

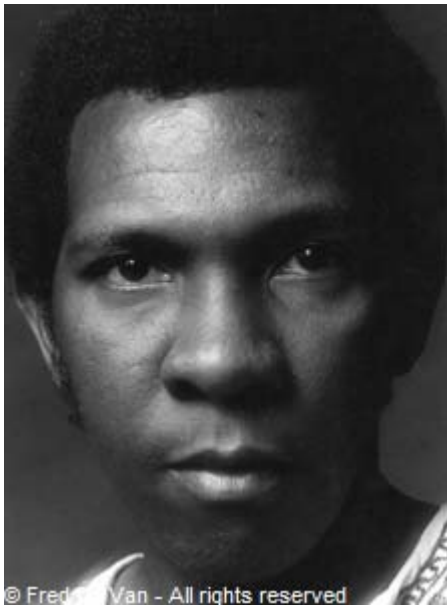
# Remembering 777

by Fred De Van

with additional comments by Ted Kaufman, Larry Price, Don Cardwell and Ed Buffaloe

**Ed Buffaloe:** Ever heard of Harold Harvey's Panthermic "777" Developer? Me neither, until Larry Price asked if anyone knew the formula on the Film and Developing forum. That was over a year ago. I eventually found it listed in my 1947 edition of the *Photo Lab Index* as Defender "777"-D. The entry said "...the formula of this developer is not available for publication..." Quite some time later, Fred de Van posted the fact that 777 contains p-phenylenediamine.

**Fred de Van:** 777 seem to work best at 75° F and above, and are best used in large quantities (big tanks). It changes a little after the first few rolls and a new batch should be ripened with a few unimportant rolls--it will then be stable for years. It really lasts well, even though visually it is not confidence-inspiring. Murky is normal. It is hard to mix, and the initial mixing is critical. Agitation is quite important--do it the same every time.



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Photograph of Carman Moore  
developed in Harvey's 777.

Edwal 12 was close but no cigar, though it did have its uses. Generally it was disappointing, but if you had to photograph Times square at night from a helicopter and the top of a building using fill flash and street and traffic lights, Edwal 12 and a film with a good anti halation backing (and a bevy of assistants) was the ONLY way to do it. 777 was perfect for anything else. Extremely smooth fine grain, totally flexible mystery soup. Shadow detail that dumbfounded folks, and which made those great long scale shots in smoky jazz clubs possible, without ever burning out a highlight. Negatives that far outstripped the dynamic range of the papers of the time--almost unprintable sometimes on Kodabromide--amazingly long scale with gently curving heel and toe but with an accutance and snap that boggled contemporary concepts of scale and depth. The only thing that worked for photographing thousands of pages in Brides magazine with the Ascor flash units of the era. We were always able to reproduce detail in the dresses.

777 has a giveaway smell--nice but very distinctive. Poorly marketed, and very expensive, it was originally only available as a mixable kit packaged in a too large cylinder. It was hard to mix, and once mixed it was a borderline suspension that if you had never seen it before seemed like it was not properly mixed. It was sold premixed for a while, but this falling out of suspension problem dissuaded most from ever buying the expensive and seemingly unstable contents. A bottle of relatively fresh, perfectly good 777 looks very funky. Putting 777 in a 500 ml tank is asking for disappointment. It is very soft working and unpredictable when there is 250 ml of solution attacking 80 sq. inches of silver-rich emulsion. (Edwal 11, 12 and 20 do this too.)

W. Eugene Smith and I would make sure our friendly competitors never discovered our secret sauce by giving them 16 oz out of a "ripened" 3 1/2 gal tank of 777. We knew they were used to things like DK-50, DK-60a, UFG, Acufine, FG-7, Clayton P-60 and the like, and we would wait for the blue smoke phone call that was sure to come in few days.

Standard practice for changing overworked 777 was to dump 2/3 of what you had and add fresh to the worked stock. Rarely, did any 777 addict mix a totally fresh batch. For us guys who shot everything from 35 mm to 8x10, 777 was a god-send--perfectly predictable, stable, consistent, do anything, at any temperature, magic stuff. It will work well (un-linear) from about 55° F to over 100° F. Dead on predictable and linear from 65° F to 90° F. Agitation is hypercritical. Testing is the starting point--not an endeavor for the occasional user.

