

A STUDY ON THE POSSIBILITY OF APPLYING THE PLATINUM AND PALLADIUM, PRINTING TECHNIQUE TO VISUAL ART

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CHAPTER I INTRODUCTION

1. Purpose and Necessity of the Research

Recently, photography has developed dramatically in the quality and quantity of its equipment and accessories according to the development of science and precision chemical technology.

This advancement has resulted in the outstanding quality and variety of design in photography due to the cooperation and compliment of other design areas, such as public arts, painting and visual media. More important, the application and efficiency of photography have remarkably ascended due to its value in the area of visual art. Also, the variety of materials and distinction of expressions applied in photography have been regarded as one of the most important elements to all the designers.

Within this context, the purpose and necessity of the research is to present "a new distinct expression visual art" and to apply "Platinum and Palladium," a 19th century's palladium technology, to the area of visual art by reinterpreting this technology through the modernization of the 20th century.

2. Content and Methodology of the Research

Due to the difficulty of the printing process, "Platinum and Palladium" pictures can not be easily assessed, even by professionals. This research provides a new method of expression by presenting and applying data has been produced through the analysis of chemical combinations and their characteristics of "Platinum and Palladium" pictures. Under the accurate comprehension of this technology, this research is also necessary for the dynamic application of "Platinum and Palladium" pictures for the production of distinct visual arts.

3. Recent Research Trends in Domestic and Foreign Countries

It has been true in the art of photography that little has been archived in research about traditional photography as well as modern photography.

Although the art of photography has lately attained a widespread acceptance in the public, the application and efficiency of photography in the design area have been at a primary level compared with that of other developed countries. In the art of photography, research focusing on the method and possibility of producing a new "Visual Images," as an image of expression, should be continued.

4. Contribution of the Research result, Expectation, and Methods of Application

In this research, it is presumed that an alternative method and application of the technology of "Platinum and Palladium" in the area of visual art will be provided and used in the area of Design Education and Design Business. In addition, it is assumed that a new method of expression will also be suggested along with the creativity necessary for designers.

CHAPTER II

CONTRAST BETWEEN PAINTING AND PHOTOGRAPHY

Modern photography has improved a lot in different direction. Platinum and Palladium photography construct the aesthetic bridge between photography and painting. Platinum and Palladium photography can be a means of making a simple visual recording or it can be a medium of personal expression through the creative use of paper, light, development, and printing. Men and women have sought to lift photography to the level of the visual arts. Some group of "advanced photographer" strive to recognize their prints, also that they are contributing to the beauty of a picture in any other arts. This group as that their work may be judged by the same standards. To be judged by this standards, there are two factors involved:

1. the photographers must have a sound knowledge of the principles of picture making as the painters have,
2. the photographers must have the power to put personal expression into the picture.¹⁾

It is not enough that the photographer put his or her feeling and knowledge, but the photographer shall control the stage of his or her print, also show the evidence of his or her own character and purpose, as well as, the painters do. In the development of photography, it was exploited for commercialism. With the usual interacting of cause and effect, the photographers aimed to please the public, and the latter accepted their work as representative of the art at its best.

Camera being a mechanism was a limitation in itself for the photographer. Limitations are involved in every form of visual art. Both painter and photographer work from a model. A painter can correct, change and modify as the subject demands. It is not same for a photographer. The photographer will find it hard to make the model express itself to the photographers satisfaction. The difficulties hinted at in the single figure composition are increased in the case of groups. Another limitation that crosses the photographer is the impartiality in which the camera records anything near to it and the misinterpretation it gives to distances. So the landscape taken by an untrained photographer may be a very pleasant reminder of a beautiful spot, but it will not be true to nature, and it will be so crowded with facts as to lack the simplicity and synthesis of pictorial composition: a charge, by the way, which may be brought against many painted landscapes. Their images isolate nature's forms from their matrix of common human experience and cause us to view and consider these forms with new and different meaning. Thus these images fulfill the requirement that "that which applies to all art also applies, in a certain sense, to photography. The reproduction of things visible is a dominant idea-an idea of sufficient integrity and power to be able to elevate the mere image into something symbolic. "This concept relates to an important thought of Paul Klee, that "the purpose of visual art is not to reflect the visible, but to make visible."²⁾

1. Beaumont Newhall, The History of Photography form 1839 to the Present, Museum of Modern art (New York: Doubleday, 1964), p.12.
2. Adam Rober, Beauty in Photography Essay in Defense of Traditional Values, (Aperture Inc. New York, New York. 1989), p.134.

