseph Paxton at Chatsworth (Scourse, 1983, p. 104). It was the most famous glasshouse of the time with indoor tropical landscapes. Although Albert was extremely hard working and aimed to emphasize religious and family values, he was never popular with the people of England. He died of
typhoid in 1861. Victoria, who truly loved and adored her husband, was devastated and her court remained in mourning for the rest of her reign. Albert’s efforts on behalf of his adopted country were noted after his death by Benjamin Disraeli (1804–1881), twice Victoria’s prime minister: “With Prince Albert we have buried our Sovereign. This German Prince has governed England for twenty-one years with a wisdom and energy such as none of our kings has ever shown” (Weintraub, 2004).

Queen Victoria’s name became firmly associated with the period of years she was in power. During the Victorian era she “inhabited her subjects’ lives to an extraordinary degree” (Hewitt, 2012, p. 2). One of the ways this was achieved was by using Victorian iconography for material objects such as Staffordshire pottery figurines. Also, her name was seen everywhere. Myriad types of corporate entities were named for her including parks, halls, baths, hotels, hospitals, universities, stations, and insurance companies, as well as, cities, towns, lakes, and rivers (Hewitt, 2012, pp. 2-3). However, her presence extended beyond figurines and the multitude of places named for her. Victoria was a diligent and engaged monarch who took her responsibilities seriously. She sometimes wrote Disraeli three or four times a day and is described as opinionated, forthright, and stubborn (Hewitt, 2012, p. 2). While Victoria reigned the monarchy was the most visible link that held the world’s largest empire together. One in four people on earth were subjects of Queen Victoria by the 1890s (Mitchell, 1988a, p. 836). Victoria celebrated two milestone events, a Golden Jubilee in 1887 and a Diamond Jubilee in 1897 where she was presented with a basket of orchids, “of endless spikes of all that are best and rarest from her Majesty’s Dominions, being used together with the almost priceless blossoms of the hybridist’s art raised in this country since our Queen’s accession” (Morgan & Richards, 1990, p. 21). When she died in 1901 there was a belief that her reign was a distinct historical period and that she played a decisive role in this distinctiveness (Hewitt, 2012, p. 2). The death of Queen Victoria seemed to epitomize the end of an age, an age that included a preoccupation with flowers and flower fashions that “assumed the most extravagant and bizarre proportions” (Scourse, 1983, p. 6). The Victorian garden, Carter tell us, “was a small reflection of the Victorian world at large” because it symbolized the self-confident stability of Victoria’s reign that took hold after an uncertain start (Carter, 1985, p. 16).

3. The nineteenth century
Before Victoria was crowned queen, collecting plants and producing and collecting paintings of plants had become fashionable from the reign of Queen Anne (1702–1714) (Morgan & Richards, 1990, p. 18). It was, however, during the nineteenth century that English horticulture made its greatest advances because of the economic achievements and social changes of the era (Quest-Ritson, 2003, p. 167). Events that took place before Victoria’s reign had a crucial impact on the lives of the Victorian people (Mitchell, 2009, p. 1). An atmosphere of national pride was engendered by the Duke of Wellington’s victory over Napoleon at Waterloo in 1815. At the end of the Napoleonic wars England controlled the seas. The Industrial Revolution began around 1780 when the cotton industry began using machines to do tasks traditionally done by hand: spinning and weaving. The cotton weavers lamented the fact that they did not have as much time for their gardens after the power looms came into use (Quest-Ritson, 2003, pp. 144–145). The Reform Bill of 1832 increased the voting electorate to 20% of the population but still left the new industrial areas underrepresented and the landed elite in power (Hewitt, 2012, p. 5). However, the passage of this legislation set in motion the forces necessary to both steer the government toward democratic rule and to push the government to take responsibility for the safety and well-being of all citizens (Mitchell, 2009, p. 1). One of the most significant developments of the nineteenth century was the establishment of a system of railways. It is traditionally held that the railway age began when the Liverpool to Manchester line was established in 1830, even though it was not the first railway. Efforts to develop steamships also predate Queen Victoria and intensified in the 1830s. This increased activity was in response to the need to fulfill government mail contracts and the development of the railways. Also, in the same decade, trade links refocused from Europe to Latin America and Asia, opening up more opportunities to import exotic flowers. In the 1820s and 1830s the status of the head gardener increased as more plants were imported that wealthy garden-owners wanted to cultivate on their estates (Quest-Ritson, 2003, p. 213). The 1830s also saw a dramatic increase in the number of gardening periodicals. These publications communicated new plants and ideas and taught their readers skills as well as contributing to changing developments in fashion. Gardening periodicals played a significant role in
promoting “aspirational lifestyle gardening” (Quest-Ritson, 2003, pp. 188–189). After the publication of sentimental flower books such as Charlotte de Latour’s *Le Langage des Fleurs* in 1833, flowers assumed a deeper moral and romantic significance (Morgan & Richards, 1990, p. 21). From the 1830s on, England was firmly in the grip of “an escalating floral mania” (Morgan & Richards, 1990, p. 20).

During the course of the nineteenth century, technological innovations contributed to the development of modern glasshouses that made it possible to construct the Great Conservatory at Chatsworth and the Palm House at Kew Gardens in the 1840s. The glasshouses were heated by coal-fired flues in 1800. A new system of heating was developed with coal-fired boilers supporting hot-water pipes that circulated the heat (Quest-Ritson, 2003, pp. 188–189). The invention of sheet glass in 1833 lowered the price of a glasshouse and made it possible for more people to own them. John Loudon (1783–1843) patented a wrought-iron glazing bar in 1816. Iron made it possible to construct the glasshouses in such a way that enough light got to the plants from the roof making it possible to maintain a wider selection of plants (Quest-Ritson, 2003, pp. 188–190).

There was an Evangelical Revival in the early part of the nineteenth century, in response to the excesses of the Regency of George IV. These included his relationships with women and his grand building projects. The people devoted themselves to the plight of the less fortunate by founding charities and voluntary associations dedicated to educating poor children. Evangelicals focused on the experience of conversion and were zealously committed to reforming society and improving lives. There was a surge of missionary activity between 1836 and 1844 (Hewitt, 2012, p. 6). Many of the professional plant hunters were missionaries of the Anglican Church who searched all over the world for spectacular unknown species (Carter, 1985, p. 16).

There was a popular view that man was near to God in a garden, in keeping with the stories of the Garden of Eden and the Garden of Gethsemane in the Bible. Working in the garden kept men and women safe from the temptations of vice and the dangers of political turmoil (Carter, 1985, p. 9). During the nineteenth century the main function of a botanic garden was to create a living collection of plants for research purposes and to benefit the public. A garden was a display of God’s handiwork for the edification and education of the public (Quest-Ritson, 2003, p. 203). The number of gardens and arboreta grew exponentially and were usually established by learned societies or universities and supported by amateurs (Quest-Ritson, 2003). The faith of those who embraced Christianity was challenged by new research in geology. Charles Lyell (1797–1875), who made significant contributions to the rise of Victorian rationalism, threw fundamental Christian beliefs into question with his *Principles of Geology* (1830–1833). He separated geology from Biblical interpretation and declared that nature was the source of the earth’s history. According to Lyell’s research the earth was much older than people believed. This meant that the story of God’s creation of the earth in seven days contained in the Bible’s book of Genesis could not be true. Mesmerism and spiritualism offered a new kind of faith to Victorians “whose God was disappearing” (Postlethwait, 1988, p. 499). Mesmerism was popular in the 1840s and 1850s and counted Charles Dickens (1812–1870), the most important figure in Victorian literature, among its practitioners. According to Franz Anton Mesmer (1735–1815), there was “a natural influence between the Heavenly bodies, the Earth and Animate bodies which exists of a universally distributed and continuous fluid” (Postlethwait, 1988, p. 499). The function of the mesmerist was to manipulate the fluid in such a way as to effect visionary and healing powers upon his client. Spiritualism, the practice of communicating with the dead through a medium, was well received when it was introduced into England in 1852. Victorians who could not empirically prove the existence of God but still wanted to have hope for an afterlife embraced the notion of contacting the departed. There were those who were critical of Spiritualism but it had a sizeable following. Even Queen Victoria and Prince Albert attended a séance (Diniejko, 2016). Still, the new social and moral concerns of the Evangelicals spurred the passage of laws that impacted people’s lives for the rest of the century.

4. Victorian society

Government factory inspectors began enforcing restrictions on working conditions in 1833. Children less than nine years old could not work in textile mills. Slavery was abolished by Parliament in all parts
of the British Empire in 1834. In the same year the Poor Law Amendment was passed. The legislation was intended to guide an efficient and uniform system that provided help and promoted moral reform. Instead, it had a devastating effect on the most disenfranchised segments of the population. It established the workhouse, the place where people were forced to go to survive if they could not support themselves. Those forced into the workhouse for whatever reasons had to endure horrible conditions and were viewed as negligent and lazy. Thomas Carlyle (1795–1881), a social critic and one of the most influential minds of the Victorian era, composed an essay, “Signs of the Times,” in 1829. It can be argued that this work marks the beginning of the Victorian age even though it predates Victoria (Thomas Carlyle, 1795–1881, 2017). The work ironically points out the fallacies and weaknesses of the “Mechanical Age.” “Signs of the Times” was used to develop another piece, “Characteristics,” published in the Edinburgh Review two years later. “Characteristics” was intended to suggest that there was a spiritual price to be paid for the benefits of industrialization and progress.

When Victoria became queen, she inherited a highly stratified society with distinct and entrenched class structures. These structures determined the basic quality of daily life for people in Victorian England. In general, English society was divided into three classes: the lower that did physical labor, the middle that did work more mental in character than physical labor and the upper or elites, who did not work for money (Mitchell, 2009, p. 18). The upper classes were composed of the gentry and landed aristocracy who lived off the income they inherited from land or from investments. The importance placed on being a member of the aristocracy is exemplified by published collections of genealogies of the titled families by Arthur Collins (1709), John Field Debrett (1803) and from 1826, John Burke, known for his *Burke’s Peerage*. During Victoria’s reign, gardening became “a national preoccupation” of all classes (Morgan & Richards, 1990, p. 11). The class that a person belonged to was reflected in their speech, education, clothing, and values. Gardens, like clothes, jewelry, and furniture, can be viewed as a symbol of social status indicating the owner’s superior wealth, education, and power (Quest-Ritson, 2003, p. 5). Benjamin Disraeli, one of the greatest political minds of the era, characterized the classes in his writings about England at the time of Victoria’s accession. He described “a ‘mortgaged’ aristocracy, a middle class only just struggling into existence, a peasantry too numerous to support itself, and a rootless urban working class which was economically and culturally degraded” (Mitchell, 1988b, p. 167). Each class came with its own set of standards that its members were expected to adhere to. It determined where people lived and their social customs. Each person conducted himself or herself in a manner reflecting their class. They did not behave as though they were from a class that was above or below their own. Even if a working class man could afford to buy a first class ticket on a train he could not sit in the car designated for first class passengers (Mitchell, 2009, p. 17). The rules of these rigid class structures were slightly relaxed in the Victorian gardening world. Men and women, laborers and intellectuals, the poor and the rich mixed with comparative freedom (Carter, 1985, p. 8). Head gardeners were not restricted as much by the class divisions and travelled to other estates to acquire new ideas, exchange plants, and discuss problems (Quest-Ritson, 2003, p. 216).

Over the course of the nineteenth century the dominant land owning classes evolved into an urban property-owning democracy. Power was transferred from the agricultural laborer to the industrial worker, from the gentry to the bourgeoisie, from the aristocracy to the plutocracy (Quest-Ritson, 2003, p. 169). These transitions in power impacted gardens and gardening. The new towns and cities that developed as a part of the Industrial Revolution dismantled the system of patronage maintained by the old landed aristocracy. Middle-class merchants and industrialists with sufficient means bought their way into the landed gentry which led to a boom in the building and remodeling of country houses (Morgan & Richards, 1990, p. 11). However, at the end of the nineteenth century the class structures were still in place. William Robinson (1838–1900), the horticultural polemicist who railed against formal gardens was still not treated as an equal by his wealthy gentleman neighbors (Quest-Ritson, 2003, p. 219).

The upper class was the domain of the aristocrats and gentry. They were the hereditary landowning class that derived their incomes from renting their lands out for farming. The gardens, hot houses, and grounds of the estates of the upper classes played a significant role in their lives. The wealth and taste of a country house was measured in part by its gardens (Morgan & Richards, 1990, p. 11). One
of the hallmarks of a gentleman was the ability to support a large and productive kitchen garden and flower garden to supply the house (Quest-Ritson, 2003, p. 173). Bedding plants were considered “an unsurpassed opportunity for the display of wealth and taste” (Morgan & Richards, 1990, p. 16). However, gardens were just one of many symbols of the wealthy lifestyle that included libraries, tennis courts, and billiard rooms (Quest-Ritson, 2003, p. 221). The wealthy were motivated to develop their gardens and exotic plants to please and impress visitors who attended their house parties. Flowers were still regarded as a status symbol toward the end of the nineteenth century. Rhododendrons had become so popular they were considered such a mark of social respectability that the new rich were keen to purchase new property with the plants (Quest-Ritson, 2003, p. 207).

The estates of the upper classes were passed down to the eldest son. Younger sons had to have careers in government, law, the church or the army which meant they mixed with professional men of lower rank. In the nineteenth century, the eldest son who inherited the estate was expected to do something useful with himself and not just pursue a life of leisure as his predecessors had done. The aristocrats were the titled families or Peers. The head of a titled family automatically assumed a seat in the House of Lords. Most aristocrats had at least one country estate and a home in London. During the spring and early summer when Parliament was in session the family lived in London and engaged in the activities primarily associated with the upper classes. These included balls, hunts, and house parties related to events such as the regatta at Henley and horse racing at Ascot. Older women visited other aristocratic women, shopped and went on carriage rides. Younger women could ride horses with men in Hyde Park (Mitchell, 2009, pp. 3–22). The upper classes were expected to adhere to a strict code of etiquette that dictated acceptable social behavior in every imaginable situation. A breach of etiquette betrayed a lack of good breeding, good taste, and civility. During the autumn and winter when Parliament was not in session, the Peers returned home to their country estates where there were more house parties and foxhunting. These gatherings and events helped build social connections and were opportunities to develop friendships and encourage marriages within the aristocracy. These connections helped preserve the more powerful position of the ruling class in relation to the lower and middle classes.

The landed gentry did not have titles and did not become members of the House of Lords when they inherited an estate. Burke’s Landed Gentry (1837) was first published as A Genealogical and Heraldic History of the Commoners of Great Britain and Ireland, Enjoying Territorial Possessions or High Official Rank (1833–35). There was no precedent for a genealogy that recorded the names of the land holding, untitled members of the upper class. The publishers of Burke’s Landed Gentry stipulated that one had to own at least 300 acres of land to be listed in their publication. Unlike the Peers, most of the landed gentleman did not have a second home in London. However, since the gentry did not divide their time between London and their estates, they influenced local life in the English countryside more than the Peers (Mitchell, 2009, p. 24). Most of the gentry had an estate that included a manor house or a hall, their own farm that was run by a bailiff, several farms rented out to tenants, and one or two villages where the farm workers lived. It was expected that the heads of the estates serve as a justice of the peace, promote local charities and generally involve themselves in issues affecting the countryside. Their wives and daughters busied themselves by doing charitable work for the poor. The gentry entertained themselves in some of the same ways the Peers did. They hunted, played sports, visited and attended balls and country festivals. Even though there were significant differences between the aristocrats and gentry on the social scale they still interacted with each other and intermarried. The boys of the aristocracy, gentry, and upper middle class were all educated at the same public schools which promoted uniform standards of behavior across the three social groups. Later in the nineteenth century, wealthy merchants and industrialists sent their sons to elite boarding schools like Eton and Rugby. The upper middle class boys learned the social etiquette of the landed classes which resulted in less rigid dividing lines between them (Mitchell, 2009, p. 25).

