KEEPING PACE

A monthly newsletter devoted to the art of darkroom photography

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AN INCREDIBLE INSTRUMENT FOR PROCESSING ACCURACY

All of my photographic life I have been working on new and better techniques in order to hold my processing temperatures as accurately as possible. I have written about different systems that I have "invented" and the amount of money that was spent on chillers and coolers and heaters. Some of the new processing systems like the Jobo, or Imagemaker, are very accurate systems, indeed, but I am talking about the lab man who has to work in a tray.

Let's take separation negatives, for an example. If you are a production house, then you really don't need to read this. But if you are a professional Dye Transfer lab and are making your separation negatives by hand, then this will apply to you.

I have discovered a relatively new device that will amaze you. It is a **Temperature Compensating Timer,** and it is sold by **Zone V1 studios in Vermont.** It can be used with any black and white film or paper. If you are processing a sheet of film for 4 minutes at 68 degrees and the results are accurate, and then you find that you have another sheet of film to process and you now have a new tray of warm developer and no ice with which to cool it down, the only other solution is to change the developer time. This means that you must have a time and temperature chart somewhere, and are certain of its accuracy.

Have you ever made a time and, temperature gamma chart? No? Well fret no longer because Zone VI Studios have the smartest unit that I have personally ever seen. This device has a temperature probe that monitors the developer in the tray as you are actually developing film. If the temperature should change while you are in the midst of the process, the timer will either speed up or slow down. The real time is replaced by a new time governed by the temperature. You will see the time counting off and as far as you are concerned, the fact that it is faster or slower won't bother you.

The timer will change speed depending on the temperature.

The unit has three settings. Film, real time and paper. All are geared to work at the normal paper or film developing temperature of 68 degrees.

Their newsletter describing this unit is available by writing to **Zone V1 Studios, Newfane, Vermont. 05345.,**

The newsletter explains some of the tests that they subjected this unit through. However, I decided to check out this unit for myself. I always

considered myself to be a thorough darkroom technician. I have worked with densitometers since 1939 when they were as scarce as hens teeth.
I needed to make a new set of time, gamma charts for my separation negatives, masks and highlight materials. I purposely decided not to look at my digital thermometer until I was through with processing a sheet of film. I went through my normal procedure of making different exposures and different developing times. When I finished one step, I would check the temperature and recorded it. After I plotted the curves and drew up my charts, I then processed a set of negatives in the same batch of developer and took new readings. I was going for a gamma of .33%. When I was through processing, the readings indicated that my gamma was 32.9%. That was one indication that the time was holding because the difference in temperature was almost 4 degrees between processing the two sets.
I did the same thing with my separation system and got similar results. The gamma repeated accurately. Of course, the agitation of the films in a tray had to be perfectly repeatable. I used a metronome to keep my agitation rythm as precise as possible.

I then decided to do one more thing.

During my early years in the color print field, I began as a Carbro printer. This meant that I had to make black and white prints (bromides) from the separation negatives in order to establish a balance. This was all done by eye. I would find an area of the photograph that looked neutral and tried to make the same area on each paper print to match. The exposures were never figured out with a densitometer or easel meter because there weren't any around in those early days. The biggest problem that we had was keeping the temperature of the developer constant. We solved it the hard way. With ice and hot water.
However, when I began to make Dye Transfer prints, instead of using easel meters (which were still not on the scene) we used to make paper prints of each separation negative and find neutral areas to match. The next step was to find the difference in speed between the paper and the film and proceed to make the matrices. Temperature was the biggest problem of all. So I decided on a new test. Using the new Compensating timer, I made a set of "bromides" from a set of negatives. I then made a test to determine the difference in exposure time between the paper and matrix film. Once I established the differences, I made a set of matrices and ran the print. It looked great. The density was right where I wanted it to be.
In order to make sure that what I saw was what I wanted, I ran the Cyan matrix by itself. I compared the density of that cyan print against the cyan paper print by looking at both of them through a red #29 filter. They matched.
So for those of you who would like to be able to process film or paper or to make a set of bromides before making a set of matrices, here is one solution to the temperature differences. I highly recommend this unit.

