

Early Canadian Botanical Photography at the Exposition universelle, Paris 1867

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Article abstract

Sites et végétaux du Canada was an early photographic experiment in botanical illustration. Presented at the 1867 Paris exposition, the album's 35 albumen prints were part of the Canadian displays. The photographs were a collaborative effort between Joseph-Charles Taché, Canada's Executive-Secretary at the exposition; Louis-Ovide Brunet, a Catholic priest and botany professor at the Université Laval; and Livernois & Cie, a Québec City photography studio. Previous work has considered the album as the aesthetic accomplishment of Jules-Isaïe Benoît dit Livernois, excluding Taché and Brunet from the art historical narrative. In this paper, I consider the album's political and botanical contexts, and viewership, to more clearly situate the album in the visual culture of early Canadian science. In its representation of Canadian landscapes and native-plant specimens, the album effectively employed photography to present Canada as a centre of cutting-edge scientific investigation.

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Résumé : « *Site et végétaux du Canada* » était une expérience pionnière en illustration botanique. Présenté dans la pavillon canadienne à l'exposition de Paris en 1867, l'album présentait 35 impressions d'albumine. Les photographies résultaient d'un effort collaboratif entre Joseph-Charles Taché, Secrétaire-exécutif du Canada à l'exposition, Louis-Ovide Brunet, prêtre catholique et professeur de botanique à l'Université Laval, et Livernois & Cie, un studio de photographie de la ville de Québec. Les recherches passées considéraient l'album comme un accomplissement esthétique de Jules-Isaïe Benoît dit Livernois, excluant la contribution de Taché et Brunet de leur narration. Je prends en compte les contextes botanique et politique, et celui de la publique pour mieux situer l'album dans la culture visuelle de la science canadienne naissante. En effet, dans sa représentation, l'album a efficacement employé la photographie pour présenter le Canada comme un centre d'investigation scientifique de pointe.

Keywords: Botany, Photography, Botanical Illustration, Joseph-Charles Taché, Louis-Ovide Brunet, Livernois et Cie., History of Botany, 1867 Exposition universelle

NESTLED WITHIN THE PHOTOGRAPHY EXHIBITS presented by the Province of Canada² at the 1867 Exposition universelle d'art et d'industrie in Paris, France, an album of botanical photographs offered a unique perspective on the landscapes and plant species in the vicinity of Québec City to the international audience that attended the event. As part of the larger Canadian display (seen in **Figure 1**), Ovide Brunet's *Sites et végétaux du Canada* was viewed within a space that also contained lumber, geological specimens, fine art, bookbinding, and approximately two hundred other photographs. While the Canadian contributions to the Paris exposition were included physically within the

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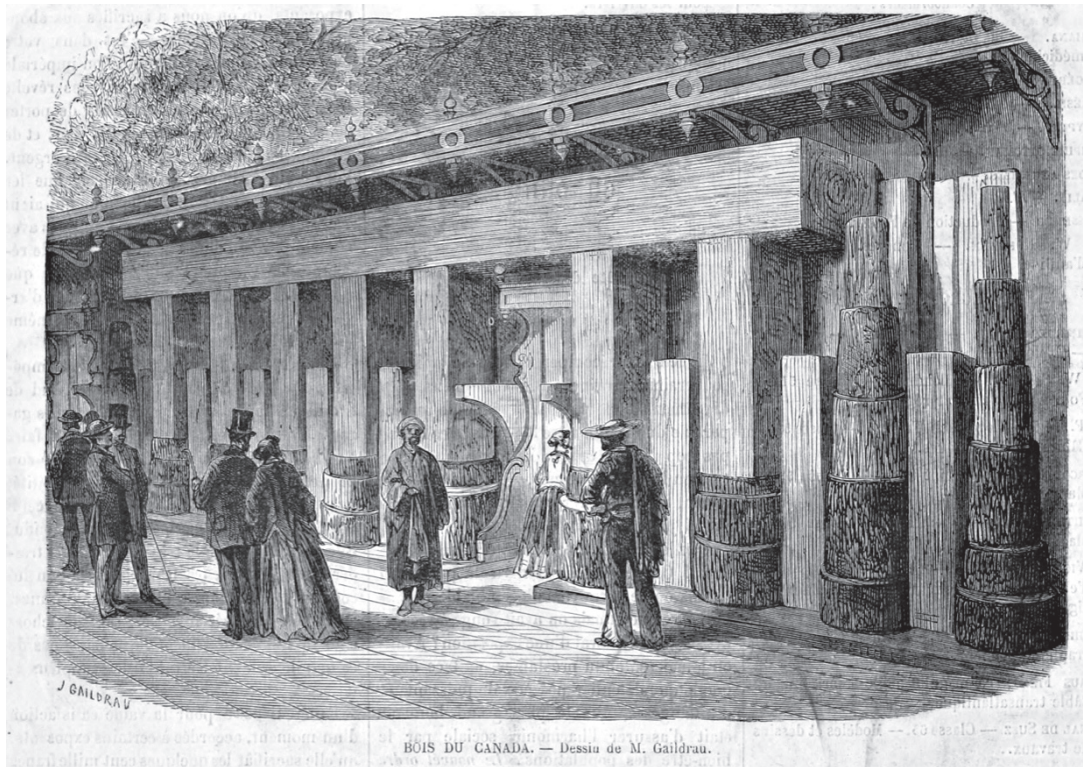


Figure 1. M. Gaildrau, *Bois du Canada*. *L'Exposition Universelle de 1867 Illustrée* 1, no.18 (Paris, Bureaux: d'abonnements, 1 July 1867): 288. From: Hathi Trust Digital Library, <https://babel.hathitrust.org/cgi/pt?id=gri.ark:/13960/t55f26f3p;view=1up;seq=294> (accessed 6 April 2017).

exhibition space devoted to “Britain and its Colonies” and described in the catalogues and reviews about the British displays, these objects asserted a distinctly Canadian character and narrative through their emphasis on Canadian landscape imagery, natural resources, and industry, especially by highlighting the emerging country’s plant assets.

Published in 1866, on the cusp of Confederation when “Canada” consisted of Canada East and Canada West, *Sites et végétaux du Canada* (**Figure 2**) was the brainchild of Joseph-Charles Taché (1820-1894), the Executive-Secretary for Canada at the 1867 Exposition universelle in Paris.³ It was created through a collaboration between Louis-Ovide Brunet (1826-1876), a Catholic priest and Université Laval botany professor, and the Atelier photographique de Livernois & Cie., both of Québec City. Little has been known about this project apart from facts about its basic physical makeup and a brief analysis which connects it to the work of the Livernois photography studio. There are two copies of the album known to the author. The only complete version, which has received some attention from historian Michel Lessard,⁴ is preserved in the archives of the Musée de la civilisation in Québec City; an incomplete copy is held in the library at Université de Montréal.⁵ More a portfolio of loose pages than a bound book of photographs, the Québec album, composed of twenty-five sheets of heavy card onto which thirty-five albumen prints are pasted, provides

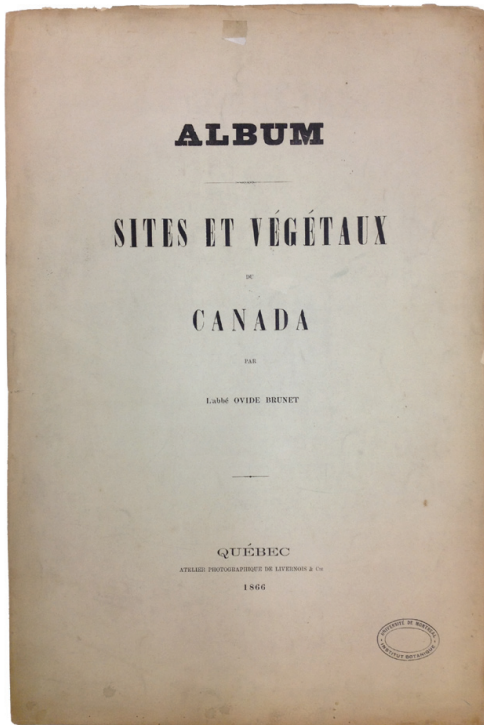


Figure 2. Title Page from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

a foundation for the current study. The second copy, which has been previously overlooked, contains eighteen plates and twenty-nine photographs.⁶ Along with providing a complete description of the physical makeup of both albums, I explore *Sites et végétaux du Canada* as a case study to understand more clearly the connections between it and the study of plants as part of nineteenth-century scholarly research. This analysis examines botanical photography and its use in the dissemination of information about Canada's flora in the Canadian display at the 1867 Exposition universelle

in Paris. Through the nascent technology of photography—used as a tool of botanical illustration—*Sites et végétaux du Canada* presented Canada as a centre of cutting-edge scientific experimentation.

