

THE SUBMINIATURE TIMES

The Subminiature Times is published monthly by Doylejet, P.O. Box 60311, Houston, TX. 77205 (713) 443-3409

Supporting 110, 17.5mm, 16mm, 9.5mm, 8mm, 4mm, 1mm, Microdot, and Electronic Still Photography.

Photography on Disc Film Introduced by South Jersey Engineer



A new rotary camera using 35-exposure disc film, regarded by engineers as a big advance in the science of photography, has been completed by a Haddon Heights engineer. The actual disc of the film is shown above. Top right: A print from one of the negatives which can be made in any ordinary album size. Lower left: Katherine Worthell, of Collingswood, using the new camera. Lower right: James J. Dilks, 300 Fourth Avenue, Haddon Heights, creator of the new theory in photography, adaptable to more than 25 uses in professional and commercial channels.



Read all about it: Clipping from local paper back in 1940 shows 20-shot "Tak-A-Disc" film (left) enlarged snapshot (top right). Inventor Dilks appears lower right, next to snapshot-model-toting photographer.

TECHNOLOGY TO WATCH

SONY will introduce a new attache case this month. Solar cells on the rim charge any devices carried inside such as phone, FAX, digital camera, monitor, etc.

COLLECTOR'S ITEM



Transparencies at PMA '91, The Photo Marketing Association's annual trade show.

The interior components are visible and labeled: film transport system, film advance lever, secondary rods, etc.

The camera is equipped with 26mm F/8 and 42mm F/8 lenses, both fixed focus (5 feet to infinity), which were selected by a sliding switch. Power was provided by two alkaline AA batteries. The built in flash had a top mounted ready light.

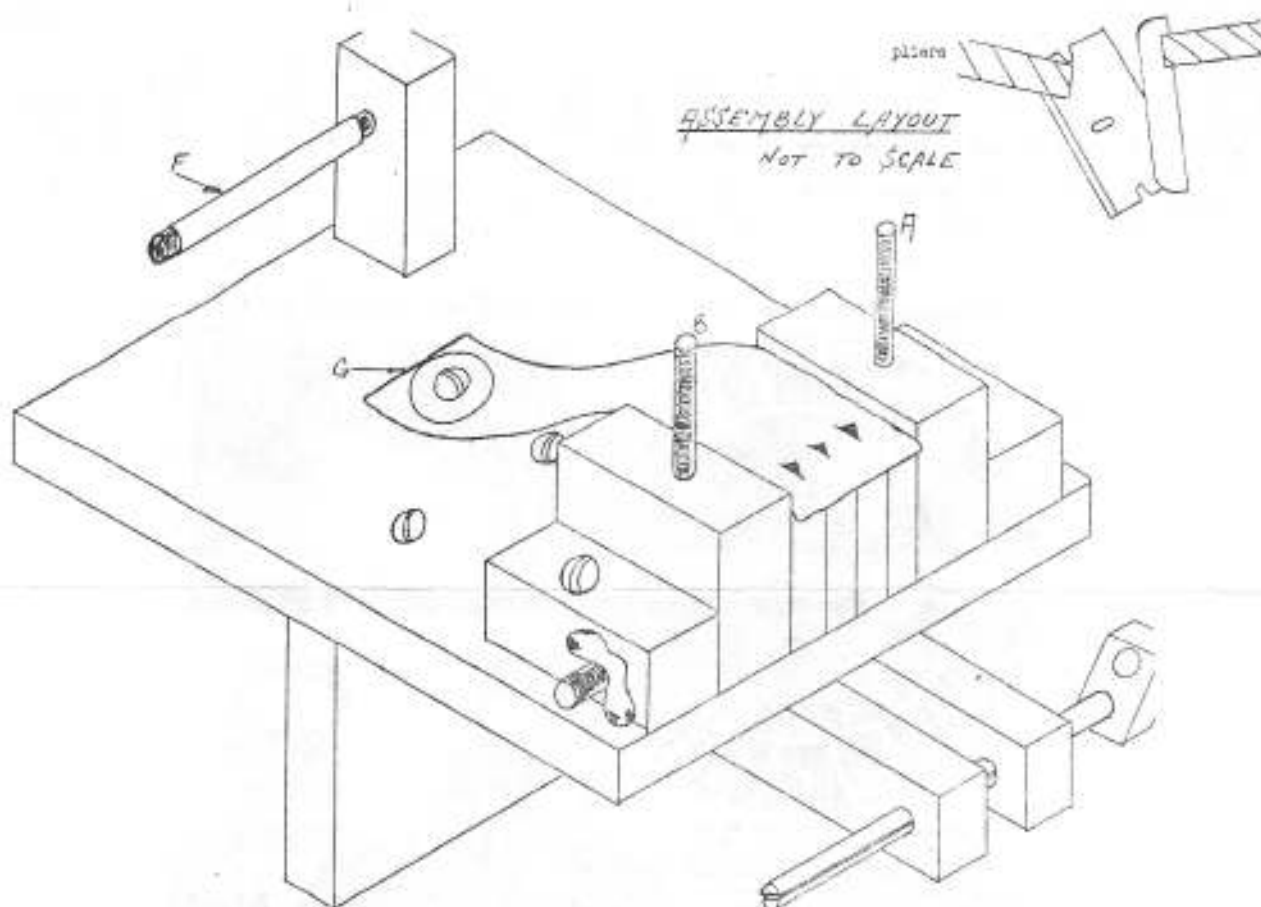
Case colors proposed were: iridescent pink, orange, chartreuse, blue, yellow, and green.

