

Cite this article: Katherine Mintie, “Material Matters: The Transatlantic Trade in Photographic Materials during the Nineteenth Century,” *Panorama: Journal of the Association of Historians of American Art* 6, no. 2 (Fall 2020), <https://doi.org/10.24926/24716839.10597>.

Material Matters: The Transatlantic Trade in Photographic Materials during the Nineteenth Century

Katherine Mintie, John R. and Barbara Robinson Family Curatorial Fellow in Photography, Harvard Art Museums

Introduction



Fig. 1. W. J. Baker, *Shadow Picture* in *The Philadelphia Photographer*, July 1870. Albumen silver print. Library of Congress; photography by the author

The July 1870 issue of *The Philadelphia Photographer*, the premier photography journal of the nineteenth-century United States, featured as its frontispiece an oval-shaped portrait of a young white woman in profile set against a dark background (fig. 1). The text on the mount identifies *Shadow Picture* as the work of W. J. Baker, a successful studio photographer in Buffalo, New York.¹ Given the primacy of makers within art-historical discourse, most scholars and institutions would classify the portrait as an American photograph. Baker’s discussion of the print a few pages later, however, offers further identifying information that complicates this assessment. Baker informs readers that he employed a “3 B.” Dallmeyer lens manufactured in England when making the negative and selected Trapp & Munch’s Albumen Paper from Friedberg, Germany, for producing the prints. To finish, Baker coated them with Adam-Solomon’s Enamel Paste imported from Paris, France.² Although made in the United States by an American photographer, the physical photograph is thoroughly cosmopolitan.

As Baker’s print reminds us, photographs are composite objects made from materials and tools often sourced from distant locations. We overlook these complex networks of labor and commerce that enable the creation of a photograph when we classify prints on the basis of the national identity or location of the photographer. Through an analysis of photographic materials, this essay places these essential though underappreciated trade relations in the foreground to position photographs produced in the United States as transnational artifacts shaped by and through continuous international exchanges of goods.³ By shifting the focus from the figure of the photographer to the materiality of photographs, this essay also brings the labor of those who produced photographic commodities into view to offer a more inclusive history of the development of the medium in the United States than is often understood.

The American photographic industry was connected to global trade networks of the nineteenth century, but this essay will focus on the crisscrossing circulation of raw materials and manufactured products between the United States and Europe.⁴ Most histories of American photography begin by tracing how news of the invention arrived in the United States from France and England; however, the focus soon shifts away from these transatlantic networks to the development of the medium within a narrower national context. While attention to the specificity of local practices in the United States is immensely valuable, it risks obscuring the continued exchanges of technological and aesthetic innovations—often carried in the form of photographic commodities—between the United States and Europe.⁵

While most nineteenth-century photographs do not readily disclose their material composition, period texts offer insight into the array of imported products available to and adopted by photographers in the United States. Among the most informative sources are early photography journals, such as *The Philadelphia Photographer* and *Anthony’s Photographic Bulletin*. Such periodicals feature advertisements for, commentaries on, and, significantly, physical examples of materials from abroad in the form of tipped-in photographs. As in the case of Baker’s print, these journals often detail the exact goods and tools used in the production of the tipped-in photographs, from lenses to papers and coatings. This density of information was prized by early practitioners because it allowed them to assess the quality of the materials and techniques employed by colleagues often working at great distances. Contemporary scholars, however, have underutilized this rich source of data.⁶

To leverage the research potential of these journals, I collaborated with Adrienne Lundgren, Senior Photographs Conservator at the Library of Congress, on a survey of illustrated photography periodicals and manuals in the Library’s collection. Over the course of a summer, we gathered information on and took digital images of about twelve hundred tipped-in prints from more than three hundred periodical issues published during the nineteenth and early twentieth centuries.⁷ This essay draws on the data collected during the survey and focuses on our findings from *The Philadelphia Photographer*, which was rechristened *Wilson’s Photographic Magazine* in 1889.⁸ Published from 1864 by energetic editor Edward L. Wilson, *The Philadelphia Photographer*, along with other periodicals, was read widely by photographers in the United States and abroad; together they functioned as testing grounds for new processes and products. These journals offer a broad view of the international goods that American photographers relied on and experimented with during the formative decades of the medium, especially the period in which paper photography came into prominence.⁹

US-based photographers employed numerous tools and materials imported from Europe—including chemicals, glass plates, varnishes, and mats—however, the focus here is on photographic papers (both raw paper stock and coated papers) and lenses. These products were the most commonly identified in descriptions of the journals’ tipped-in prints and offer the firmest evidence of the use of European goods by practitioners in the United States. In addition to discussions of the tipped-in prints, information about photographic papers and lenses appeared regularly in the periodicals’ articles and advertisements. Drawing from these and other primary sources, I hope to make legible the ways in which the transatlantic trade in photographic goods both formed and informed photography in the nineteenth-century United States, thereby complicating our understanding of what constitutes an American photograph.

