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Keeping it in the Family: The Schoellkopfs and Serial Entrepreneurship across Generations

Introduction

Jacob Frederick Schoellkopf immigrated to the United States in 1842 and through a combination of thoughtful, strategic decision-making and a fair dose of luck, built a family empire in and around Buffalo, New York, that he passed down to his son and grandsons. Trained in Württemberg as a tanner, he took major risks in the U.S. by venturing into commercial sectors in which he had no knowledge or experience. Yet, by working closely with native-born Americans who were experts in these fields and by sending his children back to Germany for further education, he found himself on the cutting edge of a number of fields including hydroelectric power generation and aniline dye production. His life offers an instructive case study in serial entrepreneurship and illustrates the transatlantic flows of financial and human capital that contributed to the Second Industrial Revolution in the United States during the late nineteenth century.¹

An Old-World Tanning Tradition

Jakob Friedrich Schöllkopf was born into an old and established Württemberg tanner family in Kirchheim unter Teck on November 15, 1819. The Schöllkopf family originated from Göppingen, a town approximately twenty-five miles (forty kilometers) east of Stuttgart in what was then the Duchy of Württemberg. They worked as rope-makers in the community until the 1680s when Michael Schöllkopf resettled in nearby Kirchheim.² His grandson, Zacharias, was the first member of the family to become a tanner. Zach-

rias also married a tanner's daughter and thus established the Schoellkopf tanning dynasty.³

In the nineteenth century, the tanning process involved many steps through which raw hides were processed into reddish brown leather. The flesh needed to be removed from the hides and then they had to be depilated to strip away all hair before they were placed together with acidic tanbark (ground tree bark, typically oak) in pits for several months or sometimes even up to two years. After cleaning and drying the tanned hides, they would be smoothed and dubbined with tallow or oil to condition the hides or colored. The tanning business required capital reserves because tanners often had to process the raw hides for at least a year before the leather would be ready for sale.⁴

Jakob Friedrich's father, Gottlieb Heinrich (1779-1860), married his first wife, the daughter of a knacker, in 1802.⁵ However, she died young and he remarried Christina Margaretha Maier, a carpenter's daughter, in 1808. Like his first wife, Christina Margaretha brought a house as dowry into the marriage.⁶ When Jakob Friedrich was born to Gottlieb Heinrich and Christiana Margaretha in 1819, the Schöllkopf family was strongly integrated into local economic and social networks. Although Jakob Friedrich eventually had fourteen siblings (four of whom died in infancy), the Schöllkopfs were wealthy and could afford to care for all the children.⁷ Besides the two houses that Gottlieb Heinrich received through his wives' dowries, he owned a third along with additional land. When he died in 1860, Gottlieb Heinrich bequeathed assets in the value of 60,000 guilders to his heirs.⁸ This sum highlights his business acumen, as he had invested his business profits widely and wisely during his lifetime.⁹

Jakob Friedrich's education began at Kirchheim primary school and he later began a five-year apprenticeship in his father's tanning business at the age of fourteen. At the end of his apprenticeship, he traveled west across the Rhine River to Strasbourg, France, in 1839 to work as an employee at a trading firm for two years. Although it is not known for which company he worked, Jakob Friedrich's stay in Strasbourg hints at his father's connections within the broader tanning and leather trading sector since Strasbourg was the center of the leather trade at the time.¹⁰ Moreover, it is possible that Jakob Friedrich obtained information about immigration to the United States in Strasbourg, as the city's location along the Rhine made it an important transit point for immigrants traveling north to ports along the North Sea. It is unclear why he decided to leave his homeland for the United States in 1841 at the age of twenty-two. Emigration from Württemberg to the United States was not very common in 1841 since it was not an unusually bad year in terms of harvest and grain prices. His decision may have been influenced by the fact

that his older brother, Karl Christian, assumed control over the family's tanning business and he would have been forced to work as a journeyman for his brother or seek employment with a master tanner in some other location.¹¹

Jakob Friedrich likely chose to leave for the United States through the port of Le Havre, which was, in addition to Antwerp and Rotterdam, the most frequently used port for immigrants leaving the southwestern German lands for North America. The price for passage across the Atlantic was approximately 50 guilders, but the expense of the journey from Kirchheim to Le Havre would have doubled this cost.¹² After seven weeks at sea, Jakob Friedrich arrived in New York in January 1842. Here he stayed for two years, working in a tannery and learning English. After traveling around the midwestern U.S., he settled down in Buffalo, New York, in the spring of 1844. Given the relatively high costs of traveling westwards in the mid-1840s—between \$10 and \$15—and his lack of employment while traveling, it's likely that his father supported him financially during this period.¹³

Jakob Friedrich likely decided to settle in Buffalo for economic and social reasons. The Erie Canal connected the Midwest with the Atlantic seaboard and Buffalo, located at the terminus of the canal on the eastern shore of Lake Erie, was an important transshipment point between canal boats and lake steamers, and later the New York Central Railroad. By the middle of the 1840s, 30,000 people lived in the city.¹⁴ Besides offering fair prospects for retail leather sales, Buffalo was a good location for operating a tanning business. Erie County was well-known for its sheep breeding, so hides were readily available, and tanbark could be obtained from hemlocks in the nearby Pennsylvania forests. Buffalo also had a flourishing German community. In 1855 almost thirty-nine percent of the city's inhabitants came from the German lands, and the community had numerous German-language social institutions including newspapers and societies.¹⁵ Jakob Friedrich, for instance, was one of the early members of the *Liedertafel* singing society.¹⁶ These numerous social institutions would have provided him with an ethnic support network and would have helped him settle into the community.

After establishing his first leather store, listed in the 1844 Buffalo city directory as "Schollkopf Jacob F., leather and finding store" on Mohawk Street near the city's busy waterfront, he bought a tannery on credit outside the city, as well as a sheepskin tannery in Buffalo two years later.¹⁷ The store purchase was likely financed by an 800 guilder loan from his father.¹⁸ Jacob Frederick's businesses prospered and he began to put plans in place for expansion. In 1848, he asked his cousin Friedrich Vogel to leave Württemberg and join him in the United States. Bankrolled by Jacob Frederick, Vogel settled in Milwaukee and opened a tannery in collaboration with another German, Guido Pfister. Vogel also established tanneries in Chicago and Fort Wayne,

Indiana, during the early 1850s. Jacob Frederick maintained a financial stake in these enterprises for a time, but sold his shares in the firms by 1856.¹⁹ Prior to the sale of his interest in the Midwest tanneries, Schoellkopf purchased an additional tannery south of Buffalo in the town of North Evans, New York. Within a decade of his arrival in Buffalo, he had assembled a large leather production and retail distribution network in western New York that would continue to grow and prosper during the Civil War era.²⁰

