# KEEPING PACE

A Monthly Newsletter devoted to the art of Darkroom Photography

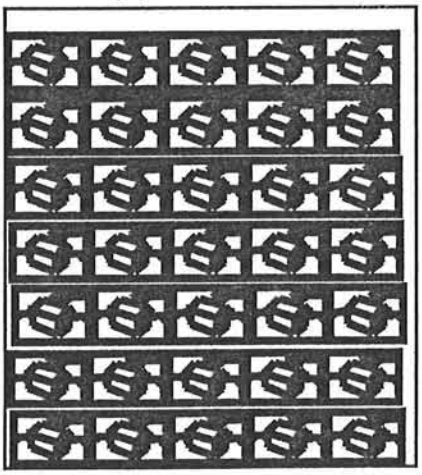
Volume 19 January 1989

## STEP AND REPEAT EASELS ARE SOMETIMES NECESSARY

Have you ever been presented with the problem of producing many small prints, all the same size, but in different positions, on one sheet of paper?
If you are currently making C prints, or any one step process, all you have to do is to move the paper by hand, or purchase an automatic easel, or even a cluster of lenses in order to print as many as possible on one sheet of paper. But suppose the client asks you to place these images in specific placements on this final sheet of paper, then what do you do?

The only answer is a step and repeat easel.

If your images have to fit in a specific place, and even silhouetted, or stripped into position, then you must have a step and repeat, vacuum register easel.
This seems to be getting rather complicated. Well, it is. There is no simple solution.
Let us assume that you have to place 35 identical images on a sheet of paper in the following position.



The method of printing single exposure prints such as Type C or Cibachrome, or dupe transparencies would be to make the first exposure through some kind of window or frisket, then remove the paper, replace it with the layout, on pins, and move the easel to the next position, remove the layout and replace the paper by again, placing it on pins, and expose the new image in the new position.

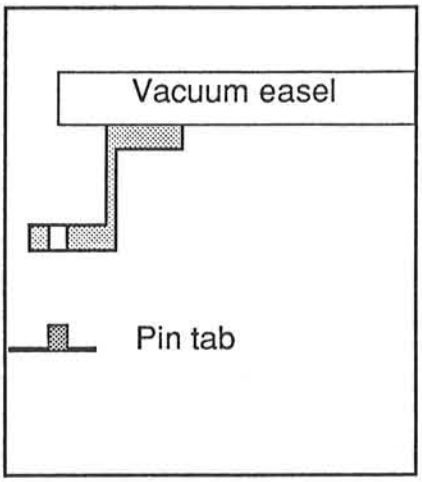
**The normal procedure that most labs would use is as follows:**

The entire layout sheet should be registered to the vacuum easel using a pin system and film punches Position the first image on the easel using the layout sheet made to the exact printing size.. Then after each exposure, the paper would be removed from the easel, replaced with the layout and then the easel would be moved to its new position.

This would go on until all 35 exposures were made. Not to difficult a job. But wait.

When printing matrices for the dye transfer process, you will have another wrinkle to be concerned about.
If you use the same technique as described when printing single exposure prints, you would have to expose the cyan, magenta, and yellow matrices in that order then remove the matrix from the easel and the separation negative from the carrier and place the layout back on the easel and move the easel to its new position, and again, expose all three matrices through all 3 separation negatives.
If the exposures are all the same (I can guarantee you that they will never be the same) then you will still have to remove the separation negatives from the carrier and the matrix film from the easel for every exposure. If you have to place 35 images in position. multiply that number by three moves for each separation negative and color matrix.
**According to Murphy's law, something will get screwed up.**

I had such a job to print, back in 1978.
Here is how I solved the problem of making all of the moves.
I made small metal attachments with 1/4 inch holes




drilled into them by a machine shop. These were attached to my vacuum registration easel. (see diagram)
I used a 30x40 sheet of plywood as my table top under the enlarger lens. This was fastened so that it wouldn't move.
I then had a bunch of 1/4 inch pin tabs made that would fit the holes in the metal attachments very accurately.