One of the most significant developments of the Victorian era was the expansion of the middle class. In 1837 about 15% of the population was considered middle class and by the end of Queen Victoria’s reign it was roughly 25% (Mitchell, 2009, p. 19). The middle classes encompassed a diverse segment of the population that included poor office workers as well as super rich bankers. As this
segment of the population expanded so did the nurseries, florists, market gardens, and firms of professional floral decorators (Morgan & Richards, 1990, p. 21). These were necessary because the middle classes aimed to imitate the garden culture of the upper classes, and poor classes aimed to imitate the garden culture of the middle classes (Quest-Ritson, 2003, p. 5). The wealthy middle classes endowed parks that had been donated by landowners in keeping with the Victorian concern for cemeteries, sanatoriums, hospitals, prisons, and public utilities. All of these were laid out according to horticultural principles (Quest-Ritson, 2003, p. 205). The highest-ranking group was the mainly urban, old middle class, or upper middle class that included professional people. They sent their sons to boarding schools and universities. The new upper middle class was made up of the men whose success was the result of the Industrial Revolution. They included manufacturers, bankers, and merchants. Other members of the middle class included farmers who employed laborers to work their land, government workers, journalists, and police inspectors. In general, even though their incomes and occupations were so varied, the middle class shared a set of common values. They valued hard work, thrift, and sobriety and attended church services. They valued education and sent their sons to grammar schools or private schools.

The suburbs came into existence when middle-class Victorians retreated to housing away from the unhealthy, heavily polluted inner cities, an unwelcome byproduct of industrialization and progress. They got their garden and landscape information from writers like John Claudius Loudon (1783–1843), who wrote primarily for the middle classes. One of his most popular publications was The Suburban Gardener and Villa Companion (1838). He established The Gardener’s Magazine in 1826 in order to “disseminate new and important information on all topics connected with horticulture, and to raise the intellect and character of those engaged in this art” (Quest-Ritson, 2003, p. 177). He believed that gardening was a form of self-improvement that promoted good morals. John Loudon was also very class conscious. He advocated the acquisition of taste to increase the social standing of the less wealthy, including women (Dewis, 2014, p. 4).

The idealization of family life and family spending time together entertaining themselves is a fundamental and distinctive characteristic of the Victorian middle class. The children of working class parents were often sent out to work when they were still very young. The children of the upper classes were raised by servants and had little contact with their parents. Middle class families played board games and cards, gathered together to read a novel aloud and sang songs around a piano. These idyllic scenes are sharply contrasted by the views of Mathew Arnold (1822–1888), one of the great Victorian poets and prose writers, who may be considered one of the most representative figures of his time (Mitchell, 1988b, p. 167). About thirty years after Disraeli described England’s three different classes, Arnold wrote an unflattering commentary on the middle class. He was struck by their complacent self-satisfaction and thought they were ignorant, narrow, and prejudiced (Mitchell, 1988b, pp. 167–168).

The working class is not often represented in popular conceptions of Victorian life or Victorian fiction even though about three out of every four people supported themselves by doing physical labor (Mitchell, 1988b). This was the segment of Victorian society that was most at risk, barely earning enough to stay alive. One small run of bad luck that left them unable to work could throw them into crushing poverty. Working men made the most money when they were in their twenties because they could endure the physically demanding labor. The children of the working class had little schooling and started to work when they were very young, often helping older members of their families with their labors. The skilled members of the working class who had a trade such as carpentry, masonry, sewing or printing were in a much stronger position. They made up about 15% of the working class and had higher, more dependable incomes (Mitchell, 2009, p. 19). As the population of laborers grew in the nineteenth century voluntary organizations of all kinds were established to support the social, political, and economic advancement of the working class. Clubs and societies generally improved the lot of working people even though they were criticized for encouraging drunkenness. The cheaper methods of papermaking, printing, and distribution made printed material available that could provide entertainment, aid political organization, and support self-improvement.
Self-improvement was a fundamental characteristic of the Victorian world view that was promoted by writers such as Samuel Smiles (1812–1904), an inspirational writer. His book *Self-Help* (1859) embodied the Victorian ideals of industry and drive (Samuel, 2014).

It was possible for some members of the working class to have a garden allotment or perhaps a tiny back yard for gardening. If these were not possibilities they might walk through one of the many new public parks (Stuart, 1988, p. 7). There was a flurry of park building activity in response to the rapidly expanding industrial areas and residential housing that threatened to devour all the green space in cities. Regent’s Park in London was the first public park opened in 1810 but charged an admission fee until 1835. Gardening was constantly recommended to the poor as an activity beneficial to their physical, mental, and spiritual well-being (Carter, 1985, p. 9). Garden societies were established to help improve the gardens of the rural destitute (Stuart, 1988, p. 8). One of the most charismatic figures of the Victorian era who provides insights into the gardening culture of the laboring classes is Samuel Reynolds Hole (1819–1904). A rose grower, he organized the first national rose show in 1858 and founded the Rose Society. Alfred, Lord Tennyson referred to him as “the Rose King” (Willes, 2014, p. 154) Dean Hole was invited to see the gardens and judge the flower shows of the laboring classes. In the late 1840s he went to see a tiny glass house on a worker’s allotment just outside the city of Nottingham (Quest-Ritson, 2003, p. 190). After judging the first national rose show in 1858 Dean Hole was invited the following year to judge a rose show by the Nottingham mechanics. After the exhibits were judged the mechanics took him to see their tiny allotments outside the city (Willes, 2014, p. 154). Dean Hole was also invited in 1859 to judge the rose show put on by the Nottingham framework knitters the Monday after Easter. He could not understand how roses could grow at that time of year but he was told by the knitters they were grown under glass and they would show him where and how they managed it if he would come. He was met at the station by the landlord of the General Cathcart Inn, who was wearing a “Seanteur Vaisse” rose in his buttonhole “which glowed amid the gloom like the red light on a midnight train” (Willes, 2014, p. 229). The roses were set out on tables in a long narrow room, with single blooms displayed in the necks of beer bottles. Hole was dumbstruck by the quality of the blooms. He said: “I have never seen better specimens of cut Roses, grown under glass, than those which were exhibited by working men” (Willes, 2014).

### 5. Change in the Victorian era

The Victorian era was divided into two periods until the 1950s when a three-part division was adopted. Recent scholarship suggests that the era is better divided into four distinct phases (Hewitt, 2012, p. 4). According to the three-period interpretation the early Victorian era extended from the accession of Queen Victoria in 1837 to 1851. These years were colored by social and political turmoil that resulted from the rapid changes that accompanied the industrialization of society. From the mid-1830s to the end of the 1840s Britain strengthened its position as the world’s leading manufacturing economy. The new industrialized cities were unplanned, overcrowded, heavily polluted, and insanitary. The public park movement was spurred not only to protect green space, but in part by the need to calm the social unrest (Quest-Ritson, 2003, p. 205). The factory system dismantled the family structure of the working class. During the preindustrial era the family worked together in their cottages using hand looms before power looms made manual labor obsolete. The displaced women and children who used to work at home provided a cheap labor supply for factory employers. The hours of the work day changed when laborers moved from farm to factory. Instead of weather conditions and changes in seasons dictating the work day the number of hours factory workers labored were dictated by a clock. They endured six-day work weeks filled with brutally long days. A nucleus of a network of railways was established between 1839 and 1841 that was followed by a boom in railway construction in the 1840s and 1850s. Although there were great economic benefits to a system of railways it was argued at the time that they were a disruptive force. The geologist Gideon Mantell (1790–1852) lamented the fact that the railways “completely metamorphosed the English character,” bringing “Eternal hustle, movement with the greatest rapidity, constant change” (Hewitt, 2012, p. 7). The crime rate was at its peak in the 1840s and Pentonville Prison was opened in 1852.
In the 1830s and 1840s there was a working class protest movement referred to as Chartism. The early 1840s witnessed the greatest economic depression of the century from 1841 to 1842 that left many laborers unemployed. The early part of the decade is referred to as the “hungry forties.” Food prices were kept artificially high by the Corn Laws that applied to all grains, aimed to protect domestic agriculture and leveled a heavy tax on imported grain. The laws protected the incomes of the wealthy land owners and provided revenue for the government, but made it difficult for laborers to survive. The price of English bread would have been cheaper with imported grain from other European countries but the upper classes who owned the land did not want to give up their high incomes. Manufacturers did not support the Corn Laws because they had to pay higher wages to their employees, which diminished their competitive advantage in foreign markets. In his work *Past and Present* (1843) Thomas Caryle wrote that “Cotton is conquered, but the ‘bare backs’-are worse covered than ever” (Mitchell, 1988c, p. 392). During the 1840s the Irish potato crop was decimated by blight which resulted in the devastating Irish Potato Famine of 1845–1849. Laborers migrated to England, as well as Philadelphia, Boston, and New York to escape the horrible conditions of the famine.

In addition to these economic hardships, the Chartist movement was spurred by the 1832 Reform Act and the 1834 New Poor Law. The Reform Act still left the working classes disenfranchised and the land owning elite in power. The New Poor Law that established workhouses had a traumatic effect on the unemployed poor and destitute members of the laboring classes. Although laws were passed to protect children in the factories, limiting the hours of their work day, and improving their working conditions, similar laws did not apply to men. However, even though it excluded men, the 1847 Ten Hours Act that shortened the work day for the women and children effectively shortened their work day as well. The Chartists were so named because they outlined their political demands in a petition or People’s Charter. They presented their charter to parliament three times, in 1839, 1842, and 1848, with the number of signatures increasing from over a million to perhaps five million by 1848 (Mitchell, 1988d, p. 132). Each time their petition was overwhelming defeated by Parliament. After the 1848 petition was defeated the movement was essentially dead, in part because the economy had begun to improve.

During the mid-1840s extensive building projects provided jobs for thousands of laborers. Building the railways necessitated the increased production of coal and iron. Advances in engineering and machine technology spurred the construction of bridges, tunnels, and locomotives. The railway system reached most parts of the country by 1850 and helped build a national culture (Mitchell, 2009, p. 6). The London daily papers could be delivered to almost any place in England and read at breakfast (Mitchell, 2009). Local dialects and regional customs began to erode. It was possible for the population to include fish, fruit, and milk in their diets because of quick and inexpensive shipping. By 1850 a steamship could cross the Atlantic in less than twenty days, enabling England to expand its economic activities to North and South America. Also, by mid-century, gardening was available and relevant to almost everyone (Stuart, 1988, p. 8).

The railways had an enormous effect on gardens and gardening culture. Commercial growers were able to transport flowers, fruit, and vegetables to London from all over the county. London lost its status as the center of the nursery trade because the railways could deliver goods around the country. Coal was brought to heat glasshouses on the country estates and used by nurseries for supplies and deliveries. It was easier to travel to flower shows and visit gardens. Railways made it possible to go beyond the local nurseries and gave rise to the traveling seed salesman (Quest-Ritson, 2003, p. 185). The Penny Post, established in 1840, delivered plant magazines and plant catalogues to gardeners. Nurserymen and manufacturers of garden equipment sold their merchandise through catalogues and delivered it by train. It became traditional for the wealthy to supply their London houses from their family estates in the country during second half of the 1800s. The railways made it possible for people to work in the city and live in the country with a garden. As railway service became more available and quicker, living in the country became more popular. “The great benefit of the country air and rural pleasures” made possible by railways are written about by a garden writer
as early as 1850 (Quest-Ritson, 2003, p. 186). Some of the great family gardens would never have been created without the railways that took their wealthy owners to work (Quest-Ritson, 2003).

The elimination of some taxes enabled gardeners to make improvements. The tax abolished on bricks in 1850 prompted gardeners to build garden walls. The glass tax, that was based on weight, was abolished in 1845. Before that time glass was made as light as possible and was not as strong and durable. The relaxation of the tax on timber in 1851 along with the elimination of the taxes on bricks and glass made owning a glasshouse more affordable for the middle classes. The most spectacular glasshouse ever constructed was the Crystal Palace for the 1851 Great Exhibition, an event that defines the middle period of the Victorian era.

The middle period of the Victorian era, extending from roughly 1851 to 1875, was a time of progress, relative domestic stability and growing prosperity in England. The period began with the Great Exhibition of 1851 that affirmed Britain’s role as the global industrial leaders and celebrated the benefits of industrialization and progress. Contemporaries believed the Exhibition heralded a new period of optimism and progress. The Manchester Examiner and Times wrote that the Exhibition “inaugurates an era” (Hewitt, 2012, p. 16). The Crystal Palace that housed the exhibition was built from component parts that were prefabricated and interchangeable. It was three times the length of St. Paul’s Cathedral and displayed over 100,000 exhibits from around the world. The building inspired the construction of glass houses and conservatories. Quest-Ritson suggests that the Crystal Palace and expansive glass houses built in botanic gardens at that time should be viewed “as statements of national pride and civic dignity, ambition and progress” (Quest-Ritson, 2003, p. 168).

During the middle period the unsanitary living conditions that the urban population endured remained unchanged despite efforts to improve them. Charles Dickens (1812–1870), whose novels depicted contemporary life produced some of his best known works during the middle years of the era including Great Expectations (1861). Set during the time England was rapidly industrializing, the story shows how machines made factories more productive but at the expense of the living conditions of the worker. However, the standard of living for urban laborers was higher during the middle period. The price of food was lowered by better transportation and mass production made goods such as clothing and shoes less expensive. Employers began to give employees time off, and in 1854 a maximum 56 h work week was mandated by the Factory Act. Police forces were established that made cities safer. The relative stability of these years was interrupted by the Crimean War (1854–1856) and a reform crisis.

Civil unrest prompted the passage of the 1867 Reform bill. There were riots in Hyde Park, bread riots in London’s East End and some trade union violence (Hewitt, 2012, p. 23). The Reform Bill doubled the size of the electorate and gave most middle class men and the more affluent working class men the right to vote. The Education Act of 1870 established government-supported schools and stipulated that children go to elementary school.

One of the most significant works on the history of science was produced during this time, Charles Darwin’s (1809–1882) The Origin of the Species (1859). Darwin proposed a scientific theory of evolution by natural selection that became the basis for modern evolutionary studies. Darwin’s theory challenged the role of God in nature and the notion that God created man. It also undermined the tenets of natural theology that argued the adaptation of species was evidence of a divine design. Darwin’s work did not result in a wholesale overthrow of religion, but Darwinism did become an established force around 1870.

During the late Victorian period, 1875–1901, the way of life of the landed wealthy classes was significantly compromised by a series of bad wheat harvests in the late 1870s. Many agricultural laborers were left without work. Agricultural rentals had reached their highest point around 1875. To avert a famine wheat was imported from America, but after the harvests improved imports did not return to their earlier levels. English wheat growers could not compete against the inexpensive
American grain grown on the Midwestern prairies. The price of wheat in England fell from 51s a quarter in the 1870s to less than 23s in the mid-1890s (Quest-Ritson, 2003, p. 220). As a result the tenants of the landlords could not pay their rents. After the tenants went bankrupt or surrendered their leases the landlords had to offer new tenants much cheaper rentals. The value of farm land dropped from £54 to £19 an acre between 1875 and 1897 (Quest-Ritson, 2003). Landowners were eager to sell their property and there was a ready supply of newly moneyed people just as eager to buy it up. They aspired to have a country life with a house and gardens. From about 1850 the contemplation and cultivation of flowers were perceived as the key to respectability and refinement. The perception that certain types of plants were status symbols persisted. In 1896 Ludwig Messel planted a pinetum, or arboretum of pine trees, an outward and visible sign of a gentleman (Quest-Ritson, 2003, p. 223).

There was a significant rise in urban unemployment in the 1880s that continued an upward trend as the English no longer had the advantage over foreign manufacturers. Over the last thirty years of the century the number of men who worked in agriculture declined by a third. Most sought jobs in the cities or emigrated, but some of them became a part of the expanding market for gardeners. Eighty percent of England’s population lived in urban areas by 1901 (Mitchell, 2009, p. 13). The growing sense of economic depression spurred labor activism and social unrest. The late Victorian city was an unsanitary and unhealthy place to live. Charles Booth (1840–1916) began a massive survey of social conditions in London in 1887 that revealed the extent of poverty.