Much of Jacob Frederick's early business success was dependent on financial transfers from his family in Europe. He continued to receive support from his father in the form of loans, which helped to capitalize his business expansion in the decade between 1844 and 1854. In 1845 and again in 1846 Jacob Frederick received a loan of 1000 guilders at a very generous interest rate.²¹ The tanning business required large capital investments and usually wouldn't turn a profit for quite a long time, so the money received from his father was absolutely essential in keeping the operation afloat.²²

By 1847 Jacob Frederick was so well established in his new home that he wrote Christiane Sophie Dürr, a baker's daughter from Kirchheim with whom he had probably gotten engaged before he left for the United States, and asked her to immigrate and marry him. The couple wed on March 12, 1848, in Philadelphia.²³ On the occasion of the marriage, Jacob Frederick received 2,500 guilders as present from his father.²⁴ In December of 1848, Jacob Frederick and Christiane had their first child, Henry.²⁵ Over the next twelve years, they would have ten more children (three girls and seven boys), of which seven (including their eldest brother Henry) survived to adulthood.²⁶ Jacob Frederick's adult sons would join him in his many business ventures and ensure that the Schoellkopf name remained well known in upstate New York throughout the twentieth century.

Serial Entrepreneurship

Jacob Frederick Schoellkopf was a serial entrepreneur constantly on the lookout for new business opportunities. Throughout his career he leveraged his existing businesses for the financial or human capital necessary to start new ones. He used profits and capital from his tanning and leather retail businesses to enter the flour milling industry. Later, he acquired the struggling Niagara Falls hydraulic canal from its mortgage holders and completed the construction project. Profits from the sale of land and water rights along the canal were invested into other Schoellkopf enterprises, including the first electrical power generating facility at Niagara Falls. Lastly, he entered the dyestuffs industry when he constructed a plant to produce coal-tar dyes in Buffalo.²⁷ As Jacob Frederick's sons came of age and acquired sufficient educa-

tion and experience, he integrated them into his businesses, first as junior and later as full partners. After his death in 1899, his surviving sons continued to manage his numerous enterprises.

Milling

After founding leather production and retail enterprises in Buffalo and supporting his extended family's business activities in the Midwest, Jacob Frederick decided to shift some of his capital into a new sector. In the mid-1850s, he took a calculated risk by entering a field in which he had no professional training or experience, flour milling. During the colonial era and early years of the Republic, flour milling had largely been conducted on a small scale in wheat-growing regions by mills serving local populations. These mills tended to be small and staffed by a handful of employees. By the late 1840s, however, a significant flour milling industry had developed in New York State. Rochester, which was located on the Genesee River near the southern shore of Lake Ontario, enjoyed a combination of natural and manmade resources that helped it to emerge as the nation's leading flour producer, the "Flour City," as it became known. Situated near wheat-growing farmland in the Genesee Valley, the city's location along the Genesee River provided it with abundant waterpower for flour mills. The Erie Canal, completed in 1825, offered Rochester millers access to inexpensive freight shipping to New York City via canal boat. Unlike millers of an earlier era, Rochester millers produced flour on an industrial scale in large mills with numerous employees and distributed it across great distances to much of the northern Mid-Atlantic region. Other lesser centers of flour milling in New York included Ithaca, Niagara Falls, and the Erie Canal towns of Albany, Lockport, and Jacob Frederick's adopted hometown of Buffalo.²⁸

It is unclear why Jacob Frederick decided to invest in the flour industry. His willingness to enter a new field in which he had no practical experience certainly reflected a risk-taking spirit more common among American entrepreneurs than European businessmen of the era. Perhaps he had witnessed the growth of the industry firsthand in the neighboring community of Black Rock during the 1840s and 1850s and had decided that milling would offer a greater return on his investment than leather tanning. In 1845, entrepreneurs Thomas Thornton and Thomas Chester had acquired the Globe Mill in Black Rock from its original proprietor, millwright Stephen W. Howell, and had operated the business profitably. They would later cooperate briefly with Jacob Frederick in his milling activities. In 1857, Schoellkopf purchased land in Black Rock and built the North Buffalo Flouring Mill. Black Rock offered a more advantageous site for a water-powered mill than Buffalo since it was

located along the Erie Canal, which served as a ready-made millrace to power nearby milling operations. Setting up and operating a water-powered flour mill required the services of an experienced millwright to construct the building and a miller to oversee daily operations. These were technical skills that the tanner from Kirchheim would not have possessed, though he may have acquired basic familiarity with small-scale milling during his youth in Württemberg (the earliest large-scale mills in the region, however, were located along the Rhine in Mannheim) or his years living in Buffalo. There is no evidence of who operated the mill during its first decade, but by 1867 Thomas Thornton and Thomas Chester were listed as proprietors. Schoellkopf may have maintained his investment in the milling facility, while allowing these skilled and experienced entrepreneurs to handle day-to-day operations for a cut of the profits.²⁹

Schoellkopf's mill used a run of four mill stones to process wheat into flour. This produced flour of average quality that sold at lower prices than finer flour produced at mills with seven or nine stone runs. Despite the lesser quality of his flour, Jacob Frederick's mill was successful and by 1863 he was the third largest producer of flour in Buffalo after the proprietors of the Queen City and Frontier Mills. However, by the end of the Civil War his production totals relative to other regional flour milling concerns such as Thornton & Chester had declined and he had fallen to sixth place. Rather than preserve his capital and exit the milling business, Jacob Frederick decided to double-down on his investment. In 1870, he, Thomas Thornton, and Thomas Chester, acquired a stake in the Frontier Mill, which dramatically increased his flour production capacity. Five years later, Thornton and Chester decided to end their joint investment with Schoellkopf in the Frontier Mill and Jacob Frederick acquired the mortgage on the property outright. Shortly thereafter, he was approached by a young miller named George B. Mathews who offered to operate the mill in partnership with Schoellkopf. Mathews contributed \$3,000 to the partnership and Jacob Frederick agreed to finance the operation for three years in exchange for allowing his third oldest son, Arthur, to be an equal partner in the new enterprise.³⁰ Mathews insisted on being a named partner in the new business, Schoellkopf & Mathews, arguing that in addition to his capital and milling knowledge, he brought with him connections to wholesalers throughout the region that would give the new firm a leg up on the competition. Schoellkopf's new milling empire got off to a rough start. During the first year of operation, the firm lost approximately \$25,000.³¹ The following year, earnings improved dramatically and the Schoellkopf & Mathews partnership made a profit of \$31,000.³² The third year, the firm added a new mill in Buffalo and profits increased to \$91,000.³³ With the combined output of the three mills, Schoellkopf became the largest

flour producer in western New York.³⁴

Canal Operation and Power Generation

Not content managing his small flour empire in Buffalo, Jacob Frederick Schoellkopf looked for further expansion opportunities. He eyed the community of Niagara Falls. The cataract at Niagara Falls demonstrated visibly the tremendous power potential offered by the Niagara River as it cascaded through the Niagara Gorge. Millers, however, had limited access to the water in the river. The steep walls of the gorge below the falls made the construction of mill races and mill buildings at the waterline impractical. Instead, in the 1850s entrepreneurs Walter Bryant and Caleb S. Woodhull began constructing a hydraulic canal that would draw off water above the falls and return it to the river approximately half a mile below the falls. They planned to sell lots at the end of the canal to millers and other interested parties who needed access to waterpower. The project had barely gotten off the ground when Bryant and Woodhull went bankrupt and the mortgage on the project was sold to another group of investors who made some progress with the project but could not afford to complete the canal. Credit and manpower shortages during the Civil War hindered further work on the canal and the project languished for the next fifteen years. Eventually one of the mortgage holders foreclosed on the Niagara Falls Canal Company in 1877.³⁵