A painter obtains his objective by eliminating unimportant parts and concentrating only the important features. The photographic artist does almost the same. The photographer studies the landscape until he finds the view that impresses him, then he finds the time of day and atmosphere that most impresses the photographer to record. Photographer as an artist do not just take picture but record and transmit to other the impression which they experience in the presence of the subject. The chief beauty in a work of art is the evidence of the artist's expression of himself when it be a painter or photographer. An example of a painter and a photographer would be of a scene of a boy in a dusty sunshine city. A painter would emphasize the boy by adding some dirt on his skin. Also emphasis would be put into the city or atmosphere by painting light into the parts of the city the painter wants to emphasize. This can be done the same way for atmosphere by adding a dust into the sunshine.

At first, landscape was used to furnish a decorative pattern of form and color behind the figure and also give the figure with atmosphere. Landscape was not studied for its own sake and independent importance until the seventeenth century. Immediately after the single source of the dignity of landscape, two separate streams of motive started; the naturalistic and the artificial. If landscape painter or photographer follows the best traditions of art, generalizes the scene by giving just enough suggestion of details to stir the imagination to realize their existence. On the other hand, painter or photographers that stress on details merely interest our sight and leave no appeal to our imagination.

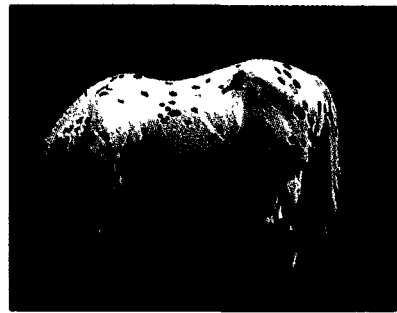
Figure painting started in the days of the Italian Renaissance, during the earlier half of the fifteenth century, where the artist was priestly and lay patrons to paint religious subjects. For centuries artists have put the study of the human figure in the front rank of pictorial motive and there is no doubt that the publics more attracted to the figure subject than any other. The analysis is certainly within the possibilities of the photographer and repeated snap-shots might take the place of sketches, until the desire result has been attained. But this involves the sincerity, patience and self-criticism that mark the procedure of the artist. The difficulties which photography presents are the measure of its possibilities. All of these possibilities are visual art. The impact of photography on the other visual arts has been strong and pervasive. It is used to create dramatic effects of immediate visual impact.



Gelatin silver print,
Rework with acrylic
Figure 1



Gelatin silver print,
Rework with color ink
Figure 2



Color print,
Reworked with acrylic
Figure 3



Platinum-Palladium print,
Reworked with watercolor
Figure 4



Platinum-Palladium print,
Reworked with color pen
Figure 5



Platinum-Palladium print
Reworked with pastels
Figure 6

Alfred Stieglitz, he was well known throughout the photographic world and has been closely identified with each stage in the development of the visual art. This was a brief account in the movement and that began to make photography a visual art. There are two distinct paths in photography.

1. Utilitarian, this the record of facts.
2. Aesthetic, this is of the other an expression of beauty. ³⁾

These two paths do not cross each other. Utilitarian photographs are of machinery, building, and engineering works. There is an intermediate class which photographs, paintings, sculpture and architecture for useful records of art. They are treated with so much skill and feelings for the beauty of the originals that they have an independent value as being themselves things of beauty. Prominent class portraits the truthful records of the individual's characteristics. Aesthetic, on the other hand, concentrates purely on beauty. It will record facts but not as facts.

Through this, there were two objections involved in the proposition:

1. the camera is mechanical.
2. the use of a camera prevented the artist's individual vision. ⁴⁾

3. Pollack Peter, The Picture History of Photography from the Earliest Beginning to the Present Day, (New York: Abrams, 1979), p.23.

4. Laons Nathan, Photography in the Twentieth Century, (New York: Horton Press, 1967), p.37.

CHAPTER III

APPLYING THE PLATINUM-PALLADIUM PRINTING

1. CONTRAST BETWEEN SILVER-GELATIN PRINT AND PLATINUM-PALLADIUM PRINT

Photographic prints in platinum and palladium constructs the aesthetic bridge between photography and painting. The paper explains the relationship between optically collected information with the additive processes of painting. A photographic print in platinum or palladium differ from a silver-gelatin print not only in material, but in aesthetic quality(Figure 7). Both palladium are more stable than silver and resistant to decay. In particular, platinum prints are famous for their permanence. Because of its enduring quality, it is especially suited for archiving documents and works of visual art.

Platinum-palladium prints have no surface coating which eliminates the problem of reflective glare, giving depth and clarity to the image. By selecting a tinted-paper base, a subtle color effect ranging from blue-black through neutral grays to rich sepia brown can be added to the image(Figure 8,9).



