



Boris Kossoy

Introduction

That the history of photography is still but a very youthful arena of study is apparent. New discoveries and hitherto unrevealed names and styles are uncovered at a fairly consistent rate — so much so that each year suggests a complete overhauling of the basic outline given us by the standard texts. It is certain, also, that we are far from possessing anything near to a fully appreciated overview of the medium's history since these discoveries frequently cause us to re-evaluate many of the assumed facts and accepted criteria of aesthetic judgments.

One of the more notable "new" facts to be discovered issues from a rather unsuspected locale. Only a few years after Niépce's héliographie process; somewhat before the daguerreotype process was being developed in France during the late 1830s; at the same time that William Henry Fox Talbot was experimenting with his photogenic drawings, which were to lead in the early 1840s to the first negative/positive process; and while Hippolyte Bayard was attempting to fix positive images on paper; it appears that a Frenchman by the wonderful name of Hercules Florence "invented" photography in the small Brazilian river town of Campinas.

Reading much like a ficcione by Jorge Luis Borges, the story of Florence and his diaries contains remarkable parallels with the mainstream inventions of photography in Western

Europe. It seems that Florence, an amateur scientist, naturalist, and "artist," managed in relative isolation to work with the photosensitive properties of silver salts, to associate these properties with some sort of potential use within a camera obscura, and to have realized results with certain chemicals (most specifically ammonia which Florence found plentifully in urine). Florence did all this — or at least his diaries indicate he did — between 1829 and 1832, nearly a decade prior to the publication of Daguerre's famous process. On one of the pages of his diaries, dated 1832, we find clear and precise drawings of a small camera similar to Talbot's "mousetrap" cameras of a few years later; a series of outdoor printing frames almost identical with those used by Talbot and Henne-man in Reading while printing the Pencil of Nature after 1841; and most spectacularly, the word, in French, "Photographie," appears atop the same page, anticipating Herschel's "coining" of the word "Photography" by some seven years. And as early as 1829, this Frenchman in Brazil was manufacturing pharmaceutical labels for a friend in Sao Paulo, but he was producing these labels by developing out sensitized paper and chemically stabilizing them — in other words he was making photograms or photogenic drawings well before Talbot, Robert Hunt, et al. The correspondences are, indeed, remarkable.'

Hercules Florence's early work with photog-

raphy was first signalled by Gilberto Ferrez, a Brazilian photographic historian, in 1953. More recently his work has been studied by Boris Kossoy, also a photographic historian from Sao Paulo, who has been publishing essays on the history of Brazilian photography over the last five years. The following article is the result of Mr. Kossoy's lengthy involvement with Hercules Florence.

Most likely, the significance of Florence's "invention of photography" will be argued for some time to come. (The question has already been raised whether to include him in the main text or simply in a footnote to photographic history.) One thing is clear, however, and that is regardless of the "fact" that Florence was the first to make a photograph, his invention, his discovery, and even his use of the word "photography" did not extend far beyond the limits of Campinas nor did they influence the general course of the history of the medium. That the parallels and congruences are fascinating and elegant in many ways is certain, as is their academic interest. Hercules Florence's invention is yet another verification that during the 1830s, photography's time had clearly arrived.

Robert A. Sobieszek

The idea of making a study in depth on Hercules Florence, pioneer of photography, came up as a consequence of research work which I began in 1972, in an attempt to compile a history of photography in Brazil, by tracing its chronological development.

The role of Hercules Florence as one of the pioneers of photography is still a relatively unknown fact outside Brazil, although I have dealt with the matter previously in several publications, which, unfortunately, have not been widely circulated abroad. However, specific cataloguing is continuing, and I feel that we have now accumulated sufficient material to justify publication of the research.

According to existing manuscripts, photographs, and historical data, pre-Daguerreian experiments were carried out by Hercules Florence in Brazil, in Sao Carlos Villa (today known as Campinas) as early as 1832.

On August 12, 1973, I published an article on the Photography page of the Literary Supplement of the newspaper *O Estado de Sao Paulo* under the title "Hercules Florence, pioneiro de fotografia no Brasil" [Hercules Florence, pioneer in photography in Brazil] with illustrations of the first experiment conducted by Florence, using rather primitive methods, in which he photographed, on a sheet of paper coated with silver nitrate and under the action of sunlight, certain images in a home-made camera obscura.

On October 18, 1975, my article entitled "Panorama de Fotografia no Brasil desde 1832" [Panorama of photography in Brazil since 1832] appeared in a special edition of *O Estado de Sao Paulo* in its Centenary Supplement. Touching on the role of Florence in referring to photographic pioneers in Brazil, I concluded by saying: "The progress of this research work

culminated in an isolated discovery that was made between 1832/33, a fact that has not yet been given due recognition."

French-born Hercules Florence was gifted with an inventive genius par excellence, which led him to a series of discoveries during the fifty-four years he lived in Brazil. Always depending on bare minimum working conditions, some of his inventions had a curious chain reaction, since they developed more likely than not as a consequence of the limited elements Florence had to work with. Such was the case of the impasse at which Florence arrived when he decided to reproduce many copies of his studies on animal voices (which he called *Zoophonie*). Since there was only one printing press in the province of Sao Paulo, he found himself faced with the necessity of inventing his own printing process, for which he carried out a great deal of research, making continual improvements — he christened the process *poligraphie*. Next, still working on the printing process, one day he came up with the idea of utilizing sunlight for this purpose, thereby discovering the photographic process, which he called *photographie*, a term that naturally occurred to him.

The history of all his inventions is not the aim of this work, but I believe it to be important to mention them, in order to convey an idea of the creative and scientific personality of Florence, as well as to show that the time in which he lived was not particularly propitious for him as an inventor. Within my proposed objective, which is limited to his photographic achievements, I will comment upon his experiments, noted in his handwritten diaries, excerpts of which are reproduced in transcription, in French, in the appendix.



Hercules Florence.

The Manuscripts of H. Florence

The existing manuscripts which form the basis for the development of this study consist of three small volumes: Manuscript I*, entitled "Livre d'Annotations et des premiers materiaux," which contains 359 pages and measures 22x16.5cm; Manuscript II, entitled "Deuxième livre d'Annotations et des premiers materiaux," which has 185 pages and measures 21x16cm; and Manuscript III, entitled "Troisième livre d'Annotations et des premiers materiaux" which has 115 pages and measures 22x15.5cm.

There is still another larger manuscript volume of 423 pages, measuring 30.5x21cm, entitled "L'Ami des Arts livre à lui-même ou Recherches et découvertes sur différents sujets nouveaux" and a smaller volume entitled "Correspondence" of 170 written pages, measuring 21x15.5cm, in which Florence copied some of the letters he sent out.

In these volumes appear notes, conjectures,

*The dates noted on the cover of each manuscript: I, 1829; II, 1836; III, 1840; "L'Ami des Arts . . .", 1837.

a sequence of scientific process reports such as "Voyage Fluvial du Tiete à L'Amazone" with beautiful illustrations, and some personal writings in which he airs his feelings, such as the impressive "L'Inventeur en Exile," which covers 150 pages of the big volume.

In all the manuscripts we find information, notes and deductions about his various inventions. However, in Manuscript I are the records of his day-to-day experiments.

The great manuscript which Florence entitled "L'Ami des Arts livre à lui-même ou Recherches et découvertes sur différents sujets nouveaux," dated 1837, condenses his notes about his inventions, among others, *poligraphie*, *photographie* (or imprinting by sunlight) and fixing the images in the camera obscura, studies of the sky, the ninth hydrostatic, research on animal voices (*zoophonie*), etc., ending this volume with the beautiful diary of the scientific expedition under the command of Baron von Langsdorff.