The misfortunes of the hydraulic canal's owners offered Jacob Frederick a chance to acquire a stake in the business and broaden his entrepreneurial focus from pure manufacturing to manufacturing and real estate development. When the mortgage went up for auction on May 1, 1877, he was present to bid on the deed. Schoellkopf had little patience for the bidding process, which began at \$5,000, and announced that he would take the property for \$67,000.³⁶ This provoked considerable consternation in the audience and the auction was adjourned for a lunch break. Once the auction resumed, only one other bidder remained to challenge Schoellkopf. The final purchase price was \$71,000, which Schoellkopf paid in cash to the canal's bankrupt owner.³⁷ The purchase seemed like a questionable investment, even for someone as successful as Jacob Frederick. The project had ruined all previous owners and twenty-three years after work had started on the canal it still had not been completed. Schoellkopf did not let these facts deter him from taking a major risk by investing in the canal and forming a partnership with one of the mortgage holders and two former owners. He renamed the project the Niagara Falls Canal Company, and began soliciting investors to purchase factory and mill lots and secure rights to the waterpower of the canal. Jacob Frederick and George Mathews offered an example to potential investors by

building a flour mill near the end of the canal where the water tumbled over the ravine and back into the Niagara River. A few years later, Schoellkopf and Mathews organized the Central Milling Company to operate the Niagara mill and constructed a second mill on the site. Mathews served as company president of the new business while continuing to serve as a partner in the original Schoellkopf & Mathews milling enterprise.³⁸

A year after investing in the hydraulic canal project, Schoellkopf incorporated the Niagara Falls Hydraulic Power and Manufacturing Company under the laws of the state of New York. In 1879, Jacob Frederick bought out one of the other major investors in the canal and turned his shares in the project and the real property owned by the canal company over to the new corporation. He assumed the presidency of the company, while George Mathews served as a director. Schoellkopf's son, Arthur, was appointed as secretary and treasurer, while also serving as general manager. Arthur, in his early twenties with degrees from St. Joseph's College and Bryant and Stratton Business College, handled much of the day-to-day business of the new company. In addition to his degrees, he already had four years of experience working in his father's flour milling enterprise and applied his knowledge and skills to the new business of selling property and waterpower rights. He and his father were eventually able to persuade a number of businessmen to build factories along the waterway including two pulp and paper mills and the Oneida Community silverplating plant.³⁹

All the mills located along the hydraulic canal used a gravity-fed system of water acting on wooden and later cast-iron wheels or turbines to power their machinery. Water was fed from the canal into sluiceways and then fell onto the wheels or turbines before exiting the mill via a tail race tunnel built into the side of the cliff. A consistent supply of water was critical to keep the mechanical power generating equipment running smoothly. More water in the canal also meant more potential power available to mills and other factories along the canal. By 1881 Jacob Frederick and Arthur had decided to deepen the eleven-foot-deep canal to fourteen feet in order to increase the flow of water through the project. Jacob Frederick was also intrigued by the idea of using the water from his canal to generate other forms of power, which he could then sell at a profit. Late in 1881, Jacob Frederick oversaw the installation of a water-powered dynamo that generated enough electrical current to light up lamps both nearby and over two miles away at Prospect Park on the edge of the falls. The success of the experiment convinced Jacob Frederick and Arthur to continue developing a hydroelectric power generation facility on a larger scale that could provide direct current to nearby factories for illumination. They repurposed one of the pulp mills built along the canal into a power plant by installing generators to produce electricity.⁴⁰ By constructing a

power plant at the base of the cliff, they obtained a one-hundred-twenty-foot head of water to power the turbines attached to the generators. They named the new facility Station Number One. They also organized a new company in partnership with electrical lighting pioneer Charles Brush, the Brush Electric Light and Power Company, to provide arc lights to customers and oversee electrical power generation and transmission in the community of Niagara Falls.⁴¹

Jacob Frederick Schoellkopf's interconnected enterprises at Niagara Falls prospered during the 1880s, but beginning in 1884 he and his firms were ensnared in a twelve-year legal battle over the companies' right to use and sell water from the Niagara River and the hydraulic canal's broader impact on the sublimity of the falls.⁴² Business rivals brought these matters before the New York state government and argued that the Niagara River was a state waterway and businesses could only draw water from the river with state approval. A commission investigated the matter and sided with Schoellkopf's opponents, concluding that the canal and power plant should be closed. The matter remained in limbo for nearly a decade until Jacob Frederick raised the issue at a state constitutional convention, which met in 1894. The seventy-five-year-old's petition was rejected on the recommendation of New York's attorney general, Republican Theodore E. Hancock. Schoellkopf continued to press the matter until the New York Assembly passed a special act in May 1896 that confirmed the right of Schoellkopf's Niagara Falls Hydraulic Power and Manufacturing Company to draw off and sell water from the Niagara River.⁴³

Two years before he secured state sanction to continue operating the hydraulic canal, Jacob Frederick Schoellkopf began expanding the power generation capability of his facilities at Niagara Falls. He may have been confident that he would eventually prevail in his conflict over water rights, or he may have concluded that he would be compensated for the property if New York ultimately refused to allow him to draw water from the river. The first part of the new Power Station Two went online in November of 1896 and the whole project was completed in 1904, four years after his death, by Arthur Schoellkopf, who served as director of operations, and George Mathews, now president of the company. The second power station used a much more modern generating arrangement with a combination of vertical water drop and horizontal intakes from the river. Rather than upgrade the original generating station, the Schoellkops sold the facility to the Buffalo and Niagara Falls Electric Light and Power Company a few months before the newer power station was opened.⁴⁴

