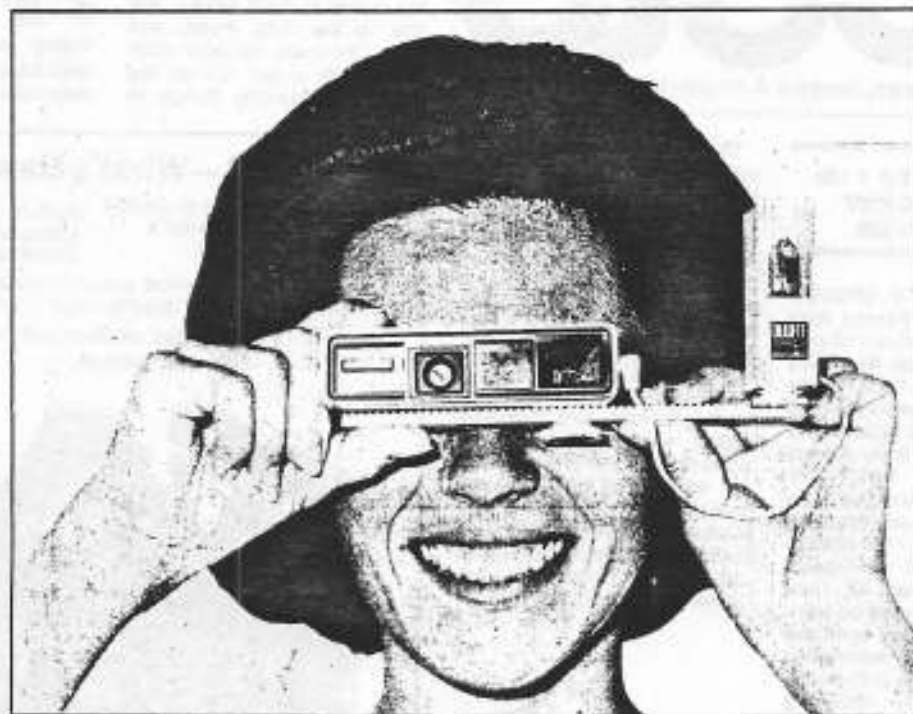


# THE SUBMINIATURE TIMES

The Subminiature Times is published monthly by Doylejet, P.O. Box 60311, Houston, TX. 77205 (713) 440-4744

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



## Whatever Happened to the Subminiature Craze?

This question was asked in the Winter '72 issue of "Photographic Quarterly". The answers given were: high costs, inferior processing, mass-marketing of undependable cameras, and meager film choice in non-standard cassettes. It was quite a list of problems, and all true.

Nowadays subminiatures are 'collectibles' in an ever shrinking niche between pocketable full frame 35mm cameras and digital electronics.

We may never see another Craze, yet subminiature lives. The cameras are still being used, and collected enthusiastically.

For snapshotters, the 110 cameras are available worldwide. The best of these is the Pentax A-110, a single lens reflex which is featured in our test report reprint.

Advanced photographers know that with a combination of dexterity and high level darkroom work, the subminiatures are capable of startling quality. It's an ironic

fact in optics that small lenses are easier to correct for aberrations than large lenses. Some of the sharpest lenses ever made for the general public were put into subminiature cameras.

We're going to crank up the antiques, show some pictures, mix and match developers; in short we're going to have fun in the upcoming issues.

For collectors, our "1989 Guide to Popular Subminiature Cameras" is an overview of the cameras you will see listed for sale each month.

Feel free to call us for film and reloadable cassettes: GaMi, Mamiya, Rollei, Edixa, and 17.5mm roll films for: Beauty-14, Epochs, Lovely, Meteor, Mycro, Peace, Robin, Rubix, Septon Pen, Snappy, Swallow, Tone, Top, Ulca, and the Vestkam.

### STATE OF THE ART

The following test report is from "Modern Photography" mid year 1980.