On pages 42 to 79 of this manuscript, Florence describes his discovery of photography.

Fortunately, all this material, today in the possession of his great-grandson, Arnaldo Machado Florence, is in a state of good preservation, thus making the continuation of our research possible.

The Inventor's Youth

In March of 1824, after a forty-five day voyage from Europe, the sailing ship *Marie Therese*, under the command of Frigate Captain Du Campe de Rosamel, anchored in the Bay of Guanabara at Rio de Janeiro. On board was young Antoine Hercules Romuald Florence, twenty-one years old, a native of Nice, who, at the invitation of Captain Rosamel, had come to America.

A painter by profession, young Florence, since his early youth, had expressed a desire to travel and see the world. He was the son of Arnaud Florence, an eminent surgeon in Bonaparte's army, and of Augustine de Vignallys, of noble descent.

His sensitivity to the arts had been obvious from childhood. However, his interest in the sea and his curiosity about travelling had been growing ever since he was sixteen.

He had done remarkably well in his studies of mathematics and physics, developing at an early age ideas and projects that showed the

self-discipline which was to be so useful to him in the future. He devoted himself to painting, not only serving to occupy his mind, but to put some money in his pocket.

Upon landing in Brazil, Florence obtained employment with a Frenchman, the owner of a dress shop, M. Pierre Dillon. He worked for him for almost a year, but, reaching the decision that that type of work was not for him, he found another job in the printing shop-bookstore of another Frenchman, M. Plancher, the founder of the newspaper *Jornal do Comercio* of Rio de Janeiro.

He had been working there for four months when a neighbor showed him a newspaper ad reading "A Russian naturalist, having to travel to the interior of Brazil, needs a painter. Qualified candidates may call at the Russian Consulate."

The Langsdorff Expedition

Florence immediately contacted Baron von Langsdorff, the consul general of Russia, who was to head the expedition, and who accepted him as second painter.

The first painter was to have been Rugendas, who eventually gave up the job, and was replaced by Amado Adriano Taunay.¹

The scientific expedition had the following persons as the intelligentsia of the group: Baron Georg Heinrich von Langsdorff,² head of the expedition; Ludwig Riedel, botanist; Nestor Rubzoff, astronomer; Christian Hasse, zoologist, who, however, did not get to embark; Amado A. Taunay, first painter; Hercules Florence, second painter.

There were also a large number of slaves, and an additional member of the party whose presence was remarked upon in a gossipy passage narrated with much relish by the Viscount de Taunay.³ The story appears on page 78 of the *Ensaio Historico e Literario* [Historical and Literary Essay], 1900, by Estevam L. Bourroul,⁴ main biographer of Florence.

The expedition which had the Emperor Alexander I as its patron lasted for almost four years. It set out on September 3, 1825, from Rio de Janeiro and stopped over for a few months in Porto Feliz, S. Paulo, where the group made their final preparations for the long trip. There Florence met Maria Angelica Alvares Machado e Vasconcellos with whom he fell in love.

In June, 1826, the expedition entered the jungle and after covering 2,240 leagues (13,440km) returned to the capital of the empire on March 13, 1829.

This expedition is the subject of a marvelous report to be found in the manuscript of Florence's diary "L'Ami des Arts livre à lui-même," full of daring deeds and adventure, and of inestimable scientific value.

Florence also wrote a separate report of the expedition: Some eighty-two pages under a title which translates into English as "Outline of a journey made by Mr. von Langsdorff to the interior of Brazil from September 1825 to March 1829."

Upon his return, Florence gave this report to the Taunay family because they had lost their relative Amado Adriano Taunay, who drowned while trying to ford the Guapore River. The report was translated and published forty-six years later by the Viscount de Taunay in the *Quarterly Magazine of the Historical and Geographical Institute of Brazil*, vol. XXXVIII, in 1875. However, the original manuscript which appears in Florence's diary, is only now being transcribed and translated by his great-grandson Francisco A. M. V. Florence.

After the expedition, Florence married Maria Angelica, the daughter of Dr. Francisco Alvares Machado e Vasconcellos, and they went to Campinas (Villa S. Carlos) to live in the year 1830.

Previous Inventions which led Florence to Experiment with Photography

The result of his observations concerning the sounds made by animals, of which he took note during the four years of the expedition, was one of Florence's first scientific essays, "Recherches sur la voix des animaux, ou essai d'un nouveau sujet d'études, offert aux amis de la nature."

At that time, there was only one printing press in S. Paulo, and one newspaper, *O Farol Paulistano*, which was printed in its own type-shop. Hercules found there were many obstacles in the way of his publishing his *Zoophonie* so he began to search for a different method of printing, and in 1830 discovered a totally new method to which he gave the name of *polygraphie*.

According to E. L. Bourroul (op. cit.) in 1831, Florence at R. Ogier's print shop, Rua da Cadeia 142, Rio, published a booklet of sixteen pages

containing a musical system of eighteen figures, and details of an essay concerning "zoophony."

In his manuscript "L'Ami des Arts . . .," Florence commented on the background for his studies on "polygraphy."

Having had the desire in 1830 of publishing a memoir with the idea of making the voices of animals a new object of the study of nature, and being in a country where there is no printing press, I realized how useful this art would be if it could be simplified in its apparatus and processing, so that everyone would be able to print as much as he needed, I therefore dedicated myself to the study of the art of printing with the few books I then possessed, and I discovered that lithography, which can become the more generally used, still employs very weighty stones, voluminous and expensive; that its process is still very complicated and requires material which can be found only in big cities. Engraving requires very well polished "planches en cuivre," which are expensive, and at the same time cannot be found in all places. Because of its big apparatus, the art of typography is still out of reach, quite beyond someone in my circumstances.

I dedicated myself, therefore, to research work, which led me, gradually, to a discovery whose usefulness has already proven itself to me over the last five years of experimenting, giving me two great advantages, that I had not expected: first, the board (planche) inked only once for all the printing; and second, the simultaneous imprinting of all colours. ("L'Ami des Arts. . .," p. 12).

A detailed description of the process of *poligraphie*, is to be found in his manuscript "L'Ami des Arts . . ." on pp. 12-39.

The fact that the invention of *poligraphie*, a process that utilized a kind of stencil device for printing, was met with general indifference was probably Florence's first great disappointment. Nevertheless, he tried many different ways to publicize his *poligraphie*. In 1831, M. Edouard Pontois, Chargé d'affaires of France in Brazil, with whom Florence had already dealt, sent a report to his government in Paris with a complete description of the process and two "polygraphic proofs." In 1839, the newspapers *A Phenix* and the *Observador Paulistano* published

several articles with complete information on "polygraphy." In 1840 *Jornal do Comercio* of Rio de Janeiro transcribed the articles from the *Phenix* and announced that twenty-two "polygraphic proofs" had been placed on public exhibition. In 1843 the Academy of Science and Arts of Turin, Italy, declared that his invention was something new, and that despite its pros and cons, it deserved the support of the Sardinian government. In 1843, Florence was honored by a tribute from the Academy of Fine Arts in Rio de Janeiro.

On pages 62, 63 and 64 of Manuscript III, as seen in the corresponding transcription from the manuscript, Florence notes in his diary on December 5, 1852, his dislike for Lipman's invention in 1848, which is "polygraphy" itself, and with which he had already obtained success seventeen years before (in 1831) and that from 1834 on, he had been printing perfectly and simultaneously in all colors.

The scientific establishment, diplomats and the press praised his invention, but nothing positive resulted in the way of financial compensation or protection rights for the inventor.