Facing competition from investors such as J. P. Morgan and William Vanderbilt who were supporting the Niagara Falls Power Company's efforts

to build hydroelectric facilities at Niagara Falls to provide power to Buffalo and other parts of New York, George Mathews and Arthur Schoellkopf began work on a third power station once the second one was completed in 1904. The 3-A Station opened in 1914 and produced four times as much power as the second power station. Mathews and the Schoellkopf family eventually decided to seek an accommodation with one of their competitors, the Niagara Falls Power Company, and consolidate ownership of both firms as the Hydraulic Power Company of Niagara Falls with six members of the Schoellkopf family serving on the board of directors for the firm. Finally, in October of 1918, under pressure from the federal government due to wartime demands for power, the Schoellkopfs' merged their power generation companies with the Niagara Falls Power Company creating a new firm that retained the name of the later company. A decade later, another round of mergers brought about the Niagara Hudson Power Corporation, in which the family maintained a significant investment. Jacob Frederick Schoellkopf's 1881 experiment in generating hydroelectric power for lighting had helped to bring about the development of a major power utility that produced and distributed electricity for much of New York State by the end of the 1920s.⁴⁵

Chemical Production

In 1879, at the same time that work had just gotten underway on the still-unproven hydraulic canal project in Niagara Falls, Jacob Frederick entered another fledgling market when he founded the Schoellkopf Aniline & Chemical Co. in Buffalo. Schoellkopf intended for the new company to produce synthetic coal-tar dyes, a product much in demand by American textile manufacturers at the time. German chemists and manufacturers had largely pioneered and facilitated the development of the aniline dyestuffs industry and held closely the scientific and engineering knowledge necessary to produce colorfast, high-quality dye products in industrial quantities. They also produced many of the chemical intermediaries that were necessary for making dyes, including toluene, caustic soda, sodium nitrate, methanol, and other chemicals. Jacob Frederick founded the firm, ostensibly, to give his sons Jacob Frederick Jr. and Charles P. Hugo, who were studying chemistry in Germany at the time (in Munich and at the Technische Hochschule in Stuttgart⁴⁶ in the case of Jacob Frederick Jr. and at the Stuttgart Oberschule and then the Technische Hochschule in Stuttgart in the case of C. P. Hugo) a source of employment in their area of expertise when they returned to the U.S. after their studies. Jacob Frederick recognized the firm's economic potential if it could produce dyes domestically that rivaled imported German dyes in quality since high tariffs on German dyestuffs at the time meant that

domestically produced dyes would be significantly less expensive than German equivalents.⁴⁷ He may also have seen establishing a business for Jacob Frederick Jr. and C. P. Hugo as a practical means for transferring German dye-stuff technologies, via his sons, to the American market.

Jacob Frederick Jr. began work at his father's new firm once he returned from Germany in 1880 and his brother assumed managerial responsibilities after he returned home five years later. The company's facilities along the Buffalo River near the Port of Buffalo expanded significantly under Jacob Frederick Jr.'s oversight and the company began producing a variety of dyestuffs using intermediaries imported from Germany. Unlike numerous other fledgling American dyestuffs manufacturers, the firm survived the Tariff of 1883 which slashed import duties on dyes from Germany. Whether this was due to continued financial support from the elder Jacob Frederick is not known. Jacob Frederick was not quite ready for his two sons to take over full managerial responsibility for the firm quite yet and let them focus on the scientific and technical challenges of dye manufacturing instead. He hired German chemist Frederick Koehler, who had worked for German aniline dry manufacturer BASF (Badische Anilin- & Soda-Fabrik) from 1874 to 1883, to consult with his sons on the production of aniline dyes, while he handled broader strategic business matters. Jacob Frederick arranged for the creation of a separate sales firm, Schoellkopf, Hartford and Maclagen Company, to market Schoellkopf Aniline products and served as the company's president. He later organized a separate sales firm with a family friend, William W. Hanna, and also served as president of the new Hanna-Schoellkopf Company. One must also keep in mind that Jacob Frederick was managing these firms at the same time that he was involved with his milling and hydroelectric power ventures. In the case of the latter two, though, he had significant assistance from George Mathews and Arthur Schoellkopf.⁴⁸

Generational Succession in the Schoellkopf Enterprises

Jacob Frederick Schoellkopf's deliberate efforts to integrate his sons into the management of his various enterprises once they reached their majority eased the succession process following his death in 1899 at the age of 79. Generational successions, especially ones following the death of a family patriarch, are often traumatic periods in the evolution of family firms and can lead to deep conflicts between family members over firm leadership and direction.⁴⁹ In each of the businesses he founded, sons and trusted business partners took over day-to-day management well before Jacob Frederick's death and continued to run the firms or serve as directors for decades thereafter, thereby safeguarding the family's financial interests. This was necessary

since Jacob Frederick was so busy founding new enterprises in the late 1870s and early 1880s that he simply did not have time to give each firm an equal level of personal attention. He may also have viewed his serial entrepreneurship as a means for ensuring that all his sons received a business for which they had training to operate and that which they could call their own, an opportunity he had not received as a youth since his elder brother took over the family's tanning enterprise.

Jacob Frederick's oldest son, Henry, passed away in 1880, nearly twenty years before his father, but between 1870 and 1880 he worked as a partner in Jacob Frederick's various tanning enterprises and also assisted the Vogel family with its tannery operations in the Midwest. Likewise, Louis, who passed away two years after his father, became a partner in the leather business, J. F. Schoellkopf & Sons, and also helped manage some of the other family enterprises in Niagara Falls including the Hydraulic Power & Manufacturing Company. Another Schoellkopf son, Alfred, also worked in the Jacob Frederick's tannery businesses and became a senior partner together with his brother-in-law, Hans Schmidt (the husband of youngest child Helen Schoellkopf), in J. F. Schoellkopf & Sons after his father's death. He died a few months after his older brother Louis.

Arthur Schoellkopf, one of Jacob Frederick's longer lived sons, continued to be involved with the Niagara Falls Hydraulic Power and Manufacturing Company until his death in 1913, just one year before the company's third power plant went online. Arthur also played an important role as a civic booster in Niagara Falls. He built the first public transit system in the town in the early 1880s using horse-drawn trollies and served as a president or officer for a number of other local concerns including the International Hotel Co. and the Niagara Falls Milling Co.