Another look at masking

When making contrast masks for any process, whether it is Cibachrome, or Type R or dupe transparencies or the Dye Transfer process, the first thing to decide is just what your enlarger will produce. I have already explained this procedure in volumes 3 and 4.
However, I believe I left out an important message. I explained how to find the enlarger need, the method of finding the

gamma for any film, but I forgot to include this; Lets assume that your enlarger requirement for a negative contrast to make a black and white print on # 2 paper is 1.20. And you are making this negative from a color transparency. If you are processing the negative to a gamma of .70, *what must your mask percentage be?* \The combined mask and transparency (CMT) must be higher than necessary so that when you process your negative to a gamma of .70 then the final result will be what you planned for. Of course, it all depends on your transparencies contrast, but here is the solution.
If your required negative Density range is 1.20 and your negative is processed to a gamma of .70, divide the .70 into 1.20 and the answer is (1.71), the CMT (combined mask and transparency) number needed to do all of your calculations. Such as ;
original

Shadow	2.70
highlight	.45
density range	2.25
Enlarger CMT	1.71
Difference	.54

Divide the difference by the original Density range and the answer is 24%

This means that the mask should be made to a percentage of .24 (Gamma) However, if the enlarger requirement is not 1.2, but 1.0 how do you change the numbers.
Here's how;
Divide the gamma (.70) into 1.0 and the new number will be 1.428 or 1.43. This is your new enlarger CMT requirement for 1.0. So the procedure is as follows.
Any time you have a different requirement for the enlarger, simply divide the gamma of your negative processing into the new enlarger requirement and the new corrected CMT requirement will be evident.

Have you ever wondered about flare?

Have you are ever been faced with the problem of which method to use when making a black and white negative or a set of separation negatives. Whether to make them by contact or enlargement? There are explanations that will make your decisions a little easier. For example; A " white on white" transparency should be exposed by contact when making separation negatives. The reason is pretty obvious. The amount of flare that would be introduced by such a light transparency if you decided to make enlarged negatives would destroy most of the detail in the upper end of the grey scale. Most of this particular picture is in the upper end of the scale. If the original is a small transparency, I would try to make the contact negatives on the new T Max film so that the grain of the separation material would not be much of a factor. The light source can be a point source, but any light source should work.The negatives made from a light original would be dense enough to eliminate any cause of flare.
On the other hand, if your original transparency was a "black on black" photo, would be a safer bet to make separation negatives by enlargement. The reason here is also obvious. The blacks would not flare because of the simple fact that black doesn't flare. Only white or clear objects flare. If a set of separation negatives were made to the exact size of the print, then an even more sensational print could be made. Because the separation negative itself would be a candidate for flare, for it is now a primarily clear sheet of film that is capable of producing flare if inserted in the enlarger. However, if the negative could be contact printed, all of the flare will be avoided. This is why the newer scanners

are producing some of the sharpest reproductions in history, because they eliminate the optical and air space problems completely. The separation negatives that they produce are usually made to reproduction size, so everything from the separation negatives are made by contact.
In making Dye Transfers, we usually don't have this luxury of using a scanner. Some labs do. but most don't. So, learn to use the equipment at hand and make great prints. The main reason why any of this was brought up was to make sure that you understood the reasons why some prints lose their detail and sharpness.