As times changed between 1885 and 1901 contemporaries were aware of a more fundamental sense of strain and dislocation than they had during previous periods of transition (Hewitt, 2012, p. 32). Class conflict appeared to be looming as Salisbury pointed out in 1883: “If classes are not in actual conflict, they are at least watching each other with vigilant distrust” (Hewitt, 2012, p. 232). Reforms increased the voting electorate to 80% between 1884 and 1885 but there was still the sense that voting was a privilege and not a right (Hewitt, 2012, p. 33). By the mid-1890s the churches were losing their missionary zeal. The changes and upheavals of the late years of the Victorian era gradually began to shake the confidence of the people. The Time Machine (1895) by H.G. Well’s “with its forebodings about the extinction of mankind” can be viewed as a rejection of the Victorian confidence in progress (Hewitt, 2012, p. 39). Still, during these later years there was a vital sense of the importance of Great Britain as an empire. Queen Victoria’s Diamond Jubilee in 1897 was a massive exhibition of pageantry and power that marked the high tide of Empire (Mitchell, 2009, p. 15). It becomes clear after surveying the voluminous political, economic, social, and cultural events of the Victorian era how Queen Victoria’s death could be viewed by contemporaries as the end of an age (Hewitt, 2012, p. 2).

6. Mrs. Bury’s A Selection of Hexandrian Plants Belonging to the Natural Orders Amaryllidae and Liliaceae and the aquatint process

At the beginning of the nineteenth century, print technology had changed little since the invention of movable type in the fifteenth century. It was a laborious and expensive process. Type-founding, typesetting, papermaking, printing, and binding were all done by hand. As the nineteenth century progressed, these processes became mechanized, and some were sped up by the use of steam power. Cheaper methods of illustrating books were developed that could replace the more costly intaglio processes of engraving and etching, such as wood-engraving, a relief process, and the planographic process of lithography. Intaglio comes from the Italian intagliere, meaning to “cut in” or carve. It refers to a process where the image is cut below the surface of the matrix, usually a copperplate. A relief process is one in which the image to be printed is above the surface of the matrix, in this case a wooden block. Planographic processes involve applying the image to be printed directly on the surface of the matrix, usually a slab of limestone or a zinc plate.

One of the more expensive, lavishly illustrated botanical books produced during the first half of the nineteenth century that used an intaglio process is A Selection of Hexandrian Plants Belonging to the Natural Orders Amaryllidae and Liliaceae by Mrs. Priscilla Susan Bury. “Hexandrian” from the Linnean
System used for describing plants refers to those that have six stamens. The book contains fifty-one color fine-grained aquatint plates reproducing Bury’s drawings and paintings (Figure 1). It has not been determined if the text was also written by her. This stunning folio volume, measuring approximately $67 \times 50$ cm, required large and expensive amounts of paper. It was produced in London between 1831 and 1834. The presence of a subscription list in the volume indicates it was not commercially produced but offered for sale to those who had the means to pay in advance for it. The first subscriber in the list of seventy-nine names is Edward George, the fourteenth Earl of Derby, who served as England’s Prime Minister three times in the 1850s and 1860s. Reading further down the list, one sees other members of the landed aristocracy represented. It was dedicated to the then Princess Victoria. The book was issued in ten parts so the entire cost of the publication was not required at once. It would have been bound after all of the parts had been published. It was not issued in any kind of publisher’s commercial binding as cheaper books had started to be in the 1820s.

Figure 1. *Lilium superbum*, *Lilium chalcedonicum*, *Lilium martagon*, White martagon plate 36; from Priscilla Susan Bury, *A Selection of Hexandrian Plants Belonging to the Natural Orders of Amaryllidae and Liliaceae* (1831–1834); aquatint plate signed “Drawn by Mrs. E. Bury Liverpool” and “Engraved Printed & Coloured by R. Havell” (Courtesy of the Peter H. Raven Library, Missouri Botanical Garden).
Mrs. Bury, née Priscilla Susan Falkner, was born into a wealthy family on 12 January 1799, in Rainhill, Lancashire and she grew up on an estate called Fairfield outside of Liverpool. In the nineteenth century Liverpool with its port was a prominent industrial and trading center second only to London. The Liverpool Botanic Garden, the first public botanic garden in Britain, was founded there in 1803. William Roscoe (1753–1831), the institution’s first president, made it a center for the study of the Linnaean system of classification. Bury’s father was a rich merchant of the city who had held positions as a justice of the peace and high sheriff of Lancashire. Her mother was the daughter of a wealthy landowner. The family was able to afford a hothouse, needed to cultivate beautiful rare plants. When she was young Priscilla Susan became interested in them and started to draw and paint lilies and their related families. At that time botanizing was considered an elegant and appropriate pastime for ladies. She had enough “portraits” (McMillan, 1968, p. 71), as she referred to her work, for publication by 1829. Her friend, the zoologist William Swainson (1789–1855), encouraged her to publish her work. Swainson, a member of the Linnean Society and the Royal Society, was also an artist who painted natural history subjects including birds and shells.

Letters dating from 1829 between Priscilla Susan and William Roscoe discuss the details of producing A Selection of Hexandrian Plants (McMillan, 1968). Roscoe’s noted work Monandrian Plants (Liverpool, 1824–1829) was the model on which she wanted to base her book. He gladly gave her permission to follow it and she even used his prospectus as a guide to create her own. It then appears that Priscilla Susan’s work on the publication was set aside while she married the railroad engineer Edward Bury (1794–1858) in March of 1830. After their marriage Edward applied himself to building engines for railways, and in February 1844 was elected a Fellow of the Royal Society. Priscilla Susan, the new Mrs. Bury, was also much engaged after their wedding as an artist and mother. Between 1831 and 1835, during the time A Selection of Hexandrian Plants was in production, she gave birth to at least three sons.

The unsigned preface of a A Selection of Hexandrian Plants, written in the third person, explains the reason that Mrs. Bury endeavored to produce her book. It was intended “to preserve some memorial of the brilliant and fugitive beauties of a particularly splendid and elegant tribe of plants” (Bury, 1831–1834). It explains further that the author does not attempt to write lengthy technical explanations of the plants because she does not possess the scientific knowledge and has not done extensive research. The accompanying descriptions of each of the plants provide a reference to the plate number if it was featured in Curtis’s Botanical Magazine. Many of the texts provide more information than just a description of the flowers, leaves, stems, and scent. Some refer to books and articles that discuss the plant or give details on where it came from and how the plant came into the country. The Amaryllis correiensis (plate 9) was based on a drawing of plant owned by Mr. Harrison, a subscriber to Bury’s book. He “obtained it from the Padre de Correia, in one of the Serras of the Organ Mountains in Brazil; the bulb was ticketed ‘rare and valuable,’ and is now in flower for the first time at Aighburgh 17th January, 1830” (Bury, 1831–1834, plate 9). The accompanying description to Lilium japonicum highlights Engelbert Kemper’s Amoenitates Exoticae (1712) and Carl Peter Thunberg’s Flora Japonica (1784). The text for the Amaryllis johnsoni (plate 1) relates that it was the first hybrid on record and gives details of the scholarly debate concerning the attribution. Some descriptions mention that the specimens were at the Liverpool Botanic Garden or the hot-house at Fairfield where Mrs. Bury grew up. The Amaryllis vittata minor was a bulb that had been in the Fairfield hot-house since 1803 (plate 40). One of the specimens represented in the book was in a flower show. The Lilium longiflorum (plate 8) was drawn from a specimen of a plant that “belonged to Mrs. Edward Cropper, and was shewn as a prize-flower, at the meeting of the Liverpool Floral and Horticultural Society, 28th May, 1829” (Bury, 1831–1834, plate 8). The texts do not instruct readers on how to grow the plants. Instead, they provide an interesting overview of the flowers and some insights into the culture surrounding the exotic plants and hot-houses in the early part of the nineteenth century.

The letters between Mrs. Bury and William Roscoe also speak to the graphic process that was going to be used to reproduce her work as large-scale book illustrations. Her correspondence indicates that at first her drawings and paintings were intended to be reproduced as lithographs by Charles
Joseph Hullmandel (1789–1850) (McMillan, 1968, pp. 72–74). Before Hullmandel, the planographic process of lithography was not taken seriously by artists in Britain. Through his own works and writings he inspired confidence in the medium. During the 1820s and 1830s he was the most prolific printer of lithographs in Britain as well as being responsible for most of the major improvements to the process. When Mrs. Bury’s book went into production after her marriage the illustrations were instead created using the intaglio process of aquatint. McMillan does not give an explanation for the change from lithography to aquatint (McMillan, 1968, pp. 71–75). Aquatint was used to illustrate natural history and topography books from roughly 1770 until around 1830. When she was ready to produce her book, Mrs. Bury decided to use the services of one of the masters of the English school of aquatint to execute the plates, Robert Havell, Jr. (1793–1878). Havell engraved the plates and then partly color printed and partly hand-colored them. While he was engaged with the Bury project he was also at work on the plates for the seminal ornithological work, John James Aududon’s *Birds of America* (1827–39).

7. Aquatint
Aquatint is a form of intaglio printing that relies on the etching process. Two main forms of intaglio are etching and engraving. The lines of an image in an aquatint plate are usually made using the etching process, which uses acid to cut the lines. The plate is covered with soft wax and the image is drawn through it with an etching needle, much like drawing on paper. The depth of the line is determined by how long the plate is immersed in the acid and by the stopping out process. Stopping out is the technique of covering parts of the plate with varnish so it can be immersed to make some lines deeper while leaving covered lines untouched. Deeper lines will print darker and thicker than shallower ones. It is thought that the technique of etching was first used in the early sixteenth century for making prints. Engraving, another intaglio process, is a far more laborious task. The lines of the image are directly incised into a copper plate with a tool called a burin.

Aquatint is also a tonal process, distinguished from other forms of intaglio because the surface of the plate is covered with particles of resin that are baked onto it. When the plate is immersed the acid bites between the particles, producing a textured surface that creates shades of tone. The texture is dependent on the varying size of the grains of resin. The depth of tone is determined by how long the plate is immersed in the acid and by the stopping out process.

The intaglio plates produced by etching and/or engraving were printed in the same way. The plate was warmed and a fairly stiff ink made of pigment oil was applied to it with a dabber. The plate was wiped perfectly clean with a series of progressively cleaner starched cloths wadded into balls. The ink was only left in the grooves. A dampened sheet of rag-based paper was applied to the plate’s surface. Both plate and paper were covered with woolen blankets to help press the paper firmly down on to the plate, effectively creating a sandwich.

A special hand press, an intaglio or rolling press, designed to apply the immense pressure needed to push the ink down into the engraved lines, was used. This pressure produced one of the distinguishing features of intaglio, the plate mark. Not all plates have a plate mark, however. They may be trimmed off or they can be faked. Aquatint plates with their delicately textured surface wore out quickly and were not suitable for commercial purposes.

There are two ways to create color printed aquatints. One is a method called à la poupée, in which a rag stump is used to apply the different colored inks to one plate. The other method is to make a separate plate for each color. In England the favored method for making color plates was to apply all the colors to a single copper plate. The à la poupée method for coloring each plate was developed by the London engraver Robert Lauri (1749–1804). One had to be extremely careful when wiping the plate so that the colors were not mixed. As a result à la poupée color printing was an extremely labor intensive task and just as difficult as hand-coloring. Color plates made this way were usually more expensive than hand-colored prints because they required highly skilled craftsmen to produce them. It is important to note the difference between a “color plate” which is color printed and a “colored
plate” which is colored by hand. Also, color printed plates were often touched up by hand with hand-coloring to enhance the image, as the Bury plates were. Hand-colored is also referred to as hand-tinted. In the last decade of the eighteenth century à la poupée coloring was taken up by a number of French printmakers to produce illustrated botanical and ornithological volumes of exceptional quality. Foremost among them was the premier botanical artist Pierre-Joseph Redouté (1759–1840) who produced the well known three folio volume Les Roses (Paris, 1817–1824).

Aquatint came into more widespread use later in the eighteenth century with Jean Baptiste Le Prince (1734–1781) being credited with its invention. However, others had created aquatint plates before his first dated ones from 1768. Its use spread quickly to the majority of European countries between 1770 and 1800.

The noted botanical illustration authority Wilfred Blunt (1901–1987) finds aquatint unsuited for botanical illustration, suggesting that it is an effective medium for the illustration of architectural works (Sitwell & Blunt, 1990, p. 45). In his opinion it is the intaglio methods of stipple and mezzotint whose subtle gradations of tone make it possible to portray leaves and flowers (Sitwell & Blunt, 1990). Stipple is a technique of engraving groupings of dots to create tonal effects. Mezzotint uses a tool called a rocker that has a curved cutting edge which is used to roughen the plate’s surface with indentations and burr. The burr refers to the ridges of copper that are pushed up as the rocker digs into the plate and creates tonal effects. As Blunt suggests, both of these techniques have been used in botanical works producing excellent effects.

Blunt is critical of Mrs. Bury’s A Selection of Hexandrian Plants, pointing out that in the preface to her book she refers to herself as an “amateur” (Sitwell & Blunt, 1990). In his opinion the aquatint plates are effective portrayals of the plants because of Robert Havell’s engraving skills and not Mrs. Bury’s artistic abilities (Blunt & Stearn, 1994, p. 249). This opinion is based on his observations of some of Bury’s paintings that were in the collection of one Major Broughton. In an essay in Sitwell’s Great Flower Books, 1700–1840 (New York, 1990) he calls the folio a “valuable book, but amaryllises apart, repetitive and monotonous” (Sitwell & Blunt, 1990, p. 22). He gives Mrs. Bury’s work one bit of praise, declaring it “certainly one of the most effective color-plate folios of its period” (Blunt & Stearn, 1994, p. 248). Jack Kramer, who tends to give the women botanical artists of the Victorian era more positive recognition in his books, writes that the great deal of credit Havell received “detracted from the superb quality of Bury’s work” (Kramer, 1996, p. 77).

A contemporary reviewer was also critical of Mrs. Bury’s book but for a different reason. It was said that she could afford the expensive aquatints instead of cheaper lithographs because she was married to a wealthy engineer (McMillan, 1968, p. 71). This could account for Bury’s switch from lithography to aquatint after she married her prosperous husband. Changes in the technologies available and the growing potential readership for books about gardens and garden plants enabled a move toward different methods of producing and distributing books.

8. Mrs. Loudon’s The Ladies’ Flower-Garden of Ornamental Bulbous Plants and the lithography process

Jane Loudon’s The Ladies’ Flower-Garden of Ornamental Bulbous Plants Bulbous Plants was a book written and produced with the new gardening middle classes, born of the industrial revolution, in mind. It contains fifty-eight hand-colored lithographic plates signed by Day and Haghe who were lithographers to the Queen (Figure 2). Bradbury and Evans, one of the most distinguished printing and publishing houses of Victorian Britain, printed the text (Figure 2). Unlike Mrs. Bury’s elegant large folio, it is a much humbler quarto volume, 29 × 22 cm, published by William Smith of London in 1841.

During the 1840s and 1850s Jane Webb Loudon (1807–1858) was one of the best known professional writers of popular gardening books. The growing numbers of the middle class, themselves caught up in the passion for flowers and gardening, were also an eager audience for books about the subject. These were intended in the main for women and younger readers. Mrs. Loudon came into
botanical and horticultural writing through her husband, John Claudius Loudon (1783–1843). John was a landscape gardener and architect who was the most influential horticultural journalist of his time. After her father died Jane needed to do something to support herself and so she wrote a book called *The Mummy* (London, 1827) and did not identify herself as the author on the title page or by signing the introduction. In this futuristic work set in the twenty-second century she wrote about a steam plow. John reviewed the book in his journal *The Gardener’s Magazine* and was interested in meeting the author. A friend of Jane’s arranged a meeting in February 1830, and they were married the following September. Jane was 23 at the time and John was 24 years her senior. Jane said she thought he was surprised when he met her because he was expecting to meet a man.