Early Intersections of Botany and Photography

Botanical study became a global enterprise in the nineteenth century. Plant taxonomy, physiology, geographical range, and economic applications drove data collection and classification efforts in this emerging area of science. As Suzanne Zeller notes in *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation*, botany formed an important part of a growing interest in assessing the economic and technological potential of Canada East and Canada West; plants became important to Canada's image. Zeller also observes that botany was employed as a template for interpreting and forecasting British North American progress. Ideas connecting botanical theory to human cultural development, over space and through time, circulated throughout the nineteenth century in the hope of forming a scientific measure of progress and development.⁷ At this moment as well, new printing technologies—including colour lithography, photography, and the steam press—arrived in North America, enabling the inexpensive publication of visual information, making the combination of text and images increasingly present and accessible.⁸ Photography offered realism, accuracy, and exact reproducibility, qualities of great interest to those invested in sharing art and science. Thus, the study of botany and the practice of photography simultaneously exploded in popularity during the nineteenth century.

Many of photography's inventors and early proponents actively engaged in producing photographic images of botanical subjects. Such an immediate entwining was the result of common interests amongst practitioners of botany, photography, and illustration. As Larry J. Schaaf explains in *Out of the Shadows: Herschel, Talbot and the Invention of Photography*, key figures in the early history of photography experimented with botanical imagery. Thomas Wedgwood (1771-1805) and Humphry Davy (1778-1829) worked towards recording images on paper and leather using silver nitrate, but ultimately failed to fix these images. While they were mainly interested in the reproduction of paintings and profiles using his method,⁹ Schaaf points out that they also produced camera-less images of plants. Joseph Nicéphore Niépce (1765-1833) invented an early photographic process which produced printing plates on pewter through the long exposure of bitumen of Judea to sunlight. He intended the technology to be used as an illustrative medium and travelled from France to London to find a patron for his invention, which he called *héliographie*. While Schaaf concedes that it is not clear what Niépce's intentions were for his process, Franz Bauer (1758-1840), a noted and respected botanical illustrator at the Royal Botanic Gardens at Kew, known for his highly detailed scientific artwork, was a great advocate of Niépce's invention.¹⁰

Following the public announcement of the method developed by Louis Jacques Mandé Daguerre (1787-1851) for capturing a unique image on a silver-coated copper plate in 1839, Andreas Ritter von Ettingshausen (1796-1878), an Austrian academic, became interested in the application of the daguerreotype in science. Having learned the process from Daguerre himself, he took the information back to his home country, where he displayed his images for colleagues at the University of Vienna and the general public. In 1840, he photographed a cross-section of clematis stem using a microscope and artificial lighting.¹¹ The resulting daguerreotype depicted a magnified (if distorted) image of the cell structures of this plant specimen.¹²

Anna Atkins (1799-1871) created the very first photographically illustrated book, entitled *Photographs of British Algae: Cyanotype Impressions*, in 1843. It was composed entirely of botanical photograms (camera-less images). Using the cyanotype process invented by John Herschel (1792-1871), Atkins placed specimens of algae on sensitized paper, creating negative images directly from the specimens themselves. The result was a unique image in which the plant form appears as a white shape on a deep blue background.¹³

William Henry Fox Talbot (1800-1877) publicly displayed examples of his "photogenic drawings" of plants in exhibitions, published them in scientific journals, sent them to leading botanists, and included one as an illustration in his famous treatise on the use of photography, *The Pencil of Nature* (1844-1846). Talbot was vocal about the potential he saw in photography for botanical study. Graham Smith, in his article, "Talbot and Botany: The Bertoloni Album," highlights Talbot's enthusiasm as he shared his ideas about botanical photography with his scientific contacts, prominent figures in the

rapidly expanding field of botany. Around 1839, Talbot sent early photogenic drawings to Antonio Bertoloni (1775-1869), based in Bologna, and to William Jackson Hooker (1785-1865), at the Royal Botanic Gardens at Kew in London, with the suggestion that his process could be useful for sharing information, reproducing the form of plants, and solving the problem of transporting botanical specimens, since plants could be left behind, and lightweight, thin paper photographs could be carried home.

The reception of Talbot's botanical photography was mixed. In an exchange of letters, Bertoloni and Talbot actively discussed the identification of the plants depicted in his photogenic drawings, employing them as a taxonomic tool. However, the legibility of the photographic image was a frustration for botanists. Hooker, according to Smith, was less than impressed with the lack of detail in Talbot's images as a method of collecting information from nature, suggesting instead that his process could more effectively be used to reproduce botanical drawings.¹⁴ These photogenic drawings, as Talbot explained in the text that accompanies Plate VII, *Leaf of a Plant*, from *The Pencil of Nature*, were produced by placing the plant directly onto a sensitized sheet of paper, securing the specimen under a clear glass plate, and exposing it to light. By repeating the procedure, the tonal values could be reversed to create the final positive print.¹⁵ While this method had the advantage of reproducing plant specimens to size, Talbot's photogenic drawings were ultimately unsuccessful because they were not effective at capturing the kind of detail that botanists, like Hooker, expected of botanical illustration.

Scholars of botanical illustration have suggested that experiments in botanical photography slowed following these early experiments.¹⁶ However, despite initial pushback from botanists, including Hooker, photography remained an intriguing means of depicting plants. In "Given time: biology, nature and photographic vision," Steve Garlick notes the conceptual and scientific qualities that made photography an appealing medium for the depiction of flora in the nineteenth century. He suggests that photography's ability to fix a moment in time was seen as an asset in the examination of specimens, which were often ephemeral, and would degrade as a consequence of desiccation or pressing: photography allowed the viewer to assess short-lived qualities of a plant long after the original specimen was lost.¹⁷ This was in line with the goals of a notion that emerged during the nineteenth century, what Lorraine Daston and Peter Galison term, "mechanical objectivity," by which they refer to "new methods aimed at automatism: to produce images 'untouched by human hands,' neither the artist's nor the scientist's. Sometimes but not always, [in the nineteenth century] photography was the preferred medium for these 'objective images.'"¹⁸ Machines became emblematic of certain virtues, which were deemed important to scientific research, with restraint being an important feature of avoiding subjective interpretations. Kelley E. Wilder expresses this idea in her book, *Photography and Science*, stating that, to the nineteenth-century observer, photography "was mechanical, and so indefatigable. It was indiscriminate, and

therefore objective. It was optical, and consequently, reliable.”¹⁹

The inability of photography to capture fine detail and produce readable images continued to frustrate photographers as technologies improved. The wet-plate collodion process, introduced in 1851, was an improvement on previous paper- and metal-based media in terms of clarity and reproducibility. Glass plates provided a transparent and durable surface onto which a photo-sensitive emulsion could be applied. The resulting negatives were used to create an unlimited number of finely detailed prints on paper. Despite this, as Elizabeth Eastlake pointed out in her essay “Photography,” published in *The London Quarterly Review* in April 1857, there were limitations to the prevailing technology for imaging plants in general:

The colour green, both in grass and foliage, is now his [the photographer’s] great difficulty. The finest lawn turns out but a gloomy funeral-pall in his hands; his trees, if done with the slower paper process, are black, and from the movement, uncertain webs against the white sky,—if by collodion, they look as if worked in dark cambric, or stippled with innumerable black and white specks; in either case missing all the breadth and gradations of nature.²⁰

Eastlake’s criticism, when applied to botanical illustration, raises a number of concerns. In keeping with Hooker’s complaints about camera-less images, the contemporary photographic technologies at hand struggled to achieve images comparable to hand-rendered artworks capable of reproducing colour (especially green) and tonal range, both important to capturing the characteristics of plant specimens. Nevertheless, by the mid-1860s, photography had advanced as an imaging technology. Despite its lack of colour, the clarity and detail achievable with the wet-plate collodion process enabled better opportunities for illustrating plants. A little over two decades after the initial experiments of Talbot, Atkins, and von Ettingshausen, Taché approached Brunet to create *Sites et végétaux du Canada*.