Photographic Papers

In 1863, social commentator and photography enthusiast Oliver Wendell Holmes paid a visit to E. and H. T. Anthony's large photographic emporium and factory on Broadway in New York (fig. 2). As Holmes told readers of *Atlantic Monthly*, his aim was to report how "vast" the "business of sun-picturing has grown" in the United States since its emergence in 1839. He begins by describing the "upper rooms" of Anthony's establishment, where a "row of young women" were albumenizing, or coating with egg whites, sheets of paper for photographic use. (The albumen served as a binder for light-sensitive silver, which would be introduced by the photographer after purchase.) Ever attentive to detail, Holmes notes that the paper was "made in Europe for this special purpose, very thin, smooth, and compact." To impress upon readers the popularity that albumen printing had achieved in the United States, he adds: "The amount of photographic paper imported from France and Germany has been estimated at fifteen thousand reams."¹⁰ That amounts to around seven and a half million sheets of paper, an impressive figure that speaks to a thriving photography industry and addresses the central role that European paper played in the medium's expansion.

I cannot confirm Holmes's numbers; however, a considerable amount of specially milled paper was imported to the United States and processed for photographic use throughout the second half of the nineteenth century. Most of the paper came from two sources: Blanchet Frères et Kélber in Rives, France, and Steinbach & Co. in Malmedy, Belgium (formerly a part of Prussia).¹¹ In period literature, the papers from these mills were often described, respectively, as "Rives" and "Saxe" (fig. 3). The high-quality

papers from these mills were made from carefully sorted linen and cotton rags and processed in mineral-free water.¹² Water purity was vital because unwanted substances could interfere with the photochemical process. As a result of their access to natural supplies of water with very low mineral content, these two mills emerged as the primary global manufacturers of raw paper stock for photographic use and retained that position into the twentieth century.¹³

Details about the production of paper for the photographic industry may seem technical, yet this information makes it possible to trace the complex cycles of labor and trade required to produce this humble but essential product. Take, for example, the possible journey of the cotton fibers in these

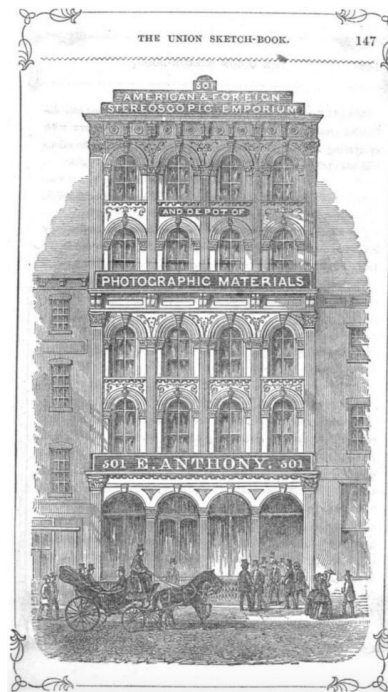


Fig. 2. View of the E. and H. T. Anthony Brothers' Shop on Broadway in John C. Gobright, *The Union Sketch-Book* . . . (New York: Pudney and Russell, 1860). University of Wisconsin, Madison; digitized by Google Books

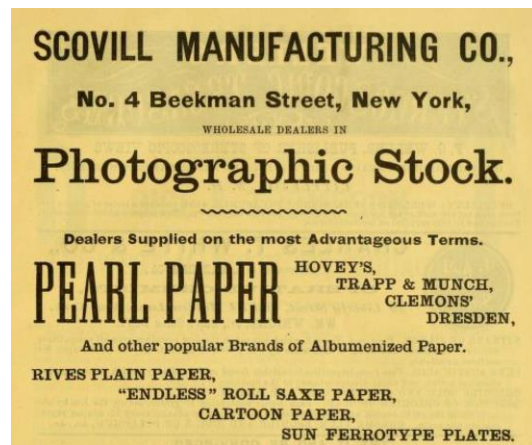


Fig. 3. Advertisement for Scovill Manufacturing Co. in *The Philadelphia Photographer*, December 1872. Boston Public Library

papers. As the United States was the leading producer of cotton for most of the nineteenth century, some percentage of the paper's cotton content was likely cultivated in the American South by slave labor and, following the Civil War, by sharecroppers and tenant farmers.¹⁴ After harvesting, large amounts of American cotton were sold to textile manufacturers in Europe and transformed by factory workers into fabric for various uses.¹⁵ Once worn out, the cotton textiles were collected by ragpickers and sold as rags to the paper mills in Rives and Malmedy. There the rags were sorted, pulped, formed into paper, and sized by skilled craftspeople.¹⁶ The paper was then exported to the United States and elsewhere where working-class women at vertically integrated firms such as E. and H. T. Anthony's prepared it for photographic use. As this probable itinerary suggests, close attention to materials can underscore the extent to which the American photographic industry was deeply embedded in crisscrossing networks of transatlantic trade.¹⁷ Furthermore, this line of inquiry brings into view the labor of many groups—the enslaved, the working class, women—who are often positioned as peripheral to photography's early history but were central to its expansion as a popular medium with the rise of paper photography.