Jacob Frederick Jr. and C. P. Hugo continued to expand the family's chemical enterprise after 1899. They consolidated Schoellkopf Aniline, Schoellkopf, Hartford, and Maclagen Company, and Hanna-Schoellkopf and incorporated a new firm, Schoellkopf, Hartford and Hanna Company. Jacob Frederick Jr. assumed the presidency of the firm and C. P. Hugo became treasurer. Various other members of the Schoellkopf family's extended business network also became officers or directors at the firm. Schoellkopf, Hartford and Hanna remained profitable throughout the first two decades of the 20th century, despite fierce competition from German and domestic chemical manufacturers. The firm even developed a black dye that was superior to German dyes of the era and licensed the patent to German manufactures for a significant profit. Congress continued to maintain low import tariffs on German dyestuffs, however, which made competing with German firms on price alone very challenging. The firm also remained dependent on some

German intermediary chemicals in order to manufacture dyes, and like other domestic manufacturers of coal-tar dyes was vulnerable in the event that German supplies were disrupted due to embargos or war.⁵⁰ Jacob Frederick Jr. raised these matters in testimony before Congress in 1908, noting that the company's production of coal-tar products had increased 280 percent between 1900 and 1906, but that profits had declined below the levels earned in 1900. He pointed out the inconsistency of assessing high tariffs on imported intermediary chemicals while maintaining low tariffs on dyes. Schoellkopf also complained that German firms manipulated the U.S. chemical market by charging high prices on certain dyestuffs not produced in the U.S., and then undercutting domestic manufacturers by slashing prices on the dyestuffs once they began to be produced domestically. He encouraged Congress to raise tariffs on German products to a much higher rate (forty percent was one figure suggested) in order to protect fledgling, domestic aniline dye manufacturers and promote the development of an independent chemical industry that might one day be competitive against German firms. He raised the same concerns in 1913 before the House Ways and Means Committee but Congress once again elected to support domestic textile manufacturers in the South, who craved inexpensive, imported Germany dyes, over aniline chemical manufacturers in the Northeast.⁵¹

The outbreak of World War I in August 1914 disrupted German shipments of dyestuffs and intermediaries. Anticipating further disruptions as the war continued, Jacob Frederick Jr. and C. P. Hugo began to expand Schoellkopf Aniline to produce chemical intermediaries. Early efforts achieved limited success but the Schoellkopf brothers continued to work on the problem, establishing new companies to focus on the production of individual intermediaries such as benzidine and sulphuric acid. They even expanded into other types of dye including sulphur blacks and methylene blues. The disruption of German imports after 1914 led to a brief boom in the domestic dyestuffs industry and by 1917 competition had become cutthroat. The Schoellkopf brothers approached the leaders of six other firms and proposed a merger to lower costs and increase sales. The new, vertically-integrated firm, National Aniline and Chemical Company, prospered and Jacob Frederick Jr. served as president for its first year of operation and then continued as a board member along with his son, Jacob Frederick III, and his brother C. P. Hugo. Given the success of the Schoellkopf's Buffalo plant in producing aniline dyes, National Aniline concentrated all aniline dye production there. Jacob Frederick Jr., C. P. Hugo, and Jacob Frederick III resigned from the board of directors for National Aniline in 1920 in order to focus their attention on the family's profitable power generation business at Niagara Falls (Jacob Frederick Jr. had succeeded Mathews as head of the power firm in 1914). In 1921, a

second American chemical industry consolidation took place and National Aniline merged with four other firms to create the highly-integrated Allied Chemical and Dye Corporation. Allied Chemical competed with three other major chemical firms in the U.S.: Du Pont, American Cyanamid, and later the General Aniline Works, which was wholly owned by German industrial combine I. G. Farben despite efforts by the U.S. government to restrict German firms from reentering the U.S. market after World War I.⁵²

Following the formation of the Niagara Falls Power Company in 1918, Jacob Frederick Jr. was elected chairman of the board for the corporation, a position that he held for eighteen years. Jacob Frederick III, Paul Arthur (the son of Arthur Schoellkopf), and other third-generation members of the family also continued to be involved as directors and stockholders of the company. In 1929, they organized the Niagara Share Corporation as a trust for all stock owned by family members. The firm continued to hold stock in the power utility until 1956. The family's decision to sell their stock severed their final link to an enterprise founded by their patriarch, Jacob Frederick Schoellkopf.

Immigrant Entrepreneurship

Jacob Frederick Schoellkopf cultivated and utilized ethnic and family support networks (often one and the same) throughout his life and these links provided him with a source of human and financial capital that helped him advance quickly in his entrepreneurial activities once he settled in Buffalo in 1844 and established his first businesses. His father's financial support from abroad during his life and at the time of his death was crucial to the process of building a foundation for the Schoellkopf family's eventual economic empire. When his father died in 1860, Jacob Frederick received an inheritance of 7,400 guilders, which he likely invested in his leather tanning or milling operations.⁵³ Family connections also enabled him to draw on trusted relatives for additional labor at a time when he wanted to expand his commercial activities. His cousin, Friedrich Vogel, helped him establish a business presence in the Midwest by opening new tanneries in the early 1850s. Later, as Schoellkopf's children began to come of age in the 1870s, he introduced them to his various business ventures and helped them build their own social networks. Jacob Frederick's oldest son, Henry, learned the leather trade working for his father and later worked with Friedrich Vogel's business partner, Guido Pfister, in Wisconsin. Soon thereafter, he married his second cousin Emily Vogel, the daughter of Friedrich, thus helping to concentrate ownership of their various business ventures within the broader family unit and cultivate further family support networks.⁵⁴ Similarly, his youngest child, Helen, married a German employee of his sheepskin tannery

in Buffalo, Hans Schmidt, an immigrant from Hannover. In his will, Jacob Frederick provided for her and his son Alfred, who was a co-owner in the business, by splitting ownership of the company (valued at \$400,000 at the time) between them and maintaining a family presence within the ownership structure of the firm.⁵⁵ Schoellkopf's other sons each received partnerships with their father in his various business ventures during their lifetime, which helped them immensely in their business careers.

Schoellkopf also proved willing to work with fellow entrepreneurs outside his immediate family and/or ethnic network if they had knowledge or skills he deemed important for his business activities. When he decided to enter the flour milling business, a field in which he had no practical experience, he partnered for a time with experienced millers Thomas Thornton and Thomas Chester since they were familiar with milling technology and also knew the commercial side of the business. In 1875, George B. Mathews proved to be a more than capable partner as Schoellkopf decided to expand his milling activities and buy the Frontier Mill from Thornton and Chester. Once Mathews demonstrated that he could make the mill profitable, he became a trusted ally of Schoellkopf and partnered with him in his milling and power generation activities at Niagara Falls. Mathews would serve as an officer or director in the family's milling and hydroelectric firms until the mid-1910s when he decided to retire and began to resign from leadership positions. When Schoellkopf purchased the hydraulic canal at Niagara Falls, he also retained the former owners for a time as partners in the new venture, seeking to draw on their institutional knowledge as he sought to complete the product and earn a profit from the heretofore ill-fated canal. When he established his aniline dye manufacturing operation in Buffalo, he employed Frederick Koehler, a chemical expert with years of practical experience with German firm BASF, to help his sons improve the firm's manufacturing operations. This transatlantic human capital transfer of insider technical knowledge about the German dyestuffs industry greatly benefitted the Schoellkopf's business and helped them develop product lines to compete against low-cost dyestuffs imported by German firms prior to the First World War.

