

## The Beginnings of Photogravure in Nineteenth-Century France

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### Introduction

Alexandre Ken, writing about photography in 1864, took note of the formation of the Société des Aquafortistes, an organization which had as its aim the preservation and promotion of artistic etching and engraving. He spoke of the alarm felt by etchers and engravers over the increasing encroachment of photography into their realm of artistic production and reproduction, but he noted that “Ce n’est pas d’ailleurs la photographie proprement dite qui menace de ruine les artistes dévoués à l’eau-forte et au burin; c’est l’héliographie [gravure héliographique]... qui sera bientôt à leurs vieux procédés ce que le chemin de fer est à l’antique diligence.”<sup>i</sup>

Twenty-five years had passed since the first public announcement of photography. On an almost daily basis during that first quarter-century of photography, artists, chemists, and entrepreneurs tried, one after another, to improve upon whatever subtle refinement or radical rethinking of the medium had been announced the day before. Photography was then very much a hand-crafted medium—a cuisine, where each practitioner had his own recipes and found that a dash of this or a grain of that or a change in the temperature of one solution or another by so many degrees for so many minutes yielded superior results. Some photographers kept the details of their processes secret, and others took out patents or published their processes for profit, but many—particularly those engaged in photography as a gentlemanly pursuit rather than as a profession—freely shared their small discoveries with one another. Particularly in the 1850s, with the founding of photographic societies (principally the Société héliographique in 1851 and the Société française de photographie in 1854) and of journals devoted to the advancement of photography (*La Lumière*, *Cosmos*, and the *Bulletin* of the S.F.P.), one can trace in detail the evolution of photographic practice. The same was true with photogravure during those early years. To enumerate each of the photographers who tackled the problem and to detail their individual solutions would be too long a story;<sup>ii</sup> instead, the pages that follow sketch the picture in broader strokes, outlining a few of the major players and their varying approaches to photogravure and suggesting some of the technical and critical issues that shaped the search for a practical photogravure process.

### Nicéphore Niépce

At its origin, photography was intimately linked with printmaking. In 1829, ten years before Louis Daguerre would announce the invention of photography, he formed a partnership with Nicéphore Niépce, who, in turn, had been experimenting with light-sensitive materials since the 1810s. By the time they joined forces to perfect the nascent medium, Niépce had already obtained passable results. His earliest photographic experiments—using sensitized paper—proved fruitless because of his inability to “fix” the camera image; the paper continued to darken after being removed from the camera. His first real success in photography grew instead from a familiarity with the materials and processes of etching and lithography (the latter introduced in France only in the first decade of the century.) In a letter of June 2, 1816, to his brother Claude, Niépce wrote that he was experimenting with metal printing plates and stones rather than paper as a support, and he identified the two principal advantages of photogravure over silver-based photographs before either had actually been invented: “ce genre de gravure serait bien supérieur

à l'autre, toute réflexion faite, à raison de la facilité qu'il donnerait de multiplier les épreuves, et de les avoir inaltérables."<sup>iii</sup>

His earliest surviving image made by photographic means—a photomechanical reproduction, in fact, not a camera image—has only recently come to light. In July or August 1825, Niépce succeeded in reproducing an etching of a horse and his leader [trans: un cheval avec son conducteur] by varnishing the original print to make it transparent and placing it on a copper etching plate coated with bitumen of Judea. Niépce had found that this substance, an asphaltum used by etchers as an acid-resistant coating for their copper plates, was photosensitive; normally soluble in oil of lavender, the bitumen of Judea hardened when exposed to light. Thus, after placing the varnished print on the coated plate and exposing it to light for several hours, he was able to make the image appear gradually by setting the plate in a solution that dissolved the bitumen wherever it had been protected from the hardening action of the light. After being washed and dried, the plate was etched in acetic or nitric acid, then cleaned and printed like any other intaglio plate. The bite was delicate, however, and only a single proof, sent to Niépce's cousin, has survived.<sup>iv</sup>

By the following year, Niepce had even greater success, having switched to pewter plates, which he found more sensitive to the acid. With help from the engraver Augustin-François Lemaître, who reinforced his initial etching, he was able to make numerous photogravure proofs reproducing Isaac Briot's seventeenth-century engraving of Georges d'Amboise, Cardinal and Archbishop of Reims.<sup>v</sup> Niépce's first successful *camera* image, also made in 1826, showed a view out the window of his house near Chalons and relied on the same materials and techniques borrowed from etching—bitumen of Judea on a pewter plate. The exposure, however, was made in a camera obscura rather than by contact-printing a pre-existing image, and the plate itself was seen as the finished product, not as a matrix for producing prints on paper.

### **Louis Daguerre**

Despite Niépce's early successes on a theoretical, and even demonstrable level, his process was far from perfect—the results still primitive and the exposures impractically long: the view from his window required an exposure of eight hours. Louis Daguerre's account of the development of the daguerreotype—and his insistence that the process bear his name alone—were not wholly self-serving; the magically precise images which he first displayed in January 1839 owed at least as much to his continued research and experimentation after Niépce's death in 1833 as to Niépce's visionary experiments.