Platinum-palladium print
Figure 7



Blue-black,
Platinum-palladium print
Figure 8



Sepia brown,
Platinum-palladium print
Figure 9

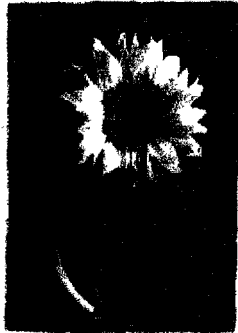
The colors are an intrinsic feature of the process, rather than the result of any subsequent "toning" chemistry, which is sometimes employed in the case of silver. Although the maximum reflection density that can be achieved in a platinum and palladium print is considerably less than that possible with glossy silver-gelatin papers, the tonal separation in the middle values is excellent, and greets delicacy can be achieved in the highlights. But platinum and palladium print may lack in impact, they make up for in their subtle luminosity. Silver-gelatin papers offer some what more reflective density than a platinum and palladium print, but the latter offer more refined tonal separation and delicate highlights.

The platinum and palladium print differs, both technically and aesthetically, from the familiar silver-gelatin print made on commercial photographic paper. The monochrome images in silver consists of tiny grains of the metal suspended in a layer of hardened gelatin on the paper, which may also have an undercoat of whitening agent(figure 10). In contrast, a platinum and palladium print is simply formed particles of these metals embedded within the surface fibbers of a fine-art paper. The absence of a gelatin

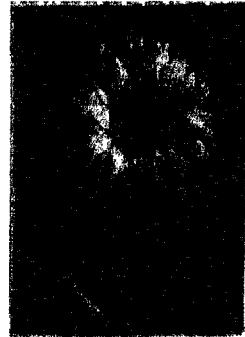
layer, or other coating, also leaves the paper surface exposed, conferring subtle, but distinctive optical properties on the platinum and palladium print(Figure 11).



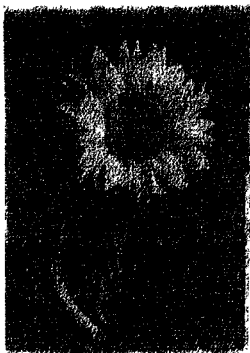
Silver-gelatin print
Figure 10



Platinum-Palladium print on rice paper
Figure 11



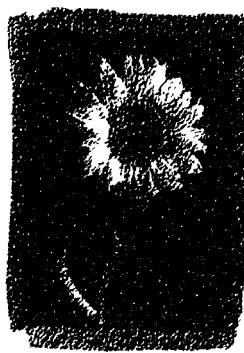
Its perfectly matte-surface enables the images to be seen from any angle without the viewer experiencing reflective glare, and so the print acquires a sense of depth-proved, of course, that it is not behind glass. The surface texture of the paper may be chosen by the printer from a wide range of available fine papers. The tint of the paper base can also be chosen to modify the expressive character of the image(Figure 12).



Print on NAPKIN paper



Print on Watercolor paper



Print on Cotton paper



Print on Wove paper

Figure 12

The process of making a platinum and palladium print differs considerably from printing on silver-gelatin papers. First, there is the "hand-crafted" aspect: what may seem to some photographers a time-consuming labor, to others can convey a sense of uniqueness in the making of every print. There is also satisfaction to be found in the integrity and simplicity of the process. The very low sensitivity of platinum and palladium paper requires a very intense light source for its exposure. This in turn imposes its own disciplines and modus operandi, characterized by working with large formats, a careful control of negative making, and unmanipulated, "straight" printing. The low sensitivity also has an advantage: there is no need for a darkroom: fine prints can be made with simple resources under ordinary lighting. Chemically speaking, platinum and palladium are much more inert than silver and are therefore not susceptible to attract by impurities or atmospheric pollutants; moreover,

the absence of gelatin from the print deprives potentially destructive microorganisms of their food supply. In consequence, platinum and palladium print enjoy a permanence for which they are renowned, and which makes the medium desirable both for archival document and for enduring "work of visual art".

2. THE PROCESS

The process of Platinum-Palladium printing has enjoyed a tremendous rebirth during the past dozen years. The primary reason for this rebirth is that the Platinum-Palladium print offers the most delicate tonal scale of any process available to the black and white photographer. The process places an additional set of demands on the photographer that many are reluctant to tackle.

The emulsion must be compounded by the photographer and applied to the chosen paper by means of a brush. Once the emulsion is mixed, it is coated onto the paper by means of a brush(Figure 13).