The Album in the Literature

Previous inquiry into the creation and reception of *Sites et végétaux du Canada* is limited to two works by Michel Lessard: an article entitled, “Focus sur les villas et les fleurs: Deux primeurs signées Livernois” and a book, *Les Livernois, photographes*.²¹ In both, Lessard refers exclusively to the album at the Musée de la civilisation in Québec City and focuses on the authorship of the images, connecting the photographs to the larger work of the Livernois family and their successful photography business in Québec City. More specifically, Lessard attributes the images to Jules-Isaïe Benoît dit Livernois (1830-1865) but notes that the publication was completed in 1866 by Jules’ wife, Élise Livernois (née L’Hérault dit L’Heureux, 1827-1896), and son-in-law, Louis Bienvenu (?-1876), following Jules’ untimely death.²²

In his brief article in *Cap-aux-Diamants: la revue d’histoire du Québec*, Lessard provides a general impression of the variety of images, which make up the album. He reports:

L'Album: Sites et végétaux du Canada, de l'abbé Ovide Brunet, comporte 24 planches de 43cm par 35cm comprenant 34 épreuves de différents formats illustrant [sic] des massifs d'arbres, des phénomènes géomorphologiques comme les marches naturelles de la rivière Montmorency, des variétés de plantes dont quelques fougères, des jardins de villas, la tradition acéricole dans une mise en scène naïve réalisée en plein été dans un théâtre de clercs en soutane. Plusieurs vues sont prises sur le terrain; d'autres ont été l'objet de montages en studio.

[The Album: Sites et végétaux du Canada, by Abbé Ovide Brunet, contains 24 plates, measuring 43 cm by 35 cm, with 34 photographic prints of various sizes, illustrating stands of trees, geomorphological phenomena such as the natural steps of the Montmorency River, various species of plants including ferns, villa gardens, the tradition of maple syrup production in a natural setting staged in full summer by priests in cassocks. Several photographs are taken on location; others were constructed in the studio.]²³

Lessard's analysis of the photographs centres on their aesthetic value. He emphasizes the connection between Livernois' images of plants and those of "the early light painters," highlighting the work of Talbot and pointing to similarities in the simplicity of composition. He also notes the accomplishment of the Livernois photography studio in creating the first photographic herbarium in Canada.²⁴ However, this concise treatment of *Sites et végétaux du Canada* does not consider the botanical context within which this album was produced. As a result, Ovide Brunet is acknowledged only in passing, as the man who commissioned the photographs, and Taché is not mentioned. In the section that follows, I provide a detailed description of the two existing albums to enable a better understanding of their physical and conceptual makeup. I also connect the images with contemporary challenges and trends in photography.

The Québec City Album

The only known complete version of *Sites et végétaux du Canada* is housed at the Musée de la civilisation in Québec City. The archival collection to which it belongs (the *fonds* d'archives du Séminaire de Québec) also includes resources related to Ovide Brunet's personal and professional life. Since this album contains all of the images described in its index, and because Lessard has previously written about this version, it offers a baseline for comparison.

The basic components of the Québec City album can be broken down into four elements: 1) cover, 2) title page, 3) index, and 4) plates. The cover appears to be original and is made of red fabric-covered cardboard with red crosshatch-textured leather on the corners and spine. The album is not currently bound, and there is no indication of glue or sewing on the edges of the title page, index, and plates. The title, which appears in gilt lettering along the spine and on a leather title insert on the front of the cover does not include accents and reads, "SITES ET VEGETAUX DU CANADA PAR L'ABBE O. BRUNET." Green endpapers line the inside of the cover, which was originally fastened around the contents of the album using four ribbon ties, one set on the top and bottom, and two along the right side (opposite the spine); only three of the four ties are extant.²⁵ The presence of this type of fastening suggests that

Figure 3. Index from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

the title page, index, and plates were likely never bound to the cover. In this sense, the “album” is, more correctly, a portfolio. However, as the title page refers to the work as an album (see **Figure 2**), I shall continue to use the term in this article.

The title page and index are printed in black letterpress, on the same sheet of paper, which is folded in half, along its width, with the text appearing on the recto of each resulting page. The title page identifies the project as “ALBUM SITES ET VÉGÉTAUX DU CANADA PAR L’abbé OVIDE BRUNET.” The Atelier photographique de Livernois & Cie. is credited within the publisher’s information, listed along with the place and date of publication, “Québec 1866.” The index (**Figure 3**) presents a numbered list of twenty-four plates, along with the corresponding titles for each of the thirty-five photographs that comprise this version of the album.

While the index lists twenty-four plates (which here refer to the pages as a whole, with photographs, page numbers, and captions), this album actually contains twenty-five because the two photographs listed as the images on plate 8 (entitled *Rivière Sainte-Anne* and *Les Sept-chûtes*, respectively) actually appear on two separate plates, both labeled “8.” The plates are numbered on the top right corner when viewed in portrait orientation. They are made of thick card and measure 14 inches by 21 inches (approximately 35 cm by 53 cm), with the exception of the two plates labelled “8,” which are smaller, 13 inches by 16 inches (approximately 33 cm by 40.5 cm). The size, orientation, and proportions of the photographs differ from plate to plate. The number of photographs pasted onto each plate varies as well: plates 1-16 and 24 each contain one photograph; plates 17-21 have two photographs; plate 22 includes three; and plate 23 has four. Image captions are printed in letterpress under each image. They include place or plant names in French. The plants are identified using French-Canadian common names and many are also labeled with Latin binomial nomenclature. The photograph captions printed on the plates correspond to the ones in the index.

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2	Sucrerie canadienne.
3	Massif d'Ormes.
4	Savane du Canada.
5	Landes sablonneuses.
6	Forêt de Pins gris.
7	Les Marches-naturelles, sur la rivière Montmorency.
8	Rivière Sainte-Anne. Les Sept-chûtes.
9	Sous-les-bois. (Cap-rouge.)
10	Sillery.
11	Coney-le-castel, sur la rivière Saint-Charles.
12	Villa, sur le chemin de Sainte-Foye.
13	Sarracenia purpurea.
14	Fougère bulbeuse. (<i>Cystopteris bulbifera</i> .)
15	Fougère odorante. (<i>Aspidium fragrans</i> .)
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17	Vigne sauvage. (<i>Vitis riparia</i> .) Branche de Vigne sauvage.
18	Orme. (<i>Ulmus Americana</i> .) Pin rouge. (<i>Pinus resinosa</i> .)
19	Branche de Pin rouge. Branche de Pin gris.
20	Branche d'Épinette noire. (<i>Picea nigra</i> .) Branche de Cèdre. (<i>Thuja occidentalis</i> .)
21	Massif de Pin blanc. (<i>Pinus Strobus</i> .) Épinette blanche, etc.
22	Mélèze du Canada. (<i>Larix Americana</i> .) Sapin. (<i>Abies balsamea</i> .) Épinette noire. (<i>Picea nigra</i> .)
23	Épinette blanche. (<i>Picea alba</i> .) Bouleau. (<i>Betula papyracea</i> .) Massif d'Épinettes blanches. Pin gris. (<i>Pinus rupestris</i> .)
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The Montréal Album

A second version of *Sites et végétaux du Canada* is currently housed in the Bibliothèque des livres rares et collections spéciales at Université de Montréal, as part of the “Collection botanique.” It is likely that the album came to be part of this collection through the institution’s historical and academic connections with Université Laval. The fact that Université de Montréal was originally a satellite campus of Laval would account for the album’s presence in the botanical collections of the university.²⁶

Like the Québec City version, this album consists of a cover, title page, index, and plates. However, the current cover is not original, and six of the plates listed in the index are missing. It consists of plates 1-2, 4-6, 8, and 13-24, which follow the order and organization presented in the index. The plates are approximately the same size in both albums.²⁷ In contrast to the album in Québec City, the Montréal version contains a single plate, labeled “8,” with smaller prints of both photographs listed in the index.

The existence of a second album and letterpress title page, index, captions, and page numbers in both, suggests a high monetary investment in the project. This, in turn, implies that more than one album might have been printed to maximize the overall cost of printing. It is unclear, at this point, whether any other copies of *Sites et végétaux du Canada* were made or have survived.

