

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.



Dycam 3 comes complete with everything you need to bring instant photography to your computer.



This photograph was created with Dycam 3 using the standard lens and natural sunlight. Image was output on 2400 dpi imagesetter.

DIGITAL BARGAIN HUNTING?

HERE'S A SHOPPING LIST

You won't have to plunk down \$10,000 for a good imaging system anymore. While the Dycam 3 (see Fotoman S.T. 11/91) went up in price from \$795 to \$895, the bottom has fallen out of printer prices, and our readers have found ways to cut corners.

Top of the line is the long awaited Kodak XLS 8300 Digital Printer (300 dpi) which produces true photographic print quality, but the \$8,975 price tag puts it out of reach for amateurs. Samy's (213) 857-9915.

The Canon BJC-600 Color Bubblejet Printer (360 dpi) has an individual color cartridge, and is optimized for plain paper at \$598.50. Computer Discount Warehouse (800) 726-4239.

The Epson Stylus 800 Ink Jet Printer (360 dpi) costs only \$289 if you mail in a \$50 rebate card. Gateway (800) 846-2059.

The Diconix 180si Inkjet (300 dpi) is our bargain of the month at \$215. Bulldog Computer Products (800) 438-6039.

RESPOOLERS can enjoy an unexpected bonanza this month. The unlisted Kodak 7206 and 7207 gun camera films are now on the surplus market. (Unlisted because Kodak has no data at all on these double-perforated films!) 7207 has ASA 125 on the box. We prefer D1000 T500. 16mm x 100', \$5 ea. 5/\$20. Haven't had time to test

the Plus-X 7206. It comes in a return-for-refund magazine. 16mm x 50' \$10 ea, 10/\$75. Both are dated 1989-'90 in good condition. S & G (215) 474-7663.

If you split slow 35mm stock to load your Minox, Ilford Pan F (ISO 50) is currently on sale, 35mm x 100' \$16.95. B & H Photo (800) 947-9960.

For really slow stock: Kodak UPL4 Precision Line Film #844-6841 (ISO 0.5) 35mm x 150' \$15 ea. Call Brent Esse.

If you're still shooting disc, Brent is selling it by the gross @ \$25 per. Assorted brands, all useable, we tried it. The regular price is \$5.79 for a 2-pack at Walgreen's. Brent Esse (713) 528-6295.