The method I then used, was to place my vacuum easel on the plywood base, with the layout on the easel's register pins, and positioned the first image by moving the easel around until it did fit.
I then placed the pin tabs into each 1/4 inch hole and fastened them in place using two small wood screws for each tab. I then identified this position by writing the number 1, adjacent to each pin.
I then moved my easel to the next position, place the pin tabs in place, fastened them down, and again, identified them with the number 2.
I continued on this tack until all 35 positions were accurately placed. The important thing to do here was to make sure that all 35 pin placements were numbered.

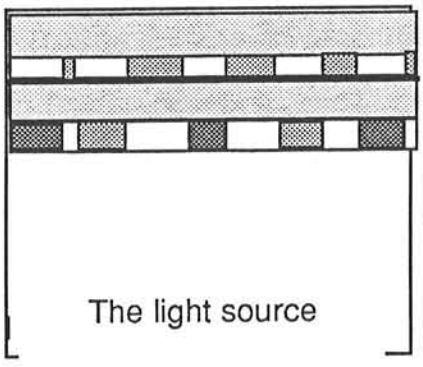
This board did look strange, but it worked.
Here is the method of working with this elaborate system.
When I was sure of the color balance and had written down the set of exposures for the three matrices, all I had to do was to place the first separation negative with all of the necessary highlight masks and any other color correction masks, in the enlarger carrier, position the easel for the first position, and proceed to make the first exposure.
The next step was simple. Lift the easel off the first set of pins, locate the next set of pins by finding the correct number, replace the easel and make the identical exposure again. Do this for all of the cyan exposures on the cyan matrix. The film in the carrier and on the vacuum easel never had to be disturbed.
When this color was done, just replace the cyan separation negative with the magenta separation negative and also replace the

cyan matrix with the magenta matrix., and place the vacuum easel back in position number 1.
Repeat these exposures and moves until all of the images were exposed.
This does require that you have an accurate voltage stabilizer and a good repeatable timer.
**Try not to get the enlarger head too hot. The color of the bulb will actually change color when overheated. Just work nice and easy and take your time.**

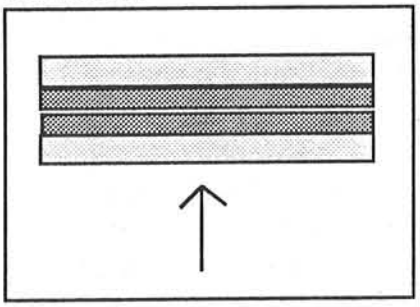
---

**When masking for Ciba or any other process, have you ever gotten lines around the image caused by the mask?**

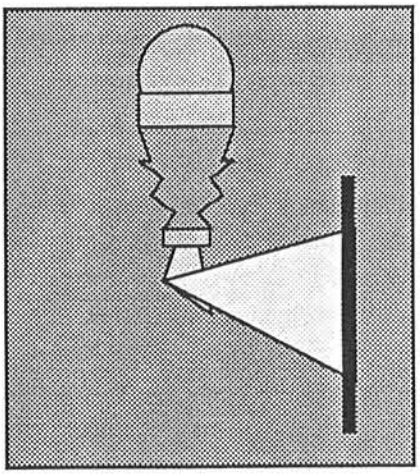
Masking transparencies for contrast control when making Cibachrome prints can sometimes be a problem. If you are masking a 4x5 or an 8x10 transparency, and are planning to use a slightly smaller than normal lens to make the print, you may run into a mask registration problem.
For instance, if you mask a transparency by the contact method,




and place it into the enlarger carrier, a normal 150mm lens will give you a better chance of making a clean print with no register lines showing. However, if you use a shorter focal length lens such as a 135mm, you will experience these unwanted lines.
The 8x10 size is even more critical.
If the normal 300mm lens is used, the masking fringe will be minimized. But if you use a 240mm lens, then the masking fringe will be evident.
How can one eliminate this problem?
There are two methods. The first is very easy to do.
Make your mask emulsion to emulsion.