In the 50's through the 80's social life for many like David Vestal, Bill Pierce, Nick Samardge, Guy Terrell, Aurtour Tcholakian (AKA: Arthur Tcholak--he anglicized his first name and used Tcholak professionally), Andre Kertez and a bunch of others, was getting together at somebody's studio, the Tcholak Lab or the Pierce mill/home to chart out a new time and temp sheet for some new film with 777. There was a lot of inspection developing going on. The product of these get-togethers, are hand drawn charts, were some of the closest held secrets in the photographic world.

Arthur has a cousin by the name of Isgo Lapagian, and maybe someone in the L.A. area would know if he is still operating his custom B&W lab which, I think, was in Receda. At my last contact with him in the 90s, he was still a steadfast crusader for the usage of 777 for all of his customers. He may still be using it and would have a fount of information on it. I have no idea where or how to find Arthur, but I am assured that if he is still plying his darkroom mastery, he is using 777.

Cartier-Bresson was a staunch enthusiast and heavy user of 777, and I think was largely responsible for its adoption by Magnum's lab in Paris. Alas, Henri was rarely around NY and was not part of the group, though I spent as much time in his presence as I could when he was in town. Howard Chapnick of Black Star espoused 777 to many in his flock since it made his life a bit easier.

**Ted Kaufman:** From Fred's description, it sounds like Harvey's 777 has a lot of glycin, in addition to PPD. If you add enough glycin to a formula, it will form a cloudy suspension that will not dissolve no matter how much you stir it or how long you let it sit. Left to sit, the suspension will eventually settle out clear with a layer of fine sediment. Also, glycin is a soft working, fine grained developer component which yields a unique glow to prints. So I'm sure this is one of the components.

**Ed Buffalo:** I knew I had seen several p-phenylenediamine/glycin fine-grain developers in an old formulary, so after Ted made his post about the glycin I looked them up and posted three of them on the forum. After staring at them for a while, it dawned on me that one (a formula by Morris Germain) had 7 grams of metol, 7 grams of paraphenylene diamine (base), and 7 grams of glycin. Voila! 777!

Germain Fine Grain Formula		
Distilled Water (125°F)	700 ml	3000 ml
Metol	7 grams	28 grams
Sodium Sulfite	70 grams	280 grams
Paraphenylene Diamine (base)	7 grams	28 grams
Glycin	7 grams	28 grams
Cold distilled water to make	1 Liter	4 liters
Use without dilution. Replenish with same formula		

This may not be the original 777 formula, but it has interesting characteristics nonetheless. *The original Harvey's 777 developer is still available from Bluegrass in Louisville, Kentucky--phone number (502)-425-6442.*

If you look at the time-temperature-gamma charts posted below, you will see what Fred means when he says 777 is linear--with many developers, the lines are curved. Hence the "Panthermic" designation for 777.

**Fred De Van:** It seems like you have it. Memory also says that there were more components in the Harvey formula--a buffering agent and/or a preservative and such, but the qualities were infinitesimal. Some of the discussion lent toward them being bogus components that did nothing of value but were there to obfuscate and confuse the curious--chemical straw men. None of us had any interest in making it ourselves, but what was in it was a constant question. The differences in performance in small tanks and the way agitation changed the result always led to the question as to why (when there was time to think of such otherwise unimportant things--we knew how to use it right).