In addition to the manufacturers who imported thousands of reams of raw paper stock from Europe, retailers in the United States purchased large amounts of albumenized and other coated photographic papers from across the Atlantic. In our survey of the prints tipped into *The Philadelphia Photographer* and *Wilson's Photographic Magazine*, Lundgren and I found that the majority (61 percent) of identified, pre-coated photographic papers were made in Europe. The bulk of these were manufactured in Germany (88 percent), particularly in Dresden and, to a lesser extent, in Friedberg.¹⁸ The other imported, pre-coated photographic papers came from Great Britain and Switzerland.¹⁹ Germany emerged as a center for the production of photographic papers, especially albumenized papers, as a result of its proximity to the paper mills and a low-wage labor market. As at E. and H. T. Anthony's workshop in New York, Dresden manufactories of photographic paper employed numerous working-class women.²⁰

The extent to which American photographers consumed imported albumen paper is conveyed in an 1874 column written by Hermann W. Vogel, famed photochemist and German correspondent to *The Philadelphia Photographer*. He notifies his American colleagues that "eight or ten different establishments of Dresden for the production of albumen paper have been consolidated, and form now one single manufactory." Warning of the effects of this merger, which gave rise to Die Vereinigten Fabriken Photographische Papiere AG, Vogel continues: "If a factory which furnishes such an important article as albumen paper has no competitor, it will be able to dictate terms. There are, of course, other establishments outside of Germany which manufactured albumen paper, but none of them are so extensive as those at Dresden."²¹ As Vogel's notice suggests, American photographers relied heavily on Dresden's "extensive" production of albumen paper even though "establishments outside of Germany," including E. and H. T. Anthony and others in the United States, manufactured it too. Vogel's prediction that German albumen papers would dominate the photographic marketplace was soon borne out, and between 1877 and 1888, the tipped-in photographs in *The Philadelphia Photographer* were printed almost exclusively on these papers.²²

The dominance of German photographic papers ended in the 1890s with the global rise of the Eastman Kodak Company. Best known for introducing the immensely popular Kodak camera in 1888, the company also manufactured and sold a range of products, including photographic papers. To gain an advantage in the market for this essential commodity, the

Eastman Kodak Company made a deal in 1898 with Blanchet Frères et Kélber and Steinbach and Company, the mills that produced the raw paper stock, to control its import into the United States.²³ Through this and other maneuvers, Eastman Kodak Company asserted considerable control over the American market for photographic papers and made further inroads into Europe.²⁴ In this way, even as American companies emerged as leaders in the international supply of photographic goods at the end of the nineteenth century, they remained dependent on European products and transatlantic trade. This similar pattern will be shown to mark the manufacture and sale of photographic lenses as well.

Lenses

In October of 1870, landscape photographer John Moran (brother of painters Edward and Thomas Moran) presented the results of a series of experiments to the Photographic Society of Philadelphia. He had set out to "prov[e] which of the many lenses offered for such use [in landscape photography] would give the sharpest picture," and determined that an objective lens by British-based manufacturer J. H. Dallmeyer, likely the popular Rapid Rectilinear model introduced in 1866, "was superior to any other he had tried." To confirm his results, he displayed a group of glass negatives made with the tested lenses.²⁵ Moran's conclusion seems to have irked some members, because he followed up with an additional report at the November meeting. In the second presentation, Moran showed a new set of glass negatives comparing the sharpness achieved with the Dallmeyer lens and one by Joseph Zentmayer, a Philadelphia-based optician. Moran pointedly restated his preference for the imported lens over the local favorite, affirming that "he had no reason to alter his opinion then formed on their relative merits."²⁶

The questioning of Moran's initial results was likely provoked by competition between American and European lens makers in the 1860s.²⁷ While European opticians commanded the market in the 1840s and 1850s, American lens makers soon caught up.²⁸ Charles C. Harrison and Joseph Schnitzer, New York-based opticians, introduced the much-admired Globe lens in 1862.²⁹ Zantmeyer, mentioned above, followed in 1866 with a lens designed for landscapes and copying that was praised by American photographers and sought after for its quality and affordability.³⁰ Despite these advances, numerous American photographers such as Moran continued to favor and purchase European models, possibly because they usually secured top honors at international exhibitions.³¹

Following photographic papers, lenses were the most common European import mentioned in *The Philadelphia Photographer* and *Wilson's Photographic Magazine*. In our survey of tipped-in prints from these periodicals, Lundgren and I found that European lenses accounted for a majority (58 percent) of those mentioned in commentaries.³² In contrast to photographic papers, no single European nation dominated the field of lens making. The lack of a clear leader is partly explained by the fact that certain lenses were better suited for specific genres, and photographers often purchased a variety of lenses from an assortment of manufacturers to meet the demands of different jobs. The journals include discussion and promotion of lenses made in Austria (Voigtländer, later produced in Germany), France (Darlot; Hermagis), Germany (Steinheil; Carl Zeiss; and C.P. Goerz), Great Britain (Ross; Dallmeyer), and Switzerland (Suter).³³ Though lenses (or "tubes," as they were often called) were named with less frequency than proprietary photographic papers, further evidence from these periodicals supports the widespread use and desirability of European lenses among US-based photographers.