Of the ten pink cameras made, most were given away as promotional items. The camera never went into production. Current price range \$60-200.

INSPECTION COLOR CAMERA

Hitachi's new KPC550 Series Inspection Color Camera employs NTSC YC (S video) or optional RGB outputs. It features small size, ext. syn, high speed electronic auto shutter, 470 TV lines, auto/manual white balance. Additional features include resistance to vibration and shock, excellent color separation, the inspection power of a high density CCD with 360,000 pixels.





9.5 THE MINOX CLUB

THE PKS ORIGINALS FILM CUTTER. After enlargers, film splitters may be the most essential piece of equipment in the subminiature darkroom.

Without your own splitter, someone else splits it from 35mm, drops it in a wrapper, and puts it into a channel of distribution aimed straight at your wallet.

With one, there's a domino effect. You take more pictures, then you smile more, because you'll be saving so much money.

Consider this, a 35mm x 36 exp roll of film produces 4 rolls of 9.5mm x 50 exp.

If you tap the surplus market where 100' rolls can be bought for as little as \$10, or if you buy unperforated film and make 4 rolls of 9mm with each pass, you could easily produce your cassettes for less than a penny apiece. It all depends on how many exposures you call normal, and how much leader and trailer you need for reasonable handling. (You also increase the chances of getting industrial grade dust and scratches on your next 1000 pictures. But then you can enjoy 4000 more without spending another dime; all the while improving with practice.)

Film splitter plans have been passed hand to hand in the subminiature underground for decades. They tend to be hard to find, because either they're obvious copies of commercially available equip-

ment, or look like something devised by Edgar Allen Poe.

The PKS ORIGINALS Film Cutter has a finger guard (4), and the film won't stay in the cutting track without it. Nonetheless, the reader who submitted it for your enjoyment wants everyone to respect the fact that you'll be working with unshielded razor blades.

These plans are particularly important as everyone in photography gears up for the new film format. Instead of producing two strips of 9.5mm from the center of a roll of 35mm as usual, you'll be able to get three because the new stock is unperforated. Only the magnetic strip prevents getting the 4 x 9mm some Minox mavens prefer.

This design is reminiscent of a unit which was popular in the '50s with "NY Daily News" photo staffers who frequented Hyman's Photo Shop, on Third Avenue and 43rd St., NYC.

Splitting Royal-X Pan 120 down to 9.5mm for several people and processing it in a fierce monobath called Unibath CC-2 had a brief surge of popularity. 500 pictures for \$2! The grain looked as if it had been shot into the film from a considerable distance, but it was a lot of fun. And it was FAST.

