

KEEPING PACE

A Monthly Newsletter Devoted to the art of Darkroom Photography

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Is The New Equipment Making Life Easier?

This past month has been a busy one for me. I attended the PMA show in Las Vegas. The array of new equipment and ideas is mind boggling. For instance.

In the "old days" whenever a plot had to be made in order to find the correct exposure and filter pack for making internegatives, one had to actually make exposures from a grey scale or use a control strip from Kodak. Then the tedious job reading the steps with a densitometer and of plotting the three curve shapes and determining what to do in order to make the curve shapes conform to Kodak's standard took plenty of time, but the results were worth the trouble.

However, over the years, methods to make these plots were improved to such a point, that you could actually purchase a program from

P.S. Software Co. in San Francisco, that could determine the correct filtration and exposure time for virtually all current color films being manufactured today, in order to make quality internegatives.

Kodak has also jumped on the wagon with their own system. A computer program has been developed that will hook up with Kodak's Ethernet system.

The system works as follows:

Two 11 step grey scales are exposed by contact and also by enlargement. The filter pack may be something that was used in the past, or what ever has been written in the paperwork that accompanies the material. Then a color densitometer is used to make readings of each step though the color filters.

These numbers are fed into

the computer, and at the touch of a button, is compared with the filter pack and exposure that was used to make the internegative test. The new filter pack and exposure time for each method of exposing is printed out for you. Sounds simple and accurate? Not yet.

X-rite has produced a new instrument about twice the size of a pack of cigarettes that will take either a Kodak E-6 control strip or a C 41 control strip and perform it's miracle and place all of the information into a computer, and print out the necessary information for the process, such as the exposures, and the correction for filtration.

It will take more knowledge about how computers work than how this field of sensitometry and densitometry works.

One new gadget was fascinating. A 35mm slide was scanned onto a CD, or an image was taken with an electronic camera, or saved from an image on a computer disc, with the ability to first correcting it for color, contrast, brightness, and some light retouching with a computer program such as Digital Darkroom.

The disc would hold 100 images. These could then be displayed on a TV screen, sent by moden to a client, or printed out on a color printer.

The results were excellent if you are in the market for nice prints made almost instantly, without a darkroom, or any chemicals, this new Kodak endeavor ios great.

I witnessed a new camera back that would slip on the new Nikon F4 that would electronically capture many images on a small instrument that resembled a VCR. These images could then be manipulated with an inexpensive program, again, like Digital Darkroom, and then either printed on a new Kodak XL 7700 thermal color printer. There is no visible grain in the print. The image could also be transmitted to a work station in the next room or across the world. It could also be sent by modem to a film recorder to produce a new transparency, or to a service company that could convert the

image to a set of screened color separation negatives.

This modernization of the field of photography will undoubtedly invade the commercial labs, but the cost of these processes is rather high and the clinical approach to producing an image loses some of the beauty.

I looked at most of the prints that were being displayed in the show. Frankly, I was very disappointed. The very quality that I have been used to seeing and printing for the past 50 years was nowhere to be seen. Every image was large, and garish. The expensive machinery needed to produce these prints was also on display. They are machines of the future.

I was happy enough to work with a Jobo or even a small roller transport, but the new breed of machines are incredible. They will outperform in speed and repeatability anything known before. But when I compare the quality of a Joe Holmes Ciba print, or the quality of a Vern Clevenger Dye Transfer print, or the black and white art of the group such as Paul Caponegro, John Sexton and Ansel Adams, I see what is missing. The human element.

Without the human element, most prints may still look sharp, colorful, and exciting, but that missing element will

make the difference. Before I retired, I operated the Dye Transfer division of Frog Prince Lab in San Francisco. Our attention and dedication produced the very best prints possible. It was an inspiration to me.

Another gadget that was fascinating is the portrait studio electronic imaging system. As you make an exposure on conventional film, the same image is also being captured on video tape. The point is that the client could see the image of his choice before the pictures are even developed. This has even more applications. Supposed that you were shooting a complicated table top set up for a prestigious client, and the client was in another city, you could send him an electronic image by wire as you are preparing to shoot, and get approval of the camera position and composition. Kodak makes such a device. It is called the Prism XL Electronic Previewing System.