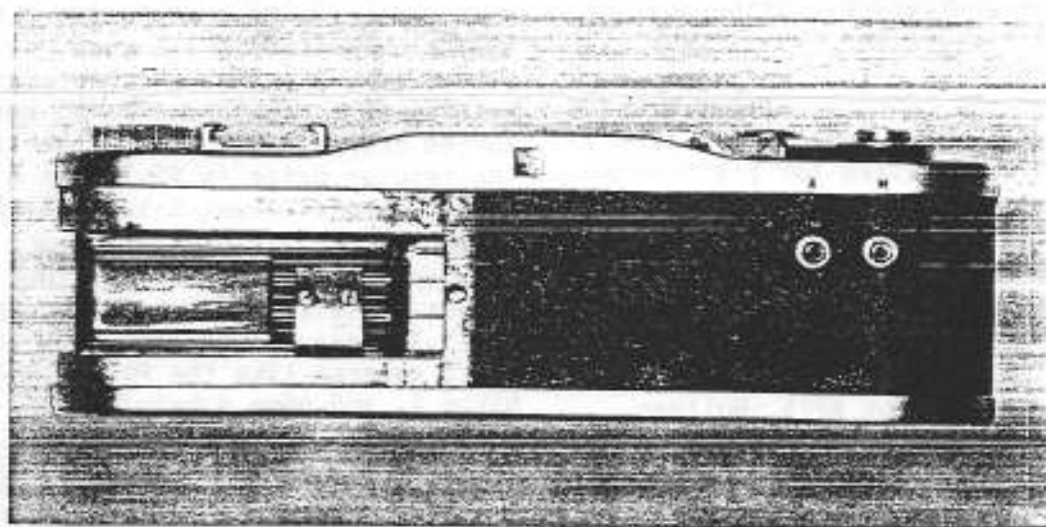
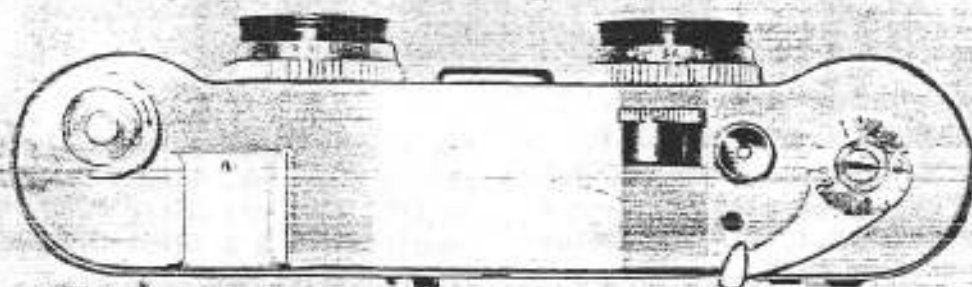
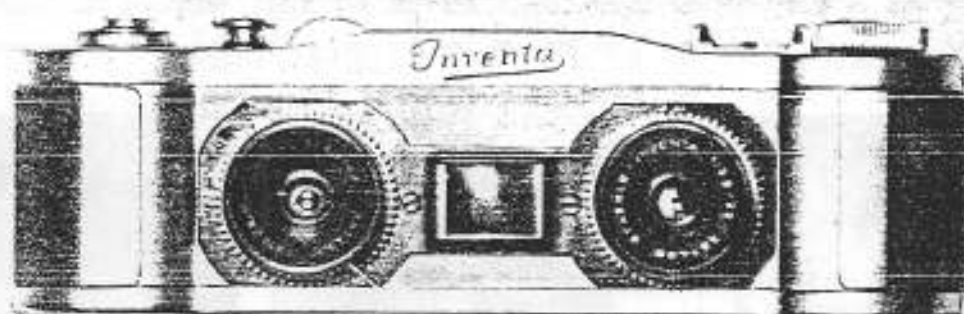
NASSAU BOUND TRAVELERS make your first stop the large pharmacy downtown on Bay Street. This is the last known source for the 1.3v mercury battery vital to many small cameras like the Petri, Rollei 35s, Nikon F, and some subminiatures.

For environmental reasons the mercury PX 625 battery is no longer being manufactured. The only replacement is a Duracell 1.5v battery which fits, but causes light meters to respond erratically. A PX 625 will last indefinitely if refrigerated. Supplies in the U.S. and Canada have been depleted. Nassau has them in quantity. If you hurry.

Inventa (Prototype)

Manufacturer:

Dr. Bergerhoff Kamera GmbH, Freiburg, Fed. Rep. of Germany



Year Introduced: about 1955
 Quantity Produced: unknown
 Size (l x w x d): 163 x 52 x 46 mm
 Weight: 620 grams

Body: die cast aluminum, black leather
 Film Size: 16 mm perforated or unperforated
 Image Size: 10 x 14 mm

Lenses:	Staeble Inventa, F = 22 mm, f/3.5, fixed focus or Ernst Leitz Wetzlar, Summar F = 35 mm, f/2, fixed focus
Lens Separation:	63 mm
Diaphragm Type:	iris, between the lens
Diaphragm Openings:	Staeble: f/3.5 to f/16 continuously adjustable Leitz: f/12 to f/32 continuously adjustable
Shutter Type:	focal plane
Shutter Speeds:	B, 1/25, 1/50, 1/100, 1/250, 1/500, 1/1000 sec.
Viewfinder:	optical mirror reflex, reduced size image, parallax free
Spirit Level:	none
Rangefinder:	none
Focus Adjustment:	fixed
Film Advance:	advance of 44 mm with one stroke of the rapid winding lever, film is transported forwards with two pressure plates which hold the film at its edges
Frame Counter:	additive, from 1 to 12
Double-Exposure Prevention:	incorporated
Image Window Size:	unknown
Image Window Separation:	unknown
Cable Release Provision:	socket
Flash Synchronization:	X-contact, M-contact, PC-outlet
Tripod Thread:	threaded, 1/4"-20 threads per inch, in the center
Carrying Strap Provision:	none
Cable Release Provision:	socket
Accessory Provision:	shoe
Special Features:	Only stereo camera which allows changing of lens assemblies.