The Origins of the Album

The idea of a photographic album featuring Canadian botany appears to have been the brainchild of Joseph-Charles Taché, the Executive-Secretary for Canada at the 1867 Exposition universelle in Paris. It is important to reiterate that, when planning began, Confederation was on the horizon and “Canada” still consisted of Canada East and Canada West. The title page bears the date 1866 and the origins of this project are recorded in Ovide Brunet’s journal. On 23 August 1866, Brunet received a letter from Taché asking him to have photographs of plants, shrubs, and trees (in isolation and in groups) made for the Canadian display in Paris. From the beginning, Brunet advocated the inclusion of landscape images in the project, writing, “Je me propose de faire exécuter les choses suivantes: 1. une savane, 2. une forêt, 3. une érablière, 4. une pinière, 5. massif d’ormes, 6. aster et solidago, et autant d’arbres isolés que possible. [I propose to have the following photographs made: 1. a bog, 2. a forest, 3. a sugar maple bush, 4. a pine forest, 5. stand of elms, 6. aster and solidago (goldenrod), and as many individual tree specimens as possible].”²⁸

These additions to Taché’s initial request reflect Brunet’s academic interest in the geography of Canadian botany. In her analysis of Canadian scientific practices of the mid-nineteenth century, Suzanne Zellar notes a burgeoning international interest in biogeography, following work by Alexander von Humboldt (1769-1859), Augustin Pyramus de Candolle (1778-1841), and William Jackson Hooker on the physical distribution of plants across geographic space.²⁹ Brunet’s own interest in geography, as it applied to the study of Canadian flora,

is clear in many of his writings. For example, his first academic publication, entitled *Voyage d'André Michaux en Canada depuis le Lac Champlain jusqu'à la Baie d'Hudson* (published in 1861), traced the location of plants described by French botanist André Michaux (1746-1802) in *Flora Boreali-Americana* (1803). Drawing from Michaux's notes, herbarium specimens housed at various institutions in Paris, and a manuscript at the library of the American Philosophical Society in Philadelphia, Brunet outlined the geographic ranges of common and rare plants throughout the British North American possessions and around Hudson Bay.³⁰ This theme is clear in the addition of various botanically relevant sites to the project. However, if elements of both Taché's and Brunet's vision for the project can be seen in the photographs that ultimately ended up in *Sites et végétaux du Canada*, it is clear that the Livernois studio also had a major impact. Below, I describe the photographs, highlighting how they interact within the album and relate to the broader work of its creators.

The Photographs

Sites et végétaux du Canada can be divided into two parts, thematically. The first half, plates 1-12, showcases images of landscape. An outstanding feature of these photographs is the presence of trees, which function to frame scenes, provide variety, or serve as focal points themselves. Each of these photographs is composed in order to include whole tree specimens. The second half, plates 13-24, presents images of plant specimens both *in situ* (outdoors) and *ex situ* (in the studio environment). They depict a number of different ways of illustrating plants in their entirety or in parts. Within this thematic split, further analysis suggests that the thirty-five images in the album can be divided into five distinct groups based upon the treatment of their subject matter. The photographs from the Montréal album, reproduced for the first time here, illustrate the various ways plants are represented in *Sites et végétaux du Canada*. I have selected images that have not appeared in previous publications.

The first group is composed of four photographs that highlight natural habitats in the vicinity of Québec City, with emphasis on the geographies of the sites depicted. These include a coniferous wood (*Bois résineux*), a bog (*Savane du Canada*), a sandy ridge (*Landes sablonneuses*; see **Figure 4**), and a jack pine forest (*Forêt de Pins gris*). Each of the photographs in this group focuses on an expansive landscape, punctuated by plants and large, mature trees. These images are the direct result of Brunet's enthusiasm for a geographical approach to botany.

The second group contains nine images of human interactions within the Canadian landscape. There is a focus on leisure and grand estates in these photographs, which include a tableau of maple-sugar making (*Sucrerie canadienne*; **Figure 5**) and a rural farming scene (*Massif d'Ormes*). This section also includes an image of two men standing on the naturally occurring limestone steps of the Montmorency River (*Les Marches-naturelles, sur la rivière Montmorenci*); two photographs of river and waterfall scenes (*Rivière Sainte-*



Figure 4. *Landes sablonneuses.* Albumen print, approximately 200 x 320 mm, cardboard mount 350 x 530 mm. Plate 5 of Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.



Figure 5. *Sucrerie canadienne.* Albumen print, approximately 200 x 320 mm, on a cardboard mount approximately 350 x 530 mm. Plate 2 from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

Anne and *Les Sept-chûtes*); and, finally, four photographs of country estates, set within the forest (*Sous-les-bois (Cap-rouge)*, *Sillery*, *Coucy-le-castel, sur la rivière Saint-Charles*, and *Villa, sur le chemin de Sainte-Foye*). Brunet noted the creation of *Sucrerie canadienne* in a journal entry from August 1866.³¹ However, Jules Livernois died in 1865 and it is not clear from the journal who created many of the photographs that Brunet envisioned for the album. We do know that the four images of the country estates were used to illustrate an essay, entitled “Our Country Seats,” published in 1865 in the third series of *Maple Leaves*, by James MacPherson Le Moine (1825-1912). These are attributed to Jules Livernois.³² Overall, the photographs in this group emphasize the beauty and utility of the countryside close to Québec City, for leisure, work, and habitation, accentuating the established forests of the landscape.

The third group presents five plant specimens, either whole or in part. These photographs—of *Sarracenia purpurea* (**Figure 6**), *Fougère bulbeuse (Cystopteris bulbifera)*, *Fougère odorante (Aspidium fragrans)*, *Osmunda interrupta*, and *Branche de Cèdre (Thuja occidentalis)* – each depict plant material placed against a white background, in the style of herbarium vouchers, which preserved pressed plant specimens, mounted on card and with accompanying botanical information. They reflect a more traditional treatment of plant images, referencing established conventions of Western botanical illustration and botanical photography. Lessard connects the aesthetic of these specimen photographs in *Sites et végétaux du Canada* to the work of “early light painters,” such as Talbot and Atkins. The comparison is understandable. The image from the album reproduced in Lessard’s *Les Livernois, photographes*, which launched the current investigation, at first glance appears to be a camera-less image. However, upon closer inspection, a tell-tale shadow behind the specimen reveals that this and similar photographs in *Sites et végétaux du Canada* were not made by placing the plants directly onto light-sensitive photographic paper, but rather were taken with a camera. The resulting image is not a record of the plant’s shadow, but of the light reflected off its surface, thus allowing the photographer to capture botanical information, including form, surface morphology, venation, and texture.

This difference in process would have been significant for Brunet, since he was an adept artist who created illustrations for some of his own publications. During an educational tour of Europe in 1861-1862, which was a requirement of his promotion to Chair of Natural History at Université Laval, Brunet became familiar with the work of prominent figures in the history of Western botanical illustration, including Pierre-Joseph Redouté (1759-1840).³³ The botanical images produced by Redouté and his circle were precise, set against a blank background, full colour, and visually striking. While photography was limited to a monochromatic palette, the images on plates 13-16 and 20 of *Sites et végétaux du Canada* reflect those characteristics of Redouté’s work that could be achieved within the medium. The manner in which these photographs are composed, with the leaves and stems intact but with no roots at the base,



SARRACENIA PURPUREA.

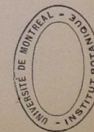


Figure 6. *Sarracenia purpurea*. Albumen print, approximately 250 x 300 mm, cardboard mount 350 x 530 mm. Plate 13 from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

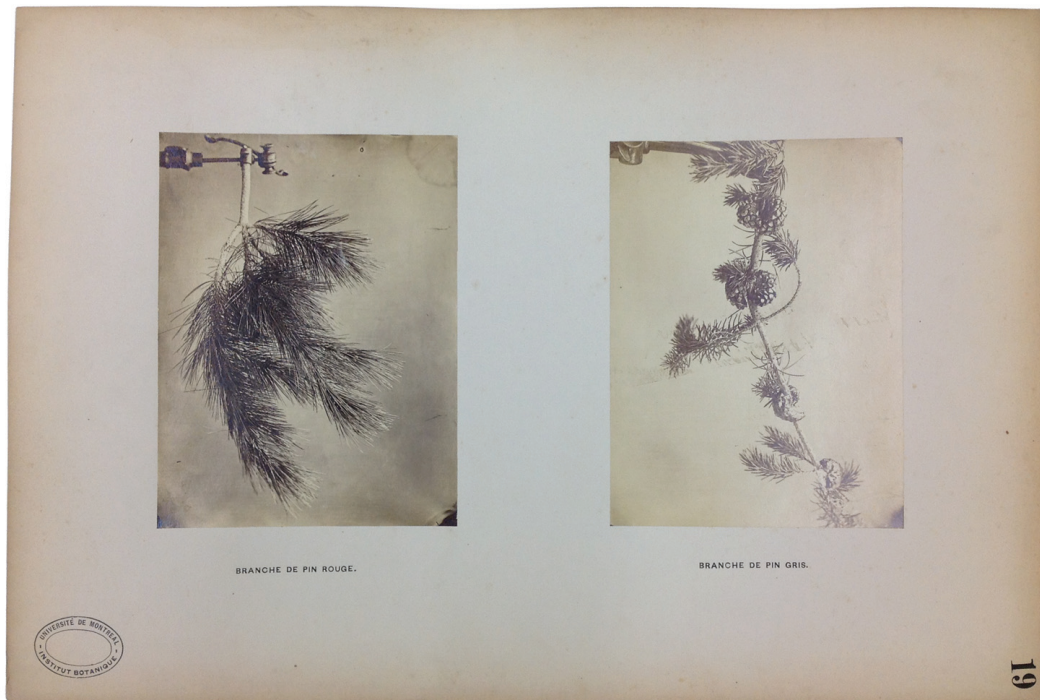


Figure 7. *Branche de Pin rouge* and *Branche de Pin gris*. Albumen prints, each approximately 150 x 200 mm, on a cardboard mount 350 x 530 mm. Plate 19 from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

closely emulates the way in which Redouté chose to depict herbaceous plant specimens.