one method for making enlarged negatives

Now, lets get back to our new transparency. The masks have been made by contact and we are now ready to make separation negatives.
I use a 4x5 carrier that has been made especially for me. by Condit Mfg. It will take either a 2 1/4 or a 35mm transparency that has been mounted in a 2 1/4 sheet of film. These sheets will be punched with a diagonal punch and will fit a set of pins in the carrier. This particular carrier is leakproof. If I want to use silicon, I can. It is an option that I use and recommend. After I explain some of it's virtues, you may consider it too.
At any rate, I can now enlarge this 35mm image to any size I wish on my vacuum easel. I choose to make my separation negatives to 8x10 size, because I use an 8x10 system for my matrices. In this case, the larger the separation negatives are made, the less trouble you will have with the grain of the Kodak Super XX influencing the final print. Once this image is sized up, the next step is to make sure that everything is locked. My easel happens to be a vacuum easel that has built in magnets cemented to it's bottom. My table top has sheet metal cemented to it. However, the clamping system made by Condit Mfg. is far superior and is highly recommended.
After stopping down to at least f 8, I will make a series of exposures through the red 29 filter. My processing time to produce a gamma of .70 for the Cyan separation negative is 4:25 .at 68 degrees F. in HC 110 diluted 60 cc of concentrate to one liter of water. Once I process this sheet of film and dry it, I will read the shadow area with a densitometer and try to find a .40 density reading. When I find it, I make a note of the exposure and place the probe of my Wallace Fisher easel meter on the lightest area of the image. I now make sure that **this** meter reading is recorded. Any time in the future, I can place this probe on any new enlarged combination of mask and transparency and adjust to the proper F stop without being under or over exposed. Remember, that when you make contact separation negatives, the light source is usually fixed.. The exposure must be changed, depending on the density of the original. When making separation negatives by enlarging, the exposure times remain constant, but the F stop will constantly have to be adjusted.

This is for the Dye Transfer enthusiasts amongst us.

The best material for transferring on is granite. Not glass or plastic or any other kind of "flat" material. Granite works best for a few reasons. The granite is easily available and can be ground down to a smooth polished finish. In fact, the engravers use granite and have the piece ground and polished to one wave length. That is a costly process and is not really necessary for Dye Transfer. However, if you should ever get such a piece offered to you, grab it.

Normal polishing should suffice. When I picked out a rather large piece in San Francisco, a few years ago, I brought with me a long metal T square. I was able to lay the long edge of the T Square on the polished surface and tried to slip a very thin sheet of paper between the granite and the T square. I found one piece about 3 1/2 feet by 7 1/2 feet. It cost around $600. But it was worth it. I was able to place more than one transferring station on this piece of granite and it worked well. It still does. Another reason for using granite is that it is **porous** and **holds the paper** much better than glass. Condit makes the granite transferring boards and will place the pins of your choice in it. Then he will crate this monster and ship it any where in the world. Drilling the necessary holes in the granite is a simple chore. First, place the punched matrix film exactly where you want it, then tape it securely in place. Find the center of each hole and drill 1/8 th in" holes down into the granite. The holes will be slightly larger than the pins stems. Use a masonry drill. The trick is to keep the drill cool. I made a mound around the hole area out of putty and filled it with water. The pins are another story. The ones that you should use must match the punch that you are using for your matrix. If you are using the Kodak system, you can get pins to fit from Condit Mfg. Philo Curtis Rd., Sandy Hook, Conn. If you are using Condit's systems., he can supply you also. If you are using anyone else's pins contact the manufacturer for their pins. The pins should have a stem around 1/2 " long. At this point, remove the matrix film from the granite, add the cement to the holes, place the pins stems in the holes wipe off as much surplus cement as possible, and now replace the matrix film over the holes. Make the film fit the pins snugly. You will find that the pins will adjust themselves to fit the matrix. Leave this combination set overnight. In the morning, cut the matrix film out of the pins and scrape off any excess cement around the pins using a razor blade. This should suffice. If you must use glass. the same procedure is followed, except that you must use a glazer's drill bit. I used a Sears drill press (The kind that you attach your own drill to) to make sure that the holes were perpendicular to the surface of the granite.
The roller is another problem. The ones made and sold by Condit Mfg. are probably the best around. His rollers are virgin rubber and are absolutely flat. It is possible to make your own, but believe me, I have been through the mill, you will never get one as accurate as Condit's. The roller should be larger than the largest matrix you plan to use. It makes sense to use a small roller on a small print. The Kodak rollers are fine, but they are unable to taken apart so that rubber rollers can be replaced.
At one time Kodak used to use little spring loaded clips to Hold the film in place, so if you can find any of them, you can cement them in place by first roughing up the surface of the granite or glass before using the same epoxy cement. However, most labs that I have visited don't use them at all. I haven't for many years.

Letters from subscribers.