Dear Al:

I own a Minox, "Riga" camera 6000 series, with a three tooth advance spindle. The plastic film cassettes always fit rather tightly, & would always break the little plastic bridge between the two spools upon removal from the camera.

In the last several years the plastic cassettes will not fit at all. I subsequently obtained some old brass cassettes & just found that they would not fit either.

Upon closer examination of the open camera body itself, I noticed something that I had not seen before.

There seems to be a metal "cup" or holder, that comes up the sides of the film spindle advance section of the camera.

It looks like a one piece part that covers the bottom of the spindle section of the body & runs up the sides about half-way.

This cup or liner is only a few thousandths thick, but it seems to be enough to stop a film cassette from sliding down in place.

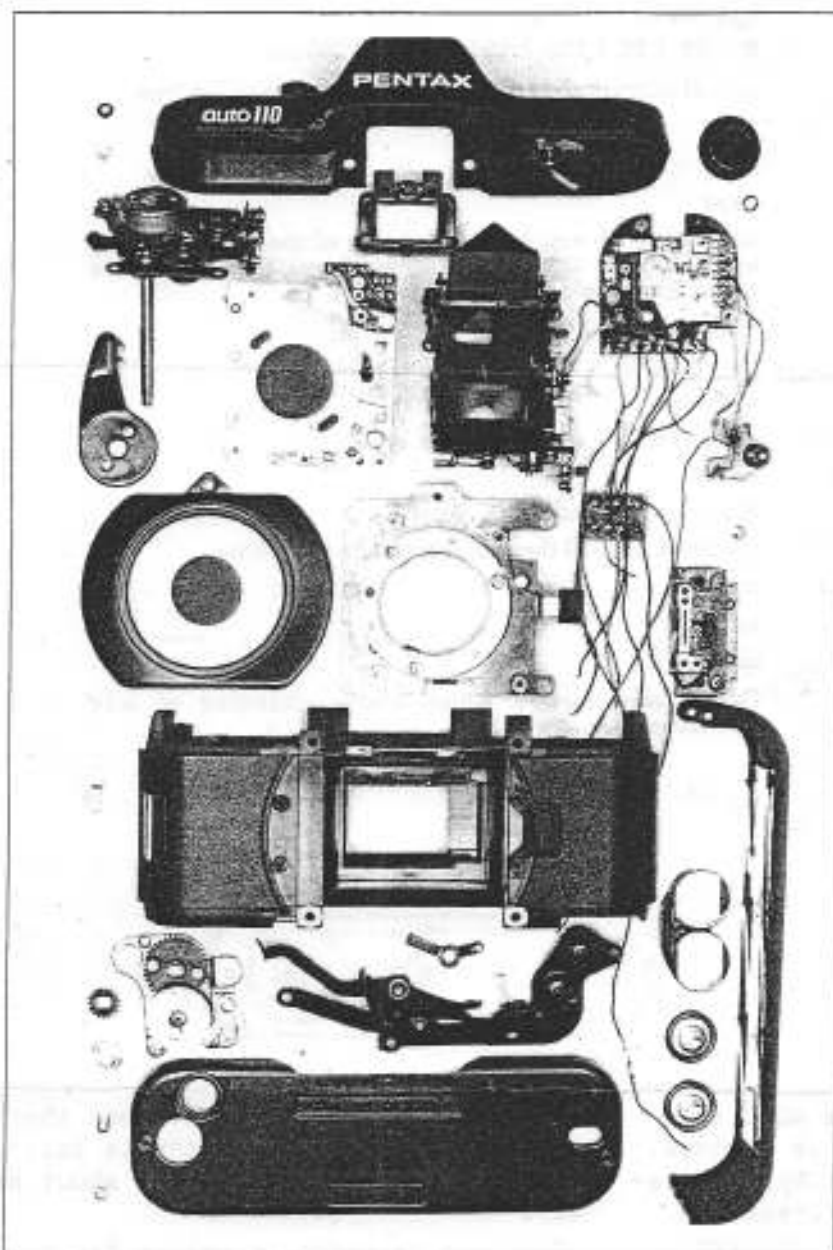
I would appreciate any thoughts you might have on this matter. Thank you.