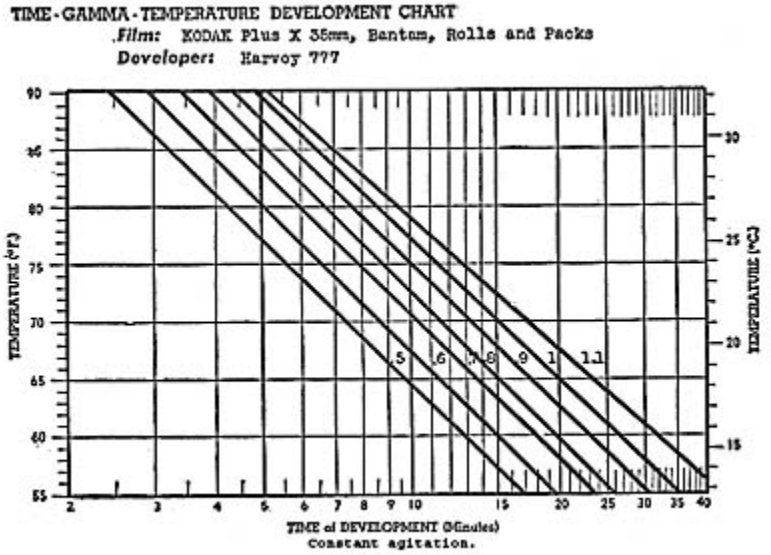
Guessing from the formula you supplied, the anomalies in performance we noted were the product of the Metol (Elon) being thrown out of balance with the relatively low activity paraphenylene diamine and glycin components, in small chemical-to-film surface-area ratios and as agitation frequency was increased. Whatever it was, it was very useful, when you got the hang of it--bewildering, if you were a neophyte.

I started at this stuff when very young and remember Defender 5-D, what it did to contrasty thick Ortho sheet film (which I developed by inspection in the stuff) had similarities to what 777 did to FP-3 and HP-4, as well as the DuPont and Ansco/GAF films that were still being made.

I was such a stickler on this stuff that I tested emulsion batches in my soup before I committed to use them. This resulted, on one occasion, in me missing a shoot. All my stuff was confiscated by British Customs when I appeared from NY with 1000 rolls and 500 sheets of Ilford film at London Airport. They said nobody would logically do that and I had to be smuggling something. 5 days later after many discussions and calls to the Time-Life photo lab and Ilford, I got my clothes, cameras, lights and film, back with apologies.

My slavish insistence on using 777 was not drawn from a desire to have membership in some esoteric, chemically-inspired, obtuse, cult; on the contrary, it was solely a practical matter.

Among the efforts I employed to be able to maintain a relatively lavish NY studio, while at the same time avoiding photo journalistic burnout, was to split my time between Life Magazine work and a wide variety of commercial and advertising photography. I detested typecasting or being placed in a niche group. I systematically did everything I could to befuddle anybody who tried to define what "kind" of photographer I was by doing a bit of everything. One of my cohorts in this was ABC TV. They remained a client for a very long time. My major activity involved network movies and other high-buck projects. This work allowed my studio and sizable support staff, caused adventures like my smuggling charge in London, and demanded my intensity of focus on 777 as a major element in my life.



This information was provided by Defender when they made the product.  
[Click to enlarge.](#)

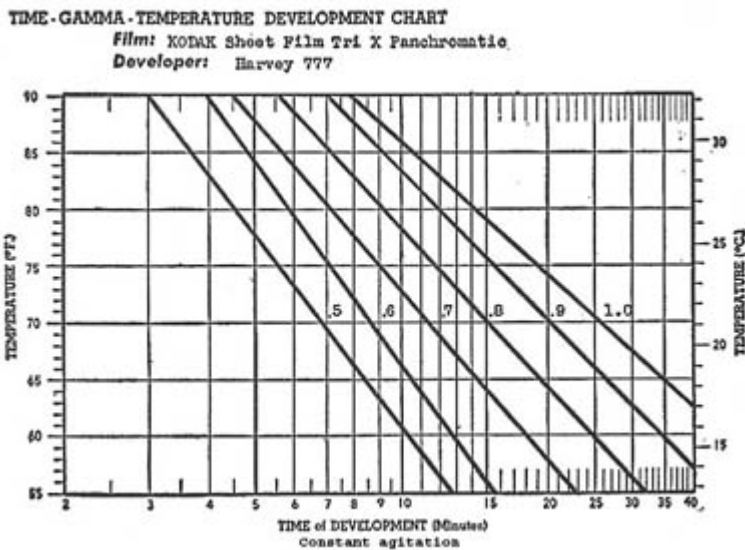
My relationship to ABC was a truly unique one. I was brought into the ABC movie project by my existing client, Burlington Industries, whose many divisions were primary sponsors, and was contracted to represent and supervise the interests of Burlington, David Suskind, the executive producer, and the Network. I was paid by all three for different elements of my involvement, which made it affordable for everybody. These films were mostly made in Europe on tight schedules, and rational budgets. Sound stage work was done at the CBS Brooklyn production facility. They were far from being low-budget corner-cutting affairs, but there was no fat allowed and no prima donnas.