I recently received a letter from Luke Powell, in Middlebury, Vermont. He has a unique system for processing 8x10 film in a tray.
First let me explain why this was necessary. The Kodak Separation Film #1 which is used to make separation negatives is a very fine grained film with excellent speed and color response. However, trying to process this material by hand is almost impossible. It was originally made to be used with a roller transport machine such as Kodak's Versamat film developing machine. I had one for 13

years. It processed Separation 1 film without any real problem. I liked the material so much that when I changed locations and sold the Versamat I tried to process the film by hand. The unevenness was too much for me. I had Max Factor as an account and when they gave me a transparency to print, and the subject matter was a white powder puff against a white background, that did it. I couldn't get a smooth print . So I switched to Super XX. My old stand by. The result? No more trouble.
However, Luke Powell likes the film so much that he has devised a system to get smooth processing using Separation 1 film.
He tapes the three, and sometimes four sheets of film to a large sheet of plexiglass. He uses water proof tape so as not to lose his work during the process. He places this large sheet of plexiglass with the film attached to it into a tray of developer. Every 5 seconds he uses a Kodak roller and rolls across the full sheet. This action simulates the action of a roller processor. Each sheet of film should be removed from the plastic sheet as each time of processing arrives. The sheets are fixed, then replaced into the developer to eliminate the anti-halation backing then fixed again, washed and then dried. It sounds like a lot of work to me, but he claims that he is getting results that are worth it. If you would like to contact him, The name is Luke Powell, 230 Battell Block, Middlebury, Vermont 05753.

Photographic Software

For those of you who may be computer enthusiasts. Here is a bit of news that may brighten your day. If you are presently making Type C prints and are making your own inter-negatives, then you know the importance of plotting your materials on a regular basis, so that you can keep your materials from developing cross overs. A relatively new company named "Photographic Software" in San Francisco has developed a software system for the IBM - PC computers that will allow you to take color readings every day if you so desire and keep your curve plots accurate. This system will also allow you to plot the results of your internegatives of different grey scales made with different films, such as Ektachrome, Kodachrome, Fujichrome, Agfachrome and even print film, so that you could actually place five internegative exposures on one sheet of film from five different sources and end up with a balanced color print. This could be done manually, of course, but the time that it would take and the probability of changing emulsions in mid stream would cause concern for the Lost t time **(which you can never retrieve)** and the inconvenience.
These new young and intelligent darkroom technicians are changing the way we work. In the old days of color printing, years before Type C prints and color negatives, we had to make separation negatives by hand and really judge them by eye, which was really quite inaccurate, but we all did it. It reminds me of flying. When Lindberg flew the Atlantic in 1927, he did it by the seat of his pants. And earlier, when the flying airmen during world war one flew their planes, they did it by the seat of their pants, as well. But today's 747 pilots have an immense bank of instruments surrounding them and they do it every day. Today's color technicians who make prints the hard way, (by the seat of their pants) are doomed to the same oblivion as the early fliers. I'm not knocking the early pioneers, because they brought us to this point in history, but the new breed of technicians will be able to work on a much higher plane. (no pun intended)

Just a call or letter away

If you are interested, **Tim Hall**, the owner of **Photographic Software, 2805 Balboa St., San Francisco, CA 94121, Phone# 515-221-9929.** has written an article for the September 1987 issue of Photo Lab Management magazine. It is very precise and I personally consider it a *must* reading for anyone interested in keeping his quality as high as possible. If you write or call Tim Hall at the above numbers, you will get an education. All of my working life I was concerned about quality. Here is a company that has quality as its only goal. I know that if I were back in harness again with a lab producing Type C prints from my own internegatives I would rush to get the system installed as quickly as possible.

News from Frank McLaughlin

Formerly the chief of the **Dye Transfer** division at the Kodak Co. in Rochester, N.Y., and now the head of McLaughlin Company, a consulting and editorial firm. He has made and plotted curve shapes on the new T-MAX film with the intentions of finding out whether or not it would be suitable for making separation negatives for the Dye Transfer process. He has tried different developers and has some interesting comments to make about the material as it pertains to separation negatives.