Going back to the inventor side of Florence's personality, as we can see he was spurred on by the difficulties he encountered in trying to invent "polygraphy," and, to quote his own words, the process "was born of a structured and premeditated calculation." (Bourroul, op cit., p. 459.)

Photography

Bourroul makes some superficial comments about the invention of photography, although transcribing certain ambiguous statements regarding it, made by the Viscount de Taunay in his preface to the 1877 translation of *Zoophonie*.

In the magazine of the Paulista Museum, vol. IV, 1900, on page 167, there is a passage in an article written by Dr. Jose de Campos Novaes, containing the following reference to photography: ". . . The documents about the latest scientific discovery, one of the most useful of our nineteenth century, made in Campinas by H. Florence and completed through highly subtle chemical manipulations by J. C. de Mello, are in the possession of his grandchildren who should give them the publicity they deserve. They have not claimed the invention publicly,

since it coincided with an identical discovery by Daguerre and Niépce in France. . ."

On June 26, 1948, Arnaldo Machado Florence, who, as the keeper of the estate of his forefathers, is in possession of manuscript diaries and other documents, gave a lecture in the Public Library of S. Paulo, about the life and works of H. Florence, accentuating his pioneer effort in photography.

Bulletins 27 and 28, published by the Foto-Cine Clube Bandeirante (July and August, 1948) printed the above mentioned lecture, with a preface by Dr. Eduardo Salvatore, president of that body.

As I mentioned in the introduction to this paper, I published several articles about Hercules Florence, giving as many details as possible in order to capture the historical and cultural era in which Florence lived, and to pinpoint his position as an independent, isolated inventor of photography in 1832/33. However, his original manuscripts offer us much more in the way of substantiation, and I found it useful to present the sequence of the evolution of his reported experiments which led me to writing this paper based on the data furnished in his own diaries.

My main purpose in this study is to try to locate the first reference to photography made by H. Florence still in the year 1832.

So from a narration of the discoveries and research work supplied to Dr. Manuel Ferraz de Campos Salles⁵ under the title "Noticia sobre os meus trabalhos scientificos e artisticos feita a convite do Dr. M. F. de Campos Salles" [News about my scientific and artistic works made at the invitation of Dr. M. F. de Campos Salles] dated July 26, 1870 (written in Portuguese) cited by Bourroul, op cit., pp. 459, 460, the following description follows:

I will not let the incident pass without comment, and that is that in 1832, without even thinking about it in advance, the idea of printing with sunlight came to me. I obtained several negatives, among them one of the jail house of Campinas*; I distributed 30 ad-

*Author's note: He kept this view of the jail inside a book to avoid the effect of light and it was still perfect fifteen years later, according to Bourroul's affirmation. However we cannot be precise as to the date of this photograph.

vertisements for the merchandise I sold. Mr. Joaquim Correa de Mello⁶ helps me in giving this process the name of *photographia*: but when I came to know that Daguerre had obtained better results, I abandoned this type of work.

And again in Bourroul's book, pp. 443-44 of Chapter VII read:

In this year 1832, on August 15, while strolling on my veranda, an idea came to me that perhaps it is possible to capture images in a *camera obscura* by means of a substance which changes color through the action of light. This is my own idea because not the slightest indication of it ever reached me from elsewhere.⁷

I will call on Mr. Joaquim Correa de Mello, my father-in-law's druggist, an educated person, who mentioned to me the existence of silver nitrate.

I started to make experiments, in which everything came out perfectly insofar as the engraving on the glass pane was concerned. Using the camera obscura, I captured the negative of the view of the jail house, and of a bust of Lafayette, etc.

Mr. Mello helped me to formulate the word "photographia." A document photographed thirty years ago, with an embellishment on it, which I used as an advertisement for the sale of my fabrics is being circulated in Villa Campinas that had never seen announcements—I was left a whole week with a "vara" and a "covado"* in my hands, selling my fabrics.

Thus I took to making experiments without being able to capture well the images until 1839, when I gave up because of having heard about Daguerre's discovery.

The original of this text as reproduced in Bourroul's book still has not been located, so that we do not know its exact date.

There is another reference to the year 1832 that we located in his manuscript diary "Correspondence" on p. 3. It is a copy of a letter Florence wrote in September, 1862, to Charles Auguste Taunay (a major in the Brazilian armed services). The letter is reproduced in the manu-

script "Correspondence" in the specific passage in which Hercules Florence deals extensively with photography; however, there is one doubtful point to be clarified:

"Je ne passerai pas sous silence un incident qu'a commencé en 1833.* L'idée me vient un jour, c'était le 15 Août, que l'on pourrait fixer les images dans la chambre obscure. . ."

We see in the manuscript, reference in letters to the year 1832 and Florence's first contact with photography. Although the idea, as we see, had come to his mind in 1832, it was only in 1833, on January 15, that the first records were noted down concerning it.

In the following paragraphs, I have tried to make a short summary, to indicate his more important conclusions and discoveries in the field of photography.

It was first Joaquim Correa de Mello, the botanist and druggist who, announcing to Florence the properties of silver nitrate, gave him the first impetus for the unraveling of the chain of subsequent facts.

Drawings and diagrams of his camera obscura give us an idea of his equipment the description of which appears on p. 59 of the manuscript "L'Ami des Arts. . ."

Florence's search became intense when he set himself to work for a definite end. After his first results, when he used silver nitrate as the solution for creating a sensitive surface, Florence began to experiment with other chemical substances that in one way or another would give better results after light had acted upon them. Narrating his first experiment (January 15, 1833) he mentioned his first problem, that of the change of the background color of the image he obtained, the white becoming gray or darker in tone after it had been washed and dried by sunlight.

Next he speaks of a second problem, connected to his getting a reversed image. On p. 58 of the manuscript "L'Ami des Arts. . ." Florence writes the following, which is a definition of the negative itself:

By placing a paper that has been wetted in the camera obscura, by a solution of silver nitrate, the objects on it are reproduced, but with the inconvenience that the parts that should be clear become dark and vice versa. From this it can be seen that, if because of the inconvenience in question, my investigations still held poor results, it is none the less true that I have obtained lines, forms and contours, harmonious between themselves, without the help of the human hand.⁸

Curious is his observation about the difficulty in obtaining a final image on paper, identical with the original subject. This problem showed the need for the performance of two operations. A description of this can be found on p. 132 of Manuscript I as well as a write-up on the photographic portrait and additional considerations on the reverse of p. 133.

Because of his background, Florence was always attracted to drawing and painting. He had an inkling of the progress that would be possible for the visual arts through the application of the photographic process and the perfection with which all subjects could be reproduced, especially drawings, and this is what motivated him to devote more and more effort to the improvement of his invention.

In his own words (Manuscript I, reverse of p. 133 — January, 1833) he gives a description of a process we could call negative-positive:

I decide to draw on a glass pane, "à la manière naturelle." I will take a copy with sunlight on another glass pane previously covered by me with a layer of silver nitrate of complete transparency; there will be the drawing, but in such a way that the white tones [clairs] will appear in place of the darks, and vice versa: I will then wash the glass to avoid having that which must not be dark appear as such, and I hope that the water will not remove what is colored, since it did not erase it on paper.

