



B&W PROCESSING

FOR QUALITY NEGATIVES

By ARTHUR KRAMER

OF all the hundreds of facets that make up the face of photographic technique, developing undoubtedly carries with it the greatest mumbo-jumbo with strong overtones of black magic based on pet super-snake-oil formulas. Most photographers, whether they admit it or not, have the uncomfortable feeling that mediocre photographs would have been great ones had only a different developer been used. And there is no better way to become a hero among your fellow photographers than to imply that your success is due to a "little formula that you have worked out yourself that gives grainless 40" x 60" prints at ten times normal emulsion speed and never, never, never blocks highlights."

All this is sheer nonsense. Especially if you feel that the word quality means long scale, brilliant images with clean, crisp highlights and a smooth tight tonal gradation. If you feel that quality is what you get when you expose Plus-X at 2,000 ASA and develop it in Super-Soup until the highlights are just this side of scalded and the fog level is zooming . . . then you should possibly try some sounder techniques to reach your photographic goals.

Now we have an important definition. Quality negatives are the kind from which beautiful prints can be made . . . full, rich prints in the classic sense of superb print quality. The quality of W. Eugene Smith and Edward Weston and Ansel Adams. This quality cannot be evaluated in terms of acutance, or grain size, or fog level, or any other single factor. It is a quantity all unto itself.

The old D-23 Metol-Sulfite formula is an outstanding case in point. This formula uses high Sulfite concentrations to achieve solvent action, therefore grain edges are

less well defined than high acutance formulae. As far as fine grain is concerned, there are many developers that produce finer grain formations than D-23. But there are few formulas that produce a more beautiful tonal range and greater sparkle than this old formula which has appeared under so many names since the early 1930's. Just for the record here it is again.

Kodak D-23

Metol 1/4 ounce
Sodium Sulfite 3 ounces 145 grains
Water to make 32 ounces
Develop Plus-X for 7 minutes at 68 degrees.

One developer that I feel surpasses D-23 (and very few do) is the relatively new Kodak Microdol-X. When used with Plus-X this developer produces quality of unusual beauty in a crisp, full-scale sense. Very few developers can match Microdol-X on Plus-X. On Tri-X, Microdol-X produces remarkably high quality images that make this high-speed film a competitor for many medium-speed combinations. There is no doubt, however, of the many advantages of the modern high-acutance compensating formulas. Of these, the Beutler is a well tested standard of proven high quality. Here it is.

Beutler Formula

Solution A

Metol 10 grams
Sodium Sulfite 50 grams
Water to make 1,000 cc.

Solution B

Sodium Carbonate 50 grams
Water to make 1,000 cc.

Use equal parts of A and B to 8 parts of water. Develop about ten minutes at 68 degrees.

It has many advantages. First of all it is a one shot. Use it once, throw it away. This means that each roll of film gets fresh solution, no half-shot developer is ever used to destroy quality. This is not to say that all one-shots are better than all replenished formulas. For example, Microdol-X may be used two ways; the stock solution replenished and the stock solution diluted and used as a one shot. Although higher acutance and greater uniformity are claimed for the Microdol-X diluted I feel that the tonal range produced by the Microdol used full

strength and replenished is superior.