Jacob Frederick cultivated social connections with his homeland of Württemberg throughout his lifetime and left a personal legacy that remains visible today. He kept his Württemberg nationality for almost twenty years after he immigrated to the United States, only becoming a U.S. citizen after his father died in 1860. Perhaps, this was out of a sense of obligation to his family and his homeland, or perhaps he had other motivations for becoming a U.S. citizen as his business activities in the U.S. became larger and more diversified. Jacob Frederick's relationships with his wife, Christiane Dürr, and his cousin, Friedrich Vogel, also illustrate how connected he was with the

social network in his hometown of Kirchheim. Despite a five-year absence from the community, he was able to prevail on Christiane to immigrate to the U.S. and marry him in 1847. A year later, he convinced his cousin to settle in Wisconsin and expand his leather tanning activities to the Midwest. Jacob Frederick made numerous trips back to Württemberg and later Germany between the 1850s and his death in 1899. Federal records show that he applied for passports at least three times (1853, 1865, and 1873) and his name appears half a dozen times between the 1860s and 1890s on passenger lists for ships traveling from Hamburg or Bremen to New York City. On at least one occasion in the early 1880s, he purchased a vast quantity of discounted U.S. government bonds while in Germany using his companies' property as collateral for loans. Somehow he had received information that the government would redeem the paper at face value and took advantage of the situation. He returned with a trunk of bonds and made a tidy profit off the trip. Schoellkopf also continued to support his hometown from abroad. He endowed the Schoellkopf-Vogel Foundation in 1891 to provide for poor men and women of Kirchheim, regardless of their religion. His wife and children contributed to the community as well and were responsible for various programs to aid orphans and provide hospital care for residents. The family even contributed to a chapel (*Schöllkopf-Kapelle*) for the city cemetery (*Alter Friedhof*). In return, the name Schoellkopf lives on throughout Kirchheim as a street name, a fountain near the local train station, and in the name of the Jakob-Friedrich-Schöllkopf-Schule, a business and vocational school for young people in the community.⁵⁶

Jacob Frederick Schoellkopf's youth in Württemberg, his German ethnicity, and his immigrant identity certainly influenced his decision to settle among co-ethnics in Buffalo and engage in retail leather sales and later tanning. He drew on his family's history of tanning and his own experiences working in his father's business and in the Strasbourg leather trade as he established and expanded his leather production and retail businesses. His inability to secure a leading role in his father's business likely spurred his decision to immigrate to the U.S., but did not provoke a break from his family or his hometown. His father continued to support him financially for nearly twenty years and Schoellkopf used his family connections in Kirchheim to recruit Friedrich Vogel to join him in the U.S. and expand the scope of his leather manufacturing operations. His numerous trips back to the German lands during his lifetime and his continued contributions to the Kirchheim community attest to his desire to maintain family and ethnic connections. His decision to send his children back to Württemberg and later Germany for schooling suggests an interest in educating them about their heritage and exposing them to German culture but also providing them with the superior

education, particularly in organic chemistry and aniline dye manufacturing, that was available through German universities at the time. It was, in part, a strategic business decision on his part as well, since it provided a direct means for transatlantic informational and technical transfers.

On the other hand, Schoellkopf demonstrated a desire to transcend his German identity and craft training. He spent time learning English upon his arrival in New York and did not found a business catering specifically to co-ethnics. After a decade in tanning, he shifted to new business sectors in which he had no prior training or experience. To compensate for this, he readily joined with non-Germans who had specialized knowledge that he could utilize. Nothing in his later business practices could be characterized as overtly German, although his use of interlocking directorships to manage his family business empire was similar in some ways to management practices used by numerous German firms at the end of the nineteenth century.⁵⁷ Perhaps it is fair to conclude that Jacob Frederick Schoellkopf's immigrant identity influenced his life course and informed his decision-making, but in no way strictly defined him.

Conclusion

Jacob Frederick Schoellkopf's life illustrates the complexity of immigration narratives. Not all immigrants followed a particular model of resettlement or entrepreneurship. German immigrants did not necessarily cut ties with their homeland or hometown when they migrated to the United States in the nineteenth century. Schoellkopf's early career highlights the importance of continued transatlantic ethnic and family support networks. Two of his modern, American biographers characterized him (perhaps stereotypically) as a "self-made man," but the reality is that he most likely could not have built such a large leather tanning and retail network without significant financial support from his father during the first twenty years he was in the United States. Also, his ability to recruit family talent from Württemberg as his business began to grow meant that he had a source for trusted business partners who would also help to concentrate profits within the extended family network. This in no way diminishes Schoellkopf's individual abilities, he was an immensely talented entrepreneur, but his family and ethnic networks contributed directly to his success.

Schoellkopf engaged in a series of entrepreneurial occupations that did not have distinct concentrations of Germans working in them, nor was he confined to selling the goods he produced to German consumers. A broad, non-ethnic customer base existed for leather goods and flour in western New York and the Midwest. This meant that he was not confined to selling special-

ized products to ethnic enclaves but rather could utilize industrial modes of production to batch produce large quantities of similar or identical goods, effecting a major cost savings.⁵⁸ Once he moved into hydroelectric power and chemical production, he sold commodities that consumers interacted with only indirectly and did not have to worry about branding or marketing products to differentiated markets.⁵⁹ Schoellkopf's serial entrepreneurship was ambitious and he had a knack for shifting his capital into emerging industries with great profit potentials, electrical power generation and aniline dry production in particular. His use of family members and close friends to manage his growing business empire reduced transaction costs and ensured a greater level of managerial transparency for "King Jacob," as some referred to him.⁶⁰ It would be reductionist to argue that his entrepreneurial drive and desire to found multiple businesses derived entirely from the frustration he may have felt as a young journeyman tanner when his older brother inherited the family tanning business, but his desire to leave his children with entrepreneurial legacies in the New World that they could nurture and grow surely reflected a longing to provide them with something that he never obtained in the Old World, a sense of ownership. Jacob Frederick's entrepreneurial accomplishments, while significant and long-lasting, should be understood within this broader social and cultural context.⁶¹

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Notes

¹ Research assistance for this article provided by Juliane Hornung, Ludwig-Maximilians-Universität, München. The author wishes to thank Drs. William J. Hausman and Uwe Spiekermann for their critique of the text. A version of this article appears on the German Historical Institute's *Immigrant Entrepreneurship Project* website: <http://www.immigrantentrepreneurship.org/entry.php?rec=188>.

² Hartmut Keil, "Schöllkopf, Jakob Friedrich" in *Neue Deutsche Biographie*, ed. by the Historische Kommission bei der Bayerischen Akademie der Wissenschaften, Vol. 23, <http://www.deutsche-biographie.de/pnd11481841X.html> (accessed August 8, 2013).

³ Manfred Waßner, *Jakob Friedrich Schöllkopf (1819-1899). Pionier zwischen Alter und Neuer Welt* (Kirchheim unter Teck: Förderverein der Jakob-Friedrich Schöllkopf-Schule e.V., 2006), 22.

