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The Auto- chrome in Imperial History



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Editorial

The Autochrome in Imperial History: Color Photography's Global Entanglements

This issue of PhotoResearcher centers on the role of the Lumière brothers' Autochrome in global colonial and political contexts. The impetus behind creating "The Autochrome in Imperial History" is the Tassilo Adam Collection, housed at Weltmuseum Wien in Vienna. Adam, a plantation manager and photographer in the Dutch East Indies, gifted the collection, including his Autochromes, to the Weltmuseum Wien in 1940. A handful of these depict the lavish estate of Karl Bosscha in Java, Indonesia. Their representation marks a shift in the conventional colonial gaze, turning inwards, by meticulously showcasing the European settler's domestic sphere. This collection broadens interpretative avenues, motivating the invitation of international scholars to re-situate the Autochrome within broader imperial dynamics.

Over the years, several authors came to my attention thanks to the online working group centering color photography around 1900, co-convened with Janine Freeston at the Consortium for the History of Science, Technology, and Medicine (CHSTM).¹ Together, we formed an extensive network of scholars, curators, and artists keen on critically approaching color photography. This network regularly met and exchanged viewpoints and still does so until today through and thanks to the CHSTM who has continuously supported this niche research topic.

In this issue and historically, the "Autochrome" refers to both the photographic process; meaning the various and unique steps needed for the technical genesis of the image, as well as the branded product "Autochrome" referring to the plates sold on the market by the Lumière company. 'Auto' refers to spontaneous, independent and 'Chrome', a derivative of the noun 'chroma', refers to color. The process was patented on December 17, 1903, by Auguste and Louis Lumière, who refined its manufacturing until it was marketed to the general public on June 10, 1907.² As one of the first commercially successful color photographic technologies, the Autochrome had an international reach, disseminated through global trade, diplomacy, and imperialism.

This volume distinguishes itself from prior scholarship on the Autochrome by prioritizing the medium's political deployment over poetic or aesthetic interpretations. The global perspectives presented through various case studies span cases across Iceland, Great Britain, the Russian Empire, colonial Indonesia, the United States of America, the French Empire and the Austro-Hungarian Empire. They demon-

1 ____ <<https://www.chstm.org/group/color-photography-19th-century-and-early-20th-century-sciences-technologies-empires>> (23.8.2025).

2 ____ Alfred W. Downs (ed.), 'French Patent 339,223, Dec. 17, 1903', *Journal of the Society of Chemical Industry*, 24, no. 21, 1905, 880–912.

strate the Autochrome's function as an instrument of imperial modernity, facilitating both in the creation and dissemination of colonial viewpoints and the documentation of the empire's aftermath.

The Autochrome Turn: Re-politicizing the Medium

Over the last two decades, the increased investigation of the Lumière brothers' color process, the so-called "Autochrome turn", has fruitfully directed research to color photographs produced well into the interwar period.³ However, it invertedly concentrated the research mostly around the Albert Kahn collection and to a lesser degree the Rothschild collection.⁴ Created and collected between 1909 and 1931 as part of his "Archives of the Planet" project to document the world, the Kahn collection's historical significance has, at times, overshadowed other relevant holdings.⁵ Around the year 2000, scholars often emphasized the aesthetics and the poetics of the Autochrome, positioning the history of photography within art history. Aesthetics also helped to legitimize color photography as an object of inquiry in the history of photography; the latter being a field whose history had largely been told through black and white images.

This issue of PhotoResearcher recognizes the Autochrome's artistic and experimental significance in the hands of pivotal figures such as Étienne Clementel,⁶ Heinrich Kühn, Edward Steichen, and Alfred Stieglitz [fig. 1]. As Uwe Schögl rightfully notes: "Photography finally and henceforth disposed of the same possibilities of representation as painting, as there are: first, the three-dimensional representation of objects through stereoscopic photographs which was already invented in the 1850s; second, the representation of objects in motion through Chronophotography which had been possible since the 1870s, and now, the reproduction of nature in its natural colours."⁷ It nevertheless shifts focus towards the political, imperial, and colonial contexts that shaped the medium, hoping to redress the historiographic imbalance. In doing so, it aligns with preceding scholarship that politicized the Autochrome, such as works by Trond Bjorli, Kjetil Ansgar Jakobsen, and Brian Hochman and hopes to offer scholars further investigative avenues and case studies.⁸