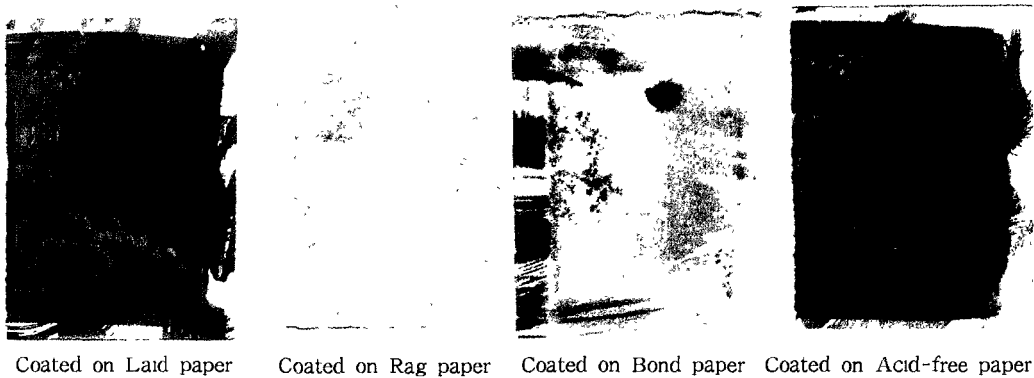


Figure 13

The preferred brush is a hake brush with the fibers sewn into a wooden handle. This eliminates the chance of the iron and platinum salts from reacting with the metal ferrule which is found on most brushes. If a brush with metal is used, the metal can be covered with tape or fingernail polish to keep the ferrule out of contact with the emulsion. The coating procedure can be carried out under dim room light. This procedure requires some physical dexterity and initially seems somewhat frightening. The process is a contact process so that the negative size is the image size. If a large image is desired an enlarged negative must be made. The process is more costly than silver printing although intelligent use of the materials makes palladium printing comparable. Finally, the process is not as predictable as conventional silver printing. The results when the process works are certainly worth the effort(Figure 14).

The process of Platinum-Palladium printing involves the compounding of an emulsion made up of three separate solutions. Solution A is a mixture of ferric oxalate, the most light sensitive iron salt, and oxalic acid. Solution B is also a mixture of ferric oxalate, oxalic acid with an additional component in the form of sodium or potassium chlorate. As the amount of chlorate in the emulsion increases, contrast increases. The third solution, Solution C, is either a platinum salt or a palladium salt.

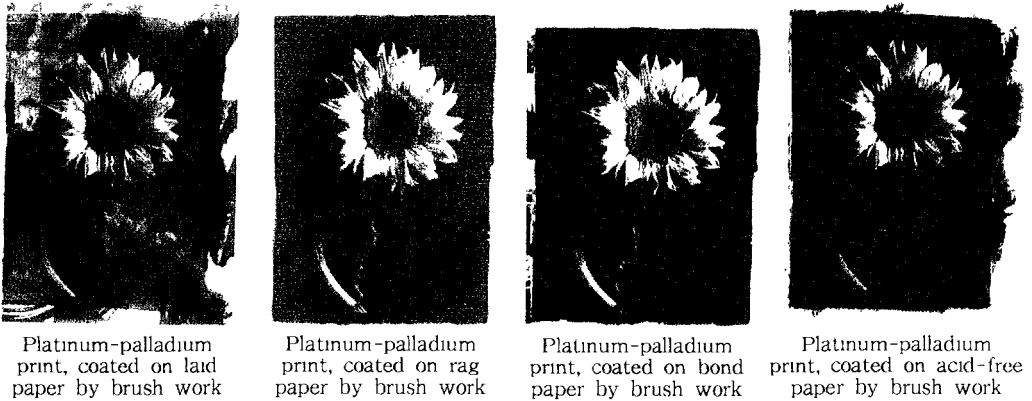


Figure 14

The two salts produce beautifully rich tonal scales (Figure 15). The platinum salt produces a cooler image tone than the palladium with a slightly greater feel of contrast than the palladium. The two salts can be mixed together when compounding the emulsion to achieve intermediate results (Figure 16). The emulsion is compounded by mixing three solutions in a small glass, measuring each with an eyedropper. The number of drops of A and B approximately equal the number of drops of C. The size of your print will determine how many drops you use. To evenly coat an 8x10 piece of paper, you will need 46 drops - 22 drops of A+B (the proportion of A to B will determine the contrast) and 24 drops of C.

After coating the paper surface, it can be dried with moderate heat, a blow dryer or hot plate can be used, taking care not to heat the emulsion too much, as small areas of the coating may reduce to a metallic state prior to exposure. Once the paper is dried, crackles at the touch, it is placed in contact with the negative emulsion to emulsion, and then placed in a contact printing frame and exposed to a light source high in UV. This can be the sun, a sun lamp (15 inches away), a carbon arc lamp, or a bank of black light fluorescent tubes. Aristo makes a cold light platinum printer (Figure 17).