A fourth group of six photographs is comprised of “studio portraits” of plant specimens presented on metal armatures (possibly retort stands commonly used in the laboratory) against an unadorned backdrop. Those include *Branche de Vigne sauvage*, *Branche de Pin rouge* and *Branche de Pin gris* (Figure 7), and *Branche d'Épinette noire* (*Picea nigra*). Others are shown on simulated architectural props: *Vigne sauvage* (*Vitis riparia*) is attached to a wall painted to look like an exterior façade, and *Clématite* [*Clematis Virginiana*] (Figure 8) has been wrapped around a balustrade that sits in front of a painted backdrop. All of the photographs in this group showcase the three-dimensionality of the plants, while also demonstrating how they drape over objects (especially the vines) or simulating how they might appear on a tree (as in the individual branches on retort stands). Combining some of the conventions of botanical illustration employed by artists such as Redouté, these photographs also reflect an experimental approach to the depiction of these specimens.

The fifth group includes eleven images of trees, taken outside and set against the sky. Distinct from the first and fourth groups, which also depict trees and tree limbs, photographs in this group focus on one or more whole specimens in natural surroundings. *Orme* (*Ulmus Americana*) and *Pin rouge* (*Pinus resinosa*),



Figure 8. *Clématite* [*Clematis Virginiana*]. Albumen print, approximately 140 x 200 mm, on a cardboard mount 350 x 530 mm. Plate 24 from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

Massif de Pin blanc (*Pinus Strobus*) and *Épinette blanche*, etc., *Mélèze du Canada* (*Larix Americana*), *Sapin* (*Abies balsamea*) and *Épinette noire* (*Picea nigra*) (**Figure 9**), and *Épinette blanche* (*Picea alba*), *Bouleau* (*Betula papyracea*), *Massif d'Épinette blanches* and *Pin gris* (*Pinus rupestris*) all clearly communicate the growth form of the trees depicted. Each is taken from a low angle to maximize the contrast between tree and sky.

The photographs in this group employ one of the weaknesses of early photography to botanical advantage to delineate overall physical form. Nineteenth-century critics of photography complained that when the sky was properly rendered in a photograph, the landscape was left dark and underexposed; correct exposure of the landscape left the sky completely white due to the insensitivity of early photographic emulsions to the colour blue.³⁴ The sky in this last group of images in *Sites et végétaux du Canada* is overexposed and blank; however, this feature helped to isolate trees from their environment, enough to obtain clear images of their shapes, much like the blank backgrounds employed in more traditional depictions of trees in botanical illustration.

Ultimately, along with the skill of the Atelier photographique de Livernois & Cie. photographers, Taché's vision for the project and Brunet's botanical eye can be seen in the photographs. Their respective contributions are clear in the thematic organization of the images, with the inclusion of Canadian landscapes

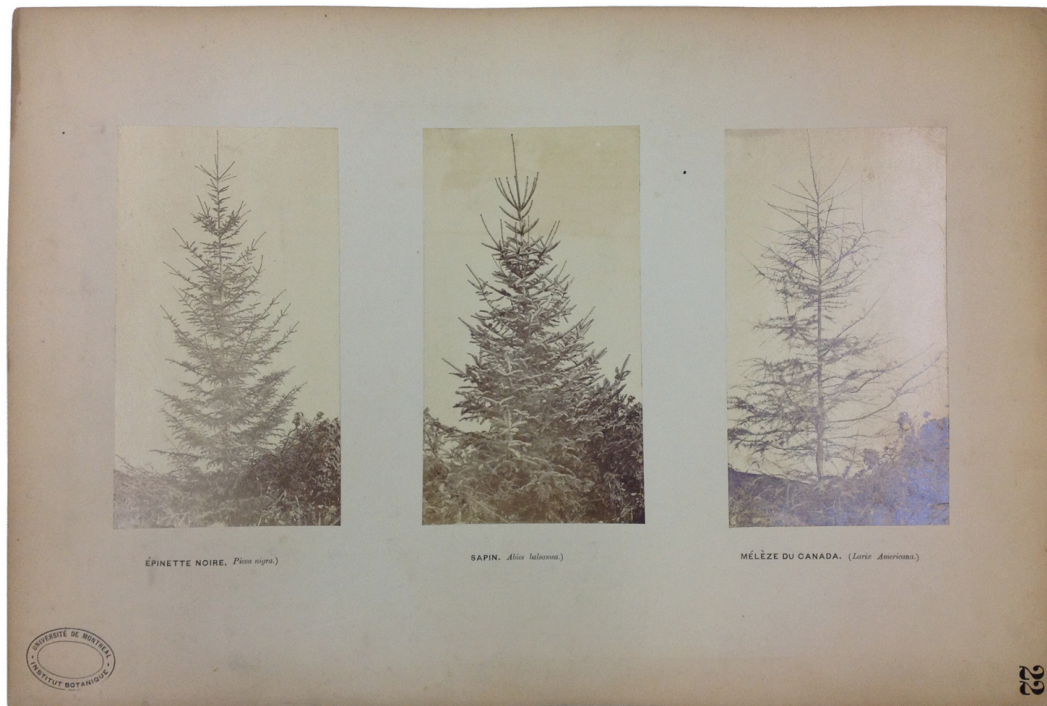


Figure 9. *Mélèze du Canada* (*Larix Americana*) (right), *Sapin* (*Abies balsamea*) (centre) and *Épinette noire* (*Picea nigra*) (left). Albumen prints, each approximately 150 x 200 mm, on a cardboard mount 350 x 530 mm. Plate 22 from Ovide Brunet, *Sites et végétaux du Canada*, Québec: Atelier Photographique de Livernois & Cie, 1866. Approximately 350 x 530 mm. Image reproduced courtesy of Université de Montréal. Bibliothèque des livres rares et collections spéciales. Collection Botanique, QK 201 B785 1866 / CSz.

and plants, and in the ways in which the botanical specimens are depicted with reference to established conventions of botanical illustration. This analysis of content and composition complicates a strictly aesthetic view of the album. At the same time, more research is required better to understand the role of the Atelier photographique de Livernois & Cie. in the album's creation, beyond its role as a publisher and, potentially, a supplier of images from a catalogue of previous work. Having laid out the album's visual program, I now turn to an analysis of the photographs within the larger Canadian display to which it belonged.