Re-politicizing the Autochrome does not only mean using a novel interpretative approach to museum collections that may not be as celebrated as Kahn's. It also means acknowledging the fact that the Autochrome rose and fell concurrently to European and American imperialism and that its users had to contend with broader colonial and political aims. It also means recognizing founder Louis Lumière's ties to National Socialism through the Vichy government, an aspect insufficiently considered by historians. The leader of the regime Marshal Philippe Pétain awarded Louis Lumière the insignia of the Legion of Honor in Vichy,⁹ France, during World War II, the video of which is available online.¹⁰ On January 23, 1941, the New York Times reported on

3 — Trond Erik Bjorli and Kjetil Ansgar Jakobsen, *Cosmopolitics of the Camera. Albert Kahn's Archives of the Planet*, Bristol 2020; Caroline Fuchs, *Das Autochrom in Großbritannien, Revolution der Farbfotografie*, Berlin 2017; Paula Amad, *Film, the Everyday, and Albert Kahn's Archives De La Planète*, New York 2010.

4 — Victor Gray (ed.), *The Colours of Another Age: The Rothschild Autochromes 1908–1912*, London, 2007.

5 — Thomas Smith, 'Revisiting the Kahn Collection: Multimodal Artificial Intelligence and Visual Patterns of Presence and Absence in the *Archives de La Planète*, 1909–1931', *Visual Studies*, 40 (1), 2024, 126–42. doi:10.1080/1472586X.2024.2380859.

6 — Louise Arizzoli, 'Autochromes by Etienne Clémentel (1864–1936)', *Études photographiques*, 35, Spring 2017, 4.

7 — Uwe Schögl, *Heinrich Kühn and the Autochromes, Photography and Research in Austria*, conference proceedings, Vienna 2001, 79.

8 — Trond Erik Bjorli and Kjetil Ansgar Jakobsen, *Cosmopolitics of the Camera. Albert Kahn's Archives of the Planet*, Bristol 2020; Brian Hochman, *Savage Preservation: The Ethnographic Origins of Modern Media Technology*, Minnesota 2014.

9 — <<https://www.rfi.fr/en/culture/20191018-french-cinema-hollywood-lumiere-brothers-festival-coppola-lyon-france-museum>> (29.8.2025).

10 — <<https://www.ina.fr/ina-eclair-actu/video/afe85000625/petain-remet-la-grand-croix-de-la-legion-d-honneur-a-louis-lumiere>> (29.8.2025).