⁴ Waßner, 25 f.

⁵ Knackers were individuals who rendered dead animals.

⁶ Waßner, 23.

⁷ The children, in order of birth, were Elisabeth Barbara (1804-64), Johann Gottlieb (1806-31), Christine Katharine (1809-75), Marie Katharine (1811-12); Katharina Barbara (1812-34), Jacob Friedrich (1813-14), Karl Christian (1815), Johann Christian (1816-70), Johanna (1818-65), Jacob Friedrich (1819-99), Johanna Karoline (1821-80), Christine Margarete (1823-51), Karoline Wilhelmine (1825-1905), Luise Pauline (1827-59), Karl

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Friedrich (1829). Diane Glynn, *The Schoellkops, 1842-1994: A Family History* (Niagara Falls, NY: The Niagara Falls Memorial Medical Center Foundation, 1995), 2.

⁸ In current value, this would be approximately \$723,000 in 2011 dollars. This value is based on an 1873 guilder (or gulden) conversion to British currency with a further conversion to U.S. dollars. Currency conversion obtained from H. John Rowbotham, *A New Guide to German and English Conversation* (London, Dulau & Co., 1873), 205. All British inflation calculations were conducted via Measuring Worth using the Purchasing Power Calculator, <http://www.measuringworth.com/ukcompare/> (accessed November 12, 2013).

⁹ Waßner, 24.

¹⁰ This argument is presented in Waßner, 27f.

¹¹ *Ibid.*, 29; Willi Paul Adams (ed.), *Die deutschsprachige Auswanderung in die Vereinigten Staaten. Berichte über Forschungsstand und Quellenbestände* (Berlin: John F. Kennedy Institut für Nordamerikastudien Freie Universität Berlin, 1980), 200.

¹² Waßner, 32.

¹³ Raymond L. Cohn, *Mass Migration Under Sail. European Immigration to the Antebellum United States* (New York: Cambridge University Press, 2009), 181. Between \$282 and \$423 in 2011 dollars. All American inflation calculations were conducted via Measuring Worth using the Consumer Price Index, <http://www.measuringworth.com/uscompare/> (accessed November 12, 2013).

¹⁴ Waßner, 33-35.

¹⁵ David A. Gerber, *The Making of an American Pluralism. Buffalo, New York, 1825-60* (Urbana: University of Illinois Press, 1989), 163f.

¹⁶ Waßner, 44f.

¹⁷ The listing shows that Jakob Friedrich had already anglicized his name by changing the German "k" in his first name to an American "c" and dropping the umlaut in Schöllkopf. He would later replace it with "oe." Horatio N. Walker, *Walker's Buffalo City Directory* (Buffalo: Lee & Thorp's Press, 1844), 193.

¹⁸ Waßner, 37. Approximately \$9000 in 2011 dollars. This value is based on an 1849 guilder (or gulden) conversion to British currency with a further conversion to U.S. dollars. Currency conversion obtained from H. John Rowbotham, *A New Guide to German and English Conversation* (London: Dulau & Co., 1849), 202.

¹⁹ Glynn, 3-4. Jacob Frederick's eldest son, Henry, married Vogel's daughter Emily in 1875, thus helping to concentrate ownership of the leather tanning businesses within the extended Schoellkopf family network. Prior to his early death in 1880, Henry partnered with Frederick Vogel and Guido Pfister and opened a tannery in northeast Wisconsin that eventually "became the largest in the world prior to World War I." Glynn, 17.

²⁰ Schoellkopf continued to be involved in the leather industry throughout his life, though primarily as an investor and less as an active manager. In 1877, the same year he purchased the hydraulic canal at Niagara Falls, he purchased a large leather manufacturer, Lymburner & Torrey, and established Schoellkopf & Company to oversee production. The firm's plant in Buffalo was one of the largest leather works in the world and the firm maintained offices throughout the United States and abroad. *A History of the City of Buffalo-Its Men and Institutions-Biographical Sketches of Leading Citizens* (Buffalo: The Buffalo Evening News, 1908), 116-17).

²¹ Approximately \$11,500 in 2011 dollars.

²² Michael Brian Powers, "The Early Industrial Achievements of the Schoellkopf Family" (M.A. Thesis, Niagara University, 1979), 7-8

²³ Waßner, 40f.

²⁴ Approximately \$30,000 in 2011 dollars.

²⁵ The anglicized form of Heinrich. The fact that Jacob Frederick and Christiane gave their first child an anglicized name is a reflection of their rapid acculturation into English-

speaking, American society.

²⁶ The children, in order of birth, were Henry (1848-80), Emma (1850-51), Albert (1852-52), Herman (1853-54), Louis (1855-1901), Arthur (1856-1913), Jacob Frederick Jr. (1858-1942), Alfred (1860-1901), Hugo (1862-1928), Anna (1867-68), and Helen (1870-1962). Glynn, 2. Glynn erroneously lists Jacob Jr.'s death date as 1913 on this page, but his biographical details are listed correctly elsewhere in the book.

²⁷ Glynn, 4-9.

²⁸ Henry H. Baxter, "flour milling" in *The Encyclopedia of New York State*, Peter R. Eisenstadt and Laura-Eve Moss, eds. (Syracuse: Syracuse University Press, 2005), 575.

²⁹ J.N. Larned, *A History of Buffalo Delineating the Evolution of the City* (New York: The Progress of the Empire State Company, 1911), 266-267. Powers, 13-14.

³⁰ Approximately \$63,000 in 2011 dollars.

³¹ Approximately \$529,000 in 2011 dollars.

³² Approximately \$671,000 in 2011 dollars.

³³ Approximately \$2 million dollars in 2011 dollars.

³⁴ Powers, 13-15; Glynn, 4-5. Schoellkopf and Mathews also made technological improvements to the Frontier mill. They added new machinery to process the "middlings," the hard middle portion of the wheat kernels that was typically discarded during the milling process. They anticipated that this change would produce a nearly twenty-five-percent increase in the Frontier Mill's fine flour production capacity. Powers, 17.

³⁵ Powers, 29. See Powers, pp. 25-30 for a more detailed description of the canal's history.

³⁶ Approximately \$111,000 and \$1.5 million dollars respectively in 2011 dollars.

³⁷ Approximately \$1.6 million dollars in 2011 dollars.

³⁸ Powers, 29-30; Glynn, 6; Larned, 267-68.

³⁹ Powers, 34-36; Glynn, 6, 43.