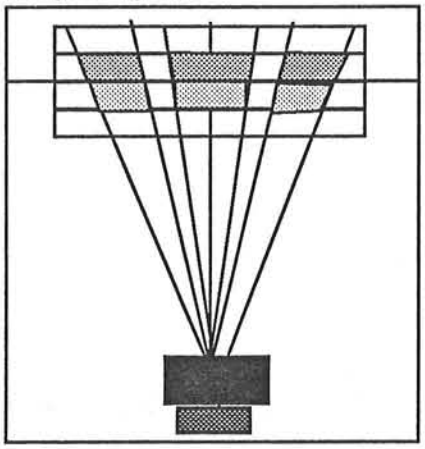
However, if you try to make a print with this combination, and want the image to read correctly, you will have to expose through the mask. This is not a good idea. But, when you are ready to make your print, use a front surface mirror to project the image to the wall and project the image through the base of the transparency. The mirror will turn the image around so that it reads right.



The only thing wrong with this method is, that you will have to construct a wall mounted vacuum carrier, and if you have to remove masks in order to replace them with different masks, the entire assembly must be as rigid as a rock.

The second method is better. Use your enlarger as if it were a camera, to make the mask. The technique here is to pick the lens that you actually plan to use to make the print. Use the lens to cover a sheet of 16x20 white paper on the easel. Place the filter that you plan to use in the masking process under the lens. Then, punch the transparency with the diagonal punch normally used for this size film. (Let us pretend that we are working with a 4x5 transparency.) Size the image so that it fills the white sheet of paper.
Place the transparency into the carrier. Mark the enlarger for position and F stop. Then, in the dark,

punch a sheet of Kodak's Pan Masking film so that it too, will fit on the same pins in the carrier. Both sheets should be emulsion down. Illuminate the sheet of white paper and make an exposure. This will expose the mask by contact in the carrier and in the exact position that it will be used. Don't change lenses at this point or you will get those masking fringes again.



The only problem with this system is that you will have to determine the correct exposure for each developing time and the correct developing time for each gamma.

**Here is how I would tackle this job.**

As with my normal masking system, a chart is a necessity in order to predetermine the correct contrast for any mask.

**However, we must first determine the enlargers contrast range for the material you plan to expose.**

You can easily find out just how much contrast your enlarger can handle.

If you place a 21 step grey scale in the enlarger, completely masked off so that no light escapes from it except the image of the grey scale, then expose it several times with different exposure times so that you will "bracket the exposure" onto a sheet of any kind of material that you plan to use.

Process the sheet normally

On close examination you will be able to see where the dark area loses detail and also where the light end loses detail. Remove the grey scale from the enlarger and find these exact points on the original grey scale by readingwith a densitometer

**This is the range that your enlarger can handle, for this particular paper or film..**

When this density range number has been established, you are now ready to make the necessary chart to be able to find the correct exposure and development time for any transparency

Now, mount a 3 step grey scale (Kodak's Q 6 C) into the corner of a sheet of opaque material so that it can be placed in different positions for each test exposure by turning it over and turning it end to end. Place it in your enlargers carrier .Kodak Pan Masking film has no anti-halation dye on the base, so that an exposure through the base will be correctly recorded.

**The carrier will act as a contact printer.**

The top sheet of film in the enlarger carrier is the Kodak Pan Masking film. This remains stationary. This will allow you to expose 4 grey scales onto a sheet of Pan Masking film with4 different exposures.

The object here is to make 2 identical sets of exposures on 2 sheets of Pan Masking film. I would suggest that you work with the lens at F 5.6 and expose for 10, 20, 40 and 80 seconds through a red #29 filter placed under the lens.

Do this twice.

These two sheets can then be processed to 2 different times in order to find the high and low points of contrast and density so that a chart can be made that will clarify the aim points more clearly.

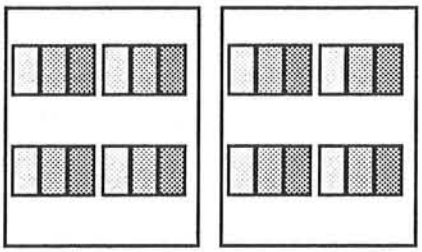
Now you have identical exposures on two sheets of Pan Masking film. Since this is a test for principal masks, we should use the appropriate developer.

My suggestion is to mix 25cc of H C 110 developer concentrate with enough water to make one liter of water.

Develop one sheet (any sheet) for 1:15 minutes @ 68 degrees.