Section II Materials List for the PK5 ORIGINALS FILM CUTTER

Wood Parts:

Quantity	Size	Part Name & Number	Type of Wood
1	5" x 8" x 1/2"	Platform—1	1/2" plywood
1	2" length	Winding Assembly—2	1/2" dowel
1	2" length	Winding Assembly—2	1/2" dowel
1	1-1/2" x 5/8" x 1/2"	Winding Assembly—2	1/2" plywood
2	3-1/2" x 3/4" x 1/2"	Winding Arm—3	1/2" plywood
1	3" x 1-1/2" x 1/8"	Cover Assembly—4	1/8" Balsa sheet
1	1-3/4" x 3" x 1/2"	Cover Assembly—4	1/2" plywood
2	3/4" x 3/4" x 1-3/4"	Outside Block—5	Hardwood—3/4"
1	5" x 3" x 1/2"	Platform Base—6	1/2" plywood
1	3/4" x 3-1/2" x 1/2"	Film Post—7	1/2" plywood
2	1-3/4" x 3/4" x 1-1/2"	Cover Post—8	3/4" hardwood
2	1-3/4" x 1-5/16" x 5/16"	Slide Block	3/8" plywood
2	1-1/4" x 1-5/16" x 3/8"	EX Blocks—10	1/8" plywood

Hardware, etc.:

Quantity	Item
1	5" x 1/2" stove bolt with wing nut and two washers
1	3" x 1/2" stove bolt
2	2-1/2" x 3/16" stove bolt with wing nuts
2	1-1/2" x 3/16" stove bolt with wing nuts
1	1" x 1/2" stove bolt with wing nut and washer
6	1" number 10 round head screws
3	single edge razor blades ("Frees" for example)—remove backs—

Section I

Introduction

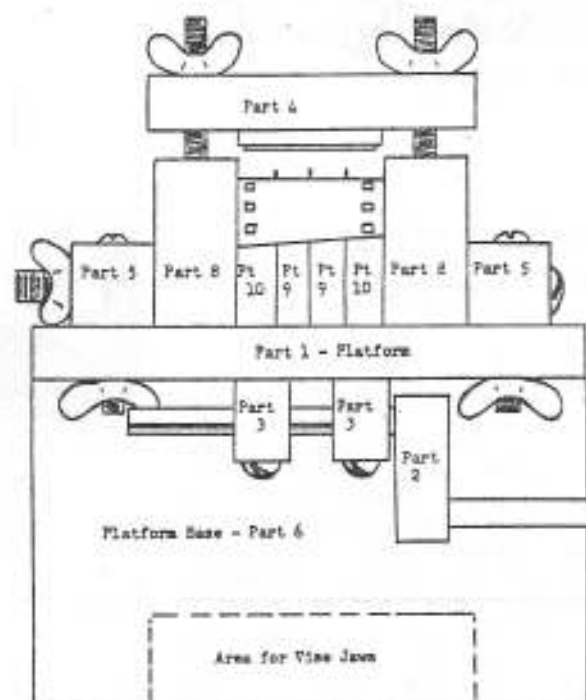
These plans are the result of a research project initiated in an effort to enable Minox users to enjoy a greater freedom of use from their equipment by drastically reducing film costs. There is nothing difficult regarding the construction or use of the PK5 ORIGINALS FILM CUTTER and it can be built in a minimum of time using simple hand tools. A little extra time taken to follow each step as closely as possible will result in a more precise final product. Take your time in building your cutter to insure good results.

The overall savings this cutter will give you will pay you many times over for the time taken in following instructions carefully. Since current film costs are \$1.25 per roll of black & white, you can expect savings up to \$1.21 per roll of film when you use your cutter. Bulk 35mm film is available at prices of \$2.49 and less for a 100' roll. Color film can be spooled at a cost of 14¢ a roll. All these savings can be yours when you use the PK5 ORIGINALS FILM CUTTER.

Although great care has been taken to list all important steps and safe guards with regard to the final outcome of the cutter and safety in construction and use, PK5 ORIGINALS cannot, for obvious reasons, assume responsibility for the final cutter, its performance, personal injury due to careless handling, or damage to your Minox camera. The cutter should give you years of good service if it is built according to the instructions presented in the following sections. You are strongly urged to read these plans through entirely before building your cutter.

It is recommended that empty cases be accumulated by developing your own film. This is extremely simple with the Minox Daylight Loading Tank available from most local dealers. Aside from the savings on film—developing cost savings will also result. A recommended method for fine grain development is included in section VII of these plans for those just starting to develop their own negatives for the first time.

(Continued next issue)



Front View—with film in cutter.

- 1 pc. felt material (ordinary skirt material)—1" x 1-1/2"
- 1 pc. felt material (" " ")—5" x 1-1/8"
- 1 pc. felt material (" " ")—1" x 1-1/4"

LETTERS

BREAKING THE CODE

All those letters that appear with film listings in mail-order advertisements confuse me. I'm referring to letters such as TX, TMAX, KM, KR, ED, ET, GA, GB, RF, RS. Please tell me what the letters mean or let me know where to get this information.