Figure 15



Figure 16



Figure 17

After the print has been exposed adequately, it is developed by pouring the developer over the print in a single motion. The developer used in Platinum-Palladium printing is a strong salt such as Potassium Oxalate, extremely toxic, or Sodium Citrate, much less toxic. Development is instantaneous and treatment for more than 1 or 2 minutes affects no change. The developer is returned to its container for future use. Unlike silver developers which eventually exhaust, platinum developers never die and actually seem to improve with age. As the amount of developer lowers, simply add new developer to it to insure an adequate amount to cover the print smoothly and quickly. If the print is not covered at once with the developer, wash marks of uneven density can occur.

The print is then cleared in three successive baths of either dilute Hydrochloric acid or citric acid for five minutes each with intermittent agitation. After 3 or 4 8x 10's have gone through a set of three one liter baths, discard the first bath, move #2 to #1, #3 to #2 and mix a fresh #3 bath. The third bath should always be water clear. After the prints have been cleared they need to be wash for 20 - 30 minutes and either dried on a fiberglass screen (face up) or with a hairdryer or hot plate. Platinum prints "dry down" much more than silver prints primarily (but not solely) due to the matte surface of the paper. Once dried Platinum-Palladium prints may be dried in any conventional manner, including dry mounting if you felt it is necessary.

a) THE NEGATIVE

The platinum emulsion is able to be manipulated to yield higher or lower levels of contrast but is, by comparison, a low contrast process when compared to silver printing. The light sensitivity of iron-based paper is about a million times less that of silver papers, so platinum-palladium can only be contact printed. Now, a reproduction scale of 1:1 leaves us with three possible photographic strategies: either to make very small prints, or to work with a large format camera, or to make enlarged inter-negative. Each of these alternatives has something develop your negatives to a contrast suitable for the printing process. A good platinum negative requires good shadow separation and a highlight density of 1.4 to 1.8. This type of negative would be virtually unprintable on even the softest silver papers. As the platinum emulsion is exposed the shadow values reduce slightly and mask the emulsion in that area slowing the effect of the light as the higher densities continue to be exposed.


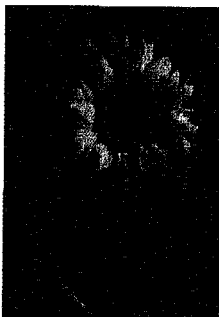




b) ENLARGED NEGATIVES

If you wish to make larger prints it will be necessary to make enlarged negative. For images up to 8x10, by far, the easiest material to use is Kodak Direct Duplicating film S0-015. Perhaps its biggest advantage is that it eliminates, the need to make an intermediate positive. It has been pre-exposed to the top of its characteristic curve. If you were to develop an unexposed piece of film in your developer, it would turn black. As it is exposed it gets less dense, so your exposure controls are backwards. As the film is developed, however, contrast will increase as development time is extended. S0-015 responds well to all conventional paper developers as well as pyro developers. (Some workers prefer to use a pyro developer as its staining action creates a UV filter that increases the effective contrast of the negative, providing a crisper image.)

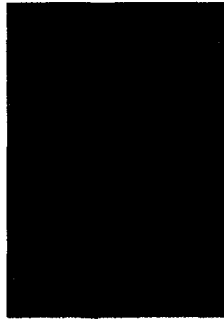
For print larger than 8x10 it becomes necessary to first make an intermediate positive. Kodak's Super XX works well for this purpose. Kodak Fine Grain Positive Film also works well but is not as sharp as Super XX. It can have a fuzzy look to it. Kodak's Gravure Positive is also an excellent material but extremely expensive. Once the positive has been made, it can then be enlarged onto any of the aforementioned materials.

c) MIXING THE EMULSION

As mentioned earlier, the emulsion for printing consists of varying mixtures of the A, B and C Solutions. Contrast of the print can be controlled by altering the amount of B Solution. The mixtures listed below are to be used for different types of negatives.

	Negative	Print
1. for extremely soft negatives with highlight density about 1,10		
A 0 drops		
B 11 drops		
C 12 drops		
2. for soft negatives		
A 4 drops		
B 7 drops		
C 12 drops		
3. for average negatives with highlight density 1.30 - 1.40		
A 7 drops		
B 4 drops		
C 12 drops		

4. for contrast negatives
- | | | |
|---|----|-------|
| A | 9 | drops |
| B | 2 | drops |
| C | 12 | drops |



5. for very contrast negatives
with highlight density above
1,5

- | | | |
|---|----|-------|
| A | 11 | drops |
| B | 0 | drops |
| C | 12 | drops |



d) EXPOSURE

The image is formed during the exposure and the construction of the printing frame allows you to examine the print by opening one half without disturbing the registration of the negative to the print. Make sure that you do this only in an area shielded from the UV source, otherwise you could fog your print.