# modern tests

newest cameras, lenses & important accessories

## PENTAX AUTO 110: FIRST POCKET SLR SYSTEM

**MANUFACTURER'S SPECIFICATIONS:** Asahi Pentax Auto 110 single-lens reflex 110 cartridge camera. Body No. 1005-301. LENS: 24mm f/2.8 Pentax 110 interchangeable bayonet mount, focusing to 13 1/4 in. (349 mm), accepts 25.5mm (series 5) accessories. SHUTTER: Programmed, electronic, behind-lens metal blade type with speeds from 1 to 1/750 sec.; X-sync speed (1/30 sec.) automatically set when AF 130P Auto Flash is mounted on camera. VIEWING: Fixed eye-level pentaprism with non-interchangeable central split-image rangefinder, full focusing screen. OTHER FEATURES: Electronic circuit with single silicon photocell above eyepiece selects apertures and shutter speeds according to predetermined program; automatic film speed indexing for ASA 100 and 400 film; go-ahead, and slow shutter speed LED indicators in finder; special socket for Pentax Auto Flash AF 130P; tripod socket; provision for auto winder. PRICE: Not available.

Ever since the introduction of the 110 cartridge format in 1971, camera manufacturers have responded by giving us an incredible number of pocketable 110 cameras incorporating a staggering variety of features. We've seen dozens of dual lens designs. Canon, Kodak and Vivitar have offered models with fast lenses for low-light photography. Minolta has a hefty SLR with a non-interchangeable zoom lens, and we've even seen an Agfa 110 with a built-in auto winder. Now Asahi Optical Co. has taken the logical and dramatic step of introducing the Pentax Auto 110, a cartridge loading SLR system that bears a striking resemblance, in scaled down form, to the latest 35mm SLRs—complete with detachable auto winder, compatible autofocus, programmed auto exposure, and, at last, interchangeable lenses.

One major advantage of going the interchangeable lens route has been to keep the camera incredibly small, while other sophisticated 110 cameras have had to grow fairly large to incorporate a host of advanced features (as Minolta found with the 110 Zoom SLR). Although the system concept represents a distinct advance over the previous designs (allowing for new and improved lenses, winders, flashes and accessories to fit directly onto the camera as they become available), it is obvious that Asahi has gone to great lengths to keep the camera as simple to use as the original Kodak Pocket Instamatic Cameras.



A palmable system, Pentax Auto 110 plus autofocus and winder weighs a mere 16 oz.



110 cartridge pops in as usual, but film automatically stops at "1" when winder's turned on.

Like three finely polished gems, the system's minuscule lenses have an aesthetic appeal all their own. The largest (50mm) is but a mere 1.7 in. in diameter (only 1 in. deep), while the smallest (24mm) is but 1 in. across and only half as deep. The lenses incorporate a polished black plastic body (except the mounting flanges

which are aluminum), and the miniature scales clearly stand out with footage markings in light blue and metric scale in yellow.

Changing lenses is a snap, as each is released from the lens mount by sliding the release button upwards a few millimeters, and turning the lens about 90° counterclockwise. Mounting lenses is even easier—just line up the dots, insert, and twist. The focus indicator mark aligns with a red dot on the camera's mounting flange to



Match focusing-index mark with dot on lens mount and lens bayonets on with a 90° twist.

## Pentax 110—What's New At A Glance



identify the proper way to insert the lens, which will not go in any other way.

Small size and simplicity of operation are well served by the use of a combined aperture/shutter. The shutter/aperture blades, located directly behind the lens mount in the camera, eliminate the need for pins or linkages to the lens, reducing the mechanical complexity found in the mounts of lenses for other interchangeable systems (35mm and medium format). The idea of a combined aperture/shutter is not entirely new (Kodak had a mechanical one at the turn of the century. Polaroid has used various electronic versions since the early 60s, and Minolta took a stab at it with their V2 rangefinder 35 in 1961), but Asahi's ingenious design consists of two 90° Vee-shaped blades which operate in a complicated sequence with the instant-return mirror.