Daguerre's dazzling mirrors of reality were images formed in the camera obscura on sheets of silver-plated copper (again, like the copper plates used by engravers and etchers), sensitized with fumes of iodine and developed in mercury vapors. In a news account that appeared in the *Gazette de France* on January 6, 1839—the day before Daguerre's photographs were to be revealed to the Académie—Hippolyte Gaucheraud described the remarkable detail of Daguerre's plates and predicted many of the uses to which photography would eventually be put: "Travelers, you will soon be able, perhaps, at the cost of some hundreds of francs, to acquire the apparatus invented by M. Daguerre, and you will be able to bring back to France the most beautiful monuments, the most beautiful scenes of the whole world. You will see how far from the truth of the Daguerotype [sic] are your pencils and brushes." Gaucheraud turned to print media in trying to describe the look of a daguerreotype: "If I wanted to find something resembling the effects rendered by the new process, I would say that they take after copperplate

engravings or mezzotints—much more the latter,”<sup>vi</sup> which is to say that the scene is rendered in tone rather than line—there is no pattern of burin lines or etched cross-hatching.

Although he displayed daguerreotypes in January 1839, Daguerre revealed the details of his process only in August of that year, in exchange for a government annuity. The new medium was embraced with wild enthusiasm, so much so that by December 1839 the caricaturist Théodore Maurisset could parody the phenomenon as “Daguerréotypomanie” in a lithograph showing a world overrun by daguerreotypists—a man with a camera photographs from a hot air balloon, cameras are loaded on ships for export, and people line up to willingly submit to the tortures of a daguerreotype portrait sitting (figure 1).

### **Excursions Daguerriennes**

Among the most enthusiastic supporters of the new medium was Noel-Marie-Paymal Lerebours. As if fulfilling Gaucheraud’s prediction, he made and collected from other photographers more than 1200 daguerreotypes showing scenes from around the world. The problem with the daguerreotypes, however, was that each was unique—a one-of-a-kind image. Between 1840 and 1843 Lerebours published a series of 114 prints—mainly aquatints but also a few lithographs—based on his collection of daguerreotypes. The editor’s introduction to Lerebours’s *Excursions Daguerriennes, vues et monuments les plus remarquables du globe* read, in part, “Grâce à la précision soudaine du Daguerréotype, les lieux ne seront plus reproduits d’après un dessin toujours plus ou moins modifié par le goût et l’imagination du peintre.” Although manually produced, Lerebours’s series might loosely be considered among the earliest commercially successful photogravure projects, for the aim of the artists was to replicate in intaglio as closely as possible the perspective, detail, and tones of the photographic models. The basic composition and outlines of each daguerreotype were traced on translucent paper and transferred to etching plates for interpretation by skilled etchers. Figures—which went unrecorded by the long exposures of the daguerreotype plates—were often added, sometimes based on drawings made at the site, but often based on fancy. Without doubt, the varying styles of different etchers are visible from one plate of the *Excursions* to the next, but a few have a play of light, a chiaroscuro effect, and an astonishing truthfulness of perspective and detail that, even today, read photographically (figure 2).

### **Dr. Donné**

Daguerre’s contemporaries logically posed the question whether there was a way to transform the daguerreotype plate directly into an intaglio plate for printing, without the intervention or interpretation of the artist’s hand. At the right side of Maurisset’s 1839 lithograph “Daguerréotypomanie” can be seen signs proclaiming “Epreuves Daguerriennes sur papier” and “Système du Docteur Donné” Donné is not a fictional character. He was, in fact, the first to make intaglio prints from daguerreotype plates—to print true photogravures of camera images—and he showed examples of his prints to the Academy of Sciences on September 3, 1839, less than a month after the details of Daguerre’s process had been made public.

To understand how Donné’s process worked, one must first realize that the “black” parts of a daguerreotype are in fact simply the highly polished, mirror-like surface of silver, which read as black when reflecting something dark, and the “white” portions of the image are an amalgam of mercury on the silver plate. Donné found that a dilute solution of hydrochloric acid bit more rapidly into the silver (“black”) areas of the image than into the mercury amalgam (“white”) areas of the image. Etched in this manner, the plate could be printed as any other

intaglio plate. Donn 's process worked in theory and, to a certain degree, in practice, but the problems were significant: first of all, the layer of mercury was so infinitesimally thin that it began to break down fairly quickly, allowing only the shallowest bite to be effected by the acid; and second, silver being relatively malleable, the surface of Donn 's plates could withstand only a small number of passages through the intaglio press—within forty or fifty prints the image was all but obliterated.<sup>vii</sup>

Although Donn 's photogravure process was far from perfect, it was enough to signal the potential of the new medium. Just to the left of Dr. Donn  in Maurisset's print can be seen a grisly scene—a forest of gallows and hanged bodies. Who are these people? The sign nearby reads "Potences   louer pour MM. les graveurs".

### **Hippolyte-Louis Fizeau**

By far the most successful process for transforming daguerreotypes into intaglio plates was that developed by Hippolyte-Louis Fizeau, aided in his experiments by the engraver and aquatinter Johann H rlimann. In 1841 the 22-year-old Fizeau patented a more successful but significantly more complex process than Donn 's. Lerebours' *Excursions Daguerriennes* included two true photogravures produced by the Fizeau process, one showing the H tel de Ville de Paris, the other a sculptural relief panel on Notre Dame.