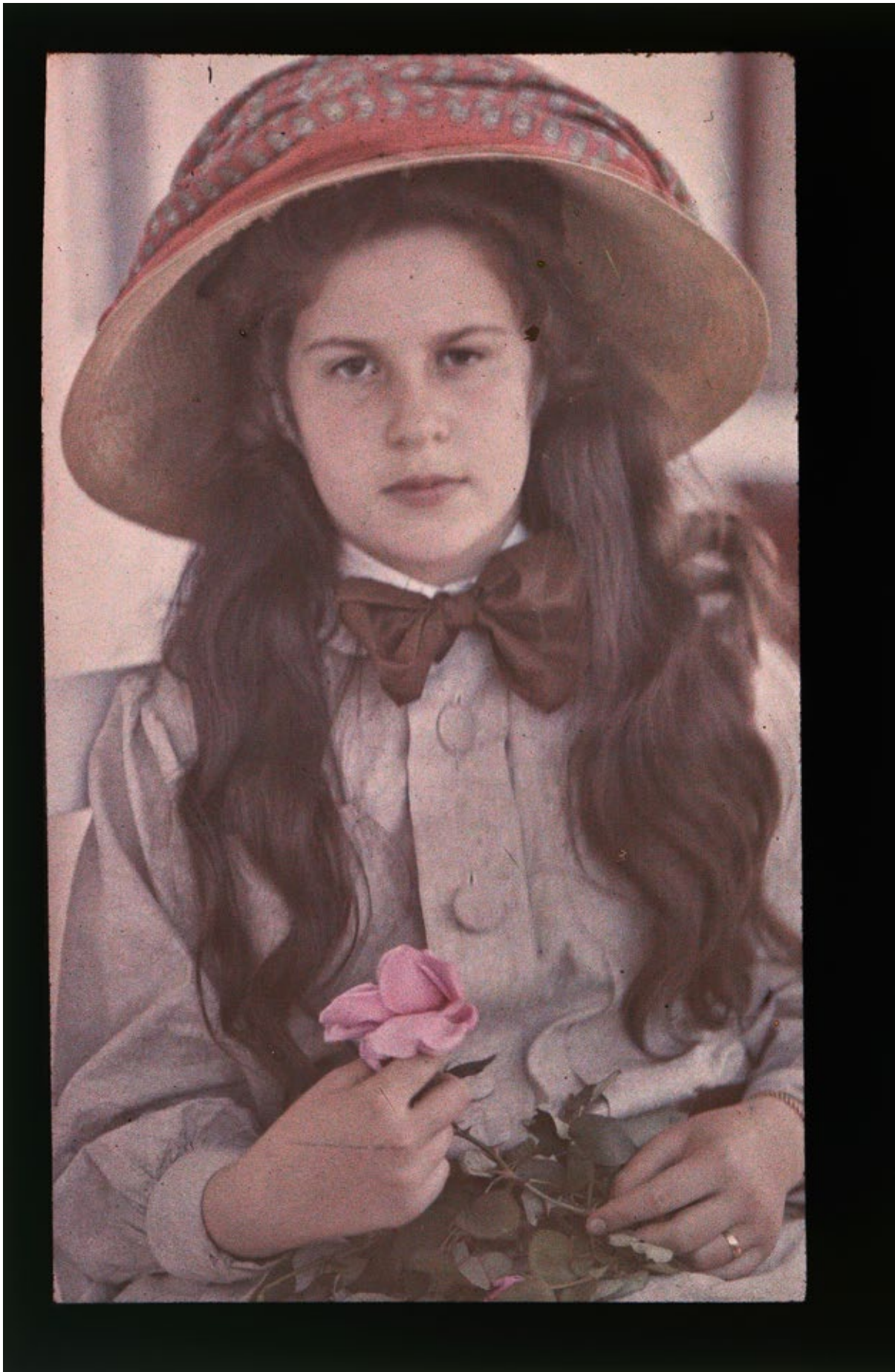


fig. 1

Alfred Stieglitz, *Kitty*, ca. 1909, Autochrome, 12 × 9 cm. Preus Museum: The National Photo Museum, Horten, Norway. Inventory Number: NMFF.FR.000257 (Photo by: Ana Gonçalves).

the Franco-German rapprochement; stating that Louis Lumière was one of “the unanimously respected persons fit to advise on matters of state” in the Vichy government.¹¹ Lumière’s proximity to power meant that his company and the producers it supplied had fewer restrictions regarding film numbers and could operate “comparatively free from German constraints”¹² in World War II.

Whether Lumière only profited from his privileges in these political circumstances or whether he was motivated by fascist ideas is still open for debate. Either way, the significance of these facts has not been adequately addressed in general Autochrome histories, thereby underscoring an urgent need for further research on this political and historical blind spot.

The Autochrome and its Markets

Despite the Autochrome’s fame and reach, it was not the first color photographic process that photographers, scientists, and amateurs engaged with. Around 1900, color photography thrived as a field of research, experimentation, and artistic practice, including processes like Lippmann method and multiple three-color photographic techniques, which I have explored elsewhere.¹³ However, what distinguishes the Autochrome from other processes and what has helped solidify its importance for photographers and historians are: Its reliance on one single screen, the ability to use it with standard cameras, and its standard darkroom chemistry.