FOR SALE.—\$2500 cash will buy one of the finest and best galleries in the city of Chicago. Everything is in first-class style and in A No. 1 order. All the lens are first-class (Dallmeyer, three A and two B patent; Voigtlander, Steinheil, etc.); the camera boxes are American Optical Co.'s, and other first-class makes, from card size to mammoth; plate glass baths; fine furniture and carpets; fine walnut counter and frame show case; silver-mounted show cases on counter; in fact a strictly first-class gallery. Location, one block south of Palmer House, and the nearest gallery to the Matteson House, Gardner House, Grand Pacific Hotel, Palmer House, and the new Post-office. The building is a fine one (see cut); long lease, low rent. Must be sold soon. Will give time on one-third the amount, if needed; or will sell one-half interest to a party competent to take charge of and manage it.

Address Mrs. J. H. NASON,
224 & 226 State Street, Chicago.

Fig. 4. Mrs. J. H. Nason, Advertisement for Nason's Gallery in *The Philadelphia Photographer*, April 1876. Boston Public Library

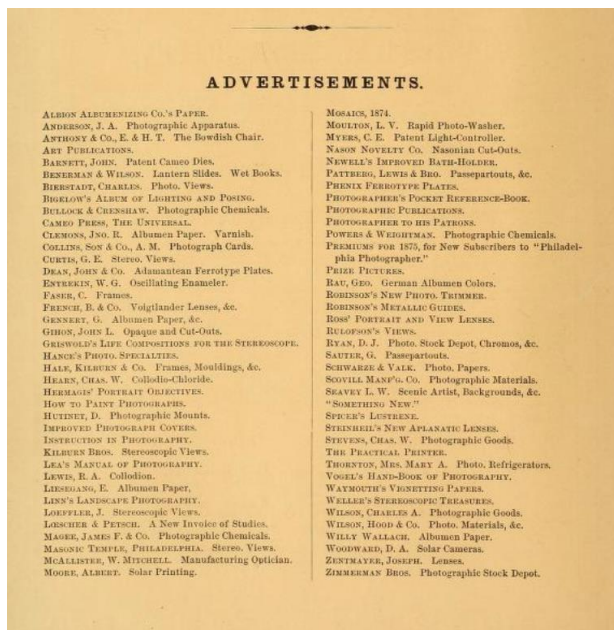
New York to Chicago and San José—but also the high regard in which they were held by the American photography community. In contrast, US-made lenses are mentioned far less frequently in these advertisements.³⁷

A number of American lens manufacturers, such as Bausch and Lomb in Rochester, gained greater shares of the market at the end of the nineteenth century, but European opticians remained leaders in technology and design.³⁸ In the early 1890s, Carl Zeiss, a German optical company, introduced an anastigmatic lens that significantly diminished spherical aberrations through the use of newly developed Jena glass.³⁹ Competing lens makers in the United States (Bausch and Lomb) and Europe (Voigtländer, Ross, and Suter) swiftly recognized the importance of Zeiss's innovation and secured licenses to manufacture their own models.⁴⁰ Improvements to the Zeiss design were introduced by C. P. Goerz, another German optical company, which debuted its modified anastigmatic lens at the 1893 World's Columbian Exposition in Chicago.⁴¹ Soon thereafter Goerz established a branch in New York and received orders from the Eastman Kodak Company, which installed Goerz lenses in its higher-end cameras.⁴² As this example suggests, even the most American of photographic products—Kodak cameras—were built with innovations and goods from across the Atlantic.

In addition to commentaries on the tipped-in prints, a reliable source for surveying which lenses American photographers bought and valued is the Specialties section (classifieds) of *The Philadelphia Photographer* and *Wilson's Photographic Magazine*. The Specialties columns featured second-hand lenses for sale on their own or as part of a gallery set-up, as it was common for photographers to sell their gallery spaces along with equipment and negatives. For example, an April 1876 illustrated notice (fig. 4) published by Mrs. J. H. Nason, offers for “\$2500 cash . . . one of the finest and best galleries in the city of Chicago. Everything is in first-class style and in A No. 1 order. All lens [sic] are first-class (Dallmeyer, three A and two B patent; Voigtlander, Steinheil, etc.).”³⁴ As this advertisement suggests, quality lenses of European manufacture were an asset of leading interest for prospective gallery buyers. The “first-class” lenses are mentioned directly following the claim that the gallery is in “A No. 1 order,” and the list of specific models seems intended to entice discerning buyers. Mrs. J. H. Nason was not alone in highlighting European lenses when selling a gallery. The previous year, B. F. Howland advertised “A first class Gallery, in San Jose [sic], Cal. Price, \$5000 . . . Fitted with Dallmeyer and Ross lenses; it is an A,-No.-1 gallery, and doing a fine business.”³⁵ Later in 1884, Abraham Bogardus offered his well-established New York studio for sale and promoted its “first-class . . . Dallmeyer lens, etc.” alongside his trove of “very valuable” negatives representing “prominent men, Presidents, Senators, etc.”³⁶ These notices not only point to the extensive use of European lenses—from