In the accompanying text for the first of these, M. Challamel described Fizeau's advances in the most glowing terms:

Les merveilleux r sultats photographiques r cemment obtenus prouvent que les proc d s daguerriens sont arriv s   une grande perfection. Une moiti  du probl me, la plus importante et la plus difficile, restait   r soudre, savoir: d'obtenir un nombre d'exemplaires, imprim s sur papier, de l'image m me fix e sur la placque. De nombreux essais, demeur s infructueux, avaient fait d sesp rer du succ s, et M. Daguerre lui-m me l'avait jug  impossible.

L'art nouveau semblait donc r duit   des limites restreintes, quand M. Fizeau est venu lui ouvrir une carri re immense en apportant au monde savant et artistique cette importante solution. Apr s de longues exp riences et de constants efforts, il a r ussi   transformer les  preuves daguerriennes en v ritables plances grav es par la nature.

As "photographic" as many of the hand-drawn plates in the *Excursions Daguerriennes* seem, it is still striking to turn from the many pages of photographically-based aquatints to Fizeau's photogravures. In some visceral way, one feels in the presence of a different type of representation. To Challamel's eyes, Fizeau's photogravure of the bas-relief at Notre Dame (figure 3) "rend parfaitement tous les d tails et jusqu'aux moindres traces de v tust  imprim es par les si cles sur la pierre du vieux monument."<sup>viii</sup>

Fizeau outlined his process at a meeting of the Academy of Sciences on February 13, 1843, and distributed photogravure prints of the church of Saint-Sulpice taken from the window of his nearby apartment at rue du Cherche-Midi, 17. In brief, the process he described was as follows:

1. The daguerreotype plate was lightly etched with a mixture of nitric and hydrochloric acids. (Essentially, this was as far as Donn  got.) To remove insoluble silver chloride from the silver portion of the image, the plate was then

- treated with ammonia. These steps of etching and cleaning could be repeated if necessary.
2. Boiled linseed oil was rubbed onto the plate, filling the recessed portions, and cleaned off of the surface (just as one would ink an intaglio plate for printing.)
  3. The plate was placed in a bath of gold chloride solution and attached to the cathode pole of a battery, with the anode pole in the liquid solution. The electrical charge resulted in a thin layer of gold being deposited on the daguerreotype. (This technology of electroplating, or “galvanoplastie,” was as new as photography itself.) The gold plating, however, adhered only to the high (clean) portions of the plate, and not to the recessed (oily) portions.
  4. The plate was removed, cleaned with caustic potash, and again submerged in a nitric acid bath. The gold—impervious to the acid—protected the high portions of the plate, while the acid bit still deeper the recessed portions.
  5. The plate was then electroplated with copper to make it stronger, less susceptible to force of the intaglio press.<sup>ix</sup>

Fizeau’s earliest examples, made in 1841 and 1842, were lacking in half-tones and detail, a fault that he overcame in his later prints by graining the plate with rosin before a final etching, as in *Man and Boy*, distributed at the close of another lecture at the Academy in 1844. The aquatint graining is visible under magnification (figure 4).

Although Fizeau described his prints as being made “without engraving or retouching by an artist,” traces of roulette work are visible along the edges of *Man and Boy*. As successful as Fizeau’s prints were, they were not altogether satisfying. On the one hand, despite their precision, they remained far from the magical surface and seemingly infinite detail of the daguerreotype plate. On the other hand, they lacked the beauty of mark and the sculptural suggestion of classic engraving, where the swell and curve of each engraved line simultaneously possess two-dimensional beauty and describe three-dimensional form; by the nineteenth century, the type of engraving practiced so fluidly and by earlier masters such as Goltzius had been adopted with near mechanical perfection by reproductive engravers. The spots and pits that describe form in Fizeau’s print seemed arbitrary and inelegant alongside the work of engravers.

Fizeau’s process ultimately proved a dead end. Though clearly capable of fine results, it was too complex to be readily practicable, and few prints beyond the inventor’s demonstration pieces and his plates for the *Excursions Daguerriennes* were made by Fizeau or by others using his process.

### **The Rise of Paper Photography**

What ultimately put an end to the experiments for converting the daguerreotype plate into an intaglio printing plate, however, was the demise of the daguerreotype itself as paper print photography began to flourish in France. The problem spurring experimentation in photogravure in the 1840s was not “How can we print a photographic image with printer’s ink?” but rather “How can we make multiple copies of a photographic image?” which, in the form of a daguerreotype, was by definition one-of-a-kind.