Jane knew little about gardening before she met John. In addition to learning from him she studied on her own and attended lectures given by John Lindley (1799–1865), professor of Botany at the University of London. Lindley was a recognized orchid expert who became known as the father of modern orchidology. She was abashed that she was married to one of the most prominent horticulturists of the day and didn’t know anything about gardening. She helped John with his work and functioned as his secretary, note taker and copyist because he had an arm amputated after a fracture did not heal properly. She contributed to *The Gardener’s Magazine* and helped him write his *Encyclopaedia of Cottage, Farm and Villa Architecture and Furniture* (London, 1833). She said that they didn’t sleep for more than four hours a night and they drank strong coffee to keep awake. Together they helped popularize the idea of garden tours around the country.

Figure 2. “1. *Lilium japonicum* 2. *Lilium luncifolium roseum* 3. *Lilium speciosum* 4. *Lilium thunbergianum*” plate 55: from Jane Loudon, *The Ladies’ Flower-Garden of Ornamental Bulbous Plants* (1841); hand-colored lithograph signed “Day & Haghe Lithrs to the Queen” (Hathitrust: original held by Harvard University).
After thirteen years of marriage John Loudon died in 1843 at the age of sixty. Jane, who was about thirty-six years old, was left alone in a precarious state with a young daughter to support. John died more or less penniless and had substantial publishing debts, although he had many copyrights on his books. Jane received aid and support from various agencies but she was motivated to write to support herself and her daughter. For fifteen years she produced books on British wild flowers, annuals, perennials, bulbs, green house plants, and gardening in general before she died young at the age of fifty-one. *Botany for Ladies* (London, 1842), considered her most significant work, is divided into two parts, the first describing a few of the orders and genera of plants commonly grown in England. The second part is devoted to the plant classification system of Augustin-Pyramus de Candolle (1778–1841), a Swiss botanist whose system was in use for half a century and eventually superseded the Linnaean. Candolle’s work came to the fore after Charles Darwin (1809–1882) put forward his theory on the origin and perpetuation of species.

Mrs. Loudon’s books were the first gardening ones written specifically for women. Her easily understood style of writing coupled with her knowledge of gardening made her books immediately popular. She did not include folklore and information about the uses of plants as did Anne Pratt, another popular botanical writer of the day (Shteir, 1996, p. 221). The aim of Loudon’s books was to get more women to study botany. Loudon didn’t write about the moral or literary associations of plants and she refused to give medical advice in her magazine *The Ladies’ Companion*. She said, “When I am ill I always apply to a doctor, and I advise my correspondents to do the same” (Shteir, 1996, p. 225). This was a very significant statement because it distanced her from the traditional sphere of women and the knowledge of herbs. She did not approve of the Linnean system of botany which described plants in a sexual way. She said it was “unfit for females” (Shteir, 1996, p. 221). In it, plants are described as having male and female sexual organs, the male stamens, and the female pistils. By contrast, in the natural system of plant description where there was no talk of sexuality involved Jane could find “nothing objectionable” (Shteir, 1996) Jane Loudon believed in women’s education but within the prevailing culture of the day. In *The Ladies Companion* she wrote that she “was not trying to make women usurp the place of men, but to render them rational and intelligent beings” (Shteir, 1996, p. 224). Her opinion of blue stockings was not favorable. She pictured one “as a cross old maid who did not like children, and who talked in high-flown language that very few people could understand” (Shteir, 1996, pp. 224–225). Jane, however, did think it was appropriate that women should study science.

The introduction to *The Ladies’ Flower-Garden of Ornamental Bulbous Plants* gives an exhaustive overview of growing plants from bulbs for the would-be gardener. At the time Mrs. Loudon was writing few people were growing bulbous plants in their gardens. She thought the main reason for this was that the “splendid flowers produced by these plants are but little known” (Loudon, 1841, p. 1). She assures her readers that “nothing can exceed the brilliancy and variety of the colour displayed by their flowers, and nothing can be more simple than their culture” (Loudon, 1841). She also explains the basic mechanics of how a bulb works. Mrs. Loudon, writing for the middle classes, addresses the expense of bulbs, identified as one of the sticking points in their widespread adoption. Instead of buying new imported bulbs every year at expensive seed shops, she advises that one can preserve the bulbs from year to year. After eliminating this obstacle, she forges ahead, carefully explaining the characteristics of the three different kinds of bulbs. The book is divided into chapters, each dedicated to one of the families of bulbs. Each chapter begins with a description of the “essential character” and “Description, & c.” of a family of bulbs, for example Hemerocallideae, Liliaceae, etc. Following the family description, the characteristics of a genus in the family are provided. After the description of the genus there is a descriptive list of the various species within the genus, each with their own descriptions. Plate 55 (Figure 2) depicts species in the Lilium, or lily family that includes the *Lilium japonicum*. Each entry contains three types of information. The first is “Engravings” with references to the plant in other publications and within *The Ladies’ Flower-Garden of Ornamental Bulbous Plants*. The second, “Specific character” gives a detailed description of the plant in botanical language. The third, “Description, & c.” describes the plant and may include information about the origin of the plant and when it was introduced in England. The *Lilium japonicum* is a native of China and
was introduced in 1804 (Loudon, 1841, p. 257). Other various details of interest to gardeners are included in the “Description, & c.” They are also of interest to us today. This work by Mrs. Loudon provides an unsettling picture of the extent of air pollution in large cities at that time created by the factories of the Industrial Revolution. In the description for No. 4, Lilium bulbiferum (plate 54) she states: “It will bear the smoke of great cities without receiving any injury” (Loudon, 1841). In the description of No. 14, Lilium chalcedonium, she assures the reader that it will produce flowers “in great abundance even when the plant is grown in a smoky atmosphere” (Loudon, 1841, p. 261).

As an artist she was one of the most successful woman botanical illustrators of her time. Kramer in his Art of Flowers (New York, 2002) says that “Loudon’s unique gift was portraying mixed garden flowers, her brilliant sense of composition and her use of light and color are what make her illustrations special” (Kramer, 2002, p. 156). Now that we understand something of Mrs. Loudon’s difficult but productive life and her work we can turn to the process of lithography that was used to reproduce her watercolor paintings for The Ladies’ Flower-Garden of Ornamental Bulbous Plants.

9. Lithography

Lithography, the process used to create the plates for Jane Loudon’s botanical work, is a planographic method of printmaking based on the natural antipathy of oil and water. Planographic means the image to be printed is applied directly on the surface of the matrix, usually a slab of limestone or zinc. Lithography was commonly used to illustrate books by the end of the 1830s. The term itself means “drawing on stone” and it was the first entirely new printing process developed since the development of intaglio in the fifteenth century. It was invented by Aloys Senefelder (1771–1834), a Bavarian playwright, between 1796 and 1799 in Munich.

The process of making lithographic plates was a separate trade just as copperplate making in the hand press period was. In the nineteenth century lithographers usually drew an image on a slab of porous limestone, similar to drawing on paper. Reproducing an image did not involve the difficult tasks of engraving, etching, or cutting hard materials like metal or wood. Original drawings could be made directly on the stone or they could be transferred by laying a sheet of paper on it with the inked design. The stone’s surface was prepared by grinding it with abrasives to remove grease and to create a smooth or coarse surface.

After the image was drawn on the stone it was treated with “etch,” a mixture of acid and gum arabic that accomplishes two purposes when applied. First, it sets off a chemical reaction which bonds the greasy image to the stone. The second is that it makes the non-image areas of the stone attract water and repel grease. After the stone is etched by that mixture it is cleaned with a solvent that removes the carbon pigment in the ink and only leaves the grease. The impressions are made by sponging the stone with water and then inking the stone with a roller covered with oil-based printing ink. The greasy image areas attract the ink and the non-image areas with the water repel the ink. At this point the stone is ready for printing.

The stone is printed from a flat-bed lithographic press. At the time it was invented, lithography was the first process that could create areas of smooth even tone. There is no obvious visible sign on a lithograph, like a plate mark on an intaglio print, that can tell you how the image was made. In general, lithographic stones or plates could produce a fairly large number of impressions without wearing down.

During the first third of the nineteenth century most printing was done in monochrome and most of the color in pictorial works was added by hand. Color was added to decorate the image or to accurately illustrate the colors of the object represented. These two types of coloring were usually done by anonymous laborers hired by the print publishers. Although hand-coloring could be done with cheap labor provided by women and children, and costs were not as high as producing color printed intaglio plates, it still made a book more expensive than one without color. There were two ways to do hand-coloring, freehand or using a stencil. Stencils were a quicker way to add color and
especially useful for producing large numbers of popular images quickly. They were used to produce products like playing cards and wallpaper. Even though there could be significant variability from one impression to another within a print run, color printing still gave a greater degree of consistency than hand-coloring (Twyman, 2013, p. 63). The plates in Mrs. Loudon’s *The Ladies’ Flower-Garden of Ornamental Bulbous Plants* are hand-colored, which would have added to the expense of producing the book. Hand-coloring did not change very much over the centuries, and was done on a production line basis (Twyman, 2013, p. 68). Each person was assigned a particular color, although when quality was important one person may have done all the colors. However, as the number of illustrations for a particular edition of a book increased it became difficult to produce the hand-colored illustrations required. Hand-coloring was used more often on aquatints and lithographs than on mezzotints and other forms of engraving. It was used until the twentieth century in botanical and ornithological works, while books on other subjects did not use it.

The firm of Day and Haghe, which produced the lithographs for Mrs. Loudon’s, 1841 publication, was considered the leading printer of pictorial lithographs in Britain by the early 1850s. The firm began with the work of two men, the Englishman William Day (1797–1845) who went into business in London as a printer and bookseller in the early nineteenth century, and Louis Haghe (1806–1885) who was born in Belgium. Haghe was expected to follow in his father’s and grandfather’s footsteps but his life took a different turn. While he was a teenager he studied watercolor painting with the chevalier Auguste de la Barrière, a French exile. The chevalier Auguste de la Barrière and Dewasme set up the first lithographic press in Tournai and employed Haghe as an assistant. It is thought Haghe went to England to work as a lithographer around 1823 where William Day printed the earliest lithographic plates he made for books. These include the plates for the artist George Simpson’s *The Anatomy of Bones and Muscles* (London, 1825). The details of their business relationship are uncertain but by 1833 they were listed as “Day & Haghe” in directories. Together they brought together a group of skilled artists and lithographers that helped them make their name. During the 1830s their work was of a quality capable of challenging the supremacy of Hullmandel’s press. They were appointed successively as lithographers to the king and queen. By the time the hand-colored plates for Jane Loudon’s book were published in 1841 the work of Day and Haghe was recognized for its excellence. The firm is best known today for its contributions to David Robert’s *The Holy Land, Syria, Idumea, Arabia, Egypt & Nubia* (1842–1849), considered to be the most ambitious lithographic work published in England. Having made a name for himself as one of the finest lithographic draughtsmen in Europe, Haghe retired from the firm in 1852 to focus on watercolor painting. The firm carried on until it failed in 1867 under the direction of Day’s younger son William, who took over the business after the death of his father.

Although Bland speaks of lithography as being ideally suited to illustrating botanical works as it so often was used during the 1830s and 1840s (Bland, 1958, p. 252), a lithographic chalk line could not always reproduce fine details like an etching needle or burin (Bridson & Wendel, 1986, p. 121). Creating small details like prickles and hairs on the stems of plants required an artist with superior skills working on a finer textured stone with a high quality lithographic chalk. In general lines and tones were kept fairly simple to facilitate the hand-coloring which was critical to botanical illustration (Bridson & Wendel, 1986, p. 119). Blunt speaks to the declining quality of lithographic illustration in botanical books from the middle of the nineteenth century and specifically mentions Jane Loudon’s attractive flower books with their lithographic plates produced in the 1840s (Blunt & Stearn, 1994, p. 276). Ten or fifteen years later when the works were reissued the lithographic work was less refined and polished. This decline can be seen in the second edition of *The Ladies’ Flower-Garden of Ornamental Bulbous Plants* published by W.S. Orr & Co. in 1849. The plates by Steward and Murray have lost the delicacy of the first edition work by Bradbury and Evans, obliterated by shadows and outlines more darkly and heavily printed.

It was probably no accident that the distinguished printing firm of Bradbury and Evans produced *The Ladies’ Flower-Garden of Ornamental Bulbous Plants*. Their specializations included works on gardening, botany, and fine art as well as illustrated periodicals and legal printing. One of their...
clients was Joseph Paxton (1801–1865), who, like Jane Loudon’s husband, was one of the most prominent names of the era in gardening and horticulture. In addition to making the gardens under his care at Chatsworth the most famous in England, he submitted the winning design for the Crystal Palace, which was based on the structure of the underside of the leaf of the great water lily, *Victoria regia*. One of the periodical titles printed by Bradbury and Evans was Paxton’s *Horticultural Register*.

William Bradbury (1800–1869) began a printing business with his brother in 1824, possibly after serving as an apprentice compositor in Lincoln. When the firm dissolved in 1830 he formed a partnership with the printer Frederick Mullett Evans (1803–1870), who grew up in London. They established themselves at Bouverie Street and Lombard Street, Whitefriars and then moved to a location on Lombard Street in 1833. The offices and warehouses of their printing works eventually dominated the entire little street. In order to print newspapers and periodicals they installed a large, steam-driven cylinder press made by Middleton & Co. that was the latest design. Bradbury and Evans became known as one of the most innovative, skillful, and efficient printing firms in Britain, by their use of such new machines and the practice of employing men to work in relays around the clock. Their business was so large they could help other printers who were trying to complete really big jobs in a short amount of time. They are also credited with being the first printers in Britain to adopt the French process of stereotype printing.

Bradbury was head of the firm and was involved in all aspects of the daily work on the printing floor. He kept a close eye on difficult jobs and maintained high standards of workmanship. He also paid unusually high wages to his workmen, quickly rewarding exceptional skill. On a lighter side, Bradbury continued the Waygoose celebration, one of the old printing traditions. The Waygoose was a celebration that a master printer gave to his workmen every year around St. Bartholomew’s Day on August 24. It marked the end of the summer and the beginning of the time of year when one worked by candlelight. Evans functioned as the main contact person for other aspects of the business including negotiations regarding books, loans, and pay. He was considered to be a kind man and he was personal friends with his staff.

As businessmen Bradbury and Evans’s most important task was to keep all of their presses running. In order to do this they published many periodicals. Their most successful venture was *Punch*, which they began printing in 1841. *Punch* was a comic weekly geared toward the British middle classes and was one of the most famous periodicals of the Victorian age. Through their work for the publisher Chapman and Hall they became, for a time, both the printers and publishers of Charles Dickens producing, among other titles, *David Copperfield*. Both Bradbury and Evans became close friends of Dickens but the warm and amicable relationship was destroyed when Dickens dissolved his marriage with his wife Catherine in 1857. In order to squelch scandalous rumors Dickens decided to publish an explanation. He sent it to the *Punch* office but did not ask specifically for it to be printed. It appears that the editor Mark Lemon and Evans, who was part of the negotiations regarding the Dickens’s separation, never thought to publish it. As a result, Dickens felt betrayed by Bradbury and Evans and broke off doing business with them. This was a terrible blow to the firm because they lost not only all the profits from publishing his books and his journal *Household Words* but the printing contracts for them as well. They never recovered as book publishers and could never find enough marketable authors to fill the breach left by his loss. Motivated by declining health and personal tragedies, Bradbury and Evans retired in 1865, passing the business on to their sons and to William and Thomas Agnew who were prominent Manchester art dealers.