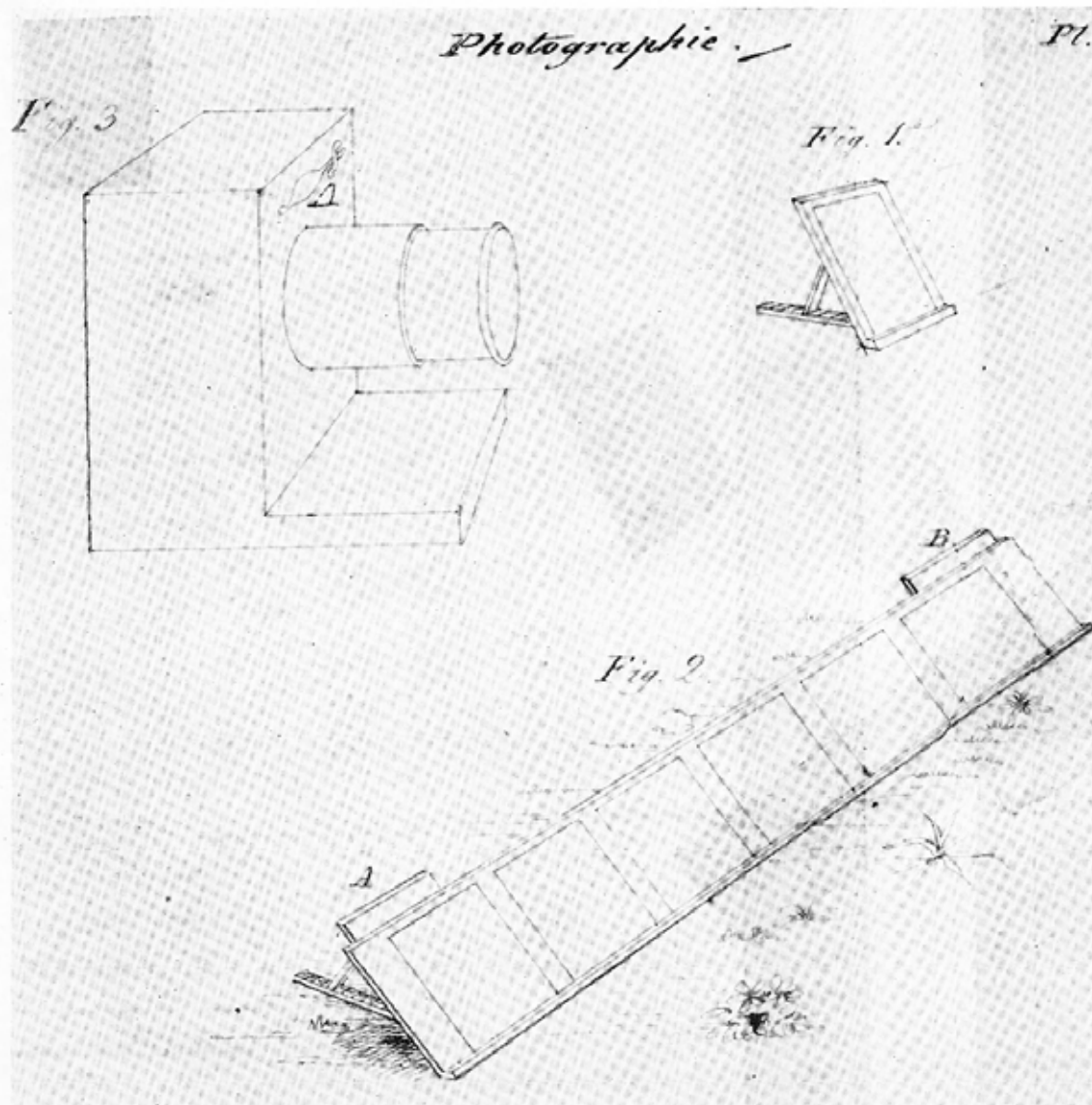
Then I will put sheets of paper under this glass and will have the copies from nature [au naturel].

Once this had been established, Florence began to make copies or printings of various subjects obtained from the matrix or negative.

In different parts of his manuscripts, Florence describes a way of multiplying writings and drawings through printing by sunlight, as in the

*Author's note: vara and covado are ancient units of measurements of length.

*Author's note: There is every indication that there was a lapse on Florence's part when he gives the year as 1833 instead of 1832.



passage "Avantages" [Advantages] in Manuscript I on p. 150, dated August 26, 1833.

As I mentioned before, Florence devoted himself to searching for new chemical substances in order to find new bases for further research and in order to perfect his invention.

Since there were no scientific institutions in the area in which he lived, and as he so often remarked, he was so far away from any cultural or scientific centers that could have given him some recognition or glory, Florence worked alone from 1833 developing his studies in the field of photography.

It is worthwhile to note that Florence was not discouraged by his working conditions in the midst of the Paullista hinterland. He continued to experiment using submuriate of mercury, phosphorus, prussic acid, oxalic acid, oxilate of mercury, silver oxilate, chloridric acid, hydrocyanic acid, silver chloride, silver bromide, muriate of silver and dozens of other substances and chemical combinations and drugs, describing their properties and effects when exposed to light, as we see in his scientific diaries.

On April 8, 1833, in Manuscript I, on p. 141 and under the heading of "Interesting Findings," Florence describes the use of nitro-hydrochloride of gold. Then explaining that by combining nitric acid with muriatic acid in equal proportions and pouring a small quantity of gold powder over the mixture, by wetting one side of the paper with the resulting solution (in this case he used a sheet of stationery), a sensitive emulsion would have been formed. Next, if this paper were placed in sunlight, taking care to cover part of it with an opaque object, the surface reached by the light would darken. Then, wetting the paper in urine for fifteen minutes and drying the excess with a cloth, putting it back in the sunlight for a few hours, he obtained a result that he considered to be very satisfactory: the white part that had been protected by the opaque object *never altered*.⁹

The combination of gold chloride and urine (p. 48 of "L'Ami des Arts. . .") seemed to him to be most satisfactory because of the quality of the "printing" obtained: "I printed by means of photography, drawings as clear, as delicate as the finest engraving." Florence captured the images by the effect of light alone on the light sensitive surfaces (no chemical development) in a way similar to printout papers.

Throughout his manuscript the reader will keep running across the names of famous chemists and their theories: everything that could possibly be of interest to Florence was reproduced. We thus find references to Berzelius, Saussure, Fourcroy, Ritter, Wollaston, Gay-Lussac, Laugier and many others.

Florence describes the use of substances that sensitize wood and textile. He is even prophetic in describing the solidifications of bodies through the effect of light, which would lead to obtaining images in relief through the use of gases in the interior of the camera obscura.

In the same way he also investigates the possible formation of images through the action provoked by the presence of hydrogen and chlorine in the interior of a vase (p. 165 of Manuscript I). Nor did he neglect to make predictions based on the principles established in the spectrum, about color photography (still in 1833). Up to the present time, I am not quite sure whether or not he used hyposulphite in the fixing of his photographs. However, he noted in Manuscript II on p. 50, the following reproduction of the words of Berzelius:

"Hyposulphite can be recognized by the fact that it dissolves recently precipitated silver chloride or if it becomes sweet tasting." He also notes that "If the formiates are mixed with silver nitrate, and we heat the solution slightly they reduce silver."

And finally, Florence notes the following (Manuscript II, p. 67):

I discovered a way to keep the proofs from darkening: add a layer of silver nitrate to the paper and allow it to dry in the dark; dip it in a solution of water and table salt, and allow it to dry in the dark; pass liquid caustic potash over it and allow it to dry, but always in the dark. Print in the sunlight, wash with spirits of ammonia.¹⁰

This experiment has been made and confirmed by the Rochester Institute of Technology with very good results.

The texts in the appendix are the transcription of his manuscript diaries in French, done by one of Florence's great grandchildren, Mr. Francisco Alvares Machado e Vasconcellos Florence, who was, without a doubt, the most qualified person to do the translation since he is familiar not only with the subject but with

Florence's handwriting.