When focusing the camera the blades are wide open



Vee-shaped blades behind lens act as combined shutter/aperture, provide programmed auto exposure (see chart).

(f/2.8). When the release is pressed, the exposure sequence begins. First the aperture/shutter blades close completely, then the instant-return mirror flips up. The blades now separate to form the aperture of specific size, for a specific time period (shutter speed) as called for by the exposure program, which selects a specific f/stop-shutter speed combination for

each EV level, ranging from  $f/2.8$  at  $1/30$  sec. or less, to  $f/13.5$  at  $1/750$  sec. (EV17) (see chart below). The blades return to the closed position while the mirror returns, then reopens to  $f/2.8$  for normal viewing and metering. These events all occur so rapidly that at first examination it appears as if the mirror is doing the exposing, as we had originally reported ("Kiepler's SLR Notebook," Oct. 1978, page 74).

To measure the EV level for the programmed shutter, a

While Asahi's auto-exposure system is designed to be operated by rank amateurs, and will provide the correct exposure in the vast majority of shooting situations, it lacks one feature that the serious photographer will miss—there is no way to override the automatic exposure system when the lighting conditions are less than ideal. You can't lock in the exposure for a close-up reading, nor is exposure compensation of any kind possible. How important is this? The vast majority of Pen-

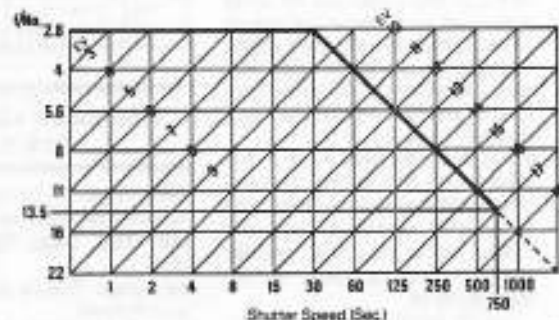
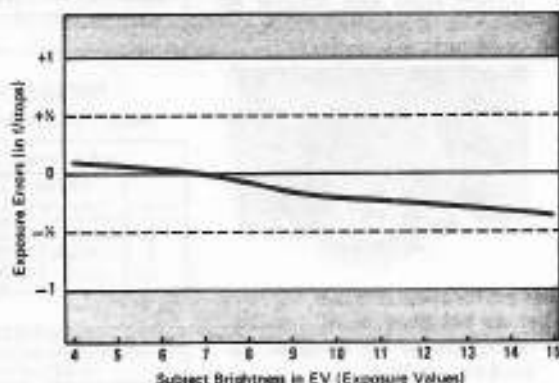
lack of exposure compensation constitutes the most serious flaw in an otherwise brilliant design. We must admit, however, that in most normal shooting conditions, our test shots were well exposed, unless we exceeded the camera's exposure range by using ASA 400 film outdoors when the light level exceeded EV17 ( $1/750$  sec. at  $f/13.5$ ). Measured accuracy of the programmed shutter falls well within the latitude of all current 110 films.

Just as the automatic-expo-



Special lens inside camera, above eyepiece, focuses light from central portion of picture field onto silicon meter cell.

## EXPOSURE ACCURACY (at film plane, ASA 100) White area indicates tolerance limits.



Here's the program: Bold line in chart above, beginning at upper left-hand corner, indicates aperture/shutter speed combinations camera provides at EV settings 3-17.

Note: We have omitted the usual light falloff and shutter speed accuracy charts because the Pentax Auto 110's behind-lens aperture/shutter did not allow our normal test procedures.

single silicon photodiode, located behind a special lens inside the prism housing, reads the light level off the central portion of the focusing screen. This center-weighted meter reads light levels from EV3, and determines the exposure settings as described above unless the autofocus is attached (see page 120).

Indication of sufficient light for a hand-held photograph (shutter speed  $1/30$  sec. or faster) is given by a green LED lighting in the viewfinder. A yellow LED lights to indicate the need for a tripod or flash. Neither LED will light if the batteries are low.

tax users will scarcely notice the difference when shooting color print film, except when photographing heavily backlit subjects, where underexposure is a distinct possibility.