Conclusion

Throughout 1874, *The Philadelphia Photographer* printed a list of its advertisers (fig. 5) at the front of every issue. A plain document, it nonetheless reveals the great extent to which photographic goods circulated from Europe to the United States. In addition to imported papers and lenses, the columns name D. Hutinet, a Parisian maker of fashionable photographic mounts that occasionally frame the journal’s tipped-in prints (fig. 6); Loescher & Petsch, successful studio photographers in Berlin, who offer a set of portrait studies; and Hermann W. Vogel, the German photochemist, who presents his popular *Handbook of the Practice and Art of Photography*. As these entries suggest, imported commodities not only made American photography possible on a physical level but also informed aesthetic ideals, practical techniques, and technological innovations. In other words, these materials matter not simply as components of early American photography but as carriers of ideas that shaped the practice of the medium during its early decades.



Figs. 5, 6. Left: *Advertisements* in *The Philadelphia Photographer*, January 1874. Boston Public Library. Right: Fritz Luckhardt (negative)/William H. Rhoads (print), Untitled in *The Philadelphia Photographer*, June 1873. Albumen silver print. Library of Congress; photography by the author

As this In the Round group of essays focuses on methods for re-reading American photographs, my examples place the integral role of European photographic materials in American photography at the fore. The flow of goods, however, went both ways, and European photographers likewise purchased and experimented with American products.

To more fully illuminate the transatlantic character of nineteenth-century photography in the United States and Europe, it is worth considering one of these commodities. At the end of the 1860s, Lafayette W. Seavey of New York began to advertise a new line of products in *The Philadelphia Photographer*: painted backdrops and studio accessories.⁴³ Although the subject has received little study, painted backdrops were a central feature of nineteenth-century studio photography in the United States.⁴⁴ Photographers hung them against their

studio walls, often alongside props, to give the illusion that their subjects occupied a more elegant or imaginative setting. Within a matter of years, Seavey emerged as “the background producing artist,” and offered his wares on both sides of the Atlantic.⁴⁵ In addition to appearing in photographs tipped-in to *The Philadelphia Photographer* (fig. 7), one of his backdrops of an ornate interior was showcased in a collotype portrait in the June 1878 issue of *Photographische Mittheilungen* (fig. 8), a leading German photography periodical. Seavey’s name appears in larger text and above both the photographer and printer on the portrait mount, signaling his stature within the transatlantic photographic community.



Figs. 7, 8. Left: G. M. Elton, *Gold Medal Prize Picture* in *The Philadelphia Photographer*, April 1878. Albumen silver print. Library of Congress; photography by the author. Right: J. C. Schaarwachter (negative)/J.B. Obernetter (print), *Portraitbild mit Seavey'schem Hintergrunde* in *Photographische Mittheilungen*, June 1878. Collotype. Library of Congress; photography by the author

Beyond demonstrating a demand for American photographic materials in Europe, the widespread use of Seavey’s backdrops points to the fluidity, rather than the sharp distinctions, between American and European photography during the nineteenth century. Seavey produced his backdrops in multiples, which means that the one adorning J. C. Schaarwachter’s Berlin studio (figure 8) likely hung in studios elsewhere in Europe and the United States. Seavey’s backdrops therefore enabled a collapsing of space between sitters posing thousands of miles apart. Whether having their portrait made in Berlin or New York, photographic subjects inhabited a shared transatlantic imaginary made possible by the circulation of goods.