T-MAX film.

What are the possibilities of its use in making separation negatives? Apparently they work very well. I experimented with the 100 speed material and found that the curve shape was almost straight. This is a very interesting development. Most films have a decided curve shape that bends at the top and also flattens out at the bottom. Not T-MAX 100. The line is so straight you can almost use a ruler to make the straight line portion.

One of my former fellow workers, **Tom Rankin of Frog Prince labs** in San Francisco, has switched completely over from Super XX to the new T-MAX 100. He had this information figured out long before anyone else.

I also received news from **Frank McLaughlin,** the former head of the Dye Transfer division at Kodak. He also has made curve plots using T-MAX film with HC110 developer and T-Max developer. His exposures for separation negatives (contact) were ;

Red filter 24 seconds
Green filter 14 seconds
Blue filter 135 seconds

The developing times using HC110 dilution A were as follows;

Blue filter 3:20
Green filter 3:20
Blue Filter 3:10

The temperature was at **75 degrees.**

From what I have seen, I think that the new T-Max film may be used for making separation negatives. It might be worth the trouble to change over. Tom Rankin thinks so, and believe me, he knows.

Archival?

The news in our photographic community lately has dwelled with archival qualities of color film and prints. We all know that black and white prints when properly fixed and washed will last for hundreds of years because of the silver content and the rag fiber content of quality paper.

The color print field has had to contend with the fact that all color materials will eventually fade. We all know that the Cibachrome print with its quality Azo dyes will outlast any other color print, but it too would fade in time. The Dye transfer color print that has been the backbone of the advertising field for all of the past 45 years gas been considered the finest print available because of its ability to be manipulated in many

directions. However, the Dye Transfer prints is truly the only archival process in the color field.
Consider this. Even if the print should fade in time, the separation negatives with pure silver and a polyester base will last indefinitely. Moreover, the matrices will also last indefinitely. My good friend **Bob DeSantis of DeSantis Color Lab** in North Hollywood, called me and told me that he had to run a new print from a set of mats that were 27 years old. They printed perfectly. So, as long as you keep the negatives and matrices from getting stepped on with golf shoes, they should last and last.

Based on what I have been writing about in this issue, it seems that advanced technology has been and will continue to be with us. Some of the most prestigeous Dye Transfer labs in the country are faced with the fact that many of their clients in the advertising field have been going to graphic art companies that will pre-digitize their transparencies and are eliminating the Dye Transfer house. This trend has been growing for the past few years. The fact that the latest breed of scanners are so accurate that they will pick any retouching that is sitting on top of the emulsion. Because of that fact, the only prints that can be scanned are usually Dye Transfers that have been retouched with bleaches and dyes. I remember when Carbro was the king of the color print field. The retouching was done with opaque colors and was easily seen. Those days are gone forever. However, the scanner still cannot do everything. Most of the labs that I am on talking terms with, tell me that even though many of their clients are going in a different direction, many new ones are filling the void. The labs that specialize in making prints for display or for point of purchase use are growing in number and size. The same goes for labs that specialize in portraits or weddings.

As you are aware of, I'm sure, I teach a Dye Transfer workshop here in Victorville, Ca. Most of my students are professionals who are looking to improve their work, or would like to get a different outlook about color printing than their own. As a result, I often learn quite a bit about their outlook and also get a chance to examine mine more closely. Many of my students call and tell me about the different materials that they have experimented with and about the results they have achieved. As a result, I have come to the conclusion that it really doesn't matter what kind of film or developer you use, so long as you are aware of its ability to accomplish your goals. The main thing to think about , is to keep your mind on what the final result will be like. In this respect, you and you alone , are the only one who can pre-determine just what kind of an effect you are capable of producing. Ansel Adams often said in his books that you must visualize the final print, framed and hanging on a wall, before you even attempt to shoot the picture. This is precisely what any quality color printer must do. The materials that could be used are many. The developers are many. Even the results that you may contemplate are many. The trick in making Dye Transfers is to choose the kind of film and developers that you would like to use and test them thoroughly before deciding on a particular group.

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