Although Talbot’s initial “photogenic drawing” process was revealed nearly simultaneously with Daguerre’s in 1839, it was a decade before the principles and processes of negative/positive photography on paper were adopted in France. The reasons were two-fold. First, in 1839 and 1840 Talbot’s process was simply not perfected to the degree that Daguerre’s

was, particularly for camera images. For better or worse, Talbot's images—even those made by his improved calotype process of the 1840s—lacked the astonishing clarity and seemingly infinite detail of the daguerreotype. (“For better or worse” because many commentators in both Talbot's time and our own have viewed the slightly fibrous quality of his images and their tendency to mass shadows in chiaroscuro effect as especially lyrical and appealing.) Second, and probably more important, is the fact that Daguerre's process, placed in the public domain in exchange for a government annuity, was free to all (except in England), while that of Talbot, who enjoyed no such subsidy, was patented and required a license for commercial exploitation. Only in the late 1840s had French artists and inventors tinkered enough with Talbot's recipes to circumvent his patent restrictions, and it is at that point—particularly after 1850—that paper print photography gained favor in France.

The rise of paper photographs, then, seemed to render moot the problem of converting the daguerreotype into a printing plate, for from a single negative, scores—even hundreds—of virtually identical photographic prints could be produced, and their paper support made them more easily integrated into the realm of graphic arts. They could be pasted in albums, matted and framed like engravings, or tipped into printed books. Though lacking the perfect clarity of the daguerreotype, the salted paper print from a paper negative still gave a smoother gradation of tones and sharper detail than even the best of Fizeau's prints.

Louis-Désiré Blanquart-Evrard established a photographic printing house in Lille in 1851 and applied such economy to the production of prints that he rendered moot the economic advantages of illustrating books with photogravures rather than original photographic prints. He reduced the time required for printing his photographs by chemically developing them, and thereby made photographic printing commercially viable for book illustration. In operation from 1851 to 1855, his *Imprimerie Photographique* published more than two dozen photographically illustrated books and portfolios.<sup>x</sup>

Experimentation in photogravure did not stop, however. Instead, it grew out of a different need or desire than it had in the 1840s. Now, rather than searching for a means of producing multiple copies of a single photographic image, the aims of research were permanence and integration into the established artisanal and technological structures of the printing industry.<sup>xi</sup> Gaston Tissandier, summed it up thus: “It is true that by the process of photographic printing on paper one has at once a negative on glass which will produce any quantity of proofs; but how slow is the printing! what numerous obstacles there are in the way of this process, which requires sunlight and careful attention to minute detail unknown in the production of printing-press proofs! and besides, photography on paper is not durable; it fades with time, sometimes turns yellow, and often even becomes completely effaced.”<sup>xii</sup>

The Jury of the Universal Exposition of 1855 noted with dismay the persistent problem of impermanence in photographic prints, reporting that “trop souvent... ces belles planches dont le prix s'élève quelquefois jusqu'à cent francs, s'altèrent peu à peu par l'effet de la lumière et finissent par disparaître.”<sup>xiii</sup> Although such fading was due principally to negligence in printing and fixing the photographs, according to the report, the Jury recognized that science could not guarantee the indefinite stability of even the most thoroughly fixed positive prints. “Heureusement la récente découverte de M. Niépce de Saint-Victor, l'héliographie [gravure héliographique] en remplaçant les épreuves positives photographiques par des épreuves imprimées à l'encre à l'aide de la presse, donnera, tout le fait espérer, une solution satisfaisante à cette question si capitale pour l'avenir de la photographie. En garantissant l'indestructibilité des

épreuves , et en réduisant le prix aux frais du tirage ordinaire des gravures, M. Niépce de Saint-Victor complétera et couronnera l'oeuvre de Daguerre, de Nicéphore Niépce et de Talbot."<sup>xiv</sup>

### **Niépce de Saint-Victor**

Cousin of the pioneer of the medium, Abel Niépce de Saint-Victor, returned to the principles of Niépce's *Cardinal d'Amboise* and, again like the elder Niépce, worked with the master printer Lemaître to perfect his process. Niépce de Saint-Victor's two principal improvements were to make the bitumen of Judea more sensitive, and, after exposing the plate and dissolving the unhardened bitumen, dusting the plate with a layer of extremely fine rosin powder—i.e., adding an aquatint texture to hold the ink in large areas of tone.

Photogravures produced by his process were included in the 1853 volume *Photographie zoologique ou représentation des animaux rares des collections du Muséum d'Histoire Naturelle* by Louis Rousseau and Achille Deveria (figure 5). The first fascicles of the volume were issued with salted paper prints by the Bisson frères tipped in, but subsequent fascicles took advantage of Niépce de Saint-Victor's new technology; the volume is thus the first substantial publication to be illustrated with photogravures. Writing about the book's photogravure plates in his summary of photography at the Universal Exposition of 1855, Ernest Lacan conceded that it was still necessary, in the majority of cases, to retouch the gravure plate with the burin, selectively etch certain parts, or use the burnisher on others, but nonetheless he declared that "Dès maintenant, il est prouvé que la gravure héliographique peut se prêter à toutes les applications de la photographie... Bientôt, nous en sommes convaincu, elle amènera une véritable révolution dans la librairie. Un jour viendra, en effet, où l'historien, le voyageur, le naturaliste, ne voudront plus confier l'illustration de leurs livres qu'aux graveurs héliographes."<sup>xv</sup> More surprising than that, this most enthusiastic critic and publicist for photography declared that "Pour nous la photographie, si complète qu'elle soit dans ses résultats, n'est qu'un procédé transitoire, et c'est à la gravure héliographique ou à la photolithographie qu'appartient l'avenir."<sup>xvi</sup>