Also, despite the fact that the meter is center-weighted, very contrasty scenes with the main subject in a central shadow area did not provide accurately exposed prints from commercial labs. Although the exposure errors we experienced with the Pentax 110 represented only a small percentage (perhaps 2 percent) of the subjects we shot, some form of exposure compensation could easily correct them. Indeed, this

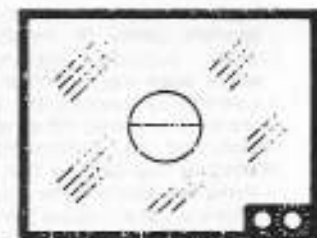
## GENERAL PERFORMANCE

Checkpoints	Our Standard	As Tested
<b>FINDER:</b>		
Apparent viewing distance	Between infinity and 20 in. (0.5 m)	39 in. (1 m)
View area compared to film area	Vertically and horizontally more than 85%, less than 100%	Vertical: 89% Horizontal: 89%
Parallax error compared to film	Vertical: less than 0.32mm Horizontal: less than 0.42mm	Vertical: none Horizontal: none
Focusing accuracy at maximum aperture	Within depth of focus	no discrepancy
Image magnification	$0.75 \pm 0.1X$	0.67X
<b>PICTURE SIZE:</b>		
13 x 17mm (110 film are pre-masked by the manufacturer and are the same size for all 110 cameras)		
<b>SHUTTER:</b>		
Synchronizer delay time	X: within full opening	O.K.
<b>LENS:</b>		
Focal length	24mm $\pm 5\%$	25.2mm
Maximum aperture	$f/2.8 \pm 5\%$	$f/2.83$
Distortion	$\pm 4\%$	less than 0.5%
<b>CAMERA SIZE:</b>		
3 1/2 in. wide x 2 1/2 in. high x 1 5/16 in. deep (88.4 x 57.1 x 33.3mm)		
<b>WEIGHT:</b>		
6 1/2 oz. (173 g)		



Twin silver-oxide batteries fit into holder that slides into battery compartment.

Holding the camera at eye level reveals a viewfinder much like those found on current 35mm SLRs. The entire screen is visible to eyeglass wearers (though Pentax will have correction lenses for the eyepiece available), and is bright corner to corner. It's not as bright or contrasty as the viewing screens of today's best 35mm SLRs, but the viewing image is quite large for a 110 camera. Your attention is immediately focused on the large split-im-



Viewfinder is bright corner to corner with large, clear, split-image rangefinder in center. LEDs in lower right provide green go-ahead signal, and yellow light to indicate shutter speed is too slow for hand-held exposures without flash.

sure system makes the little Pentax easy to use, its size and shape make it easy and pleasurable to handle. In use, the camera was more comfortable and easier to hold steady than most horizontally-laid-out 110 cameras. The compact, vertical camera body gives the user an added edge in grasping the camera firmly in both hands while pressing the shutter release. We found steadiness improved when the auto winder was attached. But though easier to hold than most other 110 cameras, one's ability to hold the camera steady is still the limiting factor in taking good pictures with the 110 format.