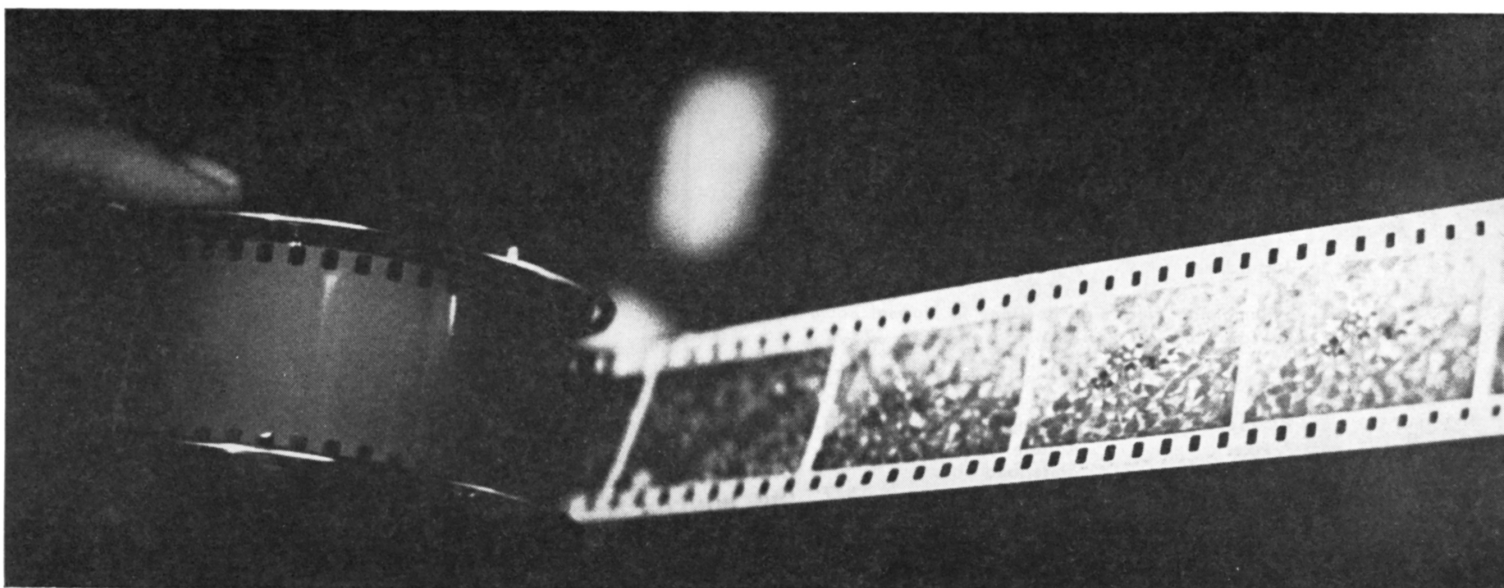
The quality of the final image must always be the factor on which a developer is evaluated. Choosing one developer over another on its vital statistics alone is like picking a fighter based on his height and weight and disregarding the fact that he has never won a fight! I have tested some very fine packaged high-acutance developers which have certainly lived up to their high acutance claims but I have rejected them not based on any single factor other than overall image quality.

An impressive modification of the Beutler formula involves the use of trace quantities (*Continued on page 60*)

EVALUATE developer on basis of the final images it produces (as left); not on its published ratings. Author suggests specific developers for fine grain, wide tonal range and brilliance effects.

AGITATION is a critical, though often carelessly executed, step of film development. Nikor tank should be inverted, as shown in double exposure at right, then twisted in regular rotary motion.

DEVELOPING by the inspection method (below) may mean the difference between a good negative and a poor one. First step is learning how fully developed negatives look under safelight.



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of Potassium Iodide to produce a strong surface action and unusually high acutance. Let's look at the formula:

British Journal FX-1 formula

Metol1½ gram

Sodium Sulphite5 grams

Sodium Carbonate2.5 grams

Potassium Iodide5 cc. of a

.001% solution

Water to make1,000 cc.

This one-shot formula has an average developing time of about 12 minutes with Adox KB-14.

The entire concept of high acutance is based on adjacency or the Eberhard effect. What happens is this. Developer which is being exhausted in the high-light areas get replenished by developers that diffuse over from shadow or adjacent areas. When carried to an extreme this means that a line can actually be formed around certain image areas. Good high acutance formulas, however, do not carry it to an extreme but make the most of this edge sharpness. In some formulas it can be enhanced. The Potassium Iodide in the above formula serves that purpose. But note that extremely little Iodide is used. Only 5 cc of a .001% solution!

This formula also produces great surface action. This means that those

parts of the image which were weakly exposed so that they affected the silver only at the surface of the emulsion will receive greater development with this formula than with others. The result is *extreme* sharpness that exceeds that of any other developer ever tested. And the image quality is excellent.

Equal in importance to the developer used is the technique employed in using it. There are two ways to process a roll of film . . . inspection or time and temperature.

Development by inspection is the messiest, in some ways the most hazardous and, when done by anyone other than the most expert, it can prove to be quite self-defeating.