Niépce de Saint-Victor's was but one of many experimental photomechanical processes put forward in the early- and mid-1850s, and nearly as many terms for the new gravure and relief processes were proposed as there were processes themselves: "gravure héliographique," "héliogravure," "gravure héliotypographique," "héliotypographie," "paniconographie," and, perhaps the most extreme case, "paniconophototypographie."<sup>xvii</sup>

### **The Duc de Luyves Competition**

Among the subscribers to Lerebours's *Excursions Daguerriennes* was Honoré d'Albert, duc de Luyves, an enlightened patron of the arts, an archaeologist, and a painter and photographer himself. In response to the need for a simple and reliable means of producing inalterable photographic prints, the duc de Luyves established two awards in July 1856 to stimulate research.<sup>xviii</sup> Announcing the competition, which was open to Frenchmen and foreigners alike, Victor Regnault, Président of the Société française de photographie, reiterated the imperfect state of knowledge regarding the stability of photographic prints: "Malheureusement, l'expérience de la première période photographique que nous venons de traverser est loin d'être rassurante à cet égard: beaucoup d'épreuves qui n'ont que quelques années d'existence sont aujourd'hui profondément altérées; quelques-unes se sont complètement effacées."<sup>xix</sup>

The smaller of the two prizes, 2000 francs, was to be awarded to the person judged to have made the most progress towards a process for permanent photographic positives. The larger prize of 8000 francs, was to be awarded in three years to the person judged by a special

committee of the Société to have developed the best process for producing photographs using printer's ink (whether photolithography, photogravure, or photo-relief printing.) In keeping with the founder's desire that the prizes stimulate research, the Jury was to consider not only the beauty of the finished products, but also the originality of the invention and the prospects for the wide and easy application of the various processes presented.

The results were not what was hoped for, however. "Il était naturel de penser," wrote Blanquart-Evrard, "d'après les progrès déjà réalisés, que les trois années ne s'écouleraient pas sans que le problème ne reçût une complète solution. La Société Française de photographie, constituée juge du concours, partageait les illusions du généreux fondateur; mais l'expérience, cette dure enseignesse qui dissipe impitoyablement tous les mirages, a prouvé que le concours, au lieu de hâter la marche du progrès, l'avait, sinon paralysée, tout au moins considérablement ralentie."<sup>xx</sup>

Meeting in 1859 to consider the entries in the *grand concours*, as it was called, the Jury found no process to have fulfilled the intentions of the duc de Luynes. Of the many artists and inventors submitting their work for consideration, three were found particularly worthy of note: Charles Nègre, Paul Pretsch, and Alphonse Poitevin. In fact, each had tackled the problem before the announcement of the competition. The other processes submitted were eliminated from consideration as being insufficiently described, not serious, or relying too heavily on the existing processes of others.<sup>xxi</sup>

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### **Charles Nègre**

Charles Nègre was trained as a painter but was also familiar with etching processes even before taking up the camera; an 1844 etched portrait of Ingres by him survives. In 1855, Nègre submitted photogravures to the Universal Exhibition, where they prompted one critic to declare that the great problem of photogravure had finally been resolved—this before the duc de Luynes competition had been conceived. He succeeded in rendering the mid-tones better than any before him, and his enormous prints of Chartres Cathedral—60 x 80 cm—made a few years later are certainly among the most impressive photogravures of the period (figure 6).

His process consisted of the following steps: he placed a photographic negative on a steel plate covered with a thin coating of bitumen of Judea (or sometimes gelatin bichromate, which Talbot substituted for bitumen of Judea beginning in 1852); exposed the plate to light through the negative, rendering the coating insoluble wherever it was struck by light; and cleaned the plate (with oil of lavender or water, depending on the coating), baring the surface of the metal plate wherever the coating had been protected by the dark portions of the negative. Had the plate been etched at this point, the image would have appeared as a negative, but instead, Nègre electroplated it with gold; the gold covered those parts where the metal plate was unprotected, partially covered the portions where the coating remained in part, and covered the portions still protected by the insoluble coating only in a lacy network that, like a dusting of rosin, provided a texture to hold the ink and render the mid-tones and dark areas.<sup>xxii</sup>

### **Paul Pretsch**

Pretsch, an Austrian living in London, had also developed a process prior to the announcement of the Duc de Luynes competition, patenting it in England in November 1854. As refined and commercially exploited in the years following, Pretsch's "photogalvanography" consisted of the following steps: a light-sensitive mixture of dichromated gelatin was spread on a smooth glass plate and exposed to light through a transparent positive; the gelatin hardened in accordance with

the amount of light hitting it; the exposed plate was bathed in cold water, swelling the gelatin in a granular pattern wherever it had been protected from light, thus reproducing the photographic image in relief; a gutta-percha mold was made and then used to create an electrotyped copper plate identical to the gelatin relief; a second electrotyped copper plate was made from the first, with the image sunk below its surface, rather than raised above it, and thus capable of being inked and printed as an intaglio plate. For added durability, the copper plate was sometimes electroplated with a thin layer of iron.<sup>xxiii</sup>