Notes

-
- ¹ “Shadow picture” was another name for “Rembrandt portraits,” a style of portrait photography known for its chiaroscuro-like lighting. This aesthetic was popularized by William Kurtz, who was born in Germany and worked in London before coming to the United States in the 1850s, and beginning a successful photography career. See Keith F. Davis with contributions by Jane L. Aspinwall, *The Origins of American Photography 1839–1885: From Daguerreotype to Dry-Plate*, exh. cat. (New Haven: Yale University Press, 2007), 246.
- ² W. J. Baker, “Our Picture,” *The Philadelphia Photographer* 7, no. 79 (July 1870): 270.
- ³ The conventional use of the nation-state to frame histories of photography in the United States and elsewhere has been commented upon and critiqued by several scholars. See, for example, François Brunet, “‘An American Sun Shines Brighter;’ or, Photography Was (Not) Invented in the United States,” in *Photography and its Origins*, ed. Tanya Sheehan and Andrés Mario Zervigón (London: Routledge, 2015), 131–44; Beth Saunders, “The Bertoloni Album: Rethinking Photography’s National Identity” in *Photography and its Origins*, 145–56; François Brunet, “Nationalities and Universalisms in the Early Historiography of Photography (1843–1857),” *History of Photography* 35, no. 2 (2011): 98–110; and Geoffrey Batchen, review of *Photography and Egypt* by Maria Golia and *Refracted Visions: Popular Photography and National Modernity in Java* by Karen Strassler, *Art Bulletin* 93, no. 4 (December 2011): 497–501. Michèle Hannoosh’s work on photography around the Mediterranean Sea offers a useful alternative model. While careful to emphasize that local variations persisted across the diverse cultures of the Mediterranean, Hannoosh argues that stepping back to consider photography in the larger region brings into view the “rich transmission and exchange of knowledge, skills, and practices as photographers encountered, joined, or competed with one another.” See Hannoosh, “Practices of Photography: Circulation and Mobility in the Nineteenth-Century Mediterranean,” *History of Photography* 40, no. 1 (February 2016): 3–27.
- ⁴ This follows a larger movement within scholarship on the art of the United States to emphasize transatlantic exchanges and connections. See, among numerous other examples, George W. Boudreau and Margaretta M. Lovell, eds., *A Material World: Culture, Society, and the Life of Things in Early Anglo-America* (University Park: Pennsylvania State University Press, 2019); Emily C. Burns, *Transnational Frontiers: The American West in France* (Norman: University of Oklahoma Press, 2018); Jennifer Van Horn, *The Power of Objects in Eighteenth-Century British America* (Chapel Hill: University of North Carolina Press, 2017); Daniel Maudlin and Bernard L. Herman, eds., *Building the British Atlantic World: Spaces, Places, and Material Culture, 1600–1850* (Chapel Hill: University of North Carolina Press, 2016); Jennifer Roberts, *Transporting Visions: The Movement of Images in Early America* (Berkeley: University of California Press, 2014); Tim Barringer, “A White Atlantic?: The Idea of American Art in the Nineteenth Century,” *Interdisciplinary Studies in the Long Nineteenth Century* 9 (2009), <https://doi.org/10.16995/ntn.507>.
- ⁵ Periodicals such as *The Philadelphia Photographer* were central to these exchanges, as I have previously discussed. See Katherine Mintie, “A Portrait on the Move: Photography Literature and Transatlantic Exchanges in the Nineteenth Century,” *Panorama: Journal of the Association of Historians of American Art*, 6, no.1 (Spring 2020), <https://doi.org/10.24926/24716839.9729>.
- ⁶ While underappreciated by most art historians, these periodicals are consulted frequently by conservators of photographs. Exceptions include Tanya Sheehan, *Doctored: The Medicine of Photography in Nineteenth-Century America* (College Park: Pennsylvania State University Press, 2011) and Lynn Berger, “Peer Production in the Age of Collodion: The Bromide Patent and the Photographic Press, 1854–1868,” in *Photography and Other Media in the Nineteenth Century*, ed. Nicoletta Leonardi and Simone Natale (College Park: Pennsylvania State University Press, 2018), 91–102.