Sites et végétaux du Canada at the Exposition universelle, 1867

To understand how *Sites et végétaux du Canada* was viewed by those who attended the Exposition universelle in Paris, it is necessary to situate the album, physically and intellectually, within the Canadian displays. From 1 April to 4 November 1867, it was viewed within the vast oval exhibition hall erected on the Champ-de-Mars in Paris, France. Within this building, designed by Frédéric LePlay (1806-1882), each of the participating nations was provided with a triangular space, which was further subdivided into "groups" based upon the type of objects presented. Photography, contained in "Apparatus and Application of the Liberal Arts," was located between "Works of Art," and

displays which contained “The Common Arts” and “Industrial Products.”³⁵

Sites et végétaux du Canada was exhibited within a specific area designated for Canadian photography. In her essay, “Canada in Paris: Krieghoff and the Universal Exhibition 1867,” Arlene Gehmacher observes that photography was “a substantial display for Canada, comprising over two hundred works by eight of its most respected photographers of the day, including William Notman, Alexander Henderson, Livernois & Cie., Ellison & Co., Samuel McLaughlin, and J. Smeaton.”³⁶ The reception afforded these photographs was positive. In a review published in *The Photographic Journal*, the *Illustrated London News*, and the official British *Reports on the Paris Universal Exhibition, 1867. Vol. I.*, Charles Thurston Thompson (1816-1868) described the quality of the photographic displays of various nations, specifically reporting that the contributions of Canada were “quite” equal to those of well-established centres of photography such as England and France.³⁷ As a noted photographer employed at the Department of Science and Art at the South Kensington Museum, Thompson’s remarks on Canadian photography were significant endorsements.³⁸ Having viewed the displays himself, he described many of the images in the exhibition, providing insight into their contents. Of the photographs exhibited by Canada, he wrote:

Canada.—Henderson, A., Montreal, has a very large collection of Canadian views, especially from the neighbourhood of Quebec and on the Ottawa River. These photographs must convey a good idea of the splendour and picturesque character of Canadian landscape. Some of them have been produced instantaneously. Notman, W., Montreal, exhibits large and small portraits of great merit. He also contributes some skating scenes on the St. Lawrence, seal-stalking amongst the ice, and the caribou-stalking in the middle of the wild and romantic country between St. Urbain and Lake St. John. Mr Notman’s photographs leave little to be desired. Mr. McLaughlin, photographer to the Board of Works, Canada, exhibits views of Quebec and Montreal—scenes of the timber trade on the Ottawa, timber-yards of Quebec, falls of Montmorency, and delicious wood scenery taken both in summer and in the spring, when the ice, melting under the rays of the sun, gives a peculiar and striking feature to the picture—also public buildings at Ottawa—all excellent photographs. *Livernois, of Quebec, contributes photographs from historical paintings, engravings, plans, and portraits, illustrative of the history of Canada; also a collection of forest trees and plants, and detailed parts for study. He also exhibits some good landscapes* [emphasis added]. Smeaton, J., of Quebec, exhibits interesting views of the miners at work, at rest, and travelling in the gold-fields of the river Chaudière, near Quebec they give a graphic portraiture of a miner’s life and of the splendid wild scenes of the native forests in Canada. Ellison and Co., Quebec—Views of Quebec and its environs, autumnal scenes of Canada, &c.³⁹

His description of Canada’s contributions, which reached different audiences in three noteworthy publications, provides a jumping off point for further analysis. Thompson viewed the album’s imagery as didactic (“for study”) and connected these photographs to a larger international interest in Canadian flora. This raises the question whether the pages of *Sites et végétaux du Canada* were not bound in order to display more than one plate at a time, thereby encouraging comparative study of the specimens depicted.

World's fairs were important venues for Canadian science. Objects such as *Sites et végétaux du Canada* reflected national interest in advertising the scientific wealth of Canada to the world. In *Histoire des Sciences au Québec: de la Nouvelle-France à nos jours*, Luc Chartrand, Raymond Duchesne, and Yves Gingras claim that these international events helped to demonstrate, especially for the government, that the work of the Canadian science establishment had broad applications. Discussing the inclusion of geological objects in Canada's displays at the 1851 Great Exhibition of the Works of Industry of All Nations, they note that the critical and popular success of such items was a key legitimizing factor for Canadian science within Canada itself and argue that the involvement of institutions, such as the Geological Survey of Canada, provided economic opportunity. Through the celebration of Canada's natural wealth, with the hope of securing further investments and markets, government displays were a public-relations boon, since the country could be viewed as "enlightened and progressive" because of its interest in the sciences.⁴⁰ As a result, scientific participation of this kind continued into the 1867 exposition. In this light, *Sites et végétaux du Canada* can profitably be viewed as a product of Canadian science.

Indeed, the mineral wealth displayed internationally by the Geological Survey of Canada was not the only natural resource showcased and endorsed by the government. Plants, especially trees, were an important feature of Canadian international exhibits. Canada was known for a series of "timber trophies," which highlighted lumber from local tree species, at the world's fairs of 1851, 1855, and 1862.⁴¹ Lumber also figured prominently in the Canadian exhibits in Paris in 1867. An impressive display of massive wooden columns, a collection of aesthetically pleasing native woods, and a catalogue of woody plants comprised the largest part of the Canadian court. As seen in an illustration from *L'Exposition Universelle de 1867 Illustrée* (see **Figure 1**), trees and wood products were afforded great prominence.

Brunet's involvement in the exposition was extensive. In the *Reports of the United States Commissioners to the Paris Universal Exposition, 1867*, an anonymous author wrote:

The Canadian exhibit attracted much attention by the size of the hewed timbers of fir and pine, and the beauty of the specimen slabs of the walnut, maple, oak, ash and other forest trees. This collection was prepared under the direction of the Abbé Brunet, and was accompanied by a complete descriptive catalogue, forming a pamphlet of 64 pages. A gold medal was awarded by the jury.⁴²

As indicated in the French government's catalogue of the exposition, Brunet contributed a "Collection de bois avec herbiers et épreuves photographiques d'arbres et de massifs d'arbres [collection of wood with herbaria and photographic prints of trees and stands of trees]."⁴³ With Brunet's botanical influence evident throughout, a discussion of the relationship between *Sites et végétaux du Canada* and the displays as a cohesive unit is warranted.

Gehmacher confronts a similar contextual challenge in her study of a large, nine-paneled and ornately framed installation of paintings, also displayed

at the Exposition universelle in 1867, entitled *Timber Depot, Quebec*, by Cornelius Krieghoff (1815-1872) and William Scott (1831-1904). Relating the subject matter of these paintings, which depict events in the lives of lumbermen, to the overall program of the industrial section of the Canadian exhibits, she argues that they connect with an overall focus on the lumber industry. Gehmacher notes that the huge artwork, despite being a group of framed oil paintings, was placed amidst the photographs and in close proximity to Brunet's grand displays of Canadian wood. She wonders if this positioning resulted from the perceived documentary qualities of Krieghoff's work.⁴⁴ A consideration of Canada's photography displays suggests that this may have been a thematic choice. Such an analysis informs our understanding of both *Timber Depot, Quebec* and *Sites et végétaux du Canada*.

The juxtaposition of photographs and paintings of trees, plants, and landscapes, and Brunet's collection of the genuine articles, developed an overall visual narrative that promoted botanical Canadiana. I use the term "botanical Canadiana" here to refer to objects, which were used to associate the history and character of Canada with forestry, forests, plants, and botany. In this way, Canadian flora became intimately linked with the image Canada wished to present to the world. The display offered a narrative of scientific and economic ambition, demonstrating the historical and cultural connections to botany in Canada through artworks, such as *Timber Depot, Quebec* by Krieghoff and Scott, photographic projects, including *Sites et végétaux du Canada*, and the timber display put together by Brunet.

Prompted by Gehmacher's question why *Timber Depot, Quebec* was not exhibited amongst the oil paintings of the Canadian section, I suggest that the subject matter of Canada's photographic display also reveals a larger thematic organization. Each of the photographers mentioned in Thompson's review exhibited scenes of the Canadian landscape, highlighting toil within the forests—lumberjacks (as in McLaughlin's work), miners (Smeaton), and hunters (Notman)—or outdoor recreational activities, especially in the photographs of Henderson, Notman, Livernois, and Ellison. The placement of these photographs together, alongside Brunet's impressive display of wood, created a visual representation of Canada, one that emphasized both the nation's resources and their exploitation. Each item within the larger display performed a rhetorical role in shaping this image of Canada. In this way, the painting installation by Krieghoff, with its ornate wooden frame of local wood by Scott, easily ties in, thematically and conceptually, with the wood specimens and photographic imagery around it. The images and objects that relate to this narrative of botanical Canadiana, are gathered together to tell a story of Canada's rich natural resources, through landscapes and plants, depicted in traditional media and through the nascent technology of photography. *Sites et végétaux du Canada* fits snugly within this narrative, between the aesthetic expression of *Timber Depot, Quebec* and the economic/scientific value represented by the wood samples.