Besides the manuscript diaries, from which I extracted the data and notes on the discoveries in photography, there are still in existence some photographic documents and drawings by H. Florence of an estimable importance in the history of photography. They are reproduced in the following plates:

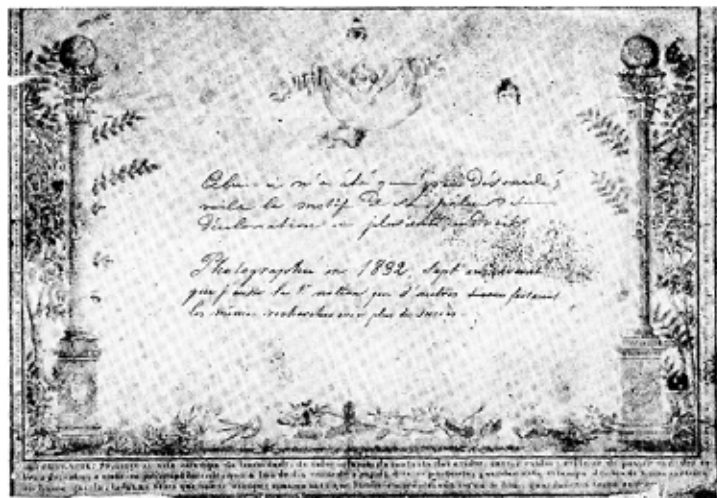
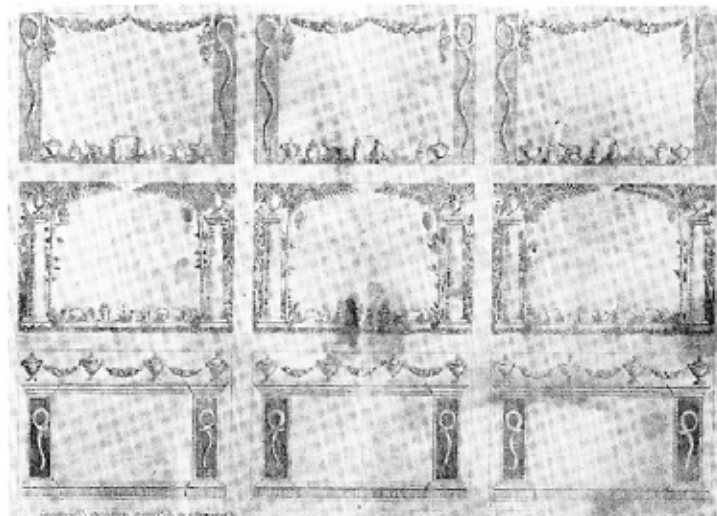
1) Drawings (measurements: 19x20.5cm) of his camera obscura and other accessories for copying, which illustrate the description contained on p. 59 of the Manuscript "L'Ami des

Arts . . ."

2) Photographic reproduction (contact print) of a "Mason's Diploma" (measurements: 29x20cm). This print shows against light a water mark of the original paper dated 1829.

3) Photographic reproduction (contact print), measuring 29.5x20.7cm, of pharmacy labels, which Florence mentions in his manuscript "L'Ami des Arts. . ." on p. 54 in the chapter "Avantages," and Manuscript I, p. 150 (August 26, 1833) in the chapter "Avantages."

I consider it apropos to mention two articles



Photographic reproductions of (above) pharmacy labels, and (below) a "Mason's Diploma."

that came out in Brazilian newspapers soon after the news of the discovery of photography, as it was announced in Paris.

The first one is an article in which H. Florence reveals his position with regard to his being a pioneer in *polygraphy* as well as in photography. Published in the newspaper *Jornal do Comercio* of Rio de Janeiro on December 29, 1839, it transcribed the material published in the Sao Paulo newspaper *Phenix*, dated October 26, 1839, and bears the editor's title:

The readers may compare dates and decide for themselves whether the world owes the discovery of photography or at least polygraphy to Europe or to Brazil:

"For nine years I have been working on this new method of printing and for more than six years I have done it here in this town; I have also filled orders from the Capital and from other parts of the province. So my discovery is well known to the people of Sao Paulo. Even in Rio de Janeiro, some people of high public rank, some distinguished artists, and some famous business people, have been informed that I invented Polygraphy and if it were really necessary I could give the names of many respected persons. I have not given wide publicity to this discovery, because I wanted to perfect it, and it is quite clear that in this Villa of S. Carlos I had need of resources to make quicker progress. Sennefelder had to work for many years without any personal profit, facing poverty in Germany, which has so much to offer, and lithography took seventeen years to get from that country to France.

"Polygraphy is already a confirmed fact, which the arts are going to adopt. The proof is, as I have already said, that for six years I have used it in printing for the public in this province.

"I have strong reasons for making this declaration. Moved by principles I deem it unnecessary to declare, I have not kept my process a secret from people worthy of my confidence. I have been surrounded by difficulties here: in moments of total discouragement I felt as if my process would end by destroying me: I wanted to launch it among the artists and a text containing a full description was taken to Paris last year by a kind person who has done me the favor of

appreciating my invention.

"Another briefer descriptive text was sent in 1831 with M Pontois. Fearful that these writings might fall into the hands of those who would appropriate the discovery as their own, and it being only fair that at least the basic idea which gave it birth be publicly acknowledged as belonging to its rightful owner, I am impelled to make the above declaration to the public.

"Another of my discoveries also known in this town, as well as by some people in Rio de Janeiro is photography: the text sent to Paris carried two titles at the end: 'Discovery of photography or printing by sunlight' and 'Investigations into the capturing of the images in a camera obscura by the effect of light.' A photographic drawing I had made was presented to the Prince de Joinville and put in his album by a person to whom I am indebted for this favor. I have just been informed that in Germany they have printed by light, and that in Paris they are doing very well at capturing images. As I have done very little with photography because of a shortage of more sophisticated conditions and for lack of a better knowledge of chemistry, I will not dispute the discoveries with anyone because two people can have the same idea, because I always found the conclusions I reached to be somewhat shaky, and to each his own: but I make this declaration with regard to polygraphy which has such beautiful properties that its inventor may be known for all time."*

On February 10, 1840, the newspaper *Jornal do Comercio*, referring to H. Florence's declaration which had been published on December 29, 1839, took up the subject again:

Today we have more data than we had at that time, so that we are able to settle the question in favor of Brazil.

The reasons that led us to make this de-

*Author's note: The person to whom Florence refers as being the one to whom he owes the favor of having placed a photograph in the Prince de Joinville's album was Felix Taunay, director of the Academy of Fine Arts in Rio. The Prince de Joinville was married to D. Francisca, daughter of D. Pedro I, and sister to the heir to the throne of D. Pedro II. The Prince de Joinville was himself the son of King Louis Philippe of France. The photograph that was presented to him was a photographic reproduction of a drawing (portrait) of a Bororo Indian (made by Florence).

cision are found in the following letter, which the author of the discovery has just sent us and which we are pleased to print:

Sao Carlos, January 18, 1840

Mr. Editor,

The article—Scientific News—in the 316th edition of the *Jornal do Comercio* carries a declaration concerning the discovery of polygraphy which had appeared originally in the *Phenix* of S. Paulo; and because of that I am moved to address this letter to you. I wish to thank the editors of the *Jornal do Comercio* for the importance they have attributed to my discovery and the justice thus done, and at the same time would like to offer a clarification I feel is necessary about my first declaration.

I don't know if someone gathered from it that I was confusing polygraphy, a discovery that is entirely mine, with photography, to which I have no pretensions after learning what has been happening in Europe along these lines. It is true that for many years I have made use of photography in drawing; and in 1834 I used it in the presence of Messrs. Riedel and Lunt who took some of my photographs with them, and up to August 1839 I never heard that the same or better experiments had been made in Europe; perhaps it is not too bold for me to say that I too invented photography, a name which was not new to me when I saw it for the first time in the paper from Rio de Janeiro; but the truth is that I did not continue with my experiments, and for this reason I do not want to claim as my own a discovery that someone else may have a better right to.