The unit hooks up with your own camera, and through a prism, reflects the same image to a color CCD camera, not unlike a video camera. A monitor is used in the studio. This give the subject the opportunity to see the image he will choose before leaving the studio.

A still recorder records the images on a floppy disc.

25 images can be captured and then displayed on a screen or make thermal color prints in 90 seconds. I remember when working in New York City with the top professional photographers and how waiting for the films to come from the processing house was almost like waiting in a hospital waiting room. Things sure have changed.

I must sound like an old geezer that has been out of touch with the world.

I have been in the color field for quite a long time. I remember when color press proofs would take more than one day and much money. Well, **Kodak** now has a proofing system that will also boggle the mind. Digital information from a scanner or magnetic tape drive is sent to this new proofing system. The image is routed to a processor, then to a pre-loaded drum. A laser sends the electronic impulses to a drum unit that loads a receiver sheet. This sheet is transferred to the final sheet. The colors match the inks and paper that will eventually be used in the final printing system. **The proof take 2 minutes.**

Enough of this modern approach to photography. Let us get back to the world as we now know it. Some of my readers wanted to know how to build a

professional Dye Transfer, or Cibachrome darkroom with limited space.

If you have lots of space, like 2000 sq. ft. then separate rooms could be built and used for separate functions. Some rooms could be dry and others wet.

The last personal darkroom that I built and operated was 12 ft. by 18 ft.. Not very large, But more than adequate.

The main thing to consider is continuity. You should be able to almost stand in one place and perform quite a few functions.

Good lighting is very important. I believe in painting my darkrooms with white paint. I enjoy the feeling as if I were in a sanitized hospital. The cleaner the lab, the better the work will be with less effort.

I used washable glossy or semi gloss paint. The wood areas near sinks and enlargers were painted with a glossy battleship grey. This gave the lab a touch of class and cleanliness. It was also easy to keep clean and clinical looking. The grey and white tones didn't deter from the color quality of any print you would examine in the darkroom.

The color temperature in the lab should be 5000°K. I suggest that the fluorescent tubes manufactured by Macbeth be used. Some daylight wouldn't hurt either. Safelights should conform to

the films manufacturers suggestions. They know their product better than you do.

There should be no light leaks, either through doors or windows, or especially from your exposing equipment.

Your equipment should be the best that you can afford. The enlarger is your own choice. Most enlargers will work satisfactorily.

The main consideration is a bright even lighthouse, a quality lens and the absolute parallel planes between the film plane, the lens board, and the easel.

If you plan to print portraits then choose a diffusion enlarger.

If you plan to make enlarged separation negatives from small originals, choose a condenser system.

If you plan to make Cibachrome prints, try to find a Pulsed Zenon light source for the enlarger. The speed will be a great benefit.

Good lenses are a necessity. I like the Apo lenses. There are a number of manufacturers that produce lenses of top notch quality. It is better to buy a used quality lens than a poor new one.

Whether the lab is part of a garage or in the basement or attic of a house, good heating and cooling is a must. The worst thing in the world is to walk into a cold lab.

The chemicals may take hours to reach their proper temperature.

In the case of Dye Transfer chemicals, the B solution will have been destroyed. Anything under 55° will solidify the solution and it can not ever be retrieved.

If the lab is too hot, the matrix film will melt in your hand.

How do I know all of these things? Guess.

Keep your small lab around 68° day and night, if possible.

The work area must have a table space and a light box for mounting originals into larger sheets of film, and a place to actually look at the transparency, and to assemble the masks once they have been made.

The light box on this work table need not be a 5000° light source, but why not? You will need a matrix sized film punch from Condit or Kodak. This is necessary if you want to make Dye Transfer prints or photo-composition attempts in your lab.

Professional registration equipment is mandatory. You must have control of your enlarger, the carriers, the easel and the vacuum platen on your work table, where masks and other photographic items are exposed and finished.

Make sure that you plan to use shelves in predeter-

mined positions. When you think you have enough shelves, double the amount.

You will be using a few pin glasses. These can get broken quite easily. Make a box that will house the glasses in an upright position with slots at the top and bottom of the box, to hold the various glasses.