Because of the basic nature of Television, and the cost involved in producing a large number of full length, original, dramatic films (something only HBO can afford to do today) my role was critical to the viability of the effort. Theatrical film (which these very much were) depends heavily on word of mouth, something that was a non-event to the sponsors since there was no value in "guess what you missed last night". Promoting and publicizing a film which nobody had seen was why I was there. Far different from standard production stills, sometimes my photography was more important than the film itself. They were provided to the media everywhere and drove the audience. Dozens served as TV guide covers and hundreds filled the Sunday papers.

Working as a tight unit with Burlington Advertising and ABC publicity, my staff produced thousands of prints a month. I produced the most accurate and consistent set of negatives humanly possible. My crack darkroom staff lived in photographic nirvana--uncompromising precision and utter ease in getting the jobs out the door. 777 was the key to delivering stunning prints with a level of consistent (client retaining) quality that was above and beyond anything the industry had previously seen.

I carried a matched set of calibrated cameras and meters on these trips--4 Minolta SLRs, 2 motorized Leicas, 4 Hasselblad s, a Linhof Technica V, and a full range of lenses for everything. The compliment of tested emulsion film was copious in volume and varied to the point of making me arrestable. The only thing omitted from my accessory kit was the kitchen sink. A Nikonos, and Widelux were among the incidentals, all light measuring tools were in duplicate, and everything was hand-carried. The studio had spares of all critical items that could be air shipped overnight. Exposed film was air shipped to the studio sometimes daily.

It really was not as much work as it sounds. Film crews abound with production assistants to make a lot of tedious annoying tasks impact you very little or become totally invisible. As daunting as it may sound, the hardest part was detailed planning. It worked glitch-free for dozens of projects, thanks to invaluable support from Minolta, Leica, Kodak, Ilford, Hasselblad and Marty Forscher. Nothing ever broke down in the entire system, other than the publicity mill at ABC, who was so pleased with the result they began to run amuck. On the first day of production when everyone was feeling each another out, I usually showed up with my beater 1950's vintage Fed (Russian made Leica IIIc copy) and a Minox. Nobody was ready for what followed.



This information was provided by Defender when they made the product.  
 Click to enlarge.

On the content side of the picture, my vaunted role made anything possible. A set could not be struck until I had signed off. If, because of film's time component, a situation I thought important did not exist, we created it. I went to script meetings and rehearsals, OK'd the shooting schedule, and worked closely with performers. The directors all knew my job was to translate their filmatic vision into the still medium, and we would often create a version of major scenes just for my needs. Verbal and public tirades would befall any lighting director who ignored or failed to deliver my non-optional, absolute minimum, 125 foot-candle light level (the secret that complimented the never mentioned 777 soup). Shooting fast under hot movie lights created some really tricky contrast situations. This is where 777 more

than earned its keep. The staff and I had daily phone meetings and they always knew what to expect, and to underline the situation I sent them a Polaroid and a test roll of every major light setup. The negatives had to be perfect or else the darkroom guys would have many sleepless nights.

Without the foundation of the highly adaptable, reliable, and consistent film processing that our 777 developer delivered (complimented by the fact that there was a floor to the light levels we would deal with) this would have all came crashing down on us like a house of cards. We all clearly understood that if the critical film processing step faltered in any way the entire endeavor would degenerate into a nightmare. There was no possibility to re-shoot anything due to the big-name actors, the remote locations, and rigorous limited schedules. The cost structure was only profitable if everything worked perfectly, and were would all

be looking for other work if the quality slipped. We had created a dream job and, once the word got around, we had a lot of pretenders. We kept our job, and the pretenders failed, principally because we never talked much about our 777.

