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## A SHORT REVIEW OF CRAYON ENLARGEMENTS: HISTORY, TECHNIQUE, AND TREATMENT.

by Gary E. Albright and Michael K. Lee

Crayon enlargements come in many varieties, many shapes. They can be paper prints or gelatin prints, rectangular or oval, flat or convex, mounted on a rigid board or stretched around a strainer. They can be black and white or handcolored; they can be of poor quality or of exceptional workmanship. What are they? Where do they come from? How are they made? How can they be conserved? These are some of the questions which this paper will attempt to answer.

### History

Shortly after the invention of photography, photographers became interested in techniques to enlarge photographs. As early as 1843 Wolcott patented an enlarger for daguerreotypes. However, the history of paper photographic enlargements probably started with the invention of enlarging cameras (solar cameras) in the mid-1850's. For the most part, before this a large photograph required an equally large negative. Even with the availability of solar cameras, many photographers still preferred to make large photographs from same-sized negatives as enlarging was not easy to do, the technique was tedious and problematic. In fact, enlarging became a job for specialists. This becomes apparent when one reads the many advertisements offering enlargement services to both amateurs and professionals.

The first solar camera was patented in 1857, by David A. Woodward, professor of fine arts at the Maryland Institute in Baltimore. Woodward's camera became very popular in Europe (primarily France), chiefly due to Antoine Claudet's enthusiasm and promotion. To use this camera, a negative was placed at the back of the enlarger. The camera was set up in a darkroom at an opening in the window shutter. A mirror reflected the sunlight into the enlarger which was concentrated by a condenser before it passed through the negative and lens, and was projected onto a screen in the room holding the photographic paper.

A solar camera which could be operated unattended in the open air (outside the darkroom) was patented by David Shrive of Philadelphia in 1859. In 1864 a similar design was shown by Alphonse Liebert at the Vienna Photographic Fair. The Liebert camera was manufactured in Philadelphia and could make photographs 17 3/4" x 23 1/4" from carte-de-visite negatives. It was supported on a stand with rack-and-pinion movement so that it could be pointed towards the sun. The progress of enlargement was observed through a yellow window in the side. According to Gernsheim (1), this is the camera which became the most popular

(1) Helmut Gernsheim, The Rise of Photography 1850-1880, London, 1987, p.237.

in America, although other sources (2) advocate the popularity of Woodward's camera in America as well as in Europe.

The demand for enlargements increased with the new fashion for carte portraits in the early 1860's. Gernsheim explains that, "It was not unusual for a client to ask for a larger copy of his favourite carte portrait, and however much the photographer tried to persuade him to have a new portrait taken on a larger plate, the client would usually insist on an enlargement of the portrait which he knew, rather than risk getting something he might not like." (3) There may very well have been other reasons for enlargement. Welling quotes one 1864 observer, "It is supposed that the albums are now full, and that the public now intends to fill their walls." (4)

Whatever the reasons, by 1865 solar cameras were commonplace. In that year, Professor Towler, editor of Humphey's Journal, observed that solar cameras had become the "favorite mode" for making enlargements. In 1867 he noted there were a "great number of solar cameras now visible on the roofs of photographic establishments, as well as in their windows and gardens." (5)

### Technique

There were many different procedures in use to make crayon enlargements. Sometimes recommendations even conflicted with each other. Some of the more typical processes are presented below. (6)

#### A. Negatives

Negatives for enlargements differed from negatives for contact printing in three ways.

- 1) They were not as dense as those meant to be contact printed. The photographer wanted a thin negative, but it still had to have full detail in the highlight and shadows.
- 2) These negatives were to be free of any harsh, hard shadows.

(2) William Henry Burbank, Photographic Printing Methods, 3rd ed., New York, 1891, p.109.

(3) Helmut Gernsheim, op.cit., p.236.

(4) William Welling, Photography in America, New York, 1978, p.170.

(5) Ibid., p.192.

(6) Edward Wilson, Wilson's Photographics, New York, 1881, pp.301-315. Many of the techniques described originated from this source.

- 3) It was preferred that negatives not be varnished (a practise very common at the time). The varnish often had lines and spots and these become readily apparent when enlarged.