Nelson Randall, Cleves, OH

The letters are the manufacturers' codes for each particular film, and the mail-order advertisers use them to cram as many listings as they can into a small space. And we, unfortunately, don't have the space to list them all either. Here are a few of the more popular films: TX—Tri-X, TMAX—T-Max, KM—Kodachrome 25, KR—Kodachrome 64, ED—Ektachrome 200 (daylight), ET—Ektachrome 160 (tungsten), GA—Kodacolor Gold 100, GB—Kodacolor Gold 200, RF—Fujichrome 50, RS—Agfachrome 50 Professional. For more complete listings, request film catalogs from the various film manufacturers.

FREE CLASSIFIED

FOR SALE Minolta 16Ps w/case \$20, ~16Ps (parts) \$5. Col filter set for Minolta 16-II w/box \$5 Duofit "5" Flash w/case Ex \$8. Flash bracket for 16II Ex \$3. Flash bracket for 16EE or EE II Ex \$3. Minolta-16 film in magazine in original box \$5. Minolta-16 film in magazine \$4. Yashica Atomon flash gun Ex \$8 All items Post Paid. Arthur T. Skopco, 154-24 24th Rd., Whitestone, NY 11357-3731.

Talking Tech

David Brooks

In Search of A Panacea

It seems only natural that, with 35mm being the almost unanimous choice of serious amateur photographers, there would be much interest in how to exact the best image quality possible from slow-speed, fine-grain black-and-white films. At least that is what my mail indicates. Typical requests ask that I test and report on developers intended to produce high-quality negatives with fine-grain films. So I did just that, choosing the most widely used 35mm film in its class, Kodak Panatomic-X, and five very different developers.

To have a basis for comparing the performance of the more specialized developers, I selected the ubiquitous Kodak D-76 as a standard developer. D-76 is enjoying a comeback in popularity and should perform ideally with fine-grain films, when used at high dilution rates. I also chose Agfa Rodinal at a 1:100 dilution, Ethol T.E.C. was selected because it is probably the best-known and most popular compensating-type developer, and Besseler Ultrafin FD1, because it is specifically designed to be used with slow, fine-grain films to obtain a high-accuracy effect. To round out the field, I included Edwal Super 20, possibly the only true fine-grain developer still on the market, at least the only one that uses the reducing agent paraphenylenediamine.

The objective of the test was to compare the negatives resulting from the use of each developer for each of the several dimensions of negative quality. I began by exposing two rolls of Panatomic-X for processing in each developer. One roll of each pair was exposed to a standard gray scale at $\frac{1}{2}$ f-stop intervals above and below the rated speed to determine film speed and development contrast. On that same roll, another bracketed series of exposures of a bald sky was made to test for apparent graininess. The second roll of each pair was exposed to four different kinds of subjects, bracketing exposures around the film's ASA rating for each subject. One test subject was a normal-contrast front-lit scene, another a crosslit scene of somewhat greater contrast, the third, a



The contents of one of these bottles may provide you with an ideal negative—which one depends on what you photograph.

backlit subject that demanded good tone separation in both highlights and shadows. The final subject was a low-contrast close-up of subtle tones lit by open shade. In summary, there were five pairs of rolls of Panatomic-X film exposed identically to exactly the same test subjects.

Each pair of rolls was then developed in a single tank containing two rolls and 16 ounces of developer, following the developer manufacturers' recommended times and temperatures: 1. D-76 straight for five minutes at 68°F., 2. Rodinal 1:100 for 16 minutes at 68°, 3. T.E.C. for 5½ minutes at 70°, 4. Ultrafin FD1 for 12 minutes at 68°, and 5. Edwal Super 20 for 12 minutes at 70°.

As a first step in evaluating the development results, I read the gray scale from the one roll of each pair with a densitometer to determine contrast and effective film speed. With one exception, the results were disastrous. Only Ethol T.E.C.'s recommended development time produced a negative density range suitable for printing on a contrast grade No. 2 paper with a condenser-type enlarger. All the other negatives were closer in contrast to, or higher in contrast than, the norm for diffusion-type enlargement. In the face of this unexpected turn of events, I started over again and repeated the ten-roll exposure series.