The enlarger or enlargers you plan to use must be rigid and easy to lock in position, Each enlarger should have it's own registration carrier and the best possible lenses that are available.

The kind of light source isn't critical. I happen to prefer condensers because of the "sharper" appearance they seem to display, but any enlarger will work fine. The trick is to make sure that whatever negatives you plan to use match the required density range for that particular enlarger.

The enlarger light source should be stabilized. This will keep your color in your color prints prints from wandering.

You will need more than one vacuum pump.

If you plan to make either Dye Transfer color prints or Cibachrome prints, the need for a quality contact system is imperative. This contact system us needed to make the various masks for controlling contrast, color and sharpness.

You can purchase the units

made by K&M from any graphic art supplier. These consist of motorized filter wheels and adjustable light level exposing units. You can make your own.

Make sure that your equipment is level and square. If necessary, use a "Zig Align" system to make sure that your enlargers will properly cover the original negatives without disrtortion.

Don't forget the vacuum easels. There are a few makes on the market. Condit makes a series of dandy ones. So does a company called "ByChrome."

I remember working in a lab that thought using a sheet of plate glass to hold the film flat on the easel was a pretty good idea.

I knew enough, even then, that this was an archaic way to hold film flat. The company apparently never heard of a vacuum cleaner.

I have a habit of making sure things proceed as simply as possible. The vacuum easel under your enlarger will move unless fastened in some way to the table.

I used to use a clamping bar system. It still works fine. Then I though about attaching a sheet of metal to the table top.

This now meant that I could use plastic magnets glued to the bottom of the easel.

Then I could place the easel anywhere I wanted and the easel would stay where it was placed.

Make sure that you have a place for the extra lenses that you will accumulate and use.

A sink is most necessary. You can purchase sinks from a few sources, including Kreonite, but the sink you use should be more than just a sink.

I suggest that you build your own sink. It is easy to do. Plan on the space you have and make sure that you line up the various trays. Measure the space required for the sink items and give yourself a little room all around it.

Use exterior or marine plywood. Design the sink, then go to any good lumber yard and have them cut the different pieces for you.

Use a drill bit to first make the holes, then an electric drill to screw the entire sink together. Use plenty of caulking compound and water proof glue. Finish the sink using fiberglass pigments and resin.

The sink will become more than a sink. You can process film of any size in this sink. You can make color prints and use the sink to wash and eventually squeegee the prints. The sink has a multiple personality.

Mine was also a rocker table and was used to process film, run Dye Transfer prints,

squeegee films and prints, act as a base for my CAP 40 Ilford processor, mix chemicals, filter dyes, contain a water circulating unit for temperature control, house the acetic acid delivery system that is used constantly, and many other jobs that need to be done.

Leave room for viewing your finished work. If you plan to make many black and white prints, build the sink's backboard out of Formica. This will act as a reviewing area. Make sure that the correct lighting is used to illuminate the backboard. The color of the light, again, should be 5000° K. Make sure that you don't use fluorescent light that are "color blind."

Your chemicals should be placed in containers that do not leak, and placed high enough so that gravity feed can supply your needs every day.

If you use "one shot" chemistry, you can get fresh chemistry quickly and conveniently.

I always considered the ease of handling whenever I designed a lab. (I built at least ten of them.) I wanted to make sure that I didn't have to search for a light switch in the dark, or a switch for vacuum, or a timer, safelight, or meter. My labs were laid out correctly and conveniently. In fact, I used so much of the "glow in the dark" tape in my home lab, my grandchildren

would come to visit me in my darkroom just to count the tapes glowing in the dark.

Last, but not least is the finishing area.

Just what is a finishing area?

Simply put, it is where you spot the prints, mount the prints, hand color correct the prints with chemicals, frame them, wrap them for delivery and so on. It is the last area in your lab that will be used to "finish" the print. I was once told by one of my employers, when I told him that I had finished my print, and didn't know where to put it, that "the print wasn't finished until it was ready for delivery."

I have never forgotten that sage piece of advice.

Remember to paint your lab white. If you ever want to get depressed, paint your lab with black paint.

You will feel as if you are in a dungeon.