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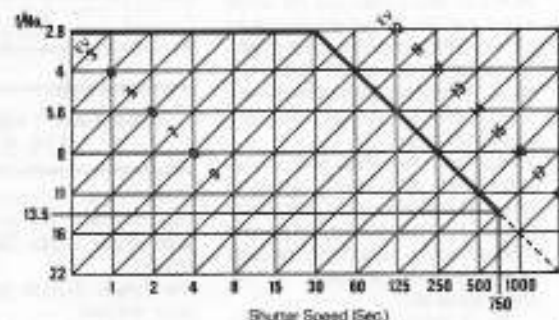
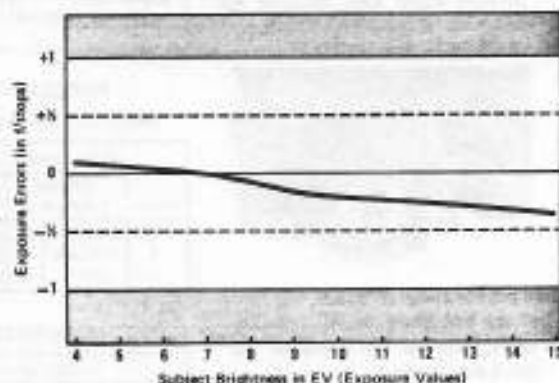
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<b>SHUTTER:</b>		
Synchronizer delay time	X: within full opening	O.K.
<b>LENS:</b>		
Focal length	24mm ± 5%	25.2mm
Maximum aperture	f/2.8 ± 5%	f/2.93
Distortion	± 4%	less than 0.5%
<b>CAMERA SIZE:</b>		
3 1/2 in. wide x 2 1/4 in. high x 1 5/16 in. deep (89.4 x 57.1 x 33.3mm)		
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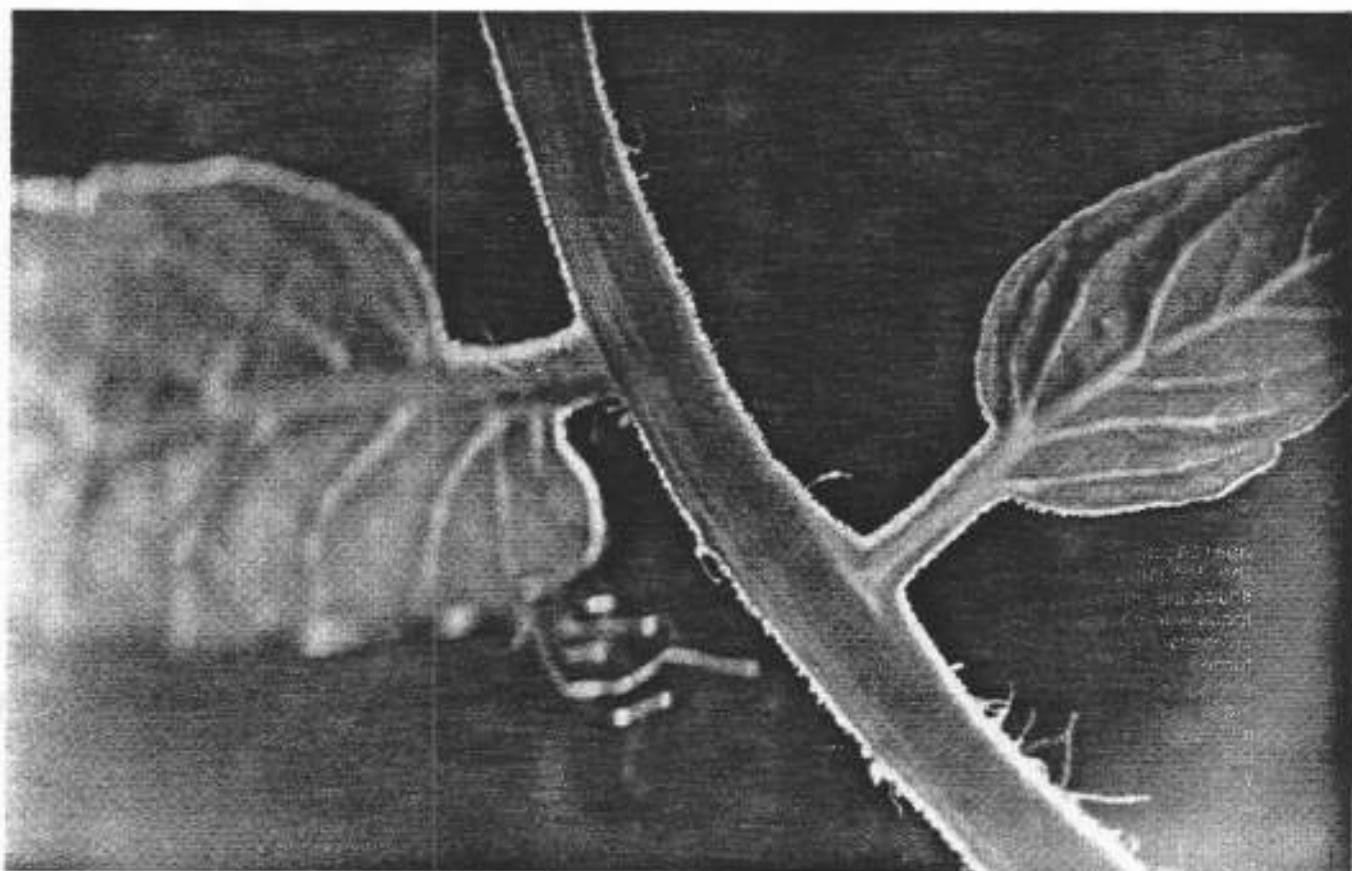
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spherical aberration, causing a very slight red flare on axis. The image was excellent at  $f/5.6$ .