10. Shirley Hibberd’s *Rustic Adornments for Homes of Taste and Recreations for Town Folk in the Study and Imitation of Nature* and the wood-engraving process

Although lithography was desirable because it was not as labor intensive as engraving or etching, it still was not well suited for making illustrations or decorations easily on the letterpress page. Any engraved illustrations on a page of text meant that the page had to make two passes through a press: the hand press for the text and the intaglio press for the engraved illustrations. Another illustrative process that was being taken up during the first three decades of the nineteenth century...
that was cheaper than lithography and did not require a second pass through a different press was wood-engraving. England was considered the center for the medium which was the most popular illustrative process in the Victorian period. In the nineteenth century wood-engraving was mainly used for reproductive work for illustrated books and journals. It was not widely adopted until the era of the popular illustrated press took off in the 1830s and 1840s. It was then that its advantages as a cheap reproductive process were recognized. Publishers in Europe and North America made wood-engraving the dominant reproductive process for works published in large editions from the 1830s. It prevailed as the chief form of illustration until the 1880s, when it was replaced by the photomechanical line-block and the half-tone plate. It was a superior form of illustration because the wood-engraved blocks, like woodcut blocks, could be locked up in the forme with the type and printed on the letterpress page at the same time.

Wood-engraving was used to illustrate some of the most popular books of the Victorian era. One of these is Shirley Hibberd’s *Rustic Adornments for Homes of Taste and Recreations for Town Folk in the Study and Imitation of Nature*, first published in 1856. The second edition was published in 1857, also by Groombridge and Sons in London, a firm that did pioneering work in natural history book production (Mclean, 1972, p. 202). The pages are decorated with monochrome wood-engraved figures and decorative flourishes and it contains only seven color printed wood-engraved plates, far fewer color plates than the Bury or Loudon books. It is a quarto volume measuring approximately 19 × 14 cm high, smaller than the commercially published quarto *The Ladies’ Flower-Garden of Ornamental Bulbous Plants*, which is 29 × 22 cm. The illustrated cover was commercially produced, unlike Mrs. Bury’s book which was bound by the owner after all of the parts had been received. The paper was not produced by hand but more cheaply by machine. Most all of the paper used for commercial bookmaking in Great Britain was machine made by the 1830s except for the hand-made paper used for some deluxe editions.

James Shirley Hibberd (1825–1890) was a British journalist and amateur horticulturalist who is considered the father of amateur gardening. He was a major force in the urban and suburban horticultural circles of his era. His primary audience was the new middle class and the lower classes of British society. His father, a retired sea captain who had served under Lord Nelson, wanted him to go into medicine, but Hibberd followed a different path upon his father’s death. Hibberd’s father also had connections to the printing trade and Shirley became apprenticed to a bookseller. However, it appears he left that particular trade early and worked as a bookbinder for a short time. After he married in his middle twenties he established a home at Pentonville and became interested in gardening.

Hibberd began writing in the 1850s and produced many popular and practical works on gardening in addition to editing several magazines. He was a gardener himself and created specialist gardens with fruit, vegetables and roses, grew trees and shrubs in pots, and developed a collection of specimen hollies and ivies. His exhaustive interests included roses, ferns, ivy, seaweed, sponges, algae, wildflowers, vegetables, fruits, aquariums, and indoor gardening. The advances in commercial book production that had taken place since the beginning of the nineteenth century made Hibberd’s books affordable and helped to popularize gardening, botany and natural history among the middle and lower classes. Before his books gardening had been the pursuit mainly of the aristocracy and the very wealthy, who could afford huge staffs of gardeners and landscape architects. He became the most authoritative voice on middle class fashionable taste of the day. Hibberd writes with humor and from his own trials and errors which makes his books both entertaining and practical. His writings are also significant as social history because they are windows into the world of contemporary life in Victorian England. *Rustic Adornments for Homes of Taste and Recreations for Town Folk in the Study and Imitation of Nature* is an example of this as he describes furnishings, flower arrangements, indoor plants, garden ornaments, the conservatory and the growing of fruit and vegetables. In a home of taste he says “everything is a reflection of refined thoughts and chaste desires” (Hibberd, 1857, p. 3). These writings by Hibberd that contain illustrations portraying contemporary interior and exterior furnishings are considered to be the best of the era (Browne, 2004).
Shirley Hibberd’s preface to the 1870 edition of his *Rustic Adornments for Homes of Taste* discusses the immense popularity of this work. The first edition of *Rustic Adornments* was published in February 1856 and it was sold out in six months. A second edition was published in June 1857. This edition was quickly sold out and the work still remained in demand. He explains that he just had no time to prepare another edition for sale. We are told the 1870 edition was altered but he used the same basic organization of the text. He relates that between the publication of the 1857 edition and the 1870 publication his text was pirated by an American, Edward Sprague Rand. He bemoans the unethical policy of American publishers at that time to pirate uncopyrighted works. Hibberd tells us he is publishing *Rustic Adornments* again to “enlarge the circle of domestic pleasures and home pursuits; ... to strengthen family ties and affections by multiplying the sources of mutual sympathy” (Hibberd, 1870, p. v). His writing is an example of how important the family and family life were to the middle classes during the Victorian era. He is certain that whatever the differing views of his readers in matters of “life religion and duty, such recreations as are herein described are not likely to clash with them, but they may help the soul in its aspirations by conducting it away from disturbing scenes, and surrounding it with an atmosphere of health and peacefulness” (Hibberd, 1870). The preface concludes with lines about a singing lark in Coleridge’s poem “Tears in Solitude.” The lengthy addendum following the preface attests to Hibberd’s popularity. He begins by telling readers he does not support any “particular trader or trading interest and has no interest of that sort of his own to promote”(Hibberd, 1870, p. 6). Among other things he does no work in landscaping, does not answer letters unless they come through a periodical publication he works for and his garden is not open to the public (Hibberd, 1870).

Hibberd opens the chapter, “The Fern Case,” with an unidentified poem that is embedded in the head-piece of the page. It describes the halls and courts of princes and kings where no one sees a glittering diamond in the torchlight. This alludes to the humble fern being overlooked by lovers of colorful, showy flowers. The title on the first page of the chapter is expanded to “The Fern Case and Fireside Garden.” Employing elegant prose, he sets the stage for the chapter telling us, “Ferns induct us pleasantly into one of the quietest regions of vegetable life, a region in which flowers are unknown, and yet where those who love flowers most will least of anywhere miss them” (Hibberd, 1870, p. 59). Ferns, because they are not colorful and showy, “make no appeal to superficial taste” (Hibberd, 1870). Hibberd advises that “The fern-case, whether it be a grand or an humble example of its class” is the best way to bring nature’s beauty into the home in all seasons (Hibberd, 1870, p. 60). In striking contrast to this idyllic scene, he paints a chilling reminder of the magnitude of the industrial pollution in the cities. The fern case was very popular with town dwellers because a contained garden could survive in the “smokiest localities, where, if exposed to the influences of the poisoned atmosphere, scarcely any kind of vegetation long survives” (Hibberd, 1870). He describes a city dweller in the polluted center of a town who sees “a few old trees peering above the black roofs, and which, from their forms rather than their colours, are distinguishable from chimneys” (Hibberd, 1870). With a fern case garden, the city dweller might “preserve a gaiety in his narrow garden in the midst of darkness and smoke” (Hibberd, 1870, pp. 60–61). The Wardian Case made it possible to grow ornamental plants and rare vegetation “in the midst of surrounding dust and the fumes of factories” (Hibberd, 1870, p. 61).

After establishing the need for a fern case and its benefits, Hibberd shares the history of Ward’s invention. Then he describes the practical matters of building, stocking, and maintaining fern case gardens and fireside gardens. Individual tastes and requirements should determine the form and dimensions of the fern case but “heavy woodwork and cumbrous designs are offensive to good taste” (Hibberd, 1870, p. 62). The fern case should have more than one door and be composed of several parts that can be taken apart and put back together again. The aspect, or which direction the fern case faces for the best light is discussed. Ferns, selaginellas, and mosses are recommended for the fern case. Also, the common ivy. Hibberd writes, “Many readers of this will doubtless call to mind the beautiful sheet of ivy filling a window garden, years ago, at the residence of Dr. Conquest, in Finsbury Square” (Hibberd, 1870, p. 63). The chapter ends with a careful discussion of the necessary composition of the soil for the fern case.
In his later years Hibberd became more involved with the Royal Horticultural Society and appears to have been in great demand as a judge and lecturer. It was written at the time that “as an after-dinner speaker at festive gatherings of horticulturists he was perhaps without rival” (Anonymous, 1890, p. 442). He was a vegetarian and supported the temperance movement. Hibberd was married twice and when he passed away in 1890 the only relative he had was a daughter from his second marriage. Even without family his funeral was attended by 200 friends and admirers.

11. Wood-engraving

Now that we have discussed Hibberd the man and his voluminous contributions, we shall consider the process of wood-engraving that was used to illustrate many of his books. Wood-engraving is a confusing term because it seems to refer to an intaglio process with the image cut below the surface of the matrix like a copper engraving. However, the image on the wood-engraving is cut in relief, above the matrix, like a woodcut block. The difference in terminology lies in the type of tools used to cut the block. The term engraving is used because the relief image on the block is cut with an engraving tool, the burin or graver. By contrast, a woodcut is made using a knife or gorge. The great advantage of both wood-engraved and woodcut blocks in book illustration is that the blocks could be locked up in the forme with the metal type and printed on the same page as the text at the same time.

The text pages of Hibberd’s second edition of *Rustic Adornments* are filled with decorative head- and tail-pieces and initial letters that are wood-engravings by Alexander Francis Lydon (1836–1917). Lydon served as an apprentice under Benjamin Fawcett, who produced the color printed wood-engraved plates for the book. Some of the wood-engravings on the text pages of the second edition of *Rustic Adornments* are used in different parts of the text in the “new edition, revised, corrected and enlarged” published in 1870. A lovely example of wood-engraving used on the text pages is the decorations at the beginning and ending pages of the chapter on the Wardian case in the second edition of 1857. The first page of the chapter has a wood-engraved head-piece with ferns and other flowers in a Wardian case. In the 1870 edition the same head-piece is used for the chapter on ferns (Figure 3). However, the initial letter of the first sentence is formed differently. A spray of ferns alongside the first paragraph of text is used to form the initial letter that mimics an illuminated initial in an expensively produced facsimile of a medieval manuscript. Wardian cases filled with ferns were kept by the middle classes who were living in cities. The fern was one of the most popular plants of the Victorian era. The fern craze was most likely launched with the 1837 publication of William Francis’s *An Analysis of the British Ferns & Their Allies* and was at its peak in the mid-1850s. Fern collectors used the expanding railway network to explore the remote regions of country for unique forms of the plant (Morgan & Richards, 1990, p. 40). The Wardian case, invented around 1829 by Nathaniel Bagshaw Ward (1791–1868), an English doctor, was a sealed protective container that functioned like a terrarium. The last page of the chapter on ferns in the 1870 edition uses a different Wardian case with ferns as a tail-piece (Figure 4) This is the same illustration used in the 1857 s edition as the tail-piece for the chapter on the Wardian case. All of the pages in both editions are attractively framed by ropes of intertwined twigs.

Wood-engraving developed from the European woodcut technique, in which an image was cut with a knife on the plank side of a soft block of wood. Woodcuts were the first kind of printed illustrations used in printed books. Woodblock or woodcut printing was first invented in China but did not come to the West until the thirteenth century where it was first used to print designs on textiles. The later wood-engraving is thought to be one of many techniques developed by general engravers from the seventeenth century onwards. It became desirable because finer tonal and linear details could be created like those of an etching or an engraving. It cannot however be identified as a unique process with certainty until the eighteenth century, and no specific inventor of the process or the date of its invention is known. The artistry of Thomas Bewick (1753–1828) brought wood-engraving to prominence in England in the later eighteenth century and by the early nineteenth century it had superseded the woodcut as an illustrative medium. One of the chief factors that made wood-engraving possible was a different kind of paper that was being made at the end of the eighteenth
century. Wove paper made with a wove mesh mold was a finer, smoother paper which accommodated the more refined lines and textures of wood-engraving. Laid paper that had chain lines and wire lines was more coarse and could not reproduce the finer details to the same degree.

The matrix for wood-engravings is a hardwood, usually boxwood. These relief blocks were cut horizontally from the tree and showed its growth rings. This part of the wood is called the end grain. The hardness of boxwood made it possible to cut fine details into the block. It is generally thought that wood-engravings are capable of reflecting more intricate and subtle images than the woodcut made from the softer tree woods, but this is debatable (Godfrey, 2017). Since the box tree is small, a large wood-engraved design had to be made by joining blocks together.

There were different ways to affix the image that was to be engraved to the surface of the block. The standard method was to have the artist draw the illustration in reverse on the face of the block. It could also be traced on the block. For the greater part of the nineteenth century the artist who designed the wood-engraved illustration did not also engrave it on the block. That was done by a specialist engraver whose job was to interpret or translate the image into a wood-engraving. It became standard practice from about 1866–1867 to transfer a photograph of an image onto a block that had been specially sensitized. The engraver interpreted the shading and other details of the block according to his artistic taste.
An advantage of the wood-engraved block from the printer’s perspective was its greater durability. It could hold up through a greater number of printings, unlike the more delicate aquatint plates and other forms of intaglio engraved plates like mezzotint. Developments in technology further extended the work life of the wood-engraved block, including stereotyping and from 1839, electrotyping.

The next graphic methods to be highlighted in nineteenth century botanical books are all color printing processes. Before the second half of the nineteenth century people did not see much printed color in their lives. The first time the general public was exposed to color on a truly meaningful scale was at the Great Exhibition of 1851 (Twyman, 2013, p. 125). It was the first international exhibition of manufactured products and was intended to showcase the accomplishments of Victorian industrialized society. With industrialization and the movement of goods and people there was a need for all manners of color ephemera from can labels to greeting cards and train and theater tickets. Color printing produces a consistency in color that hand-coloring cannot match. There was some experimentation in the less costly methods of relief color printing early in the nineteenth century but widespread interest in developing color printing processes did not take hold until the second half of the 1830s. As a result of these efforts, methods to produce cheaper color illustration that could be used in book illustration were developed by the mid-1850s. These included color printing from wood-engraved blocks, the Baxter process and chromolithography.
12. Color printed wood-engraving
The color plate illustrations in the 1857 edition of Hibberd’s *Rustic Adornments* make use of color printed wood-engraving (Figure 5). It contains seven color plates after G. Vozey. Color printing from woodblocks had been used long before the nineteenth century to illustrate books. The Mainz Psalter of 1457, the work of Johannes Fust (c.1400–1466) and Peter Schöffer (c.1425–1502), contains color-ed woodcut initials which are the earliest European color printing. Methods of color printing had been developed for other industries before the end of the eighteenth century for wall paper and fabric. However, these materials were printed on a roll and the same methods could not be used in making books that were printed as sheets. The advantage of color printing over hand-coloring was its greater cost effectiveness for the publication of large editions. With a few exceptions, there was no color printing during the first third of the nineteenth century. After Bewick had raised wood-engraving to a level of artistic excellence, interest turned to using relief processes to print in color. Even though color illustrations were printed from color intaglio plates into the nineteenth century, the
process was too expensive for producing books for the middle class audience, and relief processes were far cheaper by comparison. Color relief blocks had been especially used to produce large prints in the 1840s. The process had also been used to create smaller color images that became increasingly inexpensive so that by the 1840s color printed wood-engravings were commonly used in book illustration. Shortly after that time color printed wood-engraving was used to print the covers for yellow-backs, editions of cheap popular literature with brightly colored covers, usually with yellow background, most commonly sold in railroad stations. The heyday of the use of relief processes in color illustrated books was the middle nineteenth century.