-
- ⁷ For more on this project, see Adrienne Lundgren, “The Hidden Value of Early Photographic Technology Manuals: The Genome of Nineteenth Century Photography,” lecture delivered at the Library of Congress, Washington, DC, April 5, 2018, video, 47:48 min., <https://www.loc.gov/item/webcast-8348>. The survey data is stored in a Microsoft Access database generously built by Paul Messier of the Lens Media Lab at the Institute for the Preservation of Cultural Heritage at Yale University, New Haven.
- ⁸ The Library of Congress has a near-complete collection of these journals, but some issues were missing from our survey. I planned to collect the missing data from local archives, but closures due to COVID-19 prevented that further research.
- ⁹ By focusing on these print sources, which were well adapted to paper photography, I do not address the first two decades of photography in the United States, in which the metal-based daguerreotype process predominated; however, the transatlantic trade in goods was lively then as well. American daguerreotypists eagerly bought European lenses, especially Voigtländer’s Petzval lens, and silvered copper plates from France. See Davis, *The Origins of American Photography*, 64; and Reese V. Jenkins, *Images and Enterprise: Technology and the American Photographic Industry* (Baltimore: John Hopkins University Press, 1987), 16, 28.
- ¹⁰ Oliver Wendell Holmes, “Doings of the Sunbeam,” in *Soundings from The Atlantic* (Boston: Ticknor and Fields, 1864), 228–30. The article was originally published in *Atlantic Monthly* in 1863.
- ¹¹ While Rives and Saxe paper came to dominate the market, paper from other European mills was also used in the photographic trade. In a letter sent on behalf of photographer John Wood to E. Anthony in 1856, Montgomery C. Meigs complained about the poor quality of a batch of Saxe paper he had purchased. Anthony replied by offering him samples of papers from Canson, Marais, and Rives. See Edward Anthony to Montgomery C. Meigs, October 2, 1856, paper records archive, photography file, Architect of the Capitol. I wish to extend my thanks to Adrienne Lundgren for bringing this exchange to my attention.
- ¹² James Reilly, in a very useful overview of the production of albumen papers, cites a study that identifies the composition of paper produced at the Blanchet Frères et Kélber mill as “85% linen fiber and 15% cotton fiber.” See Reilly, *The Albumen and Salted Paper Book: The History and Practice of Photographic Printing, 1840–1895* (Rochester, New York: Light Impressions Corporation, 1980), 30. See also Cynthia Karnes, “The Art and Science of Papermaking for Platinum Photographs,” in *Platinum and Palladium Photographs: Technical History, Connoisseurship, and Preservation*, ed. Constance McCabe (Washington, DC: American Institute for Conservation, 2017), 131–34.
- ¹³ Reilly, *The Albumen and Salted Paper Book*, 29–34.
- ¹⁴ The United States was the leading cultivator of cotton before the Civil War as a result of its reliance on slave labor. While new sources of raw cotton emerged during the Civil War years—especially in India, Egypt, and Brazil—the United States regained its former position in the 1870s through the sharecropping system. See Sven Beckert, “Emancipation and Empire: Reconstructing the Worldwide Web of Cotton Production in the Age of the American Civil War,” *American Historical Review* 109, no. 5 (December 2004): 1405–38.
- ¹⁵ For statistics on the amount of American cotton consumed by European nations both before and after the Civil War, see Beckert, “Emancipation and Empire,” 1408–9, 1427.
- ¹⁶ For a detailed and well-illustrated account of early papermaking in Europe and the United States, see Dard Hunter, *Papermaking: The History and Technique of an Ancient Craft* (New York: Dover Publications, 1978), 170–202. On the specifics of the paper production for photography, see Karnes, “The Art and Science of Papermaking for Platinum Photographs,” 128–143. The nineteenth century saw a rise in the manufacture of paper from cheaper and more readily available materials, particularly wood pulp, but the demands of photographic processes necessitated the use of more durable papers made from linen and cotton rags. However, wood pulp does appear in photography papers produced in the early twentieth century. See Karnes, “The Art and Science of Papermaking for Platinum Photographs,” 133–34.

-
- ¹⁷ In a similar manner, Michelle Foa has addressed the cotton trade and materiality of paper to illuminate the importance of transatlantic mobility to the work of Edgar Degas. See Foa, "In Transit: Edgar Degas and the Matter of Cotton, between New World and Old," *Art Bulletin* 102, no. 3 (Summer 2020): 54–76.
- ¹⁸ On the consolidation of the German albumen paper manufactories, see James Reilly, "The Manufacture and Use of Albumen Paper," *The Journal of Photographic Science* 26, no. 4 (1978): 157. In Dresden, the primary manufacturer was Die Vereinigten Fabriken Photographische Papiere AG, a collective that sold its papers under various brand names. Trapp and Munch was produced in Friedberg.
- ¹⁹ In the 214 cases in which the manufacturer of the photographic paper is mentioned in commentaries on the tipped-in prints, eighty-two were produced domestically and 132 were imported from Europe. Of the 132 papers manufactured in Europe, 117 were from Germany, thirteen from Great Britain (Marion Co.; Albion Albumenizing Co.), and two from Switzerland (Gustave & Heinrich Beneke).
- ²⁰ See Reilly, *The Albumen and Salted Paper Book*, 31–34.
- ²¹ Hermann W. Vogel, "German Correspondence," *The Philadelphia Photographer* 11, no. 126 (June 1874): 181, as cited in Reilly, "The Manufacture and Use of Albumen Paper," 157.
- ²² Between January 1877 and December 1893, 93 percent (ninety-seven out of 104) of the identified photographic papers were of German manufacture.
- ²³ By this time, the two mills had consolidated to form the General Paper Company. The Eastman Kodak Company made this deal in alliance with the American Aristotype Company, another leading maker of photographic papers in the late nineteenth century. See Jenkins, *Images and Enterprise*, 195–99.
- ²⁴ Jenkins, *Images and Enterprise*, 203.
- ²⁵ "Photographic Society of Philadelphia," *The Philadelphia Photographer* 7, no. 83 (November 1870): 387. On J. H. Dallmeyer's Rapid Rectilinear lens, and early photographic lenses more broadly, see Rudolf Kingslake, *A History of the Photographic Lens* (Boston: Academic Press, 1989), 59–62.
- ²⁶ "Photographic Society of Philadelphia," *The Philadelphia Photographer* 7, no. 84 (December 1870): 421.
- ²⁷ Interestingly, both J. H. Dallmeyer and Joseph Zentmayer were born and educated in Germany. In this sense, German scientific expertise won the day.
- ²⁸ Among the most popular European lenses in the early decades of American photography was the Petzval portrait lens by Voigtländer. As a writer for *The Philadelphia Photographer* conceded in 1866, "for *portrait taking* nothing superior has been introduced to the Petzval-Voigtlander combination lens, those which . . . are now exclusively used for portraiture at the present day. This apparatus has taken a tour of the world, and is just as popular in Africa and Asia as in America and Europe." See "Fred. WM. von Voigtlander," *The Philadelphia Photographer* 3, no. 29 (May 1866): 152.
- ²⁹ On the Globe lens, see Reese, *Images and Enterprise*, 47.
- ³⁰ See Henry Morton, "Zentmayer's New Lens," *The Philadelphia Photographer* 3, no. 32 (August 1866): 244–45. In terms of the price differential between American and European lenses, it is useful to compare advertisements for Zentmayer's lenses with similar lenses by Steinheil, a German manufacturer, published in *The Philadelphia Photographer* in 1872. Zentmayer's No. 4 lens with an 8-inch focus was offered for \$42, where Steinheil offered its No. 4 lens with a 10-inch focus for \$55 in 1872. Similarly, the Zentmayer No. 5 lens with a 12-inch focus cost \$60 in 1872, where the Steinheil No. 5 lens with a 13 ¼-inch focus was advertised at \$65. See "The Zentmayer Lenses," *The Philadelphia Photographer* 9, no. 108 (1872), n.p.; and "Steinheil Lenses 'Indispensable!,'" *The Philadelphia Photographer* 9, no. 108 (1872), n.p.
- ³¹ Lens makers often listed their prize medals in advertising materials. For example, J. H. Dallmeyer won two medals at the Great London Exposition in 1862, prize medals at international exhibitions in Dublin and Berlin in 1865, and a gold and silver medal at the Exposition Universelle in Paris in 1867. See *A Catalogue of Telescopes, Microscopes, Photographic Lenses, Apparatus; Sold by J. H. Dallmeyer* (London: G. B. Goodridge & Sons, 1881), 1.