Epilogue

Florence, from 1832 on (with the assistance of Joaquim Correa de Mello) had it in his mind that the use of silver nitrate would be the ideal solution for creating a sensitive surface. And as soon as he realized this, he began to record in his diaries the effect of light upon silver nitrate and in January, 1833, Florence obtained a negative and entitled his invention photography.

What is intended in this work is only to add one more chapter to the history of photography with regard to its early beginnings, which are

practically unknown and of an importance that speaks for itself.

According to Florence: "I will not dispute my discovery with anyone because two people can have the same idea."

Although a succession of disappointments pushed him to the point of self-depreciation, when he said (after hearing about the discovery of photography in Europe) that other inventors had attained better results, it is up to the readers and researchers to make the final judgment in the face of the evidence presented herein.

One fact must be recognized — that the scientific isolation in which Florence lived, described so well in certain passages of his manuscripts, was the factor that determined his scientific and creative extermination insofar as his inventions never received any recognition.

However, there is definite proof that Florence was the first in Brazil and in the Americas, so this must be accepted as a fact.

I fervently hope the sequence of his research, as has been demonstrated, ending in his independent discovery of photography in the villa of S. Carlos, S. Paulo, Brazil, between 1832/33, has finally emerged from obscurity.

Notes

I would like to thank the personnel of IMP/GEH for the assistance they gave me in March 1976 and Rochester Institute of Technology for its valuable cooperation received through Dean Lothar Engelmann, Professor Thomas Hill for reproducing the main experiments made by Hercules Florence since 1833, and Professor Charles Arnold who introduced me to all these gentlemen.

¹ Amado A. Taunay (1803-1828), a French painter who together with his family, came to Brazil in 1816 as a member of a French Artistic Mission.

² Baron Georg Heinrich von Langsdorff (1774-1852), medical doctor, graduate of the University of Göttingen, accompanied the Prince of Waldeck to Portugal (at the age of 23) where he introduced the use of vaccine. He was part of several scientific expeditions and published *Observations faites dans un voyage autour du globe de 1804 à 1807; Plantes recueillies pendant le voyage des russes autour du monde de 1810 à 1813; Memoire sur le Bresil pour servir de guide a ceux que desirer s'y etablir.*

The date of his arrival in Rio is unknown but it is certain that he was visited in 1817 by Spix and Martius, in 1818 by J. C. Mikau and in 1819 by Theodor Von Leuthold and James Henderson, according to the latter's book, *History of Brazil* etc. (London: Longmann, Horst, Rees Orme, Brown and Green, 1828). In 1822 he was visited by Maria Graham, as is reported in his publication *Journal of a Voyage to Brazil* (London: Longmann, 1824). His residence was a meeting place for naturalists and nobles.

His scientific works were carefully prepared and he made frequent trips to the Science Academy of Saint Petersburg and other societies. In Rio de Janeiro he had the function of General Consul of Russia. During his scientific trip in the interior of Brazil, Langsdorff became mentally ill, did not recover and ultimately died of malaria. *Esboco da viagem feita pelo Senhor de Langsdorff* (see note 3). In the introduction to his *Viscount of*

Taunay, there is reference to Langsdorff on p. 349, vol. 38, first part, 1875, by Rev. Tr. of I.H.G. (work quoted).

"When the commission arrived at the Santarem in the beginning of 1829 Langsdorff was transported to Europe, where he lived or better vegetated in his hometown, Laisk, in Suabia until 1852, passing away at seventy-eight, as he was born in 1776 (?). Until the last day of his life, the Emperor Nicholas I paid him a generous pension of 10,000 rubles in spite of his unsuccessful expedition."

³ Viscount de Taunay (1843-1899) (Alfredo M. D'Escagnolle Taunay), Brazilian military figure and writer, author of many well known works in Brazilian literature: *A Retirada da Laguna* [The Retreat of the Lagoon]; *Inocencia* [Innocence]. He translated and published "Esboco da viagem feita pelo Senhor de Langsdorff ao interior do Brasil, desde Setembro de 1825 até Marco de 1829 [Outline of a voyage made by Mr. Langsdorff in the interior of Brazil, from September 1825 to March 1829] in the magazine of the Historical and Geographical Institute, vol. 38, 1875.

He participated in the whole military campaign in the Paraguayan War, drawing up a diary about the war which was later to give origin to *The Retreat of the Lagoon*. He entered politics and was president of the province Sta. Catarina and Parana. Viscount de Taunay is not to be confused with Afonso Taunay, author of the preface of the re-edited work "Outline of a Voyage. . ." Afonso Taunay was the director of the Paulista Museum and proposed that the title of "Patriarch of the Paulista Iconography" should be given to H. Florence.

⁴ Estevam Leao Bourroul, the principal biographer of H. Florence. Author of *Ensaio Historico e Literario* [Historic and Literary Essay], 1900, the work used as a guide for this paper.

⁵ Dr. M. F. de C. Salles, farmer, congressman of the empire, senator of the republic, minister of justice in the temporary government, president of Sao Paulo and later the president of the Republic of Brazil.

⁶ Joaquim Correa de Mello (1816-1877). He was known as "Joaquinzinho the druggist" because he was the partner in a pharmacy or drugstore in Campinas with Florence's father-in-law, Francisco Alveres Machado. Mello became internationally respected for his contribution to botany. A connoisseur of our flora, he collaborated extensively with the botanists abroad. Thus Edouard Marren would ask him for "Bromelias," Nylander "Lichens," Cogniaux "Cucurbitaceas," Miers "Menispermaceas," Spruce "Papayaceas," Reichenbach "Orchidaceas," Benthams, Hooker, all that could be added to the mew herbarium.

On p. 437 of the Bourroul book (op cit), we can read: ". . . He would see to everyone liberally but he neglected the convention of mentioning his name in publications: he enumerated the series of the plants in sequence for citation in general herbaria. The names change as the progress of science progresses, but the pure and simple enumeration of the floral specimens registered in the herbaria of museums is immutable as well as their origin and the name of the traveler who has collected them. For this reason Mello's name is only associated with the sixty-five plants of Mr. Dureau's herbaria, in particular the 'Bignoniaceas'. . ."

J. C. de Mello was very much helped by his daughter, Francisca de Salles Mello, who was a skillful artist. He was of a shy and modest nature, to the point of being practically unknown in Brazil. He refused systematically to publicize his research work.

One day he received a letter from a well known journalist, Dr. Francisco Rangel Pestana, from which we quote these words: "I believe that you know the journal *A Provincia de S. Paulo* and its program, and therefore you will not find it inconvenient for me to ask your valuable collaboration in the Scientific Section. I know that you have more important things to do that will bring recognition to you and your Country and that an excessive modesty and the suspicion of not finding them of real acceptance on the part of your compatriots keeps you from making them public among us. Allow me, however, to dare to contradict you in your designs by asking for some of these works for the *A Provincia de Sao Paulo*."

As the chemist that he was, Mello had no difficulty in disclosing to Florence the characteristic of silver nitrate and its transformation through the effect of light. J. C.

de Mello's help was fundamental, therefore, to the development of Hercules Florence's first experiments.

⁷ When Florence made his discovery, he named it "Photographie" since "the major role is performed by light."