Like its monochrome equivalent, color wood-engraving used blocks engraved on the end grain rather than those cut with a knife on the plank edge. The fineness of the end-grain work produced a relief block that looked different from the woodcut. A color woodcut produced large patches of color but the color wood engravers tended to break up the colors into ever more intricate overlapping patterns of finely engraved hatching. Most color wood-engravings are reproductive work done in the second half of the nineteenth century. The process was too labor intensive to make it an attractive medium for original art work. At the time color printed wood-engravings were often called chromoxylographs which means color prints from wood.

Usually there were as many blocks as there were colors, but a third color could be created by overprinting two colors from different blocks. One block functioned as the key block and carried the outline of the design. The artist colored impressions from the key block by hand with each of the required colors and then pasted them onto blocks so woodcutters could cut away the parts that did not print. Then the blocks were inked with their colors and printed one after the other on a single sheet of paper, care being taken that they were perfectly aligned or registered. The key block with the outline was usually printed last so it was above the colors and not covered by them. Printing the color wood-engraved block was more complex work than the two-color printing done in the hand-press period, so new methods were developed during the second quarter of the nineteenth century. There were also specialist color printers who used multi-color cylinder machines specifically designed for the task.

It appears that the first person to print satisfying full color images from carved or engraved wood-blocks in Europe was the Englishman William Savage (1770–1843), the director of printing at the Royal Institution in London. In 1822 he published Practical Hints on Decorative Printing with Illustrations Engraved on Wood and Printed in Colours at the Type Press. The book appears to have no antecedents and Savage is given credit for being the only person of his era in the West to visualize how color pictures could be built up from separate woodblocks (Gascoigne, 1997, p. 40).

The color wood-engraved plates in Hibberd’s work were printed by Benjamin Fawcett (1803–1893), who was considered one of the premier color woodblock printers of the nineteenth century and a specialist in natural history illustration. He is unique in that he is the only English nineteenth century color printer who worked his entire career outside of London. All of his books were printed, colored and bound at his workshop in Driffield, Yorkshire. Fawcett was born in Bridlington and apprenticed to a local bookseller before setting up as a printer, bookseller, and stationer around 1831. For the first twenty years he mainly published inexpensive children’s books and engraved the wood-engraved illustrations for them himself. Fawcett began collaborating on natural history books with the Reverend Francis Orpen Morris (1810–1893), who authored the texts after moving to the nearby town of Nafferton in 1844. The books had beautiful colored illustrations and were priced so that they were accessible to a mass audience. Their first successful venture was a six-volume work, initially issued in parts, History of British Birds (London, 1850–1857). In addition to natural history books Fawcett printed A Series of Picturesque Views of Seats of Noblemen and Gentlemen of Great Britain (London, 1860–1880), again with text by Morris, by some accounts his greatest undertaking (Mclean, 1972, p. 204).

Fawcett’s strength was in reproducing the textures of animals and plants. His use of color was distinct from that of the London color printers whose work had an oily shine. Instead, Fawcett’s
colors are subtle and transparent, resembling water colors. This was the kind of color that William Savage achieved in his color printed relief work; Fawcett may have known about the kind of ink he used and followed his example.

13. Anne Pratt’s *The Flowering Plants and Ferns of Great Britain* and the Baxter process

Although the color printed work of Fawcett and others helped to bring color printing into the hands of more people in Victorian England, there were other methods that held more promise for the mass market. The first relatively cheap color printing process that offered the commercial market an alternative to hand-coloring was patented by George Baxter in 1835. With few exceptions Baxter and his workshop were the only relief color printers at work during the 1830s. The method he developed combined the two processes of intaglio and relief. Anne Pratt’s five volume work, *The Flowering Plants and Ferns of Great Britain*, contains 241 leaves of color plates created by William Dickes, who used the Baxter process as the basis for his illustrative method (Figure 6). The five octavo volumes published by the Society for the Promotion of Christian Knowledge with text printed by Richard Clay...
measure 23 × 14 cm in height (Sitwell & Blunt, 1990, p. 127). They are undated and have been assigned a range of publication dates from 1850 to 1857 (Sitwell & Blunt, 1990). Jackson gives the probable date of publication as 1855 (Jackson, 1881, p. 237). It is thought that Dickes’s illustrations for *Flowering Plants and Ferns of Great Britain* is the most extensive and accomplished use of the Baxter process in botanical work (Bridson & Wendel, 1986, p. 109).

Anne Pratt (1806–1893) was the daughter of a well-to-do wholesale grocer in Strood, Kent. She was one of the most successful woman botanical artists of the nineteenth century and one of the best known authors of popular botanical texts. She was a prolific writer, producing over twenty books on the subject of botany that played a vital role in disseminating a knowledge and love of flowers and fauna throughout the Victorian world. In addition to writing on other natural history topics she wrote religious commentary and a collective biography of significant eighteenth century personages that included Sir Humphry Davy, Georges Cuvier, and Madame de Genlis. Her books were intended more for young people but they appealed to a wider audience. They give descriptions of plants that include plant folklore and the uses of the plants.

Anne’s mother was a gardener and this love of gardening filtered down to her. As a child she devoted her time to study because she was lame and could not take part in normal childhood activities. Like most women of her era who were successful botanical writers and illustrators, Anne was introduced to botany through family connections and pursued her work within the established social norms of the day. In her case a Scottish friend of the family, Dr. Dods, took it upon himself to teach her botany, a subject she took a keen interest in. Her older sister collected plants which she used to form an extensive herbarium. Anne made sketches of the specimens which she used later to illustrate her books. Collecting flowers and drawing them was considered an appropriate pastime for ladies of the Victorian era.

The book that first brought Pratt popular acclaim as a botanical writer and illustrator was *The Field, the Garden, and the Woodland, or Interesting Facts Respecting Flowers and Plants in General*, published in 1838. It is interesting that she kept the work secret from her family and friends. In 1845 Pratt’s mother died and she went to live with friends at Brixton in 1846. It is not certain what arrangements the family had made for her since she was unmarried and disabled. It appears that the books she wrote were her only source of income. Pratt became a household name after the publication of *Wild Flowers of the Year*, issued in 1852–1853. Before the book was published she wrote to Queen Victoria and asked her if she could dedicate the work to her. It was praised by the Queen who asked that copies of all of Pratt’s works be sent to her for the use of her children.

After Pratt settled at Dover in 1849 she wrote *The Flowering Plants and Ferns of Great Britain*. In the 1840s and 1850s the fashion for exotic plants was at a fever pitch in England, so it is noteworthy that her topic was native plants. Also, her work was published in the middle 1850s when the fern craze was at its peak. The five volume set illustrates all of the natural orders of plants and gives their British examples. The work was aimed at the unscientific and uses English terms throughout. It is considered one of the best popular botanical works of the Victorian era. For half a century it was the most widely used book on English wild flowers.

At the age of sixty in 1866, Anne married John Pearless (1809–1893), a rentier, of East Grinstead, Sussex. After their marriage she produced new editions of the botanical works that had established her reputation. *The Flowering Plants and Ferns of Great Britain* was published again in 1873 by Frederick Warner. It was printed by Savill, Edwards and Co. and issued with a sixth supplemental volume entitled *The British Grasses, Sedges, Ferns and their Allies the Club Mosses, Pepperworts, and Horsetails*.

Pratt begins volume one of *Flowering Plants and Ferns of Great Britain* by telling her readers that “one of the chief objects” of her work “is to aid those who have not hitherto studied Botany” (Pratt, 1850–1857, v. 1, p. 1). She briefly explains that the Linnaean system of classification had been
replaced by various Natural Systems. The natural systems in current use were adapted from those of Antoine Laurent de Jussieu (1748–1836) and Augustin Pyramus de Candolle (1778–1841). According to this plan, “the whole Vegetable Kingdom is divided into three great classes” (Pratt, 1850–1857). These classes are further divided into subclasses, orders, genera, species, and varieties. The rest of the introductory section explains the terms used to describe the characteristics of the roots, stems, axils, leaves, and flowers of plants. The descriptions of the flowers in the five volumes are arranged according to the natural system. The descriptions of the three water lilies depicted in plate 11 of volume 1 (Figure 6) illustrate Pratt’s style of writing and the kinds of information she shares with her readers.

The section devoted to lilies, order III, Nymphaeaceae, begins with a brief description of the parts of the plants in the order, in which the Nymphaeaceae are a subclass of the Thalamiflorae that belongs to the first great class, the Dycotyledones. Pratt continues with the story of “that celebrated plant, which has recently occupied so much attention,” the great water lily, *Victoria Regina* (now *Victoria amazonica*), a sensation among horticultural and gardening enthusiasts of the era. It was discovered by Robert Hermann Schomburgk (1804–1865) while he was on an expedition in British Guiana. It was cultivated successfully for the first time at Chatsworth by Robert Paxton. She describes water lilies that live in fresh water lakes in cool places like Norway. She also shares a myth about lilies in other lands, the East Indian *Nelumbium*, “which abounds in all the hotter countries of the East, and with which the ditches about Pekin are literally choked, is thought to have been the Sacred Bean of Pythagoras, which was the object of religious veneration in Egypt, and which the priests were commanded not to look upon” (Pratt, 1850–1857, v. 1, p. 57).

After the section that discusses the order Nymphaeaceae there are two sections devoted to two genera, the Nymphaea and the Nuphar. The section on the genus Nymphaea illustrates Pratt’s style of writing. The *Nymphaea alba*, or European white water lily is described in botanical terms: “leaves cordate, entire; stigma of 16 ascending rays. Plant perennial” (Pratt, 1850–1857). A further description of the plant follows, written in very picturesque language. Pratt describes the flower and roots and scent of the water lily. She relates the usefulness of the plant, how it is used for food and medicine. She also tells how the plant figures in the social customs of other countries and where it can be found in England. Pratt tells readers that “beautiful as are many of our aquatics, yet this lily, with its rose-like sculptured cup of alabaster lying among its glossy bright-green leaves, is without gainsay queen of the waters” (Pratt, 1850–1857, v. 1, p. 58). The plant is at its peak in June and July when “some of our quiet secluded streams are one mass of white and green”(Pratt, 1850–1857). Pratt has seen “large pieces of water in Essex almost covered with the lilies,” but according to Baxter, “the flower is seen nowhere in greater perfection than in the vicinity of Oxford, where it grows over the surface of almost every pond, deep watery ditch and slow river”(Pratt, 1850–1857). Unlike Jane Loudon’s *The Ladies’ Flower-Garden of Ornamental Bulbous Plants*, Pratt includes poetry excerpts in *Flowering Plants and Ferns of Great Britain*. A passage from “A Thames Voyage” by the poet Thomas Noel (1799–1861) that describes water lilies is quoted (Pratt, 1850–1857, v. 1, p. 59). Pratt tells readers that the flowers have a slight odor. The roots are supposed to be good for making gray and dark brown dye as well as for tanning leather. She lists the names of the lily in different languages. Pratt also relates the medicinal uses of the plant and its cultural significance in countries outside of England. In India, “the roots are chewed by singers” in order “to clear the voice” (Pratt, 1850–1857, v. 1, p. 61). In Japan, the white water lily is an emblem of purity. Lilies are cut out of white paper and “carried at funerals on long poles before the departed, and flowers are gathered from the stream and placed on the face” (Pratt, 1850–1857).

Kramer in *Women of Flowers* (New York, 1996) says her “glorious illustrations were botanically accurate” (Kramer, 1996, p. 158) and calls her a “tireless artist” (Kramer, 1996). Blunt identifies the plates of *The Flowering Plants and Ferns of Great Britain* as chromolithographs and says they are “pleasantly composed” (Blunt & Stearn, 1994, p. 276). He blames the inaccuracies in their colors on the “limitations of the newly popular technique of chromolithography” (Blunt & Stearn, 1994). He says, “The drawings which illustrate her book are her own work, though in their published form they
no doubt owe a good deal to the artists of the firm of W. Dickes and Co., who redrew them on the stones” (Blunt & Stearn, 1994). However Kramer calls Pratt a “fine botanical illustrator” (Kramer, 1996, p. 162).

14. The Baxter process
The process that was used to reproduce the art work of Anne Pratt was developed by the color print maker George Baxter (1804–1867). Born at Lewes, Sussex, he was apprenticed to a wood-engraver after he finished grammar school. In 1834 he was recognized for the colored plates he created for Feathered Tribes of the British Islands by Robert Mudie (1777–1842). He collaborated with Mudie on many other works on natural history. In 1835 he received a patent for his printing process, a new technique which combined the intaglio and relief processes. The prints he produced with his method were cheap and could be produced in large quantities, but were still good quality work. A key plate was made from an engraved metal plate or a lithographic stone and the image was built up with a succession of engraved woodblocks with various colors of ink. Printing the plates was not a particularly speedy process because the key plate had to be printed on an intaglio press and then the engraved wood blocks on a hand-press, as many as twenty, each bearing a separate color. Each woodblock had to be correctly registered against the key plate print. Baxter’s work was directed mainly toward the print market and aimed to reproduce highly finished oil or watercolor paintings. His plates were used mostly as frontispieces in books although some books have more of his illustrations (Wakeman, 1973, p. 41). The Baxter process was a significant force in the history of color printing and went on to dominate the field for the next twenty-five years.

The patent committee renewed Baxter’s license for another five years in 1849 on the grounds that his invention was of great use to the public even if it had not yet proved profitable for the inventor. Lord Brougham in his statement showed that the committee was thinking about the benefits of color printing for those who were not a part of the wealthier classes. Gascoigne shares their sentiments in his Milestones in Colour Printing, 1457–1859 (Cambridge, 1997). According to Lord Brougham their Lordships believed that Baxter’s invention was:

> of great public utility because making good coloured prints almost with the merit of oil paintings is of great benefit to the common people, to the cottagers, and to the laborers. It is a pleasure to them, and now it is made a cheap pleasure, it is a very innocent pleasure, and far more innocent than many other pleasures to which they have recourse, and far more refined. It is of an improving nature to their minds, and whatever works tend to give taste of a refined and intellectual nature to the working people are of great benefit, not merely to their happiness, but to their morals and good conduct in society. (Gascoigne, 1997, pp. 45–46)

Henry Peter Brougham (1778–1868) was responsible for the establishment of the Society for the Diffusion of Useful Knowledge, an institution dedicated to publishing cheap titles on scientific and artistic subjects for the edification of the middle and lower classes. Publishers were also striving to market popular publications to these same segments of society that embraced self-education and self-improvement.

At the time of the license renewal Baxter was carrying considerable debt which led the patent committee to advise him to sell licenses to others who wanted to use his process. Six licenses were sold over the next two years and although the work of some of the licensees was of the highest quality, some of it was not. In order to make Baxter’s process a commercial success they could not follow the same exacting standards as he did, giving each print individual care. Licensees had to modify this process to suit their own needs.

Baxter was a pious man and he did some of his most impressive work for the wealthy and influential missionary societies of his day. However, his perfectionist tendencies and extreme ambition landed him in terrible financial straits by 1856. The undertakings that cost him most dearly were the ones that were motivated by the interest Queen Victoria and Prince Albert took in his work. Lord
Brougham arranged an interview with Prince Albert and Baxter was engaged to produce prints to commemorate the Great Exhibition of 1851. The venture turned out to be an extremely expensive failure. Finally, Baxter was declared bankrupt in 1865 and tried unsuccessfully to sell his stock of prints at public auctions. He died after a head injury from an omnibus accident.

The platemaker of Pratt’s Flowering Plants and Ferns of Great Britain was one of Baxter’s licensees, William Dickes (1815–1892). He acquired his license around 1850. Before he took up color printing he trained to be a wood engraver under Robert Branston, the younger (bap. 1803, d. 1877), whose father is considered to be the leader of the London school of black-line engraving. During the 1830s Dickes studied at the Royal Academy and began his career as a book illustrator in 1840. It is thought that in 1840 he made drawings for Sir W. Jardine’s Naturalist’s Library (1834–1843). Many of these were printed in relief on metal plates by William Home Lizars (1788–1859). Dickes was both a draughtsman and an engraver gifted enough to exhibit color prints at the Great Exhibition (Mclean, 1972, p. 199). After he had made a name for himself as an engraver and designer he became interested in color printing and Baxter’s work in particular. After he had been using Baxter’s original key plate process he began working on ways to improve the process and to develop new effects in color printing. The firm of William Dickes did a substantial amount of color work for the Society for Promoting Christian Knowledge, Pratt’s greatest publisher. In the early 1850s the SPCK and the Religious Tract Society were among the publishers making the most use of color printing in their work. The SPCK said that all useful knowledge was Christian, an astute business strategy. Some of Dickes’s best work was in natural history illustration and he illustrated at least six of Pratt’s botanical books.