Compared to its predecessors, such as the Joly Color Screen (1894, Ireland) and the McDonough Color Screen (1897, United States of America),¹⁴ the Autochrome did not rely on a taking screen and a viewing screen. Rather, it was manufactured as a single plate with a single integrated screen which made its color registration far more accurate. The Autochrome plate consists of a mixture of microscopic, dyed potato starch grains sprinkled and pressed into a layer of varnish on the glass plate, creating a random mosaic of red-orange, green, and blue-violet color dots. Kenneth Mees and J H Pledge’s 1910 examination of color elements in various processes showed that the individual 0.015 mm color elements in Autochromes were significantly smaller than their main rival Omnicolor, with 0.05–0.08 mm elements.¹⁵ This allowed for a highly-detailed color registration and the production of a broad spectrum of colors, including white, through optical synthesis, by reflecting or projecting light through a red, green, and blue-filtered positive.¹⁶ Gaps between the grains were filled with lampblack, a fine carbon powder, as well as a second layer of varnish in order to protect the screen before the photosensitive emulsion layer.¹⁷

Unlike three-color photographic methods which necessitated photographing three distinct monochromatic images of the same object through filters and then, physically superimposing the resulting color positives in register, the Autochrome recorded the color image on a single photosensitive glass plate. In doing so, it not only saved the photographer’s time, but also money. Three-color photography required a unique three-color camera; produced only by a handful of manufacturers

11 — <https://www.nytimes.com/1941/01/23/archives/hitler-completes-his-reply-to-petain-vichy-expects-envoy-soon-with.html> (29.8.2025).

12 — David William Lees, *Vichy on film: the portrayal in documentary propaganda of life under Occupation, 1940–1944*, unpublished PhD thesis, University of Warwick 2014, 151.

13 — Hanin Hannouch, *Gabriel Lippmann’s Colour Photography: Science, Media, Museums*, Amsterdam 2023.

14 — Sylvie Pénichon, *Twentieth Century Colour Photographs. The Complete Guide to Processes, Identification & Preservation*. London, Los Angeles: Thames & Hudson, 21.

15 — Bertrand Lavédrine and Jean-Paul Gandolfo, *The Lumiere Autochrome: History, Technology, and Preservation*, California 2013, 81.

16 — Sylvie Pénichon 2013, (reference 14), 20.

17 — Caroline Fuchs, *Das Autochrom in Großbritannien, Revolution der Farb-fotografie*, Berlin 2017, 33.

such as Miethe-Bermpohl in Berlin as of 1904, a special three-color projector and specific three-color viewers.¹⁸ These accoutrements forced photographers and camera clubs to purchase expensive equipment to accompany every step in the image-generation process: shooting, displaying, and viewing. In contrast, Autochromists could work with existing photographic equipment and all they needed were the proper photographic plates.

Also, the Autochrome required several more steps than monochrome photography in the darkroom: After exposure, the glass plate was developed as a normal negative, then bleached to remove the silver, resulting in a reversed, transparent image. Then, re-exposing the plate and dissipating any remaining silver resulted in a fixed positive image. A final layer of varnish protected the plate from delamination or cracking. For durability, the plate was attached to another thin glass plate for added protection and secured with black tape around the edges.¹⁹ These work stages fitted seamlessly into existing darkroom practices and standard darkrooms equipment, used by amateur and professional photographers.

Despite these advantages, the Autochrome's high cost and difficulty in printing limited its reach. The plates varied in price but were generally sold at four times the price of monochrome negative plates. Even though the Lumière brothers initially targeted the amateur photographer market, high-end commercial portrait studios and publishers along with photographers with capital and social privileges soon optimized the process to their own aims.²⁰ Several articles in this issue point to the social class exclusivity of the medium: J. C. Warburg (1867–1931) in Great-Britain came from privilege, André Courmont (1890–1923) was a French diplomat in Iceland, Tassilo Adam, a plantation manager based in Java.