**In our discussions about writing this article, Ted asked Fred to send us as much information as he could recall about how 777 was used. Here is his response:**

Use a a tank larger than you need by at least 100% filling the space with empty reels. Start with constant gentle to moderate inversion agitation the first 30 seconds to 1 minute, followed by 10 seconds per minute thereafter (5 seconds per 30 seconds for slightly greater density). To lower contrast, omit half of the agitation the final 2-3 minutes, but agitate once before the last 60 seconds. To raise contrast, gently agitate by inversion 10 seconds every 30 seconds.

Tri-X	9-11 minutes
FP-4	10 to 14 minutes
HP-5	11-15 minutes
Neopan 400	10-13 minutes

Depending on personal agitation techniques, your mileage may vary.

Hyper agitation can produce surge effects around sprocket holes in 35mm, although continuous agitation during the first minute can be quite vigorous in large tanks--when you have sufficient quantities of chemicals, it is recommended. Lifting the film out of contact with the solution is the preferred methodology for all agitation.

Replenish 3/4 ounce per 80 square inches. (Harvey's did make a 777R.)



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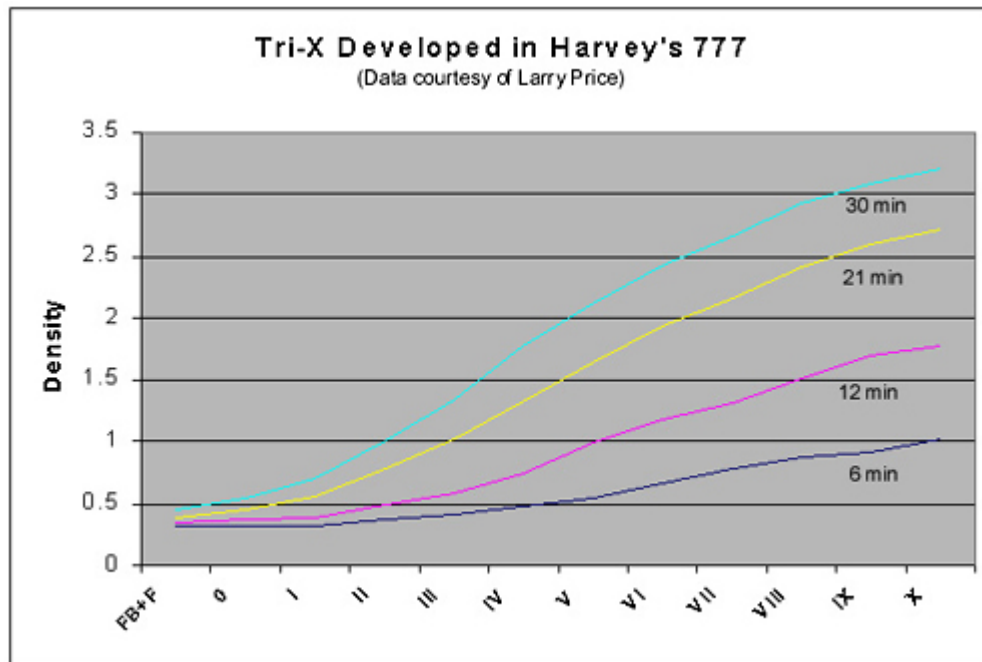
"Natalie",

down to 8 minutes next time, just to see how it fares with a little less development. Nonetheless, at 9 minutes the highlights printed with good detail, so I was very close, if not right on.