In the margins of his text, Florence noted titles referring to the subjects presented in it. The title "Photographie" [Photography] constantly appears as well as "Fixation des images dans la chambre obscure" [Capture of images in the camera obscura]. Probably they were added to the text on different occasions. However, I found in Manuscript I, January 21, 1834, p. 156, the usage for the first time of the verb "photographier" and on February 19, 1834, Manuscript I, p. 159 (reverse) the usage of the noun "photographie" as well as the noun "photographia" in Portuguese, which appears in his photo of pharmacy labels.

John Herschel used the terms "to photograph" and "photographic" for the first time in February 1839, just some weeks before Madler published the noun "photographie" on February 25, 1839.

⁸ Florence made the following comment on the use of the camera obscura in "L'Ami des Arts. . ." p. 59:

"The action of the light drew for me the objects in the camera obscura, fixing the big shapes and accentuating contrasts, but with the imperfection that the lighter parts become darker and vice-versa. In spite of the fact that this is the way to obtain drawings made by nature and not by our hands, putting aside its actual precariousness, is this new fact in the Arts, not really interesting? Isn't it deserving of perfection?"

"Haven't I initiated the more than wonderful art of designing any object, and capturing a view, without having the trouble of doing it myself?"

⁹ Florence presented a careful report in "L'Ami des Arts. . ." concerning the use of gold in his printing process. The printing was made by contact with a paper coated with a gold chloride layer, and exposed to sunlight, with a drawing on a glass plate, and then washed in urine and water for fifteen minutes. According to Florence the tones were very black with a touch of blue. Copies were taken by using parchment stationery paper, and he mentioned that non-starched papers used in printing were not convenient for they absorbed too much chloride. The use of gold chloride as a light sensitive material was confirmed by experiments at Rochester Institute of Technology.

¹⁰ In 1837, in "L'Ami des Arts. . ." p. 51, Florence described the properties of silver chloride, its insolubility in water and solubility in caustic ammonia (ammonia hydroxide). While being washed with ammonia, the chloride would be dissolved while the print was not altered by the light. However there was the inconvenience that the ammonia altered the drawing, making it very light.

Appendix

MANUSCRIPT I "LIVRE D'ANNOTATIONS ET DES PREMIERS MATERIAUX"

Le 20 Janvier. Dimanche 1833. *Decouverte tres importante.* Ce que j'ai dit dans l'article precedent du 15, vient d'etre confirme aujourd'hui par deux experiences tres heureuses. Premiere Exp. J'ai fait tres imparfaitement une chambre obscure, avec une petit caisse: je l'ai couverte de ma palette; j'ai mis au trou de ma palette une lentille qui avait appartenu a une lorgnette (ces details sont pour montrer la precarite des moyens). J'ai place le miroir, j'ai mis dedans, a une hauteur convenable, un morceau de papier qui avait ete imbibé d'une dissolution faible de nitrate d'argent. J'ai place cet appareil sur une chaise, dans une salle obscure par elle meme. L'objet qui etait represente dans la chambre obscure etait une des fenetres, avec la vitre fermee: on voyait les carreaux, le toit d'une maison en face, et partie du ciel. J'ai laisse cela pendant quatre heures, j'ai ete voir, et j'ai (palavra ilegitivel por dilaceracao da pagina nesse ponto) apres avoir retire le papier, j'y ai trouvee la fenetre representee d'une maniere fixe; mais ce qui devait etre obscure, etait clair; ce qui devait etre clair, etait obscure. Mais n'importe, on verra bientot le remede a cela. Craint que le reste du papier, et tout ce qui etait clair dans la fenetre ne devinasse obscur a la lumiere, je le lavai sans tarder, pour enlever

le nitrate d'argent; ce qui était déjà noir, ne perdit rien de son intensité au soleil, pendant une heure; ce qui était blanc, devint à la vérité un peu obscur, mais jamais assez pour faire disparaître le dessin.

Or, il ne manque plus qu'à trouver le moyen d'empêcher que ce qui est blanc se ternisse de la moindre des choses, et faire que ce qui est obscur dans l'objet, reste obscur sur le papier; nous allons bientôt y songer, mais traitons de la deuxième expérience, qui présentement est bien plus concluante.

Je dirai, pour une satisfaction à moi particulière, que c'est au contraire cette expérience-ci qui est la première parce que je l'ai faite avant l'autre.

JANVIER 1833, p. 133

Je me propose de dessiner sur un verre à la manière naturelle; je tirerai une copie au soleil, sur un autre verre que j'aurai couvert d'une couche parfaitement transparente de nitrate d'argent; le dessin s'y trouvera avec les clairs à la place des obscurs et vice-versa; je laverai ce verre, pour empêcher que ce qui ne doit pas être obscur le devienne, et j'espère que l'eau n'enlèvera pas ce qui est colore, car elle ne l'a pas enlevé sur le papier; alors je mettrai ce verre sur les feuilles de papier, et j'aurai les copies en naturel.

MANUSCRIPT I p. 150

Le 26 Aout 1833. **Decouverte** d'une nouvelle manière de multiplier les écrits et les dessins, dans laquelle on imprime en taille douce, sans qu'il soit besoin de presse, ni de planches en cuivre ou en bois, ni de pierres lithographiques, et enfin, rien de tout ce qui est en usage dans tous les arts d'imprimerie que l'on connaît jusqu'à ce jour.

Avantages de cette découverte:

1) L'imprimerie typographique, la gravure et la lithographie exigent un appareil trop compliqué, trop lourd et trop volumineux, pour qu'un voyageur puisse s'en servir pour imprimer en tous lieux; partout il n'y a pas d'imprimeries de quelqu'un des genres cités, on est privé des moyens de publier un écrit ou un dessin. Le procédé que le sousigné vient d'inventer, n'a besoin que de cinq ou six carreaux de vitres et de nitrate d'argent, objets que l'on trouve partout, et que l'on transporte facilement. Les vitres sont à vil prix, et le nitrate d'argent, qu'on en a besoin est employé en si petite quantité, que pour la valeur de 320 rs., dans une impression de 300 pages in 4), cela peut paraître cher, si l'on considère ce que coûte l'encre d'imprimerie mais le grand avantage ici c'est la facilité d'imprimer en tous lieux.

2) On écrit ou dessine en sens naturel, avec la même promptitude que sur le papier, et on peut, si l'on veut, imiter les plus fines estampes de la lithographie.

3) Les planches ne souffrent jamais la plus petite altération, quand on imprime, n'importe le nombre d'exemplaires que l'on tire: elles sont éternelles, à moins qu'elles ne se brisent par quelque accident, ce qui ne peut être occasion par la pression, puisqu'on n'en emploie aucune.

4) On change à volonté sur les planches, des titres, des mots, des phrases, etc., en sorte que si l'on aura imprimé, par exemple; des étiquettes pour un pharmacien, on pourra se servir de la même planche pour un fabricant de draps, en ne changeant que le nom de la personne et de l'établissement, sans toucher aux ornements, pourvu toutefois qu'il n'y a pas d'inconvénient, s'ils sont du rapport à l'établissement. Un même dessin peut donc servir pour différentes personnes et pour différentes choses.

5) On peut n'imprimer qu'au fur et à mesure de la vente: ou de l'émission, sans que jamais il soit besoin de lavage ni d'aucune opération, lorsqu'on cesse ou reprend le tirage: la planche se conserve toujours la même aussi longtemps que l'on veut.

Inconvénients de cette découverte:

Comme toutes les découvertes à leur berceau, celle-ci présente des inconvénients: ils sont même si grands, que malgré les beaux avantages que je viens de signaler, et auxquels les personnes entendues dans les arts d'imprimerie pourront seules donner toute leur valeur, cette découverte est inférieure à tous ses arts: mais elle a son prix; le seul premier article des avantages le prouve. Enfin, il est agréable de pouvoir imprimer en tous lieux, sans frais, sans peine, et si l'on voyage, sans transport d'ustensiles et d'appareil lourd ou volum-

ineux. Ajoutez à cela que, pour être lithographe, graveur ou imprimeur, il faut un apprentissage difficile, ici on est au fait en deux ou trois leçons.