In terms of display, Autochrome plates, when backlit by natural light, in diascopes or stereoscopes, appeared luminous and vivid. Projection was the preferred means of sharing Autochromes²¹ but since it was an ephemeral event, many practitioners wanted to convert color glass slides to a color print, better suited for museum display and sales. Direct printing, was a preferred method as photographers could generate several prints from one negative. But it defeated its purpose. The reason being that contact prints using the Utocolor bleach-out paper proved too inconsistent for artists and even amateurs who objected to the “irregular way in which the colors printed out, the lack of sensitivity of the colors to light, and the paper's unpleasant smell from the sensitizing solutions.”²² Moreover, direct contact printing often leads to the destruction of the original Autochrome plate caused by excessive exposure times (up to two hours in direct sunlight), leading to the protective varnish melting, resulting in color fading.²³ This meant that photographer had to resort to three-color separation methods and could not reproduce the Autochrome within the confines of this very medium.

Insights

This volume does not claim to be exhaustive and admits that its global ambition remains limited in scope. It merely hopes to motivate future scholars to investigate the Autochrome in countries of the Global South, thus expanding our knowledge about

18 ____ Hanin Hannouch, 'Gustav Fritsch around 1900: Anthropology and Three-Colour Photography in Imperial Germany around 1900', *PhotoResearcher*, vol. 19, 2023, 64.

19 ____ E. J. Wall, *The History of Three-Colour Photography*, Boston 1925, 517–23.

20 ____ Cyril Nunn, Ashley Sampson, and Alan Childs. *Face to Face: Sheringham, Norfolk: And the Photography of Olive Edis and Cyril Nunn*, Halsgrove 2005.

21 ____ Nathalie Boulouch, Arno Gisinger. 1999. 'Der Große Erfolg Der Autochrome-Platten Liegt in Ihrer Projektion: Das Projizierte Bild Als Privilegierte Präsentationsform Früher Farbfotografie', *Fotogeschichte*, vol. 74, 1999, 45–58.

22 ____ Pénichon 2013 (reference 14), 209–211.

23 ____ Pénichon 2013 (reference 14), 209–211.

science, technology, and representation beyond Europe and the USA. Also, while this volume focuses on single-plate Autochromes, Stereoscopic Autochromes that merged the Autochrome's color reproduction with stereoscopy's illusion of depth, remain quite under researched.²⁴ Significant knowledge and application of this complex technology extended beyond European centers, as demonstrated by Norwegian architect and academic Hans Grendahl (1877–1957), who used stereo-autochromes to document his surroundings [fig. 2] and architectural structures across Norway, thus highlighting a rich link between the medium and the study of architecture²⁵ [fig. 3] that merits further research.

Despite its limitations, several key insights about the Autochrome in imperial history emerge in this issue.

The importance of interdisciplinary research: Photography conservators emphasize the Autochrome's materiality, imperfections, and preservation. These studies are essential for the identification and conservation of Autochrome collections in museums, and constitute valuable historical research which scholars turn to, beyond the field of conservation. In keeping up with the spirit of collaborative research, this PhotoResearcher issue includes the academic-artistic research by Bronwyn Lace and Anna Seiderer, which provides an essential methodological and ethical vector for the journal. The joint article by Kittí Baráthová, Janka Blaško Križanová (conservators), and Katarína Beňová (art historian) highlights how interdisciplinarity cooperation enables meaningful knowledge creation about Autochromes as both as material objects *and* as historically-embedded artefacts.

The importance of the periphery: The articles expand the geographic and thematic boundaries of Autochrome scholarship. They challenge a metropolitan-centric view, centering Paris or Berlin, by tracing the technology's reception in perceived peripheries such as Iceland, where its limited amateur use was deeply tied to international travel and foreign presence, and diplomatic relationships. Similarly, in present-day Slovakia, Autochromes evolved through shifting political boundaries, with collections shaped (and sometimes fragmented) by neighboring powers.