For this second go-around, the development times were adjusted by calculating the percentage of contrast that the first test results were above a normal density range for condenser enlargement. These adjustments in the developer manufacturers' recommen-

dations provided me with a set of negatives that represented each developer with a level of development contrast suitable for condenser enlargement. So that you won't share my experience of unexpected contrasty negatives when trying any of the developers other than T.E.C., my adjusted times and temperatures are as follows: 1. D-76 1:1 for 5½ minutes at 68°, 2. Rodinal 1:100 for 11 minutes at 68°, 3. Ultrafin FD1 for 6½ minutes at 68°, and 4. Edwal Super 20 1:1 for 11 minutes at 68°.

Some of the manufacturers recommend a higher effective film speed than the rated speed. At their recommended times and temperatures for development, the effective film speed is often more than twice the ASA rating. But at development times adjusted to produce a negative of normal contrast for condenser enlargement, my measurements indicated that an Exposure Index of 40 could be used with all five developers with Panatomic-X film.

The next step in my testing, evaluating the various dimensions of negative quality, involved my making the best prints possible from each test subject on each of the rolls of film representing the effects of each developer. I also made a print from the center of the negative of the bald sky. It produced a developed density of 0.75 at the highest possible magnification; this was to evaluate apparent graininess. All the prints were made on a fiber-base, glossy, contrast grade No. 2 paper and developed for the same time in a standard cold-tone developer. The negatives selected for printing from the bracketed exposures of each test subject were the frames that received the least exposure producing printable detail in the shadows of the subject. According to this criterion, the exposures to produce ideal prints of each subject from each differently developed roll of film were remarkably similar. After washing and air drying the 25 prints, all were identified according to film developer used and visually compared.

Print qualities which represent the various dimensions of developer performance provided part of the basis of scoring: 1. apparent graininess, 2. acutance (appearance of sharpness, and the resolution and tone separation of fine detail), 3. shadow detail and contrast, 4. highlight detail and tone separation (effect of image brilliance), and 5. overall representation of the low-contrast and high-contrast subjects.

The high-magnification enlargements of the bald sky were compared to rate each developer on apparent graininess. Actuance, highlight and shadow performance were evaluated on the basis of an examination of the front-, side- and backlit test subject prints. The overall performance of high- and low-contrast subjects was judged and scored, and the overall performance of high- and low-contrast subjects was evaluated for tone gradation, separation and image brilliance.

Adding up the points for each developer and for each dimension of quality revealed that the highest and lowest scoring were separated by only a few points. Ethol T.E.C. and Edwal 20 scored the same. Slightly below them were UltraFin FD1 and D-76 with the same score. And the highest scorer, but only by one point, was Agfa Rodinal 1:100.

Far more significant to the selection of a developer that will provide optimum negative qualities with fine-grain film is its performance along only one or two of the dimensions of quality, rather than a compilation of all five. That selection should involve consideration of the kinds of subjects photographed as they are affected by particular developer performance characteristics instead of the overall effectiveness of the developer. The reason for this is quite simple: general-purpose developers, like D-76 and Rodinal, are designed to provide a balance of all dimensions of negative performance. Other developers formulated to maximize one aspect of negative quality do so at the sacrifice of the others. This seesaw effect makes the choice of a general-purpose developer appropriate if a wide range of subject conditions is photographed. If subjects are more specialized, then a developer that maximizes particular dimensions of performance may be the best choice.

Kodak D-76 is an exceptional developer in only one respect. The apparent graininess of the image produced by D-76 is definitely superior to most other developers. In all other dimensions of image quality, D-76 is consistently good. Acutance, or apparent image sharpness, is good at all density levels. D-76 produces good shadow detail and contrast while preserving satisfactory highlight and tone separation. In my tests, it handled both the low-contrast subject and the high-contrast scene well, producing acceptable if not out-

standing prints of each. The fine reputation D-76 has as a general-purpose developer is definitely borne out by the comparative tests; it performed equally well under all conditions to provide very printable negatives. Diluted 1:1, D-76 is an excellent choice for use with a fine-grain film if the film is to be exposed to a variety of subjects under a variety of lighting conditions, especially when low apparent graininess is an important consideration.