Off-axis, we found slight coma, some astigmatism and red-green lateral color (0.020 mm), but within acceptable limits, improving slightly when stopped down to  $f/5.6$ . The lateral color was greatly reduced when the lens was focused at its close (900mm) object distance.

**Field Test Pictures:** While our prints lacked the crisp images expected from larger formats (such as 35mm), we found the pictures much better than those we have seen from most 110 cameras. Again the main limitation is camera steadiness.

#### PERFORMANCE

Our Standard	Tested
Focal length: $\pm 5\%$ (52.5-47.5mm)	49.7mm
Max. Aperture: $\pm 5\%$ ( $f/2.94-f/2.66$ )	$f/2.78$
Distortion: $\pm 4\%$	Less than 0.5%
Light falloff: at $f/2.8$ $\pm 1\%$ stop from theoretical limit	1 stop

#### RESOLUTION

at 1:57 magnification					
f/no.	Center Lines/mm	Corner Lines/mm	f/no.	Center Lines/mm	Corner Lines/mm
2.8	V. Good	51	Excellent	51	
4	V. Good	51	Excellent	51	
5.6	Good	51	Excellent	57	

#### CONTRAST

at 30 lines/mm					
f/no.	Center %	Corner %	f/no.	Center %	Corner %
2.8	Medium	54	Low	28	
5.6	Medium	58	Low	30	

#### PENTAX 110 18mm $f/2.8$

Filter Size: 30.5mm  
Apertures:  $f/2.8$  to  $f/13.5$   
Min. Foc. Dist.: 9.9 in. (250mm)  
Features: Focusing scales in feet and meters  
Serial No.: 1005562  
Size: 34 x 21mm (1.3 x 0.83 in.)  
Weight: 29g (.98 oz.)



Pentax 110's 6-element 18mm  $f/2.8$  sounds like a superwide, but equals a 35mm lens on the 35mm format.

#### PERFORMANCE

Our Standard	Tested
Focal length: $\pm 5\%$ (18.9-17.4mm)	18.6mm
Max. Aperture: $\pm 5\%$ ( $f/2.94-f/2.66$ )	$f/2.90$
Distortion: $\pm 4\%$	Less than 0.5%
Light falloff: at $f/2.8$ $\pm 1\%$ stop from theoretical limit	1 1/2 stops

#### RESOLUTION

at 1:84 magnification					
f/no.	Center Lines/mm	Corner Lines/mm	f/no.	Center Lines/mm	Corner Lines/mm
2.8	Excellent	72	Excellent	56	
4	Excellent	80	Excellent	72	
5.6	Excellent	80	Excellent	72	

#### CONTRAST

at 30 lines/mm					
f/no.	Center %	Corner %	f/no.	Center %	Corner %
2.8	Low	47	Low	28	
5.6	Medium	60	Medium	34	

**Optical Bench Analysis:** We observed a slight overcorrected axial flare on axis, and an excellent image when stopped down to  $f/5.6$  with an absence of color aberrations.