Develop the second sheet for 4:00 minutes. Process these together in a tray or

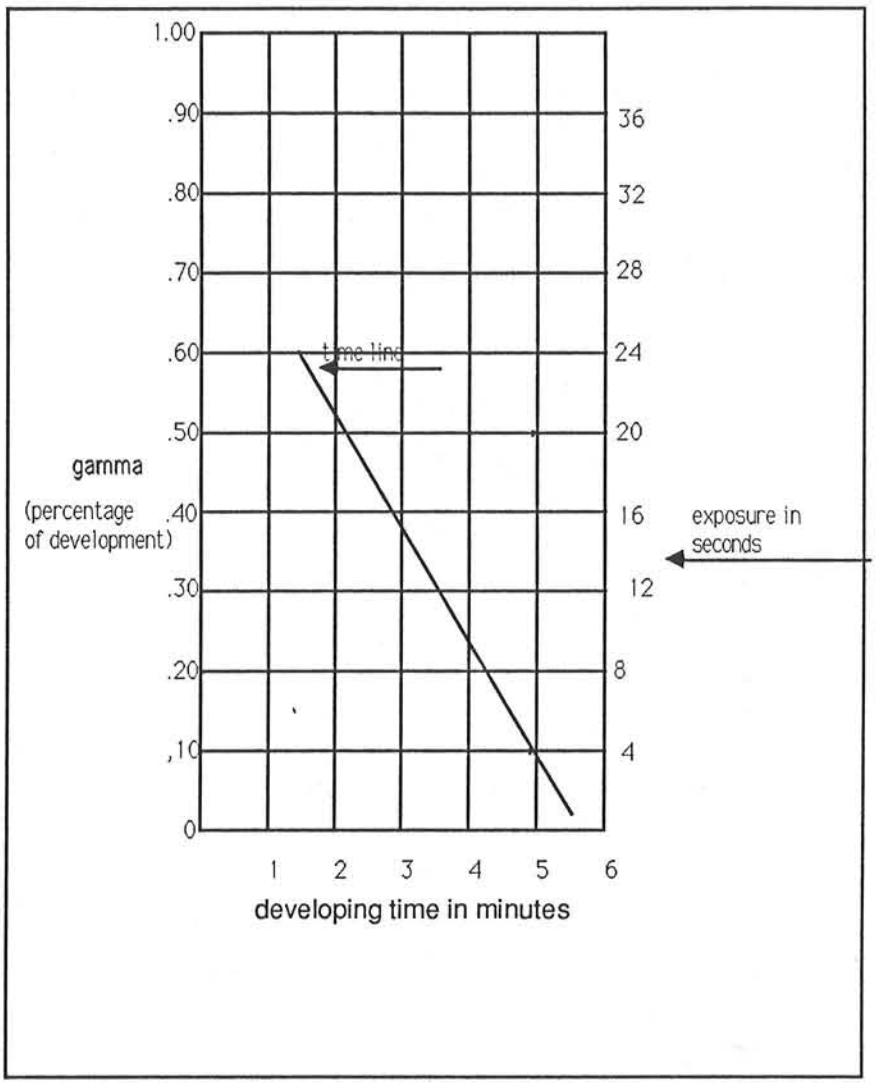
tank or tube or whatever you prefer. The main thing to consider is that the **developing times must be able to be repeated.**
Now you have two sheets of film processed to different times. Using your densitometer, you should be able to find a ..40 reading in the lightest part of the three step mask grey scale. Find the closest reading in exposures on both sheets of film.