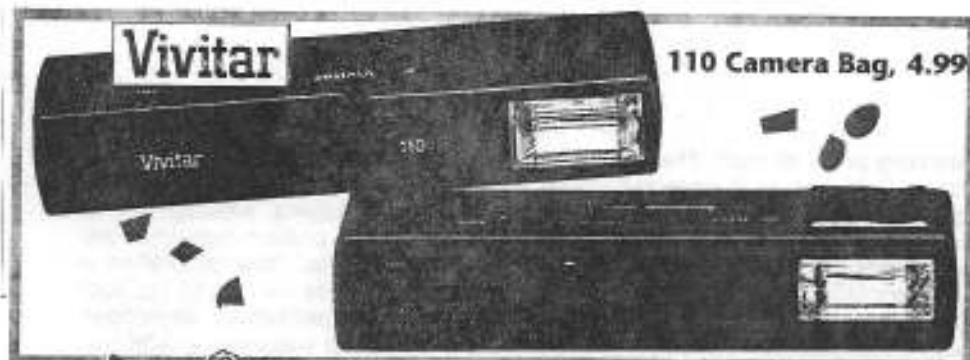
Agfa Rodinal, like D-76, is a well-rounded performer typical of a good general-purpose developer. But that is where the similarity ends. Unlike D-76, Rodinal's greatest strength is not that it produces an image with low apparent graininess. On the contrary, Rodinal grain is quite apparent. It does, however, have a very crisp, sharply defined grain structure, maintaining the fine grain characteristics of Panatomic-X film. Image resolution is also crisp and sharply defined, a product of the acutance effect of the high 1:100 dilution rate. Another product of that high dilution is its compensating effect that keeps high-contrast subjects within a range of printable negative densities. This compensating effect, however, is not so strong as to endanger Rodinal's reputation for producing excellent tone separation in areas of higher negative densities and brilliant highlight effects. At the adjusted rate of development, good shadow detail and contrast were maintained. This allowed the reproduction of the high-contrast scene with good tone separation and gradation at all density levels, while on the other hand the reproduction of the low-contrast subject was also exceptional due to strong tone separations and image sharpness.

Ethol T.E.C. is claimed to be an extremely compensating developer that produces printable negatives from a broad range of subjects of varying contrast and exposed on the same roll of film. It is specifically designed to be used with modern, thin emulsion films, and reported by the manufacturer to produce the highest resolution possible with these films. These claims were substantially corroborated by my comparative tests, with only minor qualifications. Graininess in the image was considerably more apparent than with the D-76 developed film, while not quite as sharp and crisply defined as with Rodinal. All subjects produced definite printable negatives. However,

the shadow detail and contrast were decidedly superior, particularly in the high-contrast subject. Although not on a par with the brilliant highlights produced by Rodinal, tone separation in the highlights was very good for such a highly compensating developer. T.E.C.'s greatest weakness is with low-contrast subjects. Though all the tones in the low-contrast subject were fully reproduced in the negative, the resulting print remained dull and lifeless even when a higher than normal contrast grade printing paper was used.

Beseler UltraFin FD1 is supposed to be specially formulated for use with fine-grain films, but the recommended development rate required more adjustment than any other to produce a normal-contrast negative. Even at this low rate of development, the image showed the most apparent graininess of all the five developers tested. FD1 is also claimed to be an acutance developer, and in this respect it performed very well, providing a high level of image resolution at all density levels. It displayed some similarity in performance to Rodinal, producing brilliant highlights and reproducing the low-contrast subject effectively. Its response to the high-contrast subject, however, was only fair. Contrast and the definition of detail in shadows were definitely weak compared to the other four developers.

Edwal Super 20 is the only developer that produced finer apparent grain than D-76. On the other hand, image resolution or sharpness of detail was its poorest performance characteristic. This Edwal developer is completely noncompensating, providing a proportional response in densities to exposure. Used at a dilution of 1:1, it proved to be sufficiently soft working to reproduce relatively high-contrast subjects without blocking highlights. The proportional response of Super 20, even though soft-working, yielded excellent tone separation in the highlights. But of all the five developers it reproduced the weakest contrast in the shadows. This affected the reproduction of the low-contrast test subjects, and meant the use of a very hard grade printing paper to obtain any sparkle in the image. Super 20 should excel in the reproduction of normal and high-contrast subjects which contain strong areas of local contrast and can be enlarged to make very sizable prints.



9.99

Vivitar or Studio 110 Tele Camera

Vivitar 110EF; focus-free, drop-in film loading, built-in flash, easy-to-use, flash ready signal. Or, Studio 110 Tele with telephoto and normal lens, focus-free, built in electronic flash, flash ready light and drop-in film loading. **Sale! Reg. \$12.99**



29.99 Sale! Reg. \$34.99

Vivitar Motorized Camera

Opus 35mm with motorized advance, rewind and built-in flash. Focus free, point and shoot.