Several procedures and tricks were used to obtain the desired negatives. One suggestion was to use a thin coat of collodion, give it plenty of exposure, and then develop slowly in a weak developer. If the developer was too strong, it put coarse deposits in the highlights. Another procedure, suggested in 1887 by Burbank (7), was to add some yellow aniline dye to the collodion. Also negatives which were too hard or too harsh could be softened by bleaching with potassium cyanide.

## B. Prints

The most common enlargements were albumen and salted paper photographs, although canvas and wood supports were used as well. Canvas was used when a picture was to be painted in oils; wood was used for engravings.

There were two methods for making solar enlargements; the "ordinary" process and the "development" process. The ordinary process was the typical printing-out process used at that time. Albumen or salted paper was exposed in the camera until the image was visible. Then it was washed, toned, fixed, and washed again.

The development process was used where the photographer had "little or weak sunlight." The image was partially printed and developed to full strength by "after manipulation." These developed photographs were not as soft and delicate as the ordinary prints. Also it was advised that they be made on stronger paper because of the additional handling to which they were subjected.

Exposure times for the developed-out process were three to four seconds in direct sunlight or one minute on a cloudy day. This compared to exposure times ranging from 30 minutes to several hours for the ordinary enlarged printing-out images.

Essentially the development process produced a developed-out salted paper print. One procedure went like this. The paper was salted with a solution of sodium chloride, hydrochloric acid, and distilled water; and sensitized with a solution of silver nitrate, citric acid, and distilled water. After drying the paper was exposed till a faint image appeared and then developed in a solution of water, pyrogallic acid, and citric acid. After development the image was washed, fixed, washed again, and toned if that was desired. There were many other formulas for developed paper. These might use different light-sensitive salts (KI, KBr) or different acids (acetic acid). In general, these images were developed not by immersion

(7) William Henry Burbank, *op.cit.*, p.109.

as is done today, but by pouring the developer at one end of the image and quickly swirling the developer around, covering the entire print, until development was complete.

#### C. Problems with enlargements.

There were several problems with enlargements. The usual results produced by the solar camera did not compare to those made by contact prints. Enlarged photographs often had to be retouched or "worked in color" to cover the blemishes. This was a result of the enlarging process as every defect in a small negative would be greatly enlarged during the printing and therefore made much more obvious than in the small print.

Several remedies for these problems were tried. Negatives which were too dense could be reduced as mentioned earlier (often using bichloride of mercury and potassium cyanide) and then could be retouched. Retouching consisted of preparing the surface by coating with gelatin and using pumice to provide tooth to areas to be retouched. A soft pencil was used for retouching and then these areas would be breathed upon. This would blend the graphite into the gelatin layer making it more translucent. There were many other procedures used to produce a soft image. One of these was varnishing, another was adhering a cover glass to the retouched negative with balsam. One rather ingenious idea formed a well of glycerine between the negative and a cover glass, using India rubber to seal the sides. "The glycerine coming in contact with the retouching obliterates all marks of the pencil and makes it more transparent, and the result is a fine, soft photograph, full of detail and roundness, often surpassing the contact-print" (8). After printing, the assembly was taken apart and the glycerine washed off. The negative was then ready for contact printing again.

#### D. Finishing

Most of the crayon enlargements that we are familiar with probably did not undergo these elaborate procedures. Their quality just doesn't seem to indicate that such techniques were employed. However, there was one final procedure which many of these enlargements did use; this was painting or coloring the photograph to increase contrast and reduce unsightly streaks or blemishes. This coloring was usually done with crayons, hence their name, "crayons" or "crayon enlargements."

Woodward himself realized the need for enhancing, especially the developed-out images. In an 1859 letter he wrote:

I am constantly using one of the large size Solar Cameras, with plain salted paper, or with that which is

(8) Edward Wilson, op.cit., p.307.

albumenized. The longest period of time consumed seldom exceeds one hour of good sunlight, and often not more than 45 minutes for a life-size print, and much less for a cabinet. It must be understood that this is in the production of prints not to be retouched or afterwards painted. By a much more sensitive process the time of exposure can be reduced to from 3 to 5 minutes. The latter process is intended generally for pictures that are afterwards to be painted. (9)

In the 1865 book, Principles and Practise of Harmonious Coloring, the author, an "artist-photographer," is even more adamant about the need for enhancing enlargements.