Pretsch formed the Photo-Galvanographic Company and hired Roger Fenton as manager of the Photographic Department. Fenton contributed his own photographs and selected works by fellow photographers for publication in a series entitled *Photographic Art Treasures*, few numbers of which were issued (figure 7). The published photogalvanographs were strongly criticized in the photographic press for their heavy retouching. Prices were high and demand low; the company closed in late 1857 or 1858.<sup>xxiv</sup>

### **Alphonse Poitevin**

The third principal contender in the Duc de Luynes competition was Alphonse Poitevin. Although his photolithographic process is technically outside the purview of an account of photogravure, we must take at least a brief look at it since it was a commercial rival to the many photogravure processes, and since—at the risk of giving away the ending of the story—it was Poitevin who ultimately won both the petit concours and the grand concours. Poitevin had patented, in 1855, a photolithographic process which used a gelatin bichromate or albumen bichromate coating to photosensitize a lithographic stone. He set himself up as a lithographer that year, and, in the next sixteen months, pulled more than 18,000 prints, many for books, often printing as many as 1500 prints from a single stone at a cost of 23-70 centimes each, depending on size—far cheaper than Blanquart-Evrard had been able to achieve at his assembly-line photographic printing establishment.<sup>xxv</sup> So commercially successful was Poitevin's process that he sold his patent in 1857 to Lemercier, one of the largest printing houses in France, who continued to exploit the process with the same success. Despite its obvious commercial viability, the tones of a Poitevin photolithograph nearly always seem washed out, lacking both the richness of a good photogravure and the subtlety of a photographic print; nor is there ever a remarkable degree of resolution in a Poitevin photolithograph. Beauty, however, was not the principal criterion for judging the competition.

### **Duc de Luynes Competition, continued**

Because no process was deemed in 1859 to have fulfilled the goals of the duc de Luynes competition, an additional five-year period was added in the hope of further progress. But in 1864, the results were no more decisive; the Jury declared the competition closed, but delayed their decision for yet another three years to see how each of the processes would be perfected and applied. Only in 1867 did the Jury award the 8000-franc prize to Poitevin: “M. Poitevin [...] a complètement réalisé les conditions posées par M. le duc de Luynes. En effet, par son procédé d'impression à l'encre grasse, qui est la lithographie, il produit facilement, sans retouches, de manière à laisser toute garantie d'authenticité, une épreuve photographique quelconque, et à tel nombre d'exemplaires qu'il peut être nécessaire pour mettre à la portée de chacun les documents utiles aux arts et aux sciences.”<sup>xxvi</sup> Despite the exceptional results obtained by Nègre—“magnifiques planches, comme finesse et comme dimensions”—the Jury ruled that Nègre had not fulfilled the original intention of the competition which was to “vulgariser par des

procédés facilement pratiques les documents utiles aux savants, aux archéologues et aux artistes.” Nègre had fallen short of that goal, because “son procédé délicat est resté entre ses mains; aucun élève, aucun opérateur ne peut nous assurer qu’à son défaut quelque autre personne pourrait le remplacer.”<sup>xxvii</sup>

The process that won the 8000-franc prize was the same process that Poitevin had patented in 1855—a year before the opening of the competition! Blanquart-Evrard expressed frustration with the results, declaring patents and competitions equally stifling of progress—competitions because they cut off the exchange of ideas. He noted that only a few weeks after the duc de Luynes competition was decided in Poitevin’s favor, the jury of the 1867 Universal Exposition made a different choice, giving a surprising boost to photogravure by awarding the grand prize for photography to Garnier “dont l’épreuve gravée était reconnue plus belle que l’épreuve chimique provenant du [même] cliché.” One jury, he wrote, crowned a process rich in potential applications, the other awarded a result, a masterpiece.<sup>xxviii</sup>

### Édouard Baldus

The photogravures of Édouard Baldus, one of the most successful French photographers in the 1850s, also deserve attention. In February 1867, Lacan noted that Baldus had been making photogravures since 1854 and had always kept his process secret on the perhaps well-founded pretext that it was among the simplest.<sup>xxix</sup> He did not enter the Duc de Luynes competition.

Baldus’s earliest photogravures, reproducing old and rare engravings were particularly praised by Blanquart-Evrard: “Est-il possible d’imaginer une identité plus complète que celle qui existe entre l’épreuve de la planche gravée photographiquement par Baldus et celle de la planche burinée par Marc-Antoine?”<sup>xxx</sup> The ingenuity of his process lay in the fact that, once the copper plate was covered with bitumin of Judea, exposed to light through a transparent print, and washed, the plate could be made suitable for either relief or intaglio printing; submerged in a bath of copper sulfate, the image would build up in relief on the surface of the plate if the plate were attached to the negative pole of a battery, or would be etched below the surface if the plate were attached to the positive pole.<sup>xxxi</sup>

His facsimile engravings after Aldegrever, Durer, Ducerceau, Marcantonio, and others could be offered so economically that one member of the Société française de photographie protested, observing that a single copy of a fine engraving sometimes cost 200 francs. Lacan responded: “Suivant nous, cette objection est mauvaise. La photographie et les procédés qui naissent d’elle ont avant tout pour mission de vulgariser la représentation fidèle de la nature ou la reproduction exacte des oeuvres de l’art. Le bon marché est donc indispensable pour qu’ils puissent atteindre ce but.”<sup>xxxii</sup>