1) Inconvénient. On ne peut imprimer que de jour, et encore, pour bien imprimer, il faut qu'il fasse soleil. On voit que cet art ne servira que pour une publication ou le jour et l'heure ne soient pas fixes; mais il est une foule d'occasions où l'on veut publier quelque chose, et où l'on ne tient pas à cela: c'est alors que ce procédé servira.

2) Le tirage est très lent: on ne peut, dans une journée, imprimer que dix ou douze exemplaires d'un objet quelconque, mais aussi les planches et les exemplaires pourraient être aussi grands qu'une table, ou qu'une salle, s'il était possible d'avoir des vitres de grandeur correspondante. D'un autre côté, on pourra imprimer beaucoup plus, si l'on a différentes choses à imprimer, ou si c'est un écrit de sept ou huit pages, et au-delà, car alors on préparera toutes les planches et, comme on verra dans le procédé, on pourra les imprimer dans le même espace de temps que celui qu'il faudrait pour une seule planche. Si même on n'avait qu'un seul dessin ou écrit d'une page à impr., on pourrait, pour économiser le temps de l'impression, préparer sept ou huit planches de la même chose, et de ces différentes manières on imprimera jusqu'à 200 exemplaires par jour, n'importe quel format aient les planches.

3) Les imprimés ne sont pas noirs; ils sont marron obscur, et tout le papier est sali d'une teinte brune ou rousse claire.

MANUSCRIPT II "DEUXIEME LIVRE D'ANNOTATIONS ET DES PREMIERS MATERIAUX" p. 42

La Polygraphie et la Photographie reposent sur un principe égal: une planche ou le dessin est à jour, qui laisse traverser un corps qui s'imprime ou imprime son action sur le papier; cela reconnu, on peut en faire l'application de plusieurs manières: Dans la Polygraphie, c'est l'encre placée sous la planche, qui traverse le dessin; dans la Photographie, c'est la lumière; l'électricité, au moyen d'une planche non conductrice, et dessin fait avec une matière conductrice; le calorique radiant, au moyen d'une planche non combustible et peu conductrice du calorique, et dessin fait à jour, pourra colorer en noir — une dissolution de noix de galle, etc., etc.

MANUSCRIPT III "TROISIEME LIVRE D'ANNOTATIONS ET DES PREMIERS MATERIAUX" p. 52

Berzelius — "Les hyposulfites dissolvent du chlorure argentique récemment précipité, en prenant une saveur sucrée. Une liqueur qui ne contient point de sulfite, mais qui contient un hyposulfite, donne, lorsqu'on la mêle avec une dissolution de nitrate argentique neutre, un précipité blanc, qui devient en peu de temps brun, et à la fin noir."

Les dissolutions des phosphites réduisent les dissolutions d'or, d'argent et de mercure, avec lesquelles on les fait chauffer, et en précipitent les métaux à l'état réduit.

Les Oxalates ont la propriété, à l'état de dissolution, de précipiter l'or à l'état métallique, de sa dissolution bouillante.

Si on mêle les formiates avec du nitrate argentique, et qu'on chauffe doucement le mélange, ils réduisent l'argent.

MANUSCRIPT II p. 57

Photographie

J'ai trouvé le moyen d'empêcher les épreuves de brunir: Mettez la couche de nitrate argentique sur le papier; laissez sécher à l'obscurité: plongez dans l'eau portant dissolution de sel commun; laissez sécher à l'obscurité; passez dessus de la potasse caustique liquide; laissez sécher à l'obscurité. Imprimez au soleil, lavez dans esprit d'ammoniaque.

MANUSCRIPT "L'AMI DES ARTS. . ." pp. 58, 59

J'étudiai ses propriétés chimiques, autant que mes livres me permirent; je vis que mes recherches n'étaient pas tout à fait illusoires, qu'il existe des corps qui changent très promptement par l'action de la lumière solaire, et même diffuse et faible. J'éprouvai la peine de ne pouvoir m'en procurer quelques-uns ou cette propriété paraît éminente, et je fus limité à faire mes expériences sur le nitrate argentique, qui toutefois en est passablement doué, et qui me servit à mettre en fait le principe suivant: "c'est qu'en mettant, dans la chambre obscure, du papier mouillé avec une dissolution de nitrate argen-

tique, les objets y restent dessinés, avec l'inconvénient, toutefois, que les parties qui doivent être claires sont obscures, et vice-versa."

On vient de voir dans cet énoncé, que, si mes recherches son de peu de résultats, à cause de la gravité de l'inconvénient, je n'en ai pas moins obtenu des traits, des formes, des contours en harmonie entre eux, sans qu'ils soient faits par la main de l'homme.

CHAMBRE OBSCURE "L'AMI DES ARTS. . ." p. 59

J'ai fait une petite chambre obscure, plus simple que celle qui est connue, et où l'image est plus vive, parce que, n'ayant pas besoin de passer le crayon sur les traits de l'image, et par conséquent, de la rendre horizontale, j'ai supprimé le miroir, que l'on emploie uniquement dans ce but; et l'image ne souffrant pas une réflexion, elle conserve sa plus grande vivacité. J'ai par le même motif supprimé le petit appareil qu'on y adapte afin d'introduire la main, en sorte que la chambre obscure se limite à une boîte verticale, ayant un tube horizontal A, ou il en entre un autre qui porte la lentille, et que l'on peut graduer; l'image se réfléchit sur le fond vertical de la boîte. Il y a par dessus le tube une petite ouverture que l'on tient toujours fermée, et qui sert à regarder l'image, pour graduer la lentille.

L'action de la lumière m'a dessiné les objets dans la chambre obscure: elle ne fixait que les grandes formes, les contrastes saillants, et cela, avec le défaut de rendre clairs les obscurs, et vice-versa; mais ce moyen d'obtenir les dessins faits par la nature, et non par la main de l'homme, n'est-il pas, malgré sa précarité actuelle, un fait neuf dans les arts, et de beaucoup d'intérêt? N'est-il pas susceptible de perfectionnement? N'aurai-je pas initié l'art plus que merveilleux de dessiner quelconque objet, de prendre une vue, sans se donner la peine de le faire soi-même?

(P. 3 do caderno intitulado "Correspondence:" trecho de carta dirigida por Hercules Florence, em setembro de 1862, a Charles Auguste Taunay, major, a serviço do Brasil):

Je ne passerai pas sous silence un incident qu'a commencé en 1833. L'idée me vient un jour, c'était le 15 Aout, que l'on pourrait fixer les images dans la chambre obscure. En faisant la première expérience, des rayons solaires ont passé directement à travers le tube mal joint de l'instrument, et se sont imprimés sur le papier imbibé de nitrate d'argent. L'idée me vint alors que l'on pourrait imprimer de l'écriture et des dessins graves à jour sur un verre couvert de noir et de gomme. J'imprimai une annonce, avec une Renommée en tête, que je repartis dans la ville, et que me fit vendre beaucoup de marchandises, car c'était une nouveauté pour Campinas que de faire des annonces. Je donnai à ce procédé le nom de "Photographie;" entre autres dessins et autographes photographiques, j'imprimai au soleil le portrait d'un indien Bororo, que j'envoyai à M. Felix Taunay, qui m'écrivit qu'il l'avait placé dans l'album du prince de Joinville à son premier voyage à Rio de Janeiro.

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