Photography and the Visualization of “Canada”

The inclusion of *Sites et végétaux du Canada* in the Canadian displays speaks to the importance of photography in the visualization of “Canada” in the mid to late-nineteenth century. For Taché, Brunet, and the Atelier photographique de Livernois & Cie., the wet-plate collodion process allowed them to highlight local landscapes, botanical assets, and natural history and present them as typically “Canadian” on an international stage. Considered thus, *Sites et végétaux du Canada* may be viewed as a claim on Canadian scenery and flora by Taché and Brunet for its insertion into the larger history of art and science in Canada. As Joan M. Schwartz has argued in her work on photography as a tool of the “geographical imagination,” photography had a profound effect “on strategies of seeing, engaging, and understanding the world—on the process by which people have come to know the world and situate themselves in it; by which they have pictured landscape, invested it with meaning, and articulated their relationship to it.”⁴⁵ In “Science and Sentiment: The Work of Photography in Nineteenth-Century North America,” she further asserts that, in the struggle to define Canadian borders and the geographical concept of “Canada” itself, photographs “were created and conscripted to preserve natural wonders and exploit natural resources, survey boundaries and settle diplomatic disputes, study ancient civilizations and subjugate native peoples, justify Manifest Destiny and celebrate empire.”⁴⁶ Framed within this body of work, *Sites et végétaux du Canada* can be seen as a visual statement constructed by Taché, Brunet, and the Atelier photographique de Livernois & Cie. about “Canada” at a critical juncture in time. It presents the sites and vegetation of their local environments as representative of the natural wealth and scientific potential of Canada writ large.

Sites et végétaux du Canada was not created in a vacuum. Placing it within various contexts and exploring its connections to nineteenth-century art, science, politics, and economy, broadens our understanding of this photographic project’s origins. This case study paves the way for a more detailed investigation of this complex, collaborative project and the relationship between photography and scientific research in Canada during the nineteenth century. Further work is required to tease out the intricacies of such an analysis. Exploring the relationship of the album’s photographs to other contemporary botanical practices, such as the creation and collection of plants for herbarium vouchers and catalogues, would provide a broader scientific context for this project. Drawing upon research of scholars such as Ann B. Shteir,⁴⁷ a comparison with nineteenth-century Canadian hand-rendered botanical images, including the pressed-plant arrangements of Catherine Parr Traill (1802-1899), prints by Agnes Fitzgibbon (1833-1913), and painted illustrations by women such as Millicent Mary Chaplin (1790-1858) and Fanny Bayfield (1813/14-1891), would shed light on the influence of gender and the professionalization of science on the production of botanical images in the nineteenth century.

Ultimately, *Sites et végétaux du Canada* is representative of wider trends in

nineteenth-century botany and photography. At the moment that this album was created, at the height of the wet-plate collodion era and on the verge of Confederation, photography served as a promising visual tool for sharing the botanical wealth of the landscapes explored by Taché, Brunet, and the Atelier photographique de Livernois & Cie. In considering the physical plants and their locations alongside their visual representation, we catch a glimpse into one facet of Canadian botanical illustration during the 1860s. Seen as part of the larger displays of Canada at the 1867 Exposition universelle in Paris, *Sites et végétaux du Canada* effectively employed photography to present Canada as a centre of cutting-edge scientific investigation.

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Endnotes

- 1 I am indebted to each of the generous and knowledgeable archivists, librarians, and researchers I have had the privilege of interacting with and learning from, both in person and online, during my research. This project would not have happened without you. I would like to specifically thank Joan M. Schwartz, my graduate supervisor in the Department of Art History and Art Conservation at Queen's University, and Colleen Skidmore (University of Alberta) for their guidance throughout this process. I am also very grateful for the kindness and encouragement received from David Pantalony as I put this article together. I would like to thank the anonymous reviewers who helped make this paper stronger. This research was funded by the Social Sciences and Humanities Research Council's Joseph-Armand Bombardier Canada Graduate Master's and Doctoral Scholarships.
- 2 Throughout this paper the terms "Canada" and "Canadian" are used as they would have been understood by the creators of *Sites et végétaux du Canada*, living in British North America in 1866 when this project was conceived and created. The "Canadian" displays at the 1867 Exposition universelle are representative of the pre-Confederation colonies of Canada East and Canada West (later known as Québec and Ontario), since the displays were planned and the Exposition universelle began prior to 1 July 1867. Nova Scotia had its own exhibits at the Exposition and was listed separately from "Canada."
- 3 Thank you to Jacques Cayouette, Research Scientist at Agriculture and Agri-Food Canada, for generously sharing his collection of resources related to Brunet and, in the process, helping to clarify Brunet's relationship to Taché.
- 4 Michel Lessard is the only person to have written about this album prior to the current study. He describes its contents and interprets some of its images in the article, "Focus sur les villas et les fleurs: deux primeurs signés Livernois" *Cap-aux-Diamants: la revue d'histoire du Québec* 3, no. 2 (1987): 7. He also includes a brief mention of the project in *The Livernois Photographers* (Québec: Musée du Québec-Québec Agenda, 1987), 85 and 150-151.
- 5 The Québec version is currently in the collections of the Musée de la civilisation in Québec City (MCQ: PH2000-9863 to PH2000-9897, formerly ASQ: album 171-G). The Montréal copy is held in the Library of the Université de Montréal and has been labeled "sites et végétaux du Canada : album." It is missing Plates 3, 7, 9, 10, 11, and 12 (UdeM: QK 201 B785 1866 / CSz).
- 6 It is unclear if Lessard was unaware of the Montréal album since he asserts that the Québec version is "[un] exemplaire unique" (a single or unique copy) in "Focus sur les villas et les fleurs: primeurs signés Livernois."

- 7 Suzanne Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Montréal: McGill-Queen's University Press, 2009), 257-259.
- 8 Jim Burant, "The Visual World in the Victorian Age," *Archivaria* 19 (Winter 1984-1985): 114.
- 9 Wedgwood's article, published in the *Journals of the Royal Institution* (Volume 1, 1802) was entitled "An Account of a method of copying Paintings upon Glass, and making Profiles, by the agency of Light upon Nitrate of Silver," invented by T. Wedgwood, ESQ. With Observations by H. Davy."
- 10 Larry J. Schaaf, *Out of the Shadows: Herschel, Talbot and the Invention of Photography* (New Haven, CT: Yale University Press, 1992) 25-26, 30-31.
- 11 This whole-plate daguerreotype of a "Section of Clematis" taken on 4 March 1840 sold at auction at Christie's London in 2004 for £139,650, well above the estimate of £90,000-120,000. Lot 7, Sale 6900, London, 19 May 2004. For more information, see: <http://www.christies.com/lotfinder/Lot/andreas-ritter-von-ettingshausen-1796-1878-section-4278477-details.aspx>.
- 12 Ann Thomas, "Chapter 4: The Search for Pattern," *Beauty of Another Order: Photography in Science* (New Haven, CT: Yale University Press, 1997), 97-98.
- 13 Larry J. Schaaf and Anna Atkins, *Sun Gardens: Victorian Photograms* (New York: Aperture, 1985). Carol Armstrong and Catherine Zegher, eds., *Ocean Flowers: Impressions from Nature* (Princeton: Princeton University Press, 2004).
- 14 Graham Smith, "Talbot and Botany: The Bertoloni Album" *History of Photography* 17, no. 1 (1993): 40.
- 15 Plate VII of Talbot's *Pencil of Nature* depicts a positive impression of a photogenic image of a fern, that was placed directly onto a sensitized paper, pressed down using a glass plate, exposed to light and then removed to reveal the image. The process is repeated with the resulting image negative to produce the positive image (in which the shape of the plant is dark and the background is light). William Henry Fox Talbot, *The Pencil of Nature* (London: Longman, Brown, Green and Longman's, 1844-1846), plate VII. For current scholarship on Talbot's images of plants, see also: Schaaf, *Out of the Shadows*, 47. Anthony Burnett-Brown, Michael Gray, and Russell Roberts, *Specimens and marvels: William Henry Fox Talbot and the invention of photography* (London: Aperture, 2000), 10. Graham Smith, "Talbot and Botany: The Bertoloni Album," *History of Photography* 17, no. 1 (Spring 1993): 40.
- 16 Anne Secord, "Talbot's First Lens: Botanical Vision as an Exact Science," in *William Henry Fox Talbot: Beyond Photography*, eds. Mirjam Brusius, Katrina Dean and Chitra Ramalingam (New Haven, CT: The Yale Center for British Art and The Paul Mellon Centre for Studies in British Art, 2013), 60.
- 17 Garlick, "Given time: biology, nature and photographic vision," *History of the Human Sciences* 22, no. 5 (2009): 98.
- 18 Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), quote on 42-43. For more on the broader history of photography as an aid to seeing, see Martin Kemp, *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat* (New Haven, CT: Yale University Press, 1990).
- 19 Kelley E. Wilder, *Photography and Science* (London: Reaktion, 2009), 18.
- 20 Lady Elizabeth Eastlake, "Photography," *The London Quarterly Review* 101, no. 202 (April 1857): 252.
- 21 Lessard published his book in both French and English. In this paper, I quote from the English version: *The Livernois Photographers* (Québec: Musée du Québec-Québec Agenda, 1987). See also: *Les Livernois, photographes*. Québec: Musée du Québec-Québec Agenda, 1987.
- 22 Lessard, *The Livernois Photographers*, 85.
- 23 Lessard, "Focus sur les villas et les fleurs," 7. Translation by Brendan Cull. Lessard's reporting on the number of plates and photographs is incorrect here. His information seems, in part, to be derived from the index, which lists a total of 35 photographs on 24 plates. The Québec album actually contains an extra plate, not listed in the Index. He corrects this error in *The Livernois Photographers*. The plates are also slightly larger than he describes.