Color printing using Baxter’s technique was well established by the mid-1850s in everyday publishing and was not limited to expensive gift books. He was one of the first color printers who produced quality work for the general public. His process has been credited with being the one genuine precursor to commercial chromolithography (Twyman, 2013, p. 72). Chromolithography became even more important than color printed wood-engraving as a medium for illustration for modestly priced books in the second half of the nineteenth century.

15. Shirley Hibberd’s Familiar Garden Flowers and the chromolithography process

Chromolithography takes its name from the patent Godefroy Engelmann (1788–1839) secured in 1837, which refers to the process as “chromolithographie” (Twyman, 2013, p. 654). His process used four stones with the colors black, blue, yellow, and red, which is a method based on the system that French intaglio color printers perfected in the eighteenth century for copperplate engravings. A color image is built up from a set of lithographic stones, one functioning as the key plate with the complete outline of the image and each of the others bearing a part of the image in color. Each application of a new stone to a key image is called a working and it is the successive workings that create the whole chromolithograph. Correct registration of the workings is critical to producing chromolithographic images. More colors than stones could be created by overlapping the color of one stone with another, a technique called overprinting. Colors that were not the product of overprinting are referred to as flat color. Eventually chromolithographers developed superior skills and could build up highly complex color images with color stones alone. Early knowledge about chromolithographic practice was confined to trade practice and not written down so the exact particulars of the process as it was practiced early on are not clearly understood.

The color plates in Shirley Hibberd’s charming five volume Familiar Garden Flowers are lovely chromolithographs published in the later nineteenth century by Cassell & Company, Limited in London, Paris, and Melbourne (Figure 7). The volumes bear no dates and have been assigned a range of publications dates from 1879–1897. The front fly leaves bear the company’s colophon “La Belle Sauvage,” designed by Walter Crane. La Belle Sauvage was an old estate at the foot of Ludgate Hill that John Cassell, the company’s founder, converted into his printing and publishing office in 1853. Each volume contains approximately forty plates figured by Frederick Edward Hulme and measures about 20 × 14 cm. Some copies of this title wear ornately decorated bindings that are typical of the
period. These have covers that are cobalt blue decorated with gilding and an image of a garden flower (Frazer & Sellers, 2014, p. 216). These books did not only function as useful guides for amateur gardeners, but were visually appealing.

The five volumes of Hibberd’s *Familiar Garden Flowers* have the same format. Each contains a preface followed by a “Synopsis” which contains a description of each of the flowers that are discussed in the volume. Each volume contains illustrations and descriptions of about 40 flowers. After the synopsis, the main text of the volume follows with a color illustration of each flower with an accompanying description of it. The synopsis focuses on the characteristics of the plant’s flowers, stems, and leaves. The accompanying descriptions of the flowers contain various kinds of information including its habitat, soil requirements, and edibility. In the preface to the first volume Hibberd states that his *Familiar Garden Flowers* is a popular work and not a scientific one: “Light words are at times more serviceable than learned lines, and persuasions are more often more effective than arguments” (Hibberd, 1879–1897, v. 1, p. iii). This, he says, is especially true when it comes to “subjects that are adapted for universal enjoyment and that appeal to feeling first and afterwards arouse
In the synopsis for the arum lily (Figure 7) featured in volume four of *Familiar Garden Flowers*, Hibberd tells us that “plants of this order are easily recognized both by their leaves and flowers” (Hibberd, 1879–1897, v. 4, p. xiv). He refers to them as the “lords and ladies’ of the hedgerow” (Hibberd, 1879–1897) and gives a detailed description of the leaves and flowers. Although they are “a very acrid and dangerous race of plants,” Hibberd tells us that the roots of some of the tropical species are cooked as yams (Hibberd, 1879–1897). However, if one chews on the leaf of the cuckoo pint or arum of the hedgerow it can be dangerous and will bring on “excruciating pains and some degree of danger” (Hibberd, 1879–1897). The description accompanying the arum lily is a patchwork of practical information and some social commentary. Hibberd tells us that the plant is usually called *Calla aethiopica* but it is perfectly acceptable to class it as a *calla*. Then Hibberd takes this opportunity to express his disdain for the “vicious use of commemorative names that is now becoming common with botanists who are too idle to diagnose, while over-busy in ‘dedications’” (Hibberd, 1879–1897, v. 4, p. 129). However, evoking Shakespeare, he assures us it is “no matter: ‘a rose by any other name will smell as sweet,’ and the arum lily is a glorious plant that should be grown wherever suitable accommodation can be provided for it” (Hibberd, 1879–1897). He clarifies that the arum is really not a lily “but there is no lily, however beautiful, that can be said to surpass it in elegance of form or in the purity of its ivory-white chalice, folded in curves that seem to mock the genius of the greatest artists” (Hibberd, 1879–1897). From here Hibberd describes the conditions that the arum lily needs to survive. He tells readers how to grow it as a greenhouse plant and in a garden. He explains that when the arum lily is forced in a greenhouse “a few aphides will appear on the plants” (Hibberd, 1879–1897, v. 4, p. 130). Typical of his no nonsense approach to solving gardening problems he says “nothing more is needed than simply to brush them off and kill them” (Hibberd, 1879–1897). Hibberd addresses other practical matters including the kind of soil the arum lily needs, how much water they require, how to divide the plants and when to plant them in the garden.

16. Chromolithography

Chromolithography developed from the process of tinted lithography, applying one or more tints to a black key image. Experiments in creating a tinted lithograph with two stones began shortly after 1800. Credit for its invention goes to Senefelder with the publication of his treatise *Vollständiges Lehrbuch der Steindruckery* (Munich & Vienna, 1818) which contains two specimens. In tinted lithographs one stone carried the black image, the drawing of the image, and the second stone was used to create a background wash or tint, usually in a straw, buff or parchment color. Areas of the stone were stopped out so they would print in white creating an overall effect of pure white gaps and solid, even tint. The process was brought to Britain by Charles Joseph Hullmandel and the London
publisher Rudolph Ackermann (1764–1834), who became recognized for the superb quality of his color plate books. Ackermann published the first book printed in England with color lithography, *Albrecht Durer’s Designs of the Prayer Book* (London, 1817), a facsimile of the prayer book Durer illustrated with marginal designs for Maximilian I.

Johann Barth (1765–1818) printed the first book with true chromolithographic illustration, *Pacisannis MDCCCXIV et MDCCCXV foederatis armis restitutae monumentum* (Breslau, 1818). It was originally published in 1816 to celebrate the peace established between the emperors of Austria and Russia and the king of Prussia at the Congress of Vienna in 1814 and 1815. The second edition has borders and decorations that are color printed using lithography without any additional hand-coloring added. Early chromolithographers frequently used color printing and hand-coloring to produce their images, the hand-coloring being used for the more complex parts of the image. Barth created some of the colors by overprinting, but most colors were created from specially mixed inks, often costly, that aimed to reproduce a specific hue. His was an expensive book produced without concern for the means of prospective buyers.

For approximately a decade following Vollständiges Lehrbuch der Steindruckery of 1818 lithographers worked on addressing the technical challenges that chromolithography had presented. In addition to securing the appropriate lithographic inks they had to become adept at applying the different parts of the image to a set of stones, registration and overprinting. In the early years of chromolithography overprinting was little used to create additional hues although sometimes a light shade was printed under the other colors to keep the image from looking like a jigsaw puzzle. Flat colors created with specially mixed inks were perfectly suited to reproducing two-dimensional decorative art work that required combinations of solid areas of color and line work. As a result many of the first books printed with chromolithographic illustrations were about decorative arts objects such as illuminated books and coats of arms, and were expensive to produce. Unlike the second edition of Barth’s book, chromolithographers used a combination of color printing and hand-coloring to create their images. Hand-coloring enriched the color and was used to add subtle details that could not be created by printing alone. It was applied in general to more pictorial images, particularly reproductions of paintings and manuscripts.

During the 1830s many of the techniques necessary to produce chromolithographs were mastered by the printers of color lithographs. During this time double tinted lithographs were created using three stones to reproduce landscape scenes, black for the image, fawn for the earth and pale gray or blue for the sky. The tinted lithographs created with multiple tints can resemble chromolithographs because they use a wide range of hues, making it difficult to give precise labels to these two processes. Chromolithographers became very skilled at overprinting, which increased the overall richness of the color in a finished chromolithograph. Methods of dusting gold and silver powders on the ink before it dried for decorative effects were also developed.

In the mid-1830s commercial chromolithography was taken up in Britain. Contemporary interest in archaeology and Egyptology influenced the subjects chosen for the books and their illustrations. British lithographers who produced the first publications with chromolithographic illustrations reproduced ornament and decoration mainly using flat colors. Owen Jones (1809–1874), an architect and designer, produced one of the first significant British books with chromolithographic illustrations, *Plans, Elevations, Sections & Details of the Alhambra* (London, [1836]–1845). It is also the only one that can compare to the superb level of work produced by the continental printers during the latter 1830s and the 1840s (Twyman, 2013, p. 93). It reproduces the Moorish decoration of the medieval palace Alhambra in Granada, Spain. He used six and seven colors for his plates, and as many as ten at times (Twyman, 2013). Jones played a substantial role in planning the Great Exhibition as Superintendent of the Works. He was responsible for decorating the Crystal Palace and arranging the displays. His color scheme that utilized the primary colors came under attack at first, but after the work was finished it won high praise.
The period from the late 1830s up to the International Exhibition in London in 1862 is considered a period of transition (Twyman, 2013, p. 125). Basic technical problems involving inks, registration, and overprinting were solved and chromolithographers began to understand the creative possibilities the process offered them. The printers strove to find more subtle ways of integrating the registration marks made on the different stones and greatly increased the numbers of colors they used. In commercial work the aim was to produce stunning effects with only a few colors, which contrasts with early flat color work that tended instead to create the exact colors of the original with specially mixed ink. Book illustration intended for the middle classes did not use as many colors. This was because of both the cost of the extra colors and the increased likelihood of one bad working spoiling the whole image built up by the many previous ones. The attitude toward hand-coloring changed again after the later 1830s and chromolithographers did not view it as a technical weakness; instead it was used to enrich the printed color. From the second half of the 1830s it had been leading prominent chromolithographers to avoid its use. When hand-coloring was added to double tinted lithographs the result was halfway between a tinted lithograph and a chromolithograph. Book illustrations, facsimiles of manuscripts and gift books were produced using chromolithography, as were decorated boards for bindings for mass-market books, especially in France. Victorian gift books were sumptuously decorated books of poetry, short fiction, and essays that were usually given as gifts around Christmas.

The seminal development that took place during between the later 1830s and 1862 was the successful application of the chromolithographic process to printing pictures (Twyman, 2013, p. 175). The early practice of the artist putting their own work on stone as Thomas Shotter Boys (1803–1874) did for his *Picturesque architecture in Paris, Ghent, Antwerp, Rouen etc.* (London, [1839]) shifted to reproductive forms of chromolithography (Twyman, 2013, p. 124). This affected book illustration and the reproduction of paintings, like the botanical work used to illustrate books on the subject. The early work of the chromolithographers with its focus on decoration and flat work could not create shades of tone or modeled form needed to reproduce paintings. In 1837 Engelmann demonstrated that chromolithography could go beyond decorative work and be applied to picture printing with the publication of his *Album chromolithographique* (Paris, 1837) (Twyman, 2013). It laid the foundation for a revolution in lithography that made color printed matter available to the general public. Now the process could be used to create pictures that were more detailed and used a wider range of hues and tones of color. Specialists in the craft would work from original art, analyze the colors and allocate them to different stones, a process called color separation. Color reproductions of paintings were made to display and all sorts of ephemera could be produced in color. It was possible to produce facsimiles of medieval manuscripts in color, and color illustration for books for children and science books. From the beginning of the 1840s some of the earliest chromolithographic work in Britain was done for illustrated music annuals. Also during this decade the use of chromolithography was spurred along in England by the collaboration of Henry Noel Humphreys (1807–1879) and Owen Jones on gift books that utilized the process. Chromolithography began to be practiced on a widespread basis as a method to reproduce paintings, particularly watercolors, in the 1850s.

During the transitional phase it continued to be expensive for book publishers to produce illustration that used many colors. Gift books and books with full size plates were different cases because the cost of production was usually not an issue and the plates could be printed separately and tipped in or guarded in. Trade publications presented a more difficult challenge, especially when the illustrations needed to be integrated with the letterpress text on a page. One way to address this issue was to print several of the illustrations together on a sheet, cut them up, and paste them down onto the page with the letterpress text. Since it was cheaper to print more than one image at once this process was applied to works throughout the nineteenth century. Also any raw edges around the images could be conveniently trimmed. An example of this practice can be found in Henry Noel Humphrey's *The Illuminated Books of the Middle Ages* (1844–49) that has small mounted chromolithographic illustrations on the letterpress pages in addition to full page mounted plates.
After the Austrian Georg Sigl (1811–1887) patented the first powered lithographic machine in 1851 the period of commercial chromolithography got under way. Although the speed of output these machines could achieve did not match the letterpress machines, they still helped make chromolithography the major color printing process from around the 1860s until shortly after the end of World War I. Powered printing machines not only increased output, they could also print from very large stones. By the end of the transitional period the size of the stones that could be used was still somewhat small, with the largest being able to print a sheet of paper only 40 × 30 in. Printing from large stones meant that dozens or hundreds of small items could be printed with a single pass through the press or a large-format pictorial work could be produced. The hand press was still used during the commercial era of chromolithography to print from crayon-drawn stones, especially monochrome ones that required careful inking. It was also used to pull proofs even after the lithographic industry had become fully mechanized. Finally, it must be remembered that the powered press was a superior economic alternative only for large print runs, so the hand-press was still used for short-run work for many years. By the end of the 1850s chromolithographs were printed on dry paper and not damp, a revolutionary change. The wet paper expanded and then contracted as it dried throwing off the perfect registration of successive workings necessary for chromolithographic printing. Printers experimented with coated paper which made the colors of the printed image appear shiny. Also, the Victorian era with its belief in industrial progress influenced the perception of the use of hand coloring. Even before the lithographic trade was truly mechanized in the 1860s and 1870s, hand coloring was no longer viewed as the only option for color work, and sometimes it was not considered a viable option (Twyman, 2013, p. 69).

Chromolithography was an established sector of the printing trade in Europe by around 1860 but in general only the larger printing houses could produce the work. It required a larger number of stones and a staff that had a far broader range of skills. As a result a small number of large printing houses produced the greater part of the chromolithographic work of the 1840s and 1850s. By 1870 most leading chromolithographic houses would have had at least a few power printing machines (Twyman, 2013, p. 246). As the 1870s drew to a close high-speed lithographic printing machines were introduced on a widespread basis. Up until that time, high quality chalk lithography had been printed on a hand or power-assisted lithographic press. The superior work of the pressmen had been the key factor in the fineness of the work. However, the need for mass production that was driven by the bottomless appetite for color printed images was too much for the careful work required for the production of traditional chalk lithographs. The gains of mass production came at the expense of the delicate chalk style of chromolithography, which could not be printed on the new powered printing machines. This was because the pressure of the rotary cylinders was not sufficient to pick up the colors from the finely grained stones. As a result the stones used on the machines had to be polished to a shiny smoothness and the lovely grained chalk effect was lost. One technique used to create the chalk style was to transfer the drawings from transfer paper that had a rough texture or pattern. Also, successful methods were developed to transfer images for machine printing drawn on grained stones to polished stones by the late-nineteenth century. Other methods involved creating the images by using solid areas of color or by creating tones with lines and dots, stipple and cross-hatching.