By the mid-1860s, when photogravure publication became Baldus’s primary activity, he no longer utilized the electroplating process or bitumin of Judea. Instead, he covered his copper plate with chromium salt, exposed it to light through a glass negative, and submerged it in a bath of ferric chloride. This first shallow etching was reinforced by rolling printer’s ink on the surface of the plate and resubmerging it in the acid bath. The resulting printing plate was suitable for relief or intaglio printing according to whether a photographic positive or negative was used when exposing the light-sensitive plate.<sup>xxxiii</sup>

Baldus first used the photogravure process to publish his own photographs in the late 1860s for a publication on the architecture and ornamentation of the Louvre and Tuileries palaces (figure 8); its three volumes each contained one hundred richly inked, velvety textured

heliogravures characterized by an extraordinary clarity and fineness of detail, often judiciously heightened by etched lines added by hand.

In nineteenth-century France, photogravure seems always to have been dancing at the edges—playing an important role in the origin of photography, but soon supplanted by a better process; then as a means of reproducing the unique daguerreotype plate, but soon rendered irrelevant by the advent of paper photography; then reemerging as a means of producing permanent prints and of bringing photographic images into the industrial printing realm, but before long sidelined by relief processes (e.g., the paniconographie of Gillot), photolithography (e.g., Poitevin's), and ultimately the half-tone block.

While the softening of detail and the massing of light and shadows that resulted from the conjunction of paper negatives and salted paper prints in the 1850s were praised as “Rembrandtesque” and articulated as a “theory of sacrifices” by Francis Wey and other critics, the same aesthetic criteria were not applied to photogravure. Where the individually printed landscape or architectural study by a gentleman-amateur was judged by the considerations of art, the photogravure was consistently judged according to commercial or industrial criteria: How accurate a medium was it for the communication of information? How permanent were the prints? How inexpensively could they be produced? How easily could the process be learned? How smoothly could the process be integrated into the artisanal practices of the printing industry? Little wonder, then, that despite the many great artists engaged in the effort to perfect the photogravure process, and despite the technically impressive results obtained, few original works were conceived for and printed as a photogravures.

Just as the threat posed by photography and photogravure actually helped prompt the Etching Revival in France in the latter third of the nineteenth century by freeing the art from its purely reproductive tasks, the complete integration of photomechanical processes into the printing industry prompted a reconsideration of the artistic potential of photogravure. Only in the closing decades of the century, as the printing industry adopted processes that were adequate to the task of reproduction (however inferior aesthetically), would the hand-pulled photogravure take on the status of art rather than commerce, and be celebrated and exploited for its unique aesthetic properties.

#### Notes:

This essay is adapted from a paper first presented at a colloquium on photogravure at the Institute for Research in Art / Graphicstudio, University of South Florida, Tampa, March 22-24, 1995. I thank Hank Hine for the invitation to explore the topic at that colloquium and Jon Goodman, a fellow participant in Tampa, for suggesting that I contribute the paper to the present publication.

i. Alexander Ken, *Dissertations Historiques, Artistiques et Scientifiques sur la Photographie* (Paris: Librairie Nouvelle, 1864), pp. 57-58.

ii. Two sources that survey this subject particularly well are: Raymond Lecuyer, *Histoire de la photographie* (Paris: Baschet, 1945), pp. 245-74 (Chapter X, entitled “Création des procédés photomécaniques 1813-1939”); André Jammes et al., *De Niépce à Stieglitz: La photographie en*

*taille-douce*, exhib. cat. (Lausanne: Musée de l'Elysée, 1982). An excellent beginning point for research of the many variant processes is Luis Nadeau, *Encyclopedia of Printing, Photographic, and Photomechanical Processes* (New Brunswick: Luis Nadeau, 1994).

iii. Joseph Nicéphore Niépce: *lettres, 1816-1817: correspondance conservée à Châlon-sur-Saône* (Rouen : Pavillon de la photographie du Parc naturel régional de Brotonne, 1973), p. 35.

iv. "La Photographie II; Collection Marie-Thérèse et André Jammes," Sotheby's France, March 21, 2002, lot 37, acquired by the Bibliothèque nationale de France. See also: André Jammes, "The First Photographic Image" in *Roger Eliot Stoddard at Sixty-Five. A Celebration* (New York, Prague, Cambridge: 2000), pp. 54-63.

v. The artist's son Isidore described the process in a letter to Victor Fouque, March 10, 1867, quoted in Victor Fouque, *La Vérité sur l'invention de la photographie* (Paris: 1867); translated by Edward Epstein as: *The Truth concerning the Invention of Photography; Nicéphore Niépce, His Life, Letters and Works* (New York: Tennant and Ward, 1935), p. 64.

vi. Hippolyte Gaucheraud, "The Fine Arts: A New Discovery," *La Gazette de France* (Jan. 6, 1839), translated and reprinted in Beaumont Newhall, ed., *Photography: Essays & Images* (NY: Museum of Modern Art, 1980), p. 18.