Exposure times will, of course, depend on the power and efficiency of your particular light source and the negative density range, so no generalizations can be made beyond saying that times will probably be in the order of a few minutes, and that palladium printing will be about twice as fast as platinum. As a rough guide, the Phillips 125W Reprographic Lamp at a distance of 30 cm requires an exposure for platinum of about 6 - 10 minutes. Since the correct exposure can

readily be found by inspection (at least at the higher RH values), it is not generally necessary to make test strips. Under conditions of full print-out, you simply continue exposing until the image has reached the desired appearance; do not be frightened of extending exposure in order to resolve detail in the highlights; the shadows will not block up totally because the printing-out process has a self-masking action in the regions of high print density. Dodging and burning (which is usually unnecessary) can be done to a certain extent, but please remember to protect exposed skin and eyes.

You can apply it to all the historical (and for that matter modern) printing methods, but it is especially helpful when working with techniques like platinum and carbon and when exposing a gelatin resist for gravure - processes in which accurate judging of the exposure from the faint printing-out image is impossible.

EXPOSURE CALCULATION TABLE

Highlight Density Difference	Increase Exposure (multiply original exposure by	Decrease Exposure (multiply original exposure by	Highlight Density Difference original exposure by	Increase Exposure (multiply original exposure by	Decrease Exposure (multiply exposure by
0,05	1,12	0,89	0,33	2,14	0,47
0,06	1,15	0,87	0,34	2,19	0,46
0,07	1,17	0,85	0,35	2,24	0,45
0,08	1,20	0,83	0,36	2,29	0,44
0,09	1,23	0,81	0,37	0,34	0,43
0,10	1,26	0,79	0,38	2,40	0,42
0,11	1,29	0,78	0,39	2,45	0,41
0,12	1,32	0,76	0,40	2,51	0,40
0,13	1,35	0,74	0,41	2,57	0,39
0,14	1,38	0,72	0,42	2,63	0,38
0,15	1,41	0,71	0,43	2,69	0,37
0,16	1,44	0,69	0,44	2,75	0,36
0,17	1,48	0,68	0,45	2,82	0,35
0,18	1,51	0,66	0,46	2,88	0,35
0,19	1,55	0,64	0,47	2,95	0,34
0,20	1,58	0,63	0,48	3,02	0,33
0,21	1,62	0,61	0,49	3,09	0,32
0,22	1,66	0,60	0,50	3,16	0,32
0,23	1,70	0,58	0,51	3,24	0,31
0,24	1,74	0,57	0,52	3,31	0,30
0,25	1,78	0,56	0,53	3,39	0,29
0,26	1,82	0,55	0,54	3,47	0,29
0,27	1,86	0,54	0,55	3,55	0,28
0,28	1,90	0,52	0,56	3,63	0,27
0,29	1,95	0,51	0,57	3,71	0,27
0,30	2,00	0,50	0,58	3,80	0,26
0,31	2,04	0,49	0,59	3,89	0,26
0,32	2,09	0,48	0,60	4,00	0,25

(exposure factors are rounded to the nearest hundredth)

CHAPTER IV

CONCLUSION

The way to use photography and express imagery effectively through visual art is regarded as extremely important. In addition, the best use of different qualities of materials and various images has emerged as an important point for a designer. However, those who are concerned with producing creative images fail to improve much in developing each material's characteristics.

A lot of designers use a computer in producing various images. However, it is very rare that a work made by a computer completely satisfies designers' demands. First of all, color on a computer screen is quite different from that on printed paper. In addition, a photography produced by a computer is a little different from one produced by a color printing process. Furthermore, the amateur photographers can easily produce a brilliant, professional image using a computer.

Considering all the points mentioned above Platinum-Palladium photography shows a good resolution in expressing images in visual art. As this paper has already discussed, Platinum-Palladium is very good at producing new images through using various shades and tones in a manual process. Furthermore, it has great advantage in painting because it can easily change colors. As a result, it is possible to transform images and adapt them in to a design.

In conclusion, I hope that my research into Platinum-Palladium photography helps a designer understand the concept of this photography, method and application of the technology in the area of visual art will be provided and use in the area of Design Education and Design Business. Finally, it is assumed that a new method of expression will also be suggested along with the creativity necessary for designers.