Since the introduction of the solar camera, life size and other enlarged photographs have begun to excite popular attention. Partly from some shortcomings in the method employed, and partly from inherent causes, these enlarged pictures, more than any other class of photography, require some aid from the touch of the artist. The more nearly the picture approaches the size of life, the more palpably is felt the want of the hues of life; and thus the aid of the colourist becomes almost imperative. And even where the monochrome of the photograph is considered sufficient without further colours, the untouched enlarged photograph rarely pleases; there is a want of force and vigour, or an emptiness and want of modelling, which the pencil of the artist can do much to supply. To meet either the want of colour or the want of finish, there is, perhaps, nothing more suitable than the employment of coloured crayons, or black and white chalk; and we shall, therefore, give a few brief hints as to the mode of using them. (10)

The methods for using these colored crayons (conte) and chalks varied widely between practisioners. Often these materials were powdered to make what was called a crayon sauce. This would be applied and manipulated in various ways through the use of stumps, cotton, pumice stone, chamois leather, fingers, and erasers. Charcoal appears to have been seldom used as it was too fragile. In addition to dry media, one often observes the use of watercolors for enhancement. In either case, background was usually applied first, followed by the portrait. The features usually required very little, except, as our artist-photographer suggested, a few "vigorous touches to give decision," possibly to the irises, pupils, eyelashes, and eyebrows. Slightly more may have been needed for the nostrils and ears, and much more atention was needed for hair and

(9) Photographic and Fine Arts Journal, vol. 12, June 1859, p.30.

(10) The Principles and Practice of Harmonious Colouring...by an Artist-Photographer, 5th ed., London, 1865, p.91.

drapery. The results, of course, depended greatly on the skill of the person doing the coloring.

### Treatment

There are several approaches that can be taken to treat enhanced enlargements. The selection of treatment options is, however, dependent upon the condition of the artifact and the nature of the medium with which the work was executed. One may choose to treat an enlargement aqueously either by immersion or float washing. If selective washing is desired or if the media are susceptible to moisture, one may want to employ the suction table. A thorough discussion of treatment procedures incorporating the suction table was published in the 1988 Topics in Photographic Preservation Vol. II., "The Use of the Suction Table for the Conservation of Photographic Prints" by Connie McCabe and Mary Lynn Ritzenthaler.

The suction table is one viable option for the treatment of crayon enlargements, however there are others. In many cases a crayon enlargement can be conserved by relatively simple and straightforward treatment procedures. The treatment of three crayon portraits will be described below: the first involves aqueous treatment and lining; the second follows up on the first and includes the filling of losses; the final treatment is a conservative nonaqueous approach.

#### A. The Powell Portrait

The Powell portrait was a large 30" x 24 3/4" portrait of a man and was of excellent quality. It was a salted paper image reworked with black chalk. The image was printed on a lightweight paper, backed with cloth and stretched over a wood strainer. The paper was very brittle and was torn in five locations in the design area along the left and right margins. The most severe tear was 22" long and ran diagonally across the top right corner.

Because the media was slightly friable, the image received a very light spray coat of 5% Acryloid B-72 in xylene. This would insure minimal movement of the media during aqueous treatment, yet would not alter the appearance of the image. The portrait was then mechanically removed from its strainer, leaving the cloth backing adhered to the reverse of the paper support. The backing would support the artifact during washing and minimize movement of the fragments. Before aqueous treatment was undertaken extraneous material that had accumulated on the reverse was removed. The work was then humidified using a Dahlia sprayer, placed between sheets of Hollytex and supported beneath by a sheet of Plexiglas. It was immersed in a shallow water bath, containing about 1/2" of water. The portrait was washed for approximately two hours. In order to minimize manipulation

only two changes of water were used. It was then taken out of the tray and carefully placed face down onto a sheet of Mylar to facilitate removal of the original lining. Residual mounting adhesive was swabbed off and all fragments were properly aligned. The artifact was then lined, by what is known as the Dacron method. This involves the use of a solid support, usually Plexiglas, upon which a sheet of Dacron (polyester fabric) is adhered with wheat starch paste. The lining paper is pasted down onto the Dacron and then the object is pasted to the lining. This method allows one to work on the artifact face up. This is advantageous for several reasons. If, for instance, there are many fragments to piece together or insert, this method tends to simplify the procedure. Also, when dry, objects remain flat. A more detailed explanation of this lining procedure can be found in the 1982 Book and Paper Group Postprints, Vol. I, "The Treatment of Oversized Paper Artifacts" by Gary E. Albright and Thomas K. McClintock.