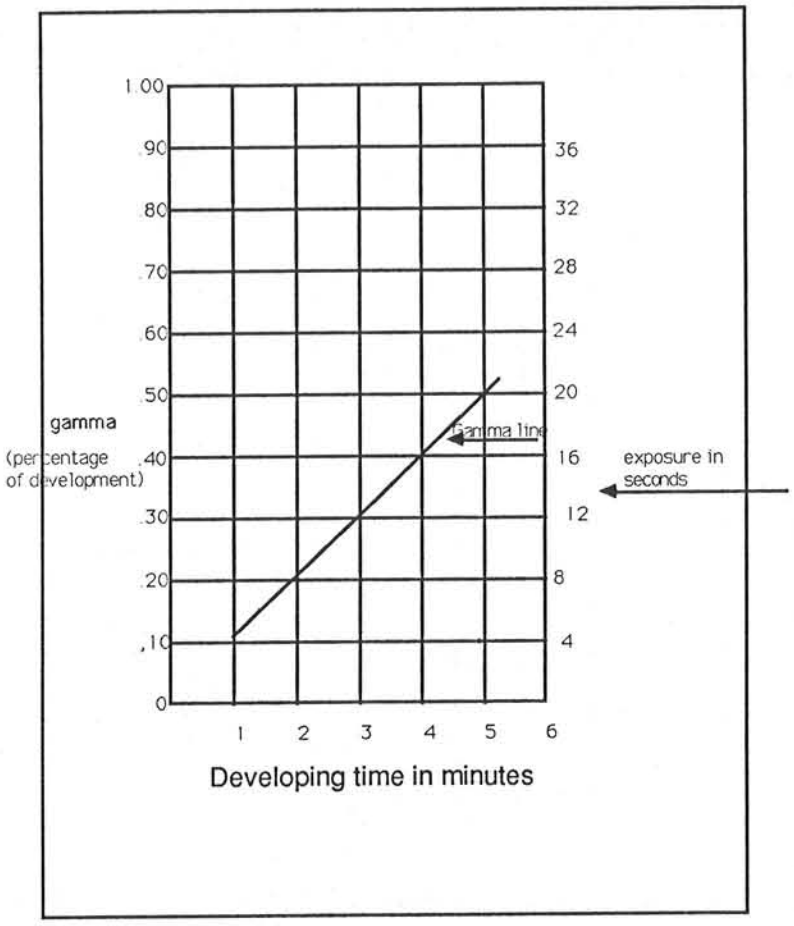


When you have found the .40 reading in the proper grey scale for the 1:15 developing time you will know what the exposure was. You will also know what the exposure was for the proper scale in the 4:00 developing time.
You now have two exposures. RECORD THEM.

Now you have two scales. Read the high and low densities with a densitometer and obtain a D.R. for both sheets of film. Divide these readings by the D.R. of the original grey scale tablet.
(lets assume that the original D.R. is 1.95) The answer you get will indicate an approximate percentage (gamma) of development. RECORD THEM. At this point you now have the exposures and developing times for two different gammas.
Make sure that you record the height of the enlarger and the f stop on the lens.
**Now it's time to plot a simple chart.**

Use graph paper found in any stationary store.
Draw a vertical rectangle.
Use the dividing lines in the graph paper to indicate gammas and developing times.
The exposure chart should show the developing times at the bottom of the chart, and the exposures from zero at the bottom to what ever the longest exposure was in making the tests, at the top. (see chart above to give you an idea of how this is done).
At the exposure side of the chart find the exposure that made the first chosen mask.