COLLECTING

Pat yourself on the back if you bought a 110 Opus a year ago. Vivitar just revived the old 'Studio' line, and dropped the price of the 35mm Opus to \$29.99, thus ensuring that the \$39.99 Opus 20 won't come back. Watch the price escalate.

LOCAL

Photographic Collectors of Houston Camera Show. Hobby Holiday Inn 9/24-25, 10-5. Leonard Hart (713) 868-9606.

Kodak Precision Line Film UPL4 (surplus dated 6/92) now on sale, 35mm x 150' \$15 ea. Brent Esse (713) 528-6295.

USA

New number for MICROTEC the California Minox mavens 1-800-419-7512.

Subminiatics are invited to enjoy your cameras in Yosemite National Park. Latest feature of the ongoing Global Preservation Project: same-day film processing. Betsy J. Saul (209) 683-6555.

Minolta, in Ramsey, N.J. has run out of 16mm Plus-X. End of an era.

INTERNATIONAL

U.K. Collector was looking for a camera/ring? We have one, Al D. (713) 443-3409. Pocketable Subminiature Monoculars and other Russian optical products. First and second generation. Continent-Wide Enterprises, Ltd. 1-800-667-0293.

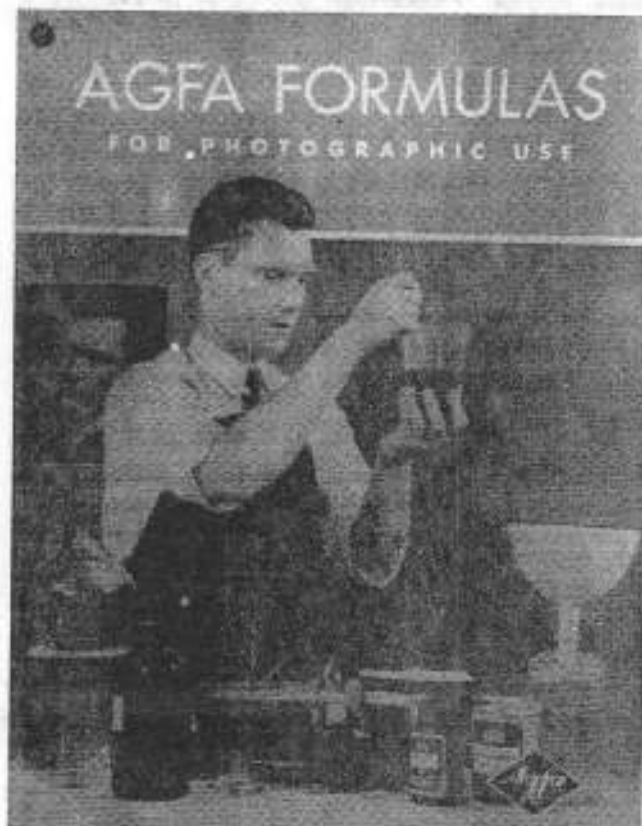
HELPLINE

TONY IN RICHMOND was looking for a "micrograin viscous developer" for Tech Pan. Try: Perfection Photo Products, 10021 La Tuna Canyon Rd., Sun Valley, CA. 91352.

HART IN HOUSTON seeking Falcon Midget (713) 868-9606. ROOKIE IN CALIF. needs Minox enlarger instructions. ALEX IN NYC needs 9.5mm reel. AL D. hunting Minolta-16 QT proxars. Subminiature lives!

QUICKFINDER 9/94

BOLSEY 8 w/case	\$249
Canon 110-ED w/case, flash	89
Steky II w/case	49
Teleca Binocular/Camera w/case	699
Woodmere Camera	(516) 599-6013



ALCHEMY

Here's an Oldie But Goodie you may have missed when it was hot (1941). Chock full of developers and curative tonics:

Agfa 20 Positive Developer, Agfa 30 for X-Ray film, Agfa 45 a 3-part pyro developer, several high contrast formulas, paper developers, paper/print developers, toners, reducers, intensifiers, desensitizers for inspection development, and of great interest still, a two-bath simply called "Rapid Processing Procedure". Total time in both solutions 90 secs. "AGFA FORMULAS FOR PHOTOGRAPHIC USE" 31 pgs., photocopies \$5 ea. Please include 10% s&h 20% International.