- 24 Lessard, *The Livernois Photographers*, quote on page 150. Lessard, “Focus sur les villas et les fleurs,” 7.
- 25 Email correspondence with archivist Peter Gagné at the Musée de la civilisation in Québec City, 31 August 2015. Gagné reports that, “The cover is not leather. It’s apparently fabric-covered cardboard, with leather corners and a leather title insert with gilded lettering. It has 3 out of the 4 original ribbon ties: 1 each at the top and bottom and two on the right, where it opens.”
- 26 Email correspondence with Éric Bouchard, librarian at the Bibliothèque des livres rares et collections spéciales at the Université de Montréal, 1 April 2015. Bouchard explained that from 1876 to 1920 the Université de Montréal was a branch of the Université Laval. Additionally, the album forms part of the collection of l’Institut botanique of the Université de Montréal, formed in 1920.
- 27 Email correspondence with Éric Bouchard, librarian at the Bibliothèque des livres rares et collections spéciales at the Université de Montréal, 13 April 2015. Bouchard explained that, “Les planches mesurent 14” X 21”. Elles sont bien volantes, mais toutes contenues dans un album entoilé bleu (demi-cuir à coins de même couleur) portant au dos l’inscription suivante : « Brunet = SITES ET VEGETAUX DU CANADA – ALBUM ».”
- 28 Arthur Maheux, “Louis Ovide Brunet,” *Le Naturaliste Canadien* LXXXVIII, no. 12 (December 1961): 324, 329. For a biography of Taché, see: Jean-Guy Nadeau, “TACHÉ, JOSEPH-CHARLES,” *Dictionary of Canadian Biography Online*, accessed 16 February 2017, http://www.biographi.ca/en/bio/tache_joseph_charles_12E.html.
- 29 Zeller, *Inventing Canada*, 184, 188-189.
- 30 Ovide Brunet, *Voyage d’André Michaux en Canada depuis le Lac Champlain jusqu’à la Baie d’Hudson* (Québec: Bureau de l’Abeille): 1-27. Brunet’s article was later translated into English. See: Ovide Brunet, “Michaux and his Journey in Canada,” trans. Thomas Sterry Hunt, *The Canadian Naturalist and Geologist* 1, no. 5 (Montréal: Dawson Brothers, 1863): 325-337.
- 31 On 29 August 1866, Brunet notes that “J’allai à St-Augustin où je fis photographier la sucrerie de M. Brosseau [I travelled to St-Augustin where I had photographs of Mr. Brosseau’s sugar bush made.” Maheux, “Louis Ovide Brunet,” 329.
- 32 This observation is based upon the version of *Maple Leaves. Third Series. Canadian History and Quebec Scenery* (Quebec: Hunter Rose & Co., 1865), which resides in the W. D. Jordan Special Collections (Lorne Pierce Collection) at Queen’s University.
- 33 Ovide Brunet, “Journal de voyage en Europe de l’abbé Ovide Brunet en 1861-1862,” in *Le Canada français* second series, no. XXVI, ed. Arthur Maheux (1938-1939): 684.
- 34 Lady Elizabeth Eastlake, “Photography,” *The London Quarterly Review* 101, no. 202 (April 1857), both quotes on page 252.
- 35 Henry Cole, “Appendix E to Mr. Cole’s Report,” *Reports on the Paris Universal Exhibition, 1867. Vol. I. Containing the report by the Executive Commissioner, and appendices*. (London: George E. Eyre and William Spottiswoode, 1868): 51-55.
- 36 Arlene Gehmacher, “Canada in Paris: Krieghoff and the Universal Exhibition 1867,” *Journal of Canadian Art History* 24 (2003): 34.
- 37 C. Thurston Thompson, “Official Reports of the French Exhibition: Class 9. Photography. Section II,” *The Photographic Journal* 12, no. 186 (15 October 1867): 120.
- 38 Anthony J. Hamber, “Thompson, Charles Thurston (1816–1868),” *Oxford Dictionary of National Biography*, 2004, <http://www.oxforddnb.com.proxy.queensu.ca/view/article/27259>.
- 39 Thompson, “Official Reports of the French Exhibition,” 123 (emphasis added).
- 40 Chartrand, Duchesne, and Gingras write, “Ce succès à Londres contribue à persuader les membres du Parlement que la participation de la Commission géologique aux manifestations internationales constitue à la fois un moyen idéal d’attirer sur les richesses naturelles de pays l’attention des investisseurs étrangers et de faire savoir au monde entier ce qu’un gouvernement «éclairé et progressiste» fait en faveur des sciences.” Luc Chartrand, Raymond Duchesne and Yves Gingras, *Histoire des sciences au Québec: de la Nouvelle-France à nos jours*, nouvelle édition (Montréal: Les Éditions du Boréal, 2008), 138-139.

- 41 For current research into Canada's timber trophies at international exhibitions, see: Elsbeth A. Heaman, *The Inglorious Arts of Peace: Exhibitions in Canadian Society during the Nineteenth Century* (Toronto: University of Toronto Press, 1999), 141-181. For nineteenth-century responses to Canada's timber trophies, see: Henry Youle Hind, ed., *The Canadian Journal: A Repertory of Industry, Science, and Art, and a Record of the Proceedings of the Canadian Institute* 1 (1852): 38. Anonymous, *Canada at the Universal Exhibition of 1855. Printed by order of the Legislative Assembly*. (Toronto: John Lovell, 1856), 278-279. Anonymous, *The Record of the International Exhibition, 1862* (London: William Mackenzie, ca. 1862): 114.
- 42 Anonymous, *Reports of the United States Commissioners to the Paris Universal Exposition, 1867. Published under Direction of the Secretary of State by Authority of the Senate of the United States, Volume I*, edited by William P. Blake (Washington: Government Printing Office, 1870): 152.
- 43 "Classe 41. - Produits des Exploitations et des industries forestières," Exposition Universelle de 1867 à Paris. *Catalogue général publié par la Commission Impériale. 5^e Livraison. Produits (bruts et ouvrés) des industries extractives (groupe V.-classes 40 à 46.), Volume 5* (Paris: E. Dentu, 1867): 309. The same reference (in English, French, German, and Italian) can also be found in "Class XLI," *Catalogue of the British Section: containing a list of the exhibitors of the United Kingdom and its colonies, and the objects which they exhibit: in English, French, German, and Italian: with statistical introductions and an appendix in which many of the objects exhibited are more fully described*. (London: Printed for Her Britannic Majesty's Commissioners and sold by Spottiswoode and Co., New-Street Square, 1867): 250.
- 44 Gehmacher, "Canada in Paris," 35.
- 45 Joan M. Schwartz, "Photographic Archives and the Idea of Nation: Images, Imaginings, and Imagined Community," in Costanza Caraffa and Tiziana Serena (eds.), *Photographic Archives and the Idea of Nation* (Berlin-Munich-Boston: De Gruyter, 2015), 38.
- 46 Joan M. Schwartz, "Science and Sentiment: The Work of Photography in Nineteenth-Century North America," in Craig E. Colten and Geoffrey L. Buckley (eds.), *North American Odyssey: Historical Geographies for the Twenty-First Century* (Lanham, MD: Rowman & Littlefield, 2014), 228. See also: Joan M. Schwartz, "'Records of Simple Truth and Precision': Photography, Archives, and the Illusion of Control," in Francis X. Blouin and William G. Rosenberg (eds.), *Archives, Documentation, and Institutions of Social Memory: Essays from the Sawyer Seminar* (Ann Arbor, MI: University of Michigan Press, 2006), 61-83; reprinted from *Archivaria* 50 (Fall 2000): 1-40.
- 47 See: Ann B. Shteir, *Cultivating Women, Cultivating Science: Flora's Daughters and Botany in England 1760 to 1860* (Baltimore: The Johns Hopkins University Press, 1996).