My observations of the printed results were quite positive. The balance of grain/sharpness/tonality is excellent. I expected a soft grain pattern, but found the grain particles very sharp-edged, with a tight structure. In this respect, it's one of the better developers I've seen. Likewise, it's tonal characteristics; zones V - VII are particularly smooth, which makes me think this would work very well with skin tones. The shots I printed were mostly of snow scenes, although one shot was of a plume of steam billowing from a Con Edison power plant and it revealed excellent separation of highlight values. Deeper tones, too, had a richness that I found little to fault. Sharpness was only average, however. PMK, my developer and Gainer's vit-C formula clearly resolve finer detail and show greater accutance. 777's strengths are a very tight grain pattern, which is noticeably finer and tighter than most developers, and a smooth richness of tone. It does have a distinctive look, with its smooth, luminous tonality. I can see why it would have been favored by the beauty/fashion photographers. (Ed, I think this would be a very promising formula for nude studies.)

**Fred De Van:** With 777 develop for the highlights with contrast second. It is difficult to overdevelop. A little un-development equals a lot of underdevelopment. Instead of cutting to 8 minutes (bad idea) you may like the even more luminous effect you get by extending the time and softening the agitation. You can develop until the negs look like soot and as long as the agitation is not too much and retain an easily printable result with bright open shadow detail. The highlights do not pack up as you would expect.

**Larry Price:**



	Normal = 8:45	EI 200	
N-1 = 7:45	EI 160	N+1 = 9:30	EI 250
N-2 = 7:00	EI 100	N+2 = 11	EI 320
N-3 = 6:00	EI 50	N+3 = 14	EI 500

Times are for 35mm, 4-reel tank, 1000ml full-strength Harvey's 777, 68° F., 30 seconds initial agitation then 10 seconds each minute thereafter. 30 second water stop with constant agitation, fix with Kodak Rapid Fixer without hardener. NO presoak, reels lifted into tank on rod in dark. It's important to mix "part A" using very hot water--otherwise it won't fully dissolve. The working developer is a strong magenta color, which is normal. --Larry Price

**Don Cardwell:**

I've been meaning to send this for a while, but it's a cold wet day and I'm catching up on overdue correspondence.

Like many I was charmed by the 777 article of 2002.

I had some experience with 777 back in the late '60s: a teacher used it, and like most things he did, in my young eyes, it seemed magical.

It seemed funny, however, that the formula Fred spoke of could be remotely similar in composition to Edwal 12, another formula I was exposed to in those old days by a teacher who learned his craft in the 1920's, whose approach was distinctly pre World War 2.

The 7+7+7 composition was so similar to Edwal 12, it was difficult to me to accept it was Harvey's formula. Going through my old papers, for I inherited them from my teacher, I found you had hit upon Morris Germain's formula, and sure enough, it was within normal mixing error to be Ed Lowe's formula; a developer I still used and was familiar with.

<b>Edwal 12</b>	
Water	1 liter
Metol	6 grams
Sodium sulfite	90 grams
Paraphenylene diamine	10 grams
Glycin	5 grams

<b>Germain's PPD</b>	
Water	1 liter
Metol	7 grams
Sodium Sulfite	70 grams
Paraphenylene diamine	7 grams
Glycin	7 grams

From reading the literature of the time, it seems pretty evident Dr. Lowe, the photo-chemist who founded Edwal, evolved E12 from the Sease formulae. He wrote about how the formula may be used, and offered several variations to suit specific applications and taste. It also seems likely Germain's formulae were a personal variation of Lowe's formula.

I ordered some developer from BPI, and sure enough, it was quite different from E 12 & Germain's.



First, there seemed to be no glycin in BPI's 777.

Second, there was a much higher volume of 'stuff' to make a gallon of 777 than was needed to make Germain's. A liter's worth of dry 777 weighs about 155 grams. A liter of Germain's weighs 91 grams. Sixty grams of fairy dust? Maybe.

It looked different, it smelled different, and most importantly, it behaves completely differently.

It is as Fred describes it, a beautiful developer, with a smooth, glowing tonality.

Germain's / E 12 makes a distinctive upswept curve similar to HC110. Even in a stable, replenished system, it is a brilliant developer. Edwal 12 is a developer well worth knowing, but it is completely different from Harvey's 777.

Finally, Harvey's articles from the 1940's describe the behavior of his developer, and BPI 777 fits it like a glove.

I only want to give you a heads-up - but I'm sure many 'old hands' have shared this before.

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Data Sheet for 777