vii. Louis Figuier, *La photographie au Salon de 1859* (Paris: Hachette, 1860), p. 130; Gaston Tissandier, *A History and Handbook of Photography* (London: Sampson, Low, Marston, Low & Searle, 1876; New York: Scovill Manufacturing Co., 1877), p. 180.

viii. Challamel, "Un des bas-reliefs de Notre-Dame de Paris," *Excursions Daguerriennes* (Paris: 1840-43), not paginated.

ix. Lecuyer, pp. 246-48.

x. See Isabelle Jammes, *Blanquart-Evrard et les origines de l'édition photographique française: Catalogue raisonné des albums photographiques édités 1851—1855* (Geneva: Librairie Droz, 1981).

xi. Jeff Rosen has written extensively on the relationship of photography and the printing industry. See, for example, his article, "The Printed Photograph and the Logic of Progress in Nineteenth-Century France," *Art Journal* (Winter 1987), pp. 305-11.

xii. Tissandier, p. 181-82.

xiii. Exposition universelle de 1855, *Rapports du jury mixte international publiés sous la direction de S.A.I. le prince Napoléon* (Paris: 1856), pp. 1233-43. Reprinted in: André Rouillé, ed., *La Photographie en France* (Paris: Macula, 1989), p. 189.

xiv. *Ibid.*

xv. Ernest Lacan, *Esquisses photographiques à propos de l'Exposition universelle et de la guerre d'Orient* (Paris: Grassart, 1856) pp. 201-2; Louis-Désiré Blanquart-Evrard, *Photographie. Ses origines, ses progrès, ses transformations* (Lille: L. Danel, 1870), p. 35.

xvi. Lacan, *Esquisses*, p. 204.

xvii. Ernest Lacan, "Héliotypographie ou gravure héliographique reproduite en relief par la paniconographie," *La Lumière* (April 1, 1854), pp. 49-50.

xviii. A full review of the various stages of the competition and the works submitted at each stage is given in the jury's final report: Alphonse Davanne, "Rapport de la commission chargée de décerner le prix de 8000 francs, fondé par M. le duc de Luynes pour l'impression à l'encre grasse des épreuves photographiques," *Bulletin de la Société française de photographie* (April 1867), pp. 89-112. Many articles concerning individual processes submitted to the S.F.P. for the competition appeared in the *Bulletin* between the first announcement in 1856 and the final report. See also: Sylvie Aubenas, *D'encre et de charbon: le concours photographique du duc de Luynes, 1856-1867*, exhib. cat., Paris: Bibliothèque Nationale, 1994.

xix. "Procès-verbal de la séance du 18 juillet 1856," *Bulletin de la Société Française de Photographie* (August 1856), p. 214.

xx. Blanquart-Evrard, p. 40.

xxi. Those submitting entries to the competition by the July 1, 1859, deadline included Rousseau and Musson, Poitevin, Pretsch, Thévenin, Nègre, Dufresne, Renaud-Saillard, Garnier and Salmon, Laborde, Asser, Bertschold, Talbot, Pouncy, Newton, and Jobard.

xxii. Alphonse Davanne, *La Photographie* (Paris: 1886-88), p. 304.

xxiii. Paul Pretsch, "Two Main-Points in Photography. II. Photography subject to the Press," *The Photographic Journal* 75 (December 21, 1858), pp. 109-11, and 76 (January 8, 1859), pp. 132-36; Paul Pretsch, "Photogalvanography, or Nature's Engraving," *The Photographic Journal* 89 (September 15, 1859) pp. 29-31, accompanied by a photogalvanographic print of a photograph by O.G. Rejlander. The idea of converting the tones of a photograph into a gelatin relief, and of creating a mold from the swollen gelatin, are also an essential component in the highly successful Woodburytype process, or photoglyptie, introduced in 1865.

24. John Hannavy, *Roger Fenton of Crimble Hill* (Boston: David R. Godine, 1975), pp. 65-71.

xxv. Sylvie Aubenas, "La photographie est une estampe; multiplication et stabilité de l'image," in *Nouvelle histoire de la photographie*, Michel Frizot, ed. (Paris: A. Biro; Bordas, 1994), pp. 229-30.

xxvi. Davanne, "Rapport," p. 112.

xxvii. *Ibid.*

xxviii. Blanquart-Evrard, *La Photographie*, p. 45. Garnier and Salmon's process, somewhat reminiscent of the daguerreotype, involved sensitizing a brass plate with iodine fumes, exposing it, and then rubbing it lightly with a polisher containing mercury. The process was ingenious for its ability to yield plates for intaglio, relief, or lithographic printing, according to the subsequent steps followed, but the jury deemed the actual results "trop médiocres pour être pris en considération."

xxix. Ernest Lacan, "Revue photographique," *Le Moniteur de la Photographie* (February 15, 1867), p. 45.

xxx. Blanquart-Evrard, p. 46.

xxxi. Figuier, pp. 135-36; H. de la Blanchère, *Répertoire encyclopédique de photographie* (Paris: 1864), v. I, p. 455, art. 755.

xxxii. Ernest Lacan, "Revue photographique," p. 45.

xxxiii. Figuiet, pp. 136-37.