⁴⁰ The first steam-powered dynamos, which produced electrical current using electromagnets, were developed in the 1850s and saw use powering arc lamps in Europe. Arc lamps produced light through electrical arcs between electrodes. The electrodes were burned by the arc and had to be adjusted constantly to maintain the proper gap between the electrodes. In the late 1870s, Charles F. Brush developed an arc lamp system with a regulating mechanism for automatically adjusting the gap between electrodes that proved popular in the U.S. At the same time, other inventors including Englishman Joseph Swan and American Thomas Edison were working on incandescent lighting systems that produced illumination that was less harsh than the light from arc lamps. Edison's system employed direct current power transmission, whereas the systems developed by rivals such as George Westinghouse used alternating current. William J. Hausman, Peter Hertner, and Mira Wilkins, *Global Electrification: Multinational Enterprise and International Finance in the History of Light and Power, 1878-2007* (Cambridge: Cambridge University Press, 2008), 9-12. For more on electrification and the development of electrical lighting systems in the U.S., U.K., and Germany, see Thomas P. Hughes, *Networks of Power. Electrification in Western Society, 1880-1920* (Baltimore: The Johns Hopkins University Press, 1993).

⁴¹ Edward Dean Adams, *Niagara Power: History of the Niagara Falls Power Company, 1886-1918, Vol. 1: History and Power Projects* (Niagara Falls: Niagara Falls Power Co., 1927), 76-86. Powers, 39-40.

⁴² Water rights were a source of tension and the subject of numerous lawsuits during the nineteenth century in the U.S. Water rights in the eastern U.S. were based on English common law, which entitled landowners with property situated along watercourses to make reasonable use of the water as long as it did not interfere with the rights of other riparian landowners. However, transporting water away from the watercourse, such as through an irrigation or power canal, was not permitted under common law. In the nineteenth century, various states governments and courts implemented differing legal frameworks governing how

landowners and industrialists could use or sell water for commercial purposes such as milling and/or manufacturing. See Naomi R. Lamoreaux, "The Mystery of Property Rights: A U.S. Perspective," *The Journal of Economic History* 71, no. 2 (June 2011): 275-306.

⁴³ Powers, 42-43. The quantity of water that Schoellkopf's company was allowed to draw from the river was limited to the size of the canal in 1896, one hundred feet of width by fourteen feet of depth. Elbert Hubbard, *Power, or, The Story of Niagara Falls* (East Aurora, NY: Roycrofters, 1914), 15. At the time, Jacob Frederick also negotiated new contracts with the businesses that drew waterpower from the hydraulic canal. Firms signed long-term contracts of more than 20 years, in one case guaranteeing water power supplies through 1967. Powers, 45.

⁴⁴ Powers, 43-44.

⁴⁵ *Ibid.*, 51-53.

⁴⁶ Today the University of Stuttgart (*Universität Stuttgart*). At the time, it was well known for its chemical, mechanical, and civil engineering faculty. The *Hochschule* added an electrical engineering curriculum in 1883 and was the location where Werner von Siemens introduced the concept of "Elektrotechnik." "Timeline 1840-1876: Polytechnical School," Universität Stuttgart, <http://www.uni-stuttgart.de/impulse/zeit/liste.php?cid=3&lang=en> (accessed November 12, 2013) and "Timeline 1876-1890: Polytechnic," Universität Stuttgart, <http://www.uni-stuttgart.de/impulse/zeit/liste.php?cid=4&lang=en> (accessed November 12, 2013).

⁴⁷ Powers, 58-59.

⁴⁸ *Ibid.*, 60-64; "National Aniline and Chemical Company Buffalo, New York," ColorantsHistory.org, <http://www.colorantshistory.org/NationalAniline.html> (accessed November 12, 2013).

⁴⁹ See Andrea Colli, *The History of Family Business, 1850-2000* (Cambridge: Cambridge University Press, 2003), 65-72.

⁵⁰ As Michael Powers notes, "In 1914, it was estimated that the Schoellkopf Company was producing approximately one hundred coal-tar dyes which represented about fifty percent of all the coal-tar dyes used in this country." Every product they made, however, used intermediaries imported from Germany. Powers, 70.

⁵¹ Tariff Hearings Before the Committee on Ways and Means of the House of Representatives, Volume 12, Sixtieth Congress (Washington, D.C.: Government Printing Office, 1908), 59-65; Powers, 71-72, 78.

⁵² Powers, 76, 78-80. Confiscation of German dye patents and brands during World War I, along with major wartime government funding, also played a role in the sudden and dramatic growth of the U.S. dyestuffs industry after the war. On the other hand, American chemical industry expert Robert J. Baptista argues that the confiscated German patents were not as beneficial to American manufacturers as some historians have argued since they were "masterpieces of obfuscation" that omitted information necessary to manufacture the products. After the war, American firms attempted to recruit German chemists in order to work with the confiscated patents, but the German government went to great lengths to prevent their emigration including refusing to issue passports and arresting chemists on the grounds of industrial espionage. See Robert J. Baptista, "The Faded Rainbow: The Rise and Fall of the Western Dye Industry 1856-2000," Colorantshistory.org, [http://www.colorantshistory.org/files/Faded Rainbow Article April 21 2012.pdf](http://www.colorantshistory.org/files/Faded%20Rainbow%20Article%20April%2021%202012.pdf) (accessed November 12, 2013).

⁵³ Approximately \$86,500 in 2011 dollars.

⁵⁴ Powers, 9; Glynn, 14.

⁵⁵ Approximately \$11.2 million dollars in 2011 dollars.

⁵⁶ Glynn, 6-7. See Ancestry.com for more details on Jacob Frederick Schoellkopf's travel between the U.S. and Europe. For more information on the Schöllkopf Schule, see "Die Geschichte des kaufmännischen Berufsschulwesens in Kirchheim," Jakob-Friedrich-Schöllkopf-Schule, <http://www.jfs.de/schule/schule.htm> (accessed August 29, 2013).

⁵⁷ Caroline Fohlin, "The rise of interlocking directorates in imperial Germany," *Economic*

History Review 52, no. 2 (May 1999): 307-33 and Jeffrey Fear and Christopher Kobrak, "Banks on Board: German and American Corporate Governance, 1870-1914," *The Business History Review* 84, no. 4 (Winter 2010): 703-36 present contrasting views on the presence of interlocking directorates in German business at the end of the nineteenth century.

⁵⁸ See Walter Kamphoefner, "The German Component to American Industrialization," *Immigrant Entrepreneurship: German-American Business Biographies, 1720-Present*, <http://www.immigrantentrepreneurship.org/entry.php?rec=189>.

⁵⁹ For more on batch production, see Philip Scranton, *Endless Novelty: Specialty Production and American Industrialization, 1865-1925* (Princeton: Princeton University Press, 1997). For more on chemical production and consumer, see Alfred D. Chandler Jr., *Shaping the Industrial Century: The Remarkable Story of the Evolution of the Modern Chemical and Pharmaceutical Industries* (Cambridge, MA: Harvard University Press, 2005).

⁶⁰ Glynn, 9.

⁶¹ *Ibid.*, iii.