EVERYONE LIKES TO RECEIVE SOMETHING THAT SMELLS GOOD. EVEN THOSE THREE KINGS BROUGHT GIFTS OF MYRRH AND FRANKINCENSE. ON THIS TWELFTH NIGHT, FATHOM COLOGNE WILL SOOTHE YOUR CONSCIENCE AS WELL AS YOUR SENSE OF SMELL — THE COMPANY PROMISES TO DONATE A PORTION OF ITS PROFITS FOR ONE YEAR TO CLEAN UP RIVERS, LAKES AND OCEANS — AND OUTDOOR TYPES WILL APPRECIATE WOODY COLOGNES LIKE IRON OR POLO BY RALPH LAUREN, A BLEND OF TOBACCO AND LEATHER SCENTS. — MEN NEW TO THE SCENT SCENE MAY GO FOR



SOMETHING A LITTLE LIGHTER THAN COLOGNE TO SPLASH ON AFTER SHOWERING: AN EAU DE TOILETTE LIKE TUSCANY OR ANTALUS POUR HOMME. NEED SOMETHING MORE UP TO THE MINUTE? FLASHY LAGERFELD PHOTO IS SCENTED WITH GRAPEFRUIT AND JASMINE.

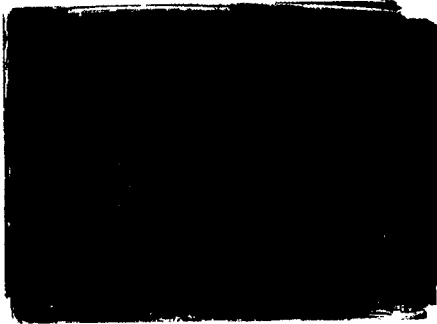
— AFTER-SHAVES ARE ANOTHER SWEET-SMELLING ALTERNATIVE. LIKE AN ASTRINGENT, SAMBA WILL CLOSE YOUR PORES WHILE PROVIDING A TOUCH OF SCENT. PERRY

Ellis's after-shave has a leathery scent with spicy overtones. — The man who already has everything could probably use a Clarison Purifying Facial Bar. This gentle soap cleans pores without making your face feel taut. —

SKIN DRIED BY WINTER'S WINDS WILL BENEFIT FROM NEUTROGENA'S SESAME BODY OIL. APPLY IT AFTER SHOWERING AND BEFORE DRYING FOR MOST EFFECTIVE MOISTURIZING. SOFTER ON SKIN THAN ORDINARY SOAP, GLYCERINE FRESH FRUIT SOAPS BY THE BODY SHOP ARE MADE FROM ALL-NATURAL PRODUCTS AND ARE NOT TESTED ON ANIMALS. A VERY NINETIES KIND OF PRESENT — TO GIVE AND RECEIVE. — TISH HAMILTON

1992, Advertising/Magazine
Platinum-Palladium print Reworked with pastels

The Fine Art of Microsurgery for the Neurosurgeon



f i d e l i t y

The... of... microsurgery... the... of... microsurgery... the... of... microsurgery...



Zeiss Oculi Co
surgical
microscopes
possible
unmatched
optical
brilliance and
image clarity

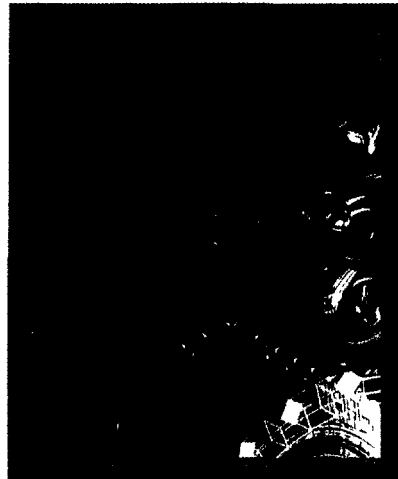
Carl Zeiss, Inc.
Microscopy Division
100-100-1000
Tel: 410-338-2100
Fax: 410-338-2101



Customer satisfaction -
A Carl Zeiss way of life.

1992, Advertising/Magazine
Platinum-Palladium print
Reworked with pastels

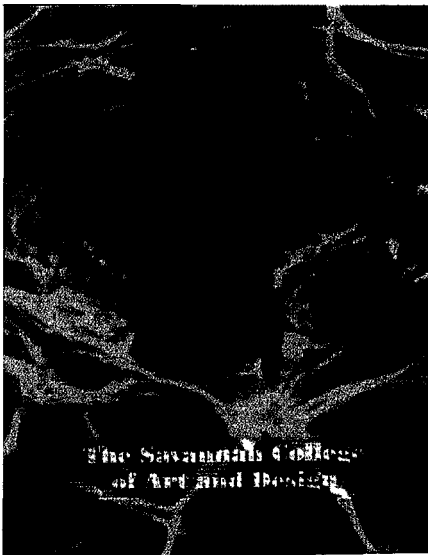
A CMP PUBLICATION®
VAR BUSINESS
DECEMBER 1991 THE MAGAZINE FOR VALUE ADDED RESELLERS AND DEALERS \$6.00