-
- ³² Of the twenty-nine times that proprietary lenses were mentioned in discussions of tipped-in prints, seventeen were European and twelve were domestic.
- ³³ Of the seventeen European lenses mentioned, seven were made in Great Britain with one by Ross and six by Dallmeyer; five were made in Austria by Voigtländer; four were made in Switzerland by Suter; one was made in France by Hermagis.
- ³⁴ "Specialties," *The Philadelphia Photographer* 13, no. 148 (April 1876), n.p.
- ³⁵ "Specialties," *The Philadelphia Photographer* 12, no. 139 (July 1875), n.p.
- ³⁶ "Specialties," *The Philadelphia Photographer* 21, no. 249 (September 1884): 291. Bogardus also notes in the advertisement that he continuously operated this studio for thirty-eight years, which is remarkable.
- ³⁷ In a review of the Specialties sections of digitized versions of *The Philadelphia Photographer* and *Wilson's Photographic Magazine*, which is admittedly incomplete, I found numerous other positive references to European lenses but only two references to American lenses (Harrison; American Optical Company) in descriptions of studios for sale. See "Specialties," *The Philadelphia Photographer* 3, no. 26 (February 1866), n.p.; and "Specialties," *The Philadelphia Photographer* 15, no. 170 (February 1878): 65.
- ³⁸ Although Bausch and Lomb was founded in Rochester, New York, both John Bausch and Henry Lomb were German immigrants.
- ³⁹ Jena glass, a heat-resistant glass with high refraction properties, was developed by German scientists Ernst Abbe and Otto Schott. J. R. Gotz, "Optical Glass," *Wilson's Photographic Magazine* 29, no. 428 (October 15, 1892): 601–3. For more information on the development of anastigmatic lenses, see Kingslake, *A History of the Photographic Lens*, 81–102.
- ⁴⁰ Gotz, "Optical Glass," 602.
- ⁴¹ One lengthy and glowing review begins by noting that the C. P. Goerz anastigmat "presents so many advantages and improvements as to be in a special way worthy of the attention of practical workers." See "The New Goerz Double Anastigmat," *Wilson's Photographic Magazine* 30, no. 441 (1893): 407–9.
- ⁴² Jenkins, *Images and Enterprise*, 214.
- ⁴³ The first advertisement that I have found for Seavey's background appears in the July 1869 issue of *The Philadelphia Photographer*.
- ⁴⁴ For a good introduction to the use of painted backdrops by nineteenth-century photographers in the United States, see David S. Shields, "Background: The Picture in the Picture," *Broadway Photographs*, accessed May 16, 2020, <https://broadway.cas.sc.edu/content/background-picture-picture>. There is more robust literature on backdrops in colonial and postcolonial photography. See, for example, Arjun Appadurai, "The Colonial Backdrop," *Afterimage* 24 (March/April 1997): 4–7; and Jennifer Bajorek, *Unfixed: Photography and the Decolonial Imagination in West Africa* (Durham, NC: Duke University Press, 2020), 103–8.
- ⁴⁵ "What Photographers Say," *Philadelphia Photographer* 197, no. 17 (May 1880): 151. Emphasis in the original.