Off-axis there was no lateral color, but slight coma, astigmatism, and skew-ray flare were observed. The image was good at  $f/5.6$  with some residual astigmatism.

**THROUGH A MAGNIFYING GLASS.** The point of focus was a single hair, dead center. Only a single lens reflex could do this.

The wide-angle lens of the Pentax-110 lens trio, the 18mm Pentax-110, displays little distortion. Not really as wide as its focal length sounds to users of 35mm equipment, the 18mm lens has an angle approximately equal to that of a 35mm wide-angle on standard 35mm cameras.

Focusing is easy, as it takes only a 100° revolution of its 1 1/4-in. focusing ring to bring it from near focus to infinity, and the large split-image rangefinder on the center of the focusing screen snaps the image into focus very nicely.

**Field Test Pictures:** The 18mm Pentax 110 functioned well providing crisp imaging in our test slides and little light falloff at the corners of the picture field. However, we expect some loss of detail, particularly near the corners of the image, as the pictures are enlarged beyond the normal 3 1/2 x 4 1/2 in. print size. We judged overall performance to be very good.

## THE SUBMINIATURE TIMES #1 1/89

Canon 110 ED	\$59.50	CCG
Mec-16	44.50	CCG
Mec-16 SB	94.50	CCG
Minolta-16	24.00	B
Minolta-16 P	17.50	CCG
Minolta-16 QT	29.50	CCG
Minox B	95.50	CCG
Minox GT	229.00	CO
Minox LX gold	1495.00	CO
Minox ML	289.00	CO
Minox (Riga)	474.00	CCG
Rollei-16	100.00	T
Yashica Atoron	49.50	CCG
Yashica Electro 110	44.50	CCG
Yashica 16EE II	84.50	CCG

B Brooklyn Camera, 549 E. 26th St., Bklyn, NY 11210 (718) 462-2892  
 CO Camera One, 1918 Robinhood St. Sarasota, FL 34231 (813) 924-1302  
 CCG Columbus Camera Group, 55 E. Blake, Columbus, OH 43202 (614) 267-0686  
 T Tillis, 337 Merrick Rd., Lynbrook, NY 11563 (516) 599-6013

## ABOUT THE EDITOR

I learned photography at Rice High School, in New York City. The school provided a well stocked darkroom, the students had to bring their own cameras and film.

In 1955 all cameras smaller than 4" x 5" were considered useless for serious photography. At the time I was on the track team and involved with other school activities. I didn't want to be chained to a piece of equipment, I wanted a small camera. The smaller the better. Any snapshots at all would have been satisfactory.

Because my first camera was a Mamiya Super-16 I couldn't show my work for months to avoid the the ribbing I took from my classmates who had light meters larger than my camera.

I became serious about subminiature when I saw how much easier it was to take notes with microfilm and sit in the park with a film viewer, than to spend hours in a library copying page after page by hand. (This was before Xerox.)

I consumed a lot of time trying to follow photographic rules that only apply to larger formats. Then I went on lengthy

pursuits of the slowest film, the finest developer, and prints free of dust and scratches. By trial and error I sorted out much helpful advice to produce the daily 8" x 10" prints I needed to stay in the class.

My involvement with subminiature continued into Pratt Institute, and my photo studio on West 40th Street. I did industrial catalogs with a Rolleiflex, and many times used the Mamiya when a large volume of small prints were needed.

After almost forty years and a few career changes, my love for subminiature remains constant. I still shoot at least four rolls of film a week, preferably landscapes, and still consider every roll a learning experience.

I'm sure I came nowhere near exhausting the potential of microfilm, but it's time to learn imaging technology now.

If you already own a subminiature camera dust it off. We'll celebrate the past and accept the future as it envelopes us.

Let's take some pictures.

Al Doyle