The philosophy behind development by inspection is, "why wonder when you can take a look?" And this philosophy does make a lot of sense. In routine work where simple, direct meter readings are employed and no special exposure problems exist the time-temperature method is quite adequate. But suppose you are working under conditions of extreme brightness ranges or combined back and cross light. Here the "right" exposure can often become a function of special developing techniques. In this case development by inspection is the only answer. Besides, it is a valuable and useful technique. And like a spare tire

on a car it's good to have along even though we hope it doesn't get used.

Learning to develop by inspection is fairly simple. You will need a Wratten series 3 dark green safelight filter. This filter (depending on the safelight housing you are using it in) is used at a distance of about four feet from the negative and then only for a few seconds. But a few seconds is all you need.

First you have to learn what a fully-developed negative looks like under a green safelight. Remember that it hasn't been cleared in the hypo yet therefore is not transparent but looks like a black negative image on a cream-colored background.

We'll start to develop our judgment without taking any risks by using the following procedure. Expose a roll of film normally on normal subjects. Now proceed to process it as you would ordinarily, by time and temperature. Now turn out your darkroom lights and let your eyes become used to the darkness. Just before time is up, turn on the green safelight (don't be astounded at how dim it is, in a few seconds it will seem as bright as automobile headlights to you). Open the tank and look at the film's *emulsion side*.

Notice the degree of density the highlights have achieved. See how the various kinds of subject matter look. But most of all do your judging by the

degree of "blackness" in the highlights. When time is up proceed with the rest of the process as you would normally.

Under no circumstances try to evaluate the negative by looking through it as you would a completely processed negative. And don't try to evaluate the negative by the old wives tale about "the negative is properly developed when the first trace of image appears through the anti-halation backing." Nonsense. Just inspect the image on the emulsion by reflected light.

Now every time you process a roll that has had normal exposure and only requires normal development repeat this process of "taking a peek" until the image of a good negative under a green safelight is firmly etched in your mind. Now, the first time you've shot a problem roll such as unusual lighting or under conditions of known under or overexposure you are well equipped to handle the situation by inspection. But this time, take your first look after the developing time is half up. Then use your judgment from there on in. If you have been really memorizing how a good negative looks under a green safelight, your judgment should be near infallible. But remember. That green safelight is only safe for a few seconds. So learn to look fast.

One more point about developing the negative. I believe that by and

large shortstop baths of any kind cause more trouble than they alleviate. I go directly from the developer into the fixer with no bath in between. The one advantage a shortstop has is to neutralize the alkalinity of the developer and decrease developer carry-over, thereby increasing the life of the fixer bath. On the debit side this is another solution that requires strict temperature control, and it also increases the time that the negative remains wet. As far as using a hardening bath such as chrome alum, a fixer with adequate hardener in it is good for everything but the most tropical conditions. If you feel that more than normal hardening is needed, additional hardening solution can always be bought (or mixed) separately and added to the fixer solution.

Wherever quality is desired the question of temperature invariably comes up. I think it might be said that without strict temperature control of plus or minus $\frac{1}{2}$ degree between solutions, maximum quality is almost impossible to achieve.

Heat hastens chemical action, cold retards it. For every degree a developer is above normal it has a bit more energy. If the temperature is lower than normal, it has less energy. To some extent we can compensate by adjusting developing times. But not completely, especially if the developer

has more than one developing agent, each affected differently by temperature changes.

Agitation functions in some ways similarly to temperature. That is, too much agitation will produce overdevelopment and too little will produce underdevelopment. There are other distasteful by-products such as streaking.

Holding temperatures and developing times to strict tolerances is pointless unless agitation is also standardized. Most techniques call for constant agitation the first 15 seconds of development and every 20 seconds thereafter.

If you are using a Nikor tank, invert the tank and then twist in a rotary motion for the time required. Plastic tanks requiring a rotary motion should have their agitation rods twisted smoothly and uniformly for the agitation times specified above.

Remember that the first 15 seconds of constant agitation is most critical. If the film does not get a good, even start in the developing process, development will not be even. Development well started is sure to be smooth. So give special attention to those first 15 seconds and close attention to the rest and you should get results equal to the best pro.