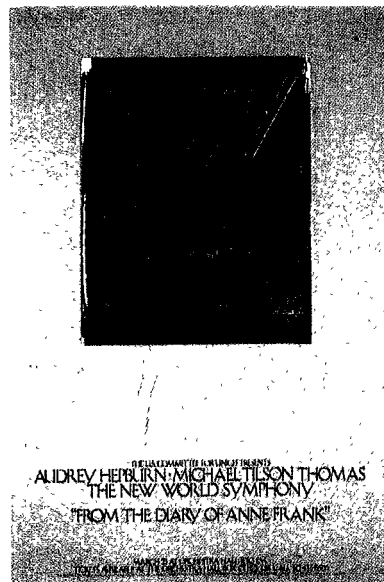
A YEAR OF CHANGE

1990 STATE OF THE MARKET

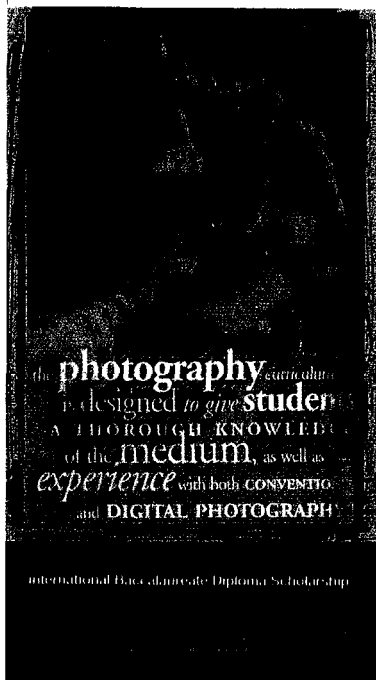
1993, Magazine Cover Design
Platinum-Palladium print



1993, Magazine Cover Design
Platinum-Palladium print



1993, Poster Design
Platinum-Palladium print
Reworked with colorpencil



1993, Poster Design
Platinum-Palladium print



1997
8
AUGUST

1	FRI	15
2	SAT	16
3	SUN	17
4	MON	18
5	TUE	19
6	WED	20
7	THU	21
8	FRI	22
9	SAT	23
10	SUN	24
11	MON	25
12	TUE	26
13	WED	27
14	THU	28
	FRI	29
	SAT	30
	SUN	31



1997, Calendar Design
Platinum-Palladium print



1994 **11**
NOVEMBER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

1993, Calendar Design
Platinum-Palladium print

BIBLIOGRAPHY

- Adam, Rober. Beauty in Photography Essay in Defense of Traditional Values. Aperture Inc. New York, New York. 1989.
- Beaumont, Newhall. The History of Photography from 1839 to The Present. Museum of Modern art. New York: Doubleday, 1964.
- Ben, Helprin. Petersen's Guide to Photo Lighting Techniques. Los Angles: Petersen Publishing co. 1983.
- Coe, Brian & Haworth-Booth, Mark. A Guide to Early Photography Processes. London, Victoria and Albert Museum 1983.
- Coke, Van Deren. The Painter and Photography. Albuquerque: University of New Mexico Press, 1072.
- Cottingham, Ian. Platinum and Early Photography. Platinum Metals Review volume 28, 1984.
- Crawford, William. The Keepers of Light. New York: Morgan & Morgan 1979.
- Croy, O.R. The Complete art of Printing and Enlarging. 11th ed. New York: Amphoto, 1970.
- Gassan, Arnold. Handbook for contemporary Photography. Rochester: Light Impressions 1977.
- Haselgrove, Maurice L. Photography's Dictionary. New York: Archer House,1963.
- Laons, Nathan. Photography in Twentieth Century. New York: Horton Press, 1967.
- Nadeau, Luis. History and Practice of Platinum Printing. New Brunswick, Atelier Luis Nadeau 1984.
- Newball, Beaumont. The History of Photography. New York, The Museum of Modern Art 1964.
- Pollack, Peter. The Picture History of Photography from the Earliest Beginning to the Present Day. New York: Abrams, 1979.
- Rexroth, Nancy. The Platinotype 1977. Arlington VA, Violet Press(dist. Light Impression) 1977.
- Ware, Mike. Platinum Roprinted I. London, British Journal of Photography, October 10, 1986.
Platinum Reprinted II. London, British Journal of Photography, October 17, 1986.