Once lined and dry, the Powell portrait was inpainted with pre-ground dry pigments having no binding medium. This inpainting technique works well for many crayon enlargements or even pastels. The pigments are the same materials used for inpainting by paintings' conservators, and they can be applied by brush using either water or alcohol. This technique provides very good covering power with minimal media buildup. It also produces the proper texture for this type of artifact and enables one to tone very fine losses, such as those along tears; such losses are often difficult to retouch with a pastel stick or colored pencil. In essence, dry pigments provide the color matching flexibility of watercolor with the desired appearance of pastel or chalk.

#### B. The Walker Portrait

This crayon enlargement, a portrait of a man and a woman, had been in the Walker family for three generations. It was a salted paper image reworked with black chalk, with additional white highlights present in the gentleman's shirt. The portrait was in poor condition when received as it had been abused by vandals who had broken into the Walker home. Several holes had been punched through the object and there were numerous tears and losses. The paper support was discolored overall and had moderate mold damage and water staining. It had been backed with cloth and attached to a wood strainer.

Treatment began by mechanically releasing the portrait from its strainer and surface cleaning where possible with crumbled erasers. It was humidified, then washed following the same procedures as those employed with the Powell portrait. However, the enlargement was not fixed. This was because of the presence of the white highlight which tended to become slightly translucent when treated with B-72. In an attempt to reduce some of the discoloration, the enlargement was light bleached for

approximately 4 hours using artificial illumination. No chemical bleaches could be safely used due to the pulpy nature of the paper and the potential destruction of any remaining photographic image. The portrait was then Dacron lined with a lightweight, machine-made Japanese paper similar in weight to a handmade kizukishi. After the portrait was dry, it was removed from the cloth and Plexiglas, and using a light table the lining paper was mechanically removed from areas of loss. It was then leafcast with liquid paper pulp to fill the losses. Immediately after leafcasting, the portrait was relined using a heavier weight Japanese paper and then flattened in a press. The losses were inpainted using dry pigments, this time mixed with some watercolor.

### C. Portrait of Josephine Logue

The final work was a wonderful portrait of Josephine Logue. It was one of two companion portraits, the other being her husband, a prominent Boston businessman who contributed substantial funds for the construction of Fenway Park in Boston.

This portrait was a salted paper image colored with pastel. It had suffered major breaks in the paper, and had been backed with a lightweight cloth and mounted to a strainer. The paper was moderately discolored overall and brittle. Sections of the portrait remained adhered to its strainer, generally with an animal glue but with additional dabs here and there of a PVA emulsion adhesive.

The highlighting and detail work present in this portrait were executed with exceptional artistry. However, it was this fine detailing which restricted the overall treatment. The white highlights were extremely soluble in water and any attempt to fix the highlights by any means dramatically altered their appearance. Therefore aqueous treatments by immersion, float washing or use of the suction table were precluded.

Treatment proceeded as follows. First the fragments were released from the strainer and the original backing removed. Then, the artifact was mended locally with Japanese tissue and wheat starch paste. Next, it received a relatively dry traditional Japanese lining using a heavyweight, machine-made Japanese paper. Once dry, it was rehumidified from the reverse and stretch dried on a Japanese drying screen. Dry pigments and ethanol were used for inpainting. This insured that no tidelines would be produced. Occasionally a few droplets of PVA AYAA resin in solution were added to the ethanol, thus altering the saturation of the colors so they would more accurately match the colors found in the portrait. Once complete the portrait was hinged onto an acid-free back mat and reframed.

### Conclusion

In the early days of daguerreotype portraiture, Queen Victoria asked Alfred Chalon, a fashionable French miniature painter, whether he was not afraid that photography would ruin his profession. The question would have been appropriate 20 years later with the popularity of crayon enlargements. Monsieur Chalon's answer to the Queen would have been the same regardless of the date asked. "An, Non, Madam," he replied, "photography cannot flatter!"

How apt a description for crayon enlargements. Yet, in spite of this, they were very popular. Today they yield important insight into the people who lived during the last half of the 19th century and the early part of this century. Often they are the only remaining images of our direct ancestors, and because of this, more and more people are requesting their conservation. This paper has reviewed the production and treatment of these images and has attempted to form an understanding of them providing a base for future conservation efforts.