Stipple was used by chromolithographic artists to create tones and textures. Unlike intaglio artists who created lines and dots with tools, chromolithographic artists made every dot one by one, usually with a pen, but the tip of a brush was also used. These were designed to fuse together optically, like the dots in pointillist paintings.

Chromolithographers also used parallel and cross-hatched lines. Together these dots, lines, and solid areas functioned as the main techniques used by chromolithographic artists during the commercial years of color lithographic printing. The ink-drawn method of the work of this later period gives chromolithography its distinctive qualities, just as crayon work had characterized earlier monochrome lithography. In 1879 the American Benjamin Day (1838–1916) invented a way to mechanically produce tints made up of dots, lines, and patterns, which made ink-drawn chromolithography a more systematic process.
Even though stippled style became widely popular toward the end of the century it resulted in the publication of great quantities of cheap and generally poor-quality work. However, a printer sensitive to the style could still produce very fine results (Bridson & Wendel, 1986, p. 131). The use of numerous workings helped to conceal the negative qualities of the method. The introduction of stippling and mechanical tints prompted divisions of labor that increased the speed of production and maximized different kinds of skills. A different kind of paper, one with a smooth surface, had to be used to get a clean print. The results were not always pleasing and when glossy paper was used the quality of late-nineteenth century chromolithographic work could sink even further. To enhance the image and make it more attractive, a completed print run was sometimes sent under a strongly textured roller which left an impression similar to good drawing paper. This helped to cover up the unattractive surface initially produced.

Chromolithography was applied later to botanical and ornithological illustration than it was to other subjects (Twyman, 2013, p. 239). Orchids were among some of the first plants that it was used to illustrate (Twyman, 2013). One of the most outstanding publications on the subject was the Reichenbachia: Orchids Illustrated and Described (Twyman, 2013) produced under the direction of Frederick Sander (1847–1920), a nurseryman from St. Albans, between 1886 and 1894 (Sitwell & Blunt, 1990, p. 135). The Reichenbachia is a large folio measuring 52 × 39 cm and contains one hundred and ninety-two chromolithographs that reproduce the orchids as life size. Writers on the history of botanical illustration have said that creating botanical illustrations using chromolithography required significant skills. This was because the multiple printings required to create a chromolithograph “gave the plates a rather greasy, shiny appearance, suitable for the vivid plumage of tropical birds but much less so for flower prints” (Sitwell & Blunt, 1990, p. 179) The declining quality of chromolithograph illustration in botanical publications of the second half of the nineteenth century has been noted (Sitwell & Blunt, 1990, p. 135).

The publishing firm that produced Shirley Hibberd’s Familiar Garden Flowers, Cassell and Company, Limited, was founded by John Cassell (1817–1865), a man who worked as a child laborer in a cotton mill and a velveteen factory. Throughout his life he supported liberal and radical causes and was dedicated to uplifting the poor and laboring classes through his work. He was involved in the teetotal movement, which spurred his first publishing venture, The Teetotal Times, in 1846. Before this he had a business selling tea, coffee, cocoa, and vegetable restorative pills. The Teetotal Times was followed by his periodical The Standard of Freedom, first issued in July 1848, another publication reflecting his progressive views. The Standard of Freedom spoke out in support of religious, political, and commercial emancipation, as well as free trade and universal suffrage. The first extensively illustrated book published by Cassell was a four-volume work brought out at the time of the Great Exhibition of 1851, The Illustrated Exhibitor (Mitchell, 2004). The publication was illustrated with wood-engravings, and to make it accessible to people of lesser means it was issued in weekly and monthly parts (Nowell-Smith, 1958, p. 31). In keeping with his magnanimous personality he made arrangements for lodging for working-class people attending the exhibition. A supporter of the abolitionist movement in the United States, he published an edition of Harriet Beecher Stowe’s Uncle Tom’s Cabin with illustrations by George Cruikshank. Unfortunately he was not as successful as a bookkeeper and became heavily indebted to his paper supplier. As a result his business was taken over by Thomas Dixon Galpin (1828–1910) and George William Petter (1823–1888) in 1854. The new company, Cassell, Petter & Galpin, assumed his debt for the privilege of using his name. He continued on with the firm as an editor and was made a partner in 1858. He died in 1865 and stands out as one of the most important and innovative popular publishers of the mid-nineteenth century.

Cassell, Petter & Galpin produced many books with color illustrations that were usually unsigned. Wakeman & Bridson give an example of their work in this area, European Ferns (1881–82) by James Britten (1846–1924). It does have plates signed by Vincent Brooks, Day & Son (Wakeman & Bridson, 1975, p. 20). Wakeman & Bridson identify other publications with chromolithographic work done by the firm (Wakeman & Bridson, 1975, pp. 20–21). Cassell & Company, Limited was incorporated in 1883 after Petter retired. The plates produced for Familiar Garden Flowers during this time are
unsigned and appear to use both stipple and grained style chromolithography. Frederick Edward Hulme (1841–1909), who did the original botanical artwork used in the book, was both an artist and amateur naturalist. The son of a landscape painter, he was the art and drawing master at Marlborough College from 1870. Walter Crane (1845–1915), who designed the colophon with the Indian woman holding a bow and arrow, was one of the foremost book illustrators of the nineteenth century. He learned to draw the illustrations on wood blocks by serving as an apprentice under the distinguished wood engraver William James Linton (1812–1898). He led a full life as a book illustrator, painter, and designer of all manner of things, from wallpaper to ceramic tiles. Crane designed covers for yellow backs and is well known as one of the most prominent illustrators of nineteenth century children’s books. Although Shirley Hibberd’s *Familiar Garden Flowers* was conceived for the working and middle classes, it reflects the dedication of Cassell and Company, Limited both to publishing good quality work for the less privileged members of Victorian Society and to making a profit.

### 17. Conclusion

The love of flowers and gardening that consumed the Victorians and drove publishers to produce books for this expanding market could be seen in part as a means of escape from the pollution and ugliness of their industrialized world. John Ruskin (1819–1900) writes about a polluted stream on the outskirts of an industrial town in *The Two Paths* (1859). He writes how he came upon the ruins of an abandoned cottage and he compares the present scene to what it looked like in earlier times. He describes the stream as he saw it:

> Now soaking slowly by, black as ebony and thick with curdling scum; and bank above it trodden into unctuous, sooty slime: far in front of it, between it and the old hills, the furnaces of the city foaming forth perpetual plague of sulphurous darkness. *(Ford, 1977, p. 44)*

Dickens, who was appalled by the fallout from industrialization, conjured up a cottage scene to rid himself of “the machine-made evil spirits” *(Ford, 1977, p. 46)*. Nature brought some relief from the “harshness and starkness of the Victorian world” *(Creese, 1977, p. 49)*. The garden was also a way for man to control nature in some small way and relate directly to the soil and the environment because he could no longer relate to his fellow humans *(Creese, 1977)*. Scientific methods provided growers with the illusion that they could have the upper hand over nature *(Carter, 1985, p. 16)*. The Victorian desire to control nature created a demand for luxury fruit the year round *(Morgan & Richards, 1990, p. 21)*.

All of the books discussed in this article, including Pricilla Susan Bury’s superb *A Selection of Hexandrian Plants Belonging to the Natural Orders Amaryllidae and Liliaceae*, were created during a period of time that has been described as a gradual decline in the history of botanical book illustration *(Sitwell & Blunt, 1990, p. 175)*. It is referred to as the age of the lithograph, which began well enough with hand-colored plates but gradually became cheaper until the invention of chromolithography wrought some of the worst examples of the genre. Although from the standpoint of connoisseurs and graphic artists this evaluation is easily understood, one should not overlook the positive role the cheaper illustrated works on gardening played during the Victorian era. The books of Jane Loudon, Anne Pratt, and Shirley Hibberd enriched the lives of vast segments of society that would never have been able to afford the caliber of book published by Mrs. Bury. Even though these popular works are not illustrated with the most expensive intaglio processes, or color printed from multiple plates perfectly registered and enriched with hand-coloring by the likes of a Robert Havell, Jr., they still have an aesthetic appeal that cannot be denied. Credit too should be given to the service their texts provided to those who wished to pursue their own gardening passions but did not have the resources to employ a trained staff of gardeners to do the work for them. Indeed the commercially produced books of the nineteenth century should be appreciated for bringing the passion of gardening and floriculture to almost all members of Victorian Society, not just the privileged, and for communicating their passion and enthusiasm to us in the present day.
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Source: “Aurum Lily” v. 4, facing p. 129; from Shirley Hibberd, Familiar Garden Flowers (1879–1897); unsigned Chromolithograph (Courtesy of the Sterling Morton Library, The Morton Arboretum).

References
Anonymous. (1890, November 20). Death of Mr. Shirley Hibberd. The Morton Arboretum.

Hibberd, D. (1879–1897). unsigned Chromolithograph (Courtesy of the Sterling Morton Library, The Morton Arboretum).

Bland, D. (1958). Victorian gardening and the local landscape. In M. Tait (Ed.), Victorian gardening and the local landscape. Cambridge: University Press.

Bridson, G. D. R., & Wendel, D. E. (1986). Printing in the service of botany: Catalogue of an exhibition. Pittsburgh, PA: Hunt Institute for Botanical Documentation.

Brown, J. (2004). Hibberd, (James) Shirley (1825–1890). In H. C. G. Matthew & B. Harrison (Eds.), Oxford dictionary of national biography. Oxford: Oxford University Press. Retrieved March 24, 2017, from https://www.oxforddnb.com/view/article/13193

Bury, P. S. (1831–1834). A selection of hexandrian plants belonging to the natural orders of amaryllidae and liliacae. Preface.

Carte, T. (1885). The Victorian garden. Salem, NH: Salem House.

Crewe, W. L. (1977). Imagination in the suburb. In U. C. Knoepfflmacher & G. B. Tennyson (Eds.), Nature and the Victorian imagination. Berkeley, CA: University of California Press.

Dewis, S. (2014). The loudons and the gardening press: A vicotorian cultural industry. Burlington, VT: Ashgate Press.

Dinekeo, A. (2016). Victorian spiritualism. In The Victoria web. Retrieved June 20, 2017, from https://www.victorianweb.org/victorian/religion/spirit.html

Ford, G. H. (1977). Felicitous space: The cottage controversy. In U. C. Knoepfflmacher & G. B. Tennyson (Eds.), Nature and the Victorian imagination. Berkeley, CA: University of California Press.

Frazer, S. M., & Sellers, V. B. (Eds.). (2014). Flora illustrata: Great works from the LuEsther T. Mertz Library of the New York botanical garden. Bronx: New York Botanical Garden.

Gascoigne, B. (1997). Milestones in colour printing, 1457–1859. Cambridge: University Press.

Godfrey, R. (2017). Woodcut. In The Oxford Companion to Western Art. Retrieved April 6, 2016, from https://www.oxfordartonline.com/subscriber/article/opr/t118/e62798

Hewitt, M. (Ed.). (2012). Introduction: Victorian milestones. In The Victorian World. London: Routledge.

Hibberd, S. (1857). Rustic adornments for homes of taste and recreations for town folk in the study and imitation of nature (2nd ed.). London: Groombridge and Sons.

Hibberd, S. (1870). Rustic adornments for homes of taste (New ed., revised, corrected and enlarged). London: Groombridge & Sons.

Hibberd, S. (1875–1897). Familiar garden flowers. London: Cassell & Company, Limited.

Holme, S. R. (1880). A book about roses: How to grow and show them (7th ed. revised). Edinburgh: William Blackwood and Sons.

Jackson, B. D. (1881). Guide to the literature of botany. London: Longmans, Green & Co.

Kramer, J. (1996). Women of flowers. New York, NY: Stewart, Tabori & Chang.

Kramer, J. (2002). The art of flowers. New York, NY: Watson-Guptill Publications.

Loudon, J. (1841). The ladies’ flower-garden of ornamental bulbous plants. London: William Smith. https://doi.org/10.5962/bhl.title.105717

Mclaren, R. (1972). Victorian book design and colour printing. Berkeley, CA: University of California Press.

McMillan, N. F. (1968). Mrs. Edward Bury (née Priscilla Susan Falkner), botanical artist. Journal of the Society for the Bibliography of Natural History, 5, 71–75. https://doi.org/10.3366/jsbnh.1968.5.1.71

Mitchell, R. (2004). Cassell, John (1817–1865). In H. C. G. Matthew & B. Harrison (Eds.), Oxford dictionary of national biography. Oxford: Oxford University Press. Retrieved March 24, 2017, from https://www.oxforddnb.com/view/article/4861

Mitchell, S. (Ed.). (1988a). Victoria, Queen of England (1819–1901). In Victorian Britain: An encyclopedia. New York, NY: Garland Publishing.

Mitchell, S. (Ed.). (1988b). Class. In Victorian Britain: An encyclopedia. New York, NY: Garland Publishing.

Mitchell, S. (Ed.). (1988c). Industrialization. In Victorian Britain: An encyclopedia. New York, NY: Garland Publishing.

Mitchell, S. (Ed.). (1988d). Chartism. In Victorian Britain: An encyclopedia. New York, NY: Garland Publishing.

Mitchell, S. (2009). Daily life in Victorian England (2nd ed.). Westport, CT: Greenwood Press.

Morgan, J., & Richards, A. (1990). A Paradise out of a common field: The pleasures and plenty of the Victorian garden. New York, NY: Harper & Row.

Newell-Smith, S. (1958). The house of Cassell, 1848–1958. London: Cassell & Company.

Postlethwaite, D. (1988). Mesmerism. In V. Britain (Ed.), Sally Mitchell. New York, NY: Garland Publishing.

Pratt, A. (1850-1857). The flowering plants and ferns of Great Britain. London: Society for the Promotion of Christian Knowledge.

Quest-Ritson, C. (2003). The English garden: A social history. Boston, MA: David R. Godine.

Reynolds, K. D. (2004). Victoria (1819–1901). In H. C. G. Matthew & B. Harrison (Eds.), Oxford dictionary of national biography (D. Cannadine (Ed.), online ed., May 2012). Oxford: Oxford University Press. Retrieved May 24, 2017, from https://www.oxforddnb.com/view/article/35652

Samuel, S. (2016). The Victorian web. Retrieved May 27, 2017, from https://www.victorianweb.org/victorian/authors/smile/index.html

Scourie, N. (1983). The Victorians and their flowers. Portland, ME: Timber Press.

Shiteir, A. B. (1996). Cultivating women, cultivating science. Baltimore, MD: Johns Hopkins University Press.

Sitwell, S., & Blunt, W. (1990). Great flower books, 1700–1900. New York, NY: Atlantic Monthly Press.

Stuart, D. (1888). The garden triumphant: A Victorian legacy. New York, NY: Harper & Row.
Thomas Carlyle, 1795–1881. (2017). Biography, poetry foundation. Retrieved May 27, 2017, from https://www.poetryfoundation.org/poems-and-poets/poets/detail/thomas-carlyle

Twyman, M. (2013). A history of chromolithography: Printed colour for all. London: British Library: Oak Knoll Press.

Wakeman, G. (1973). Victorian book illustration: The technical revolution. Newton Abbot: David & Charles.

Wakeman, G., & Bridson, G. D. R. (1975). A guide to nineteenth century colour printers. Loughborough: Plough Press.

Weintraub, S. (2004). Albert [Prince Albert of Saxe-Coburg and Gotha] (1819–1861). In H. C. G. Matthew & B. Harrison (Eds.), Oxford Dictionary of National Biography (D. Cannadine (Ed.), online ed., May 2012). Oxford: Oxford University Press. Retrieved May 24, 2017, from https://www.oxforddnb.com/view/article/274

Willes, M. (2014). The gardens of the British working class. New Haven, CT: Yale University Press.