I have been making direct screened separation negatives for the lab that I am working for here in Las Vegas. The eventual use is for a magazine produced by the local newspaper. A coarse 85 line screen is being used.

The method is quite simple. The first thing that I had to do was to find the necessary exposures through the separation filters so that a

good balance could be achieved.

I did this by first masking a film grey scale for 25% and then exposing the projected grey scale and it's mask through it's properly angled screen and through the first separation filter Red 29.

I use Fujimoto Panchromatic litho film, and processed the sheet for 2:30 in Kodalith A&B developer at 70°.

I examined the results by eye. When I felt that I had a good density for a negative (merely judging it by eye) I recorded the exposure time, then read through white light, the lightest part of the grey scale on the easel with a good quality easel meter (Wallace Fisher.)

Then I made a series of exposures on one sheet of film through the green filter (N 61) and it's correctly angled screen. This sheet was also processed for the same time and temperature. When I found the exposed grey scale that matched the first (red) negative, I also recorded the exposure time. I did the same for the blue filter exposure. Then I made a series of exposure with no filter, through the black screen. I matched all of the grey scales as accurately as possible.

My resulting balance was Red 25 seconds, Green 125 seconds, Blue 240 seconds and the black, 13 seconds.

The results were not great, but were satisfactory for their use.

When making a new set of negatives, I simply read the lightest area of the new masked projected image, adjust the lens to read the same as the test aim point, and proceeded to make the screened separation negatives.

The litho films must be punched to match the pins on my vacuum easel. The screens must also be punched.

The masks are made using all three filters. I use them according to the "look" of the original.

If I find that I have a picture of a head with a very deep and warn flesh tone, I will use the red and green filter for 1/2 each of the exposure time for the cyan printer, the green for the magenta printer and the green and part blue for the yellow printer. I use the yellow for the black printer to keep black from building up in flesh areas.

It takes a little knowledge of the separation systems.

This is not a high class separation method.

In order to make quality screened separations, continuous tone negatives are first made then these are converted to continuous tone positives, then finally to screened negatives.

Control of the gamma for each layer is the object in

making a quality set.

The direct screen system does not allow for such luxury.

Making a color key is extremely simple.

3M makes a product for such a purpose. It is a pre-sensitized to ultra violet, colored gelatin coated on a very thin sheet of film.

Working under a safelight that consists of two yellow "bug" lights, an exposure is made from the screened negative **through the back** of the colored gelatin. The light source must consist of a bright ultra violet light source. The graphic art field uses a plate maker for this purpose. Each sheet is placed over the corresponding color sheet, the vacuum is turned on. Usually 28 lbs of pressure will hold the two sheets together very tightly. The sheets are then exposed.

I use a flip top machine that allows you to load the materials on top of the machine, then turn the whole plate over to expose from the bottom of the unit. The light is almost as bright as a welders torch.

After an exposure. (We determined that 40 seconds was good) we then went to our sink area. Using the back of a white tray, we place the four sheets of gelatin coated film emulsion up. Using a liquid called 3M developer (it smells like rubbing alcohol) we coat the

face of the sheets using a cotton wipe. Then we add more liquid developer to the wipe and continue to lightly rub the colored sheets. In a few seconds the chemistry will wash off all of the unexposed gelatin and only leave the exposed portion.

The films were exposed through the back. This is why part of the image remains attached to the film. If the film was exposed on the emulsion side, it would all wash off. The dye transfer matrix film works in the same fashion.

The films are then rinsed for a few seconds in water, squeegeed and dried. On a light table, these four sheets are registered by eye (or by punch holes) in the order of yellow, then magenta, cyan, and finally, black. Then the entire group is placed on a sheet of white paper.

It will give you an indication of how this package of negatives will look when actually converted to real plates. At this stage, if you are unhappy with part or all of the image quality, you can make part, or all of it, over. This system is a forerunner of Charles Bergers UltraS-table carbon system. In Bergers method, the image is exposed emulsion to emulsion. Then the sheet of exposed material is transferred to a receiver sheet, which is then is washed off

in hot water. The area that was exposed and placed against the receiver sheet pigment will adhere to it. The same kind of light sensitivity is needed for the process to work. A Platemaker is also used.