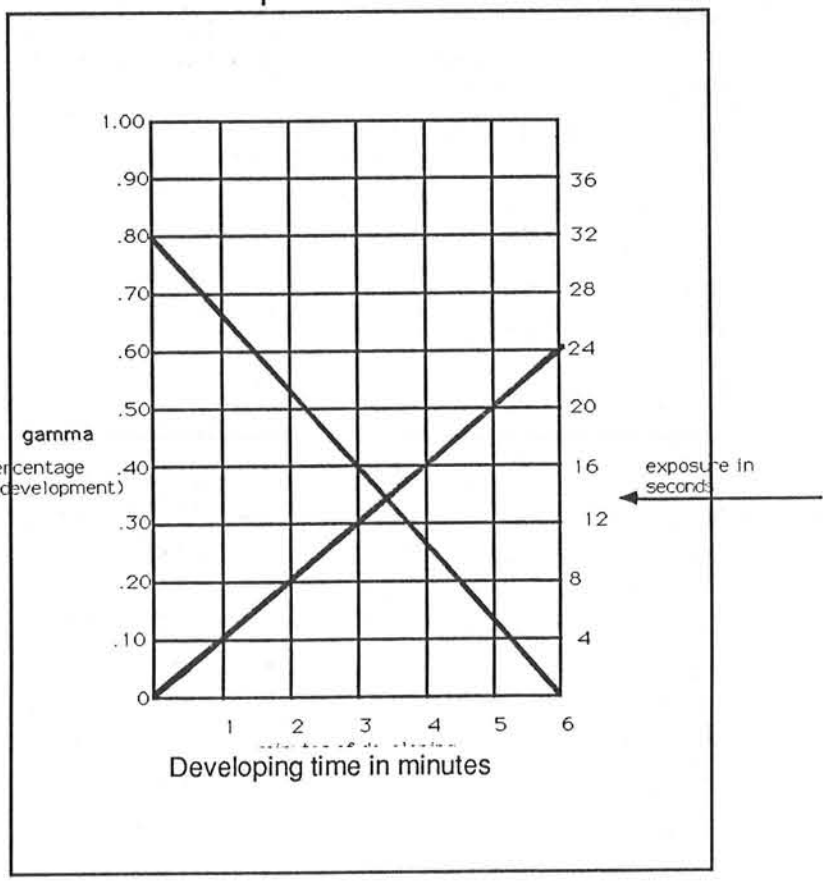



gamma meet, and place a dot on each of the two places. Connect these dots with a line. You can now find all of the developing times for any gamma ( and also the proper exposure for any developing time).
Both of these charts can be placed on one sheet of paper.

These exposure and developing times are exclusively yours. No one else will have the same group of variables to contend with.

Also find the developing time at the bottom of the chart. Place a dot where the two connect. (see chart)
By placing a straight line between the two exposures and extending them a bit in either direction, you will be able to find out all of the different exposures for each level of development.

Do the same on the left side of the chart. Find where the developing time and the



**Let us talk a bit about Photo-Composition.**
To me, there are a few kinds of "comps" to talk about. Most of you are familiar with the simple kind where "inserts" are dropped into a background. This is a relatively simple method of making a prepared "comp". First, a layout is received from the client. it may just be composed of many rectangles or circles or even ovals which must be held out of the receiver sheet (E6 or a print). Then images are dropped into these shapes. Sometimes a key line is necessary, in either white or black or a color. Occasionally, lettering or some kind of logo is positioned on the layout page. You may even have to change a black and white logo to a specific color. One of my recent students has to produce just this kind of work on color negative material.
In order to accomplish the task of matching a color, many series of exposures were made through many varied kinds of filter packs, from blank, exposed, and processed negative film When this sheet of paper was processed, the colors that matched a Pantone book were selected. These filter packs and light levels were recorded. Other colors were also determined from this set of test exposures. All that needed to be done when a specific color was needed was to place the color negative in the enlarger, set the filter pack and then the light level. A very close match to the original test was easily accomplished.
My task was to explain how to properly make the masks (friskets) that would hold out, and burn in areas. This was accomplished by using Amberlith or Rubylith. All that is required is an accurate layout, that is square and to the correct size. Then a good Ex-acto knife is used with great care.

But I began to examine just what I was doing. It took a while to cut these openings with great care. I had to make sure that the edges were clean and not overlapped. Then an idea came to my mind. Since I use a computer in my publishing and since I have access to a desktop publishing system, I decided to use my Mac Draw program to see what I could accomplish.
I could make my page layout fit an 8x10 image. Then I could easily draw the rectangles or squares or whatever, and repeat it precisely as often as I wish. I could also make circles, and key lines and position them where ever the client needed them. The time saved was considerable. There was no need for a knife or a pair of magnifying glasses to wear, and best of all, there was no opaque needed at all.
Once the image was set in the computer, I could print it out on a lazer printer and obtain needle sharp edges and lines. This is all I need to produce the film sheets necessary to do the job.
The next problem was making sure that the levels of contrast were as equal as possible throughout the whole series of image exposures.
A 7 piece strip requires one of two things:

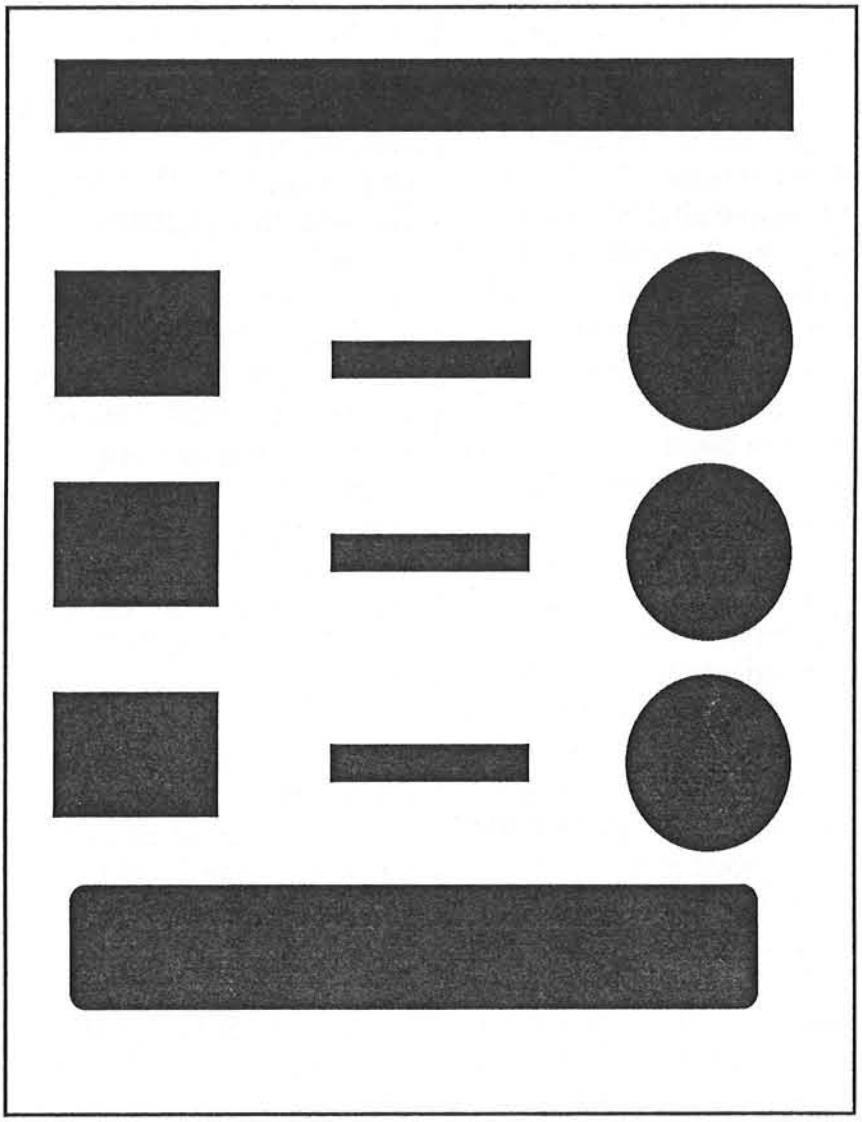
**1. 7 enlargers.**

**2. the ability to make accurate dupe transparencies,** to size and position, so that the hold out and burn in friskets and all of the images would fit on a set of register pins in one enlarger. If many dupes are required to do the job, then masking is sometimes necessary to keep the contrast, in each transparency, as close as possible to each other. It all depends on how good the originals are and how critical is your clients eye.

---

The image on the following page is an example of how easy it would be to make a layout with very little difficulty. The main thing to worry about is the ability to measure the spaces properly.

My computer makes this chore a simple pleasure. It has a buit in ruler that is very precise.
I realize that a computer is an expense that most individuals would rather not spend money on, but for those of you who might have a computer in the home or lab, either a new "MacDraw" program or the new "Illustrator" made by Adobe, will work fine.
However, when it comes to strip-ins and tight fits, then you must rely on the systems that I have been expounding on for the past few years.
My book, "The Art of Photo Composition" goes into the techniques of making tight fits with little or no edge problems. The trick is to make accurate fitting friskets to begin with, then making the hold back and burn in friskets to the correct size and position.
Every serious worker in a lab that depends on "photo composition "work to stay in business, must learn about the professional ideas and working methods used by the major labs throughout the country.
I hope I have been helpful in this area.



The above demo is just a small example of what can be done with a computer. With the proper program, such as those listed earlier, perspectives could be drawn and any image could be rotated to any degree .
I all in favor of using the computer as compared to using a knife, in this kind of layout.

My Video production has begun. It is a lot of work with which I am not too familiar. I'm glad I have two professionals working with me.
Again, the newsletters are $60 per year,
My book,"The Art of Photo Composition" is still only $50

Have a happy new year.

**Bob Pace**
**13900 Trinidad Dr.**
**Victorville, CA 92392**
**619-241-0905**