Colonial tropes advanced photographers' careers: By seeking fame and recognition, many photographers relied on representations that they knew would serve imperial agendas at the expense of indigenous interests. Janine Freeston's examination of J. C. Warburg's Autochromes from the 1908 Franco-British Exhibition, Rachel Lee Hutcheson's text about Fred Payne Clatworthy, and my analysis of Adam's photographs of the Bossca estate in Java underscore the direct link between the pursuit of photographic success and the reinforcement of colonial ideologies. All three photographers achieved various degrees of national and international fame by using the medium to either objectify and display indigenous people (Warburg), to completely erase them through the promotion of touristic and "uninhabited" landscapes (Clatworthy), or choosing not to represent them; focusing instead on foreign settlers who held more the power (Adam).

Hanin Hannouch's contribution shifts the focus of colonial photography inward, analyzing Tassilo Adam's Autochromes of a European tea planter's estate in the Dutch East Indies to examine the performance of settler identity within the domestic

24 ____ Catlin Langford, 'Startling, Extraordinarily beautiful, and Obtrusive: Reactions and Responses to the Stereo-Autochrome', *International Journal on Stereo & Immersive Media*, vol. 6, 2022, 90–103.

25 ____ <<https://preusmuseum.no/en/the-world-in-3d>> (29.10.2025).



fig. 2

Hans Grendahl, *Blomstrende kaktus* (flowering cactus), June 1937. Autochrome, 9 × 14 cm. Preus Museum: The National Photo Museum, Horten, Norway. Inventory Number: NMFF. HG.V.05 000257 (Photo by: Ana Gonçalves).

fig. 3

Hans Grendahl: *Møre, Stordal, Langseteren*, August 1938. Autochrome, 9 × 14 cm. Preus Museum: The National Photo Museum, Horten, Norway. Inventory Number: NMFF. HG.O.14 (Photo by: Ana Gonçalves).

sphere. The article argues that the color photographs showcased wealth and leisure, using European interior décor to reinforce Dutch cultural norms despite the hybrid Javanese architecture.

Janine Freeston's study reveals that J.C. Warburg's Autochromes, taken during the 1908 Franco-British Exhibition and featuring staged displays of indigenous people, not only promoted colonial geopolitical ambitions but also advanced his own status as a famed Pictorial Autochromist.

Rachel Lee Hutcheson's article traces how Fred Payne Clatworthy's Autochromes, reproduced in publications like *The National Geographic Magazine*, contributed to the settler-colonial project of the United States. His images of the Western National Parks framed the landscape as an extractable scenic view and an uninhabited wilderness, thereby reinforcing the national mythos of Manifest Destiny and incentivizing tourism.

Inga Lára Baldvinsdóttir's research explores Autochrome photography in Iceland pre-WWII as a niche practice whose protagonists included French diplomat André Courmont, watchmaker Sigurður Tómasson, and shopkeeper Evald Hemmert. Her approach underscores the process's introduction via foreign connections rather than local amateur development, positioning color photography in Iceland as a far more international activity than previously assumed.

Nadezda Stanulevich addresses the process's reception in the Russian Empire as of 1907, propelled by scientist-photographer Sergei Prokudin-Gorskii and an active camera club scene, active translators ensuring access to knowledge in Russian language, and a critical photographic press.

Kitti Baráthová, Janka Blaško Križanová, and Katarína Beňová examine how Autochrome photography in Bratislava was driven by its peripheral position, with the medium arriving via regional hubs like Vienna and Budapest and flourishing through local groups like the Pozsonyer Photo-Club. This history necessitates urgent conservation attention, as many surviving Autochromes in Slovak collections face misclassification and improper storage.

Bronwyn Lace and Anna Seiderer's essay details their collaborative project that utilizes the Pepper's Ghost illusion to create a "living autochrome," transforming colonial-era archival images of Dahomey (Benin) into sites for performance and contemporary engagement. This "research of doing" aims to agitate the frozen archival material, bringing its inherent colonial violence and silences into dialogue with the artists' bodies and imaginations, thereby contesting traditional authoritative museological approaches.

Acknowledgment

I would like to extend my sincere gratitude to my dear colleague, photography historian Janine Freeston, for her invaluable input and support during the initial stages of writing this editorial. Janine Freeston's foundational contributions were instrumental to this text, and I am deeply thankful for her commitment.

Hanin Hannouch

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