I have the formulas for all of the necessary steps.

In an upcoming issue, if my readers so desire, I will write an article and disclose the formulas that are required.

Either system needs a line negative or a half tone screen, which is actually a line negative system.

The image will not hold together properly unless it is a line or screen.

The old Carbro process was a little different.

Incidentally, the word Carbro is actually derived from **Car**-bon and **Brom**ide.

All that was necessary to make a Carbro print was to make a set of black and white prints called bromides (because they were made on Bromide paper.)

These black and white prints were combined with pre-sensitized colored pigments emulsion to emulsion.

The trick here was to make sure that we then used cold water to wet the pigment, then squeegeed the surface of the pigment onto a sheet of waxed celluloid.

This insured us that the pigment would not wash off but instead, would adhere to the celluloid. This process did not require screened or

line negatives. Continuous tone prints were made with no screen.

Unfortunately, this fabulous black and white paper manufactured by Ilford is no longer being produced. This means that in order for the Carbro process to work, continuous tone separation negatives must be made to the size of the print in order for the image to work.

Have you ever made separation negatives to a 20x24 size? I have. It is not easy to make negatives this size and not encounter difficulties with processing and abrasions.

You must have your processing times and exposure times pre-determined very accurately in order for the print to work.

However, there is some leeway in the actual exposure of the pigments. You can make an individual color lighter or darker to a certain limited extent. If you use the very inexpensive and fast method of 3M color key system to establish a balance, then the final set can be exposed with much more accuracy.

3 M also has a process that is similar to the Carbro concept. It is called Color Match. The company claims that they can easily match press proofs from screened separations for color and contrast. The image is exposed on the emulsion side, transferred then washed off. Un-

fortunately, this process requires a special laminator that costs around \$12,000. This is fine for a company that has the need for such a device. I understand that it is better than Chromalin proofs.

I received a call from a subscriber that wanted to know if one could make separation negatives in a camera.

Of course, the answer is yes.

However, the caller wanted to use a 35mm camera. Apparently, he read Mindy Beatie's book on Dye Transfer where she details such a procedure.

If you want great prints, the answer is **no way**.

However, if you wish to play around with the process and just make an attempt to understand how it works, here is what could be done.

Make a series of exposures in daylight, through the red, green and blue filters of a grey scale paper image, using a tripod. Try to make sure that the image is immobile.

Use a panchromatic film such as T-Max 100 or Plus X.

After processing, look at the strip and find what looks like a good negative that was shot with the red filter. Then find as close a match to the red with the image shot with the green filter. Do the same

with the blue filter. In this way, you will at least have a close density match of the three images.

In fact, if you use T-Max 100, and process it for 5:50 in dilution A — HC-110, you will get a close contrast range as well.

Once you have established the three different exposure times for the three filters, try shooting a scene. Don't attempt this in a strong breeze. Pick a subject, focus. expose the red, then the green, then the blue. You can bracket the exposures so long as the image hasn't shifted too much.

Make a set of matrices from these three negatives and you will get a color print. A great print? No. A good print? No. A print? Yes. This approach to understanding the Dye Transfer system is being taught in famous universities. It is hard to believe.

One instance was reported to me where the student loaded his 4x5 film holders and decided to shoot pictures of his friends outdoors, next to a tree and resting against a car.

They shot the three negatives, with the leaves of the tree moving, the cars in the background also moving, and the human subject also moving a little. The results were bizarre, but the idea was gotten across that a one shot camera should have

been used or maybe a transparency should have been shot in order to make a set of separation negatives.

If you are going to spend time and money on such a project, learn how it is really done.

Imagine shooting a painting with a 35 camera and using this system? There would be a print, but the color would be off, the registration would be worse and the image quality would suffer from working with such a small set of separation negatives.

My next venture is to make a video of my Cibachrome process. I will still keep the book, but replace the color images with black and white shots. However, the video will describe with much more detail the differences between the various prints. The video will be easier for me to produce. I am working on it right now.

I am now starting my home study courses. This will be a challenge for me. But I think it is a novel way to teach a subject. It will almost be like having me at your elbow while you are making a print. Thanks again for your support.

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