Philip Terni
Millerton, NY
(518) 789-3474

Minoxers, can you help Phil?

Stripdown Report Pentax Auto 110

	Interior	Exterior	
Material choice:	Good	Note A	Repair access: Good
Assembly, Finish:	Good	Good	Seal against dirt: Fair
Do frequently made adjustments require major stripdown? No			
Modular construction: Yes Replace key parts easily? Yes			
Note A: Good except tripod socket (See text)			

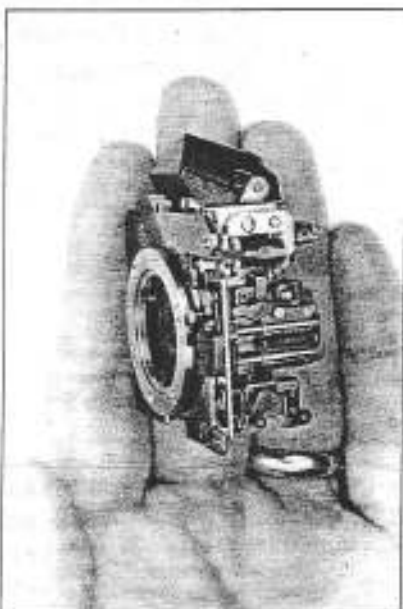


Modular construction, strong, well-made parts characterize Auto 110, whose stripdown portrait reveals its complexity.

Anyone expecting that this diminutive reflex camera would be simply made is in for a surprise; it's a full-blown SLR with an electronically governed auto-exposure system whose insides look like the scaled-down "real" camera that it is. It boasts heat-treated steel wind gears and shafts that run in bronze bearings, a miniature pentaprism, and a strong, thick-walled plastic body.

The sequence of operation begins as initial pressure on the trip button closes a switch that turns on the LED exposure-level indicator in the finder and energizes the shutter's electromagnet. Full pressure on the trip button releases a drive system whose spring power closes the shutter-diaphragm blades, then swings the mirror up and a narrow baffle door at the bottom of the mirror down. This bottom-of-the-mirror door creates a light-tight seal, and thus acts as a secondary shutter behind the two-bladed shutter at the camera's front.

Once the mirror is up and the narrow door is down, the shutter blades open. The amount they open is regulated by the exposure-control system, and it can vary from a full-size square down to a slim ellipse. /continued on page 6



Central module contains reflex system, shutter/diaphragm assembly. Note mini-pentaprism perched at top of module.

FREE CLASSIFIED

FOR SALE Minolta-16 Ps w/case \$20, Minolta-16 Ps (parts) \$5, color filter set for Minolta-16 II \$5, Minolta Duofit "S" flash w/case \$8, flash bracket for 16 II \$3, flash bracket for EE or EE II \$3, Minolta-16 film in original box \$5, film in magazine \$4, Yashica Atoron flash gun \$8. All items Post Paid. Arthur T. Skopec, 154-24 24th Rd. Whitestone, NY 11357-3731
FOR SALE Yashica Atoron kit in box metering \$50, Mamiya-16 w/case+manual \$60, Min-

olta-16 P w/film \$25, Minolta Disc 7 w/case+film \$75, Minolta-16 QT +film \$75, Minolta-16 MG w/case+film+inst \$75, Rollei A26 w/box+inst \$95. Stephan C. Elliott, 6775 Pukoo St., Honolulu, HI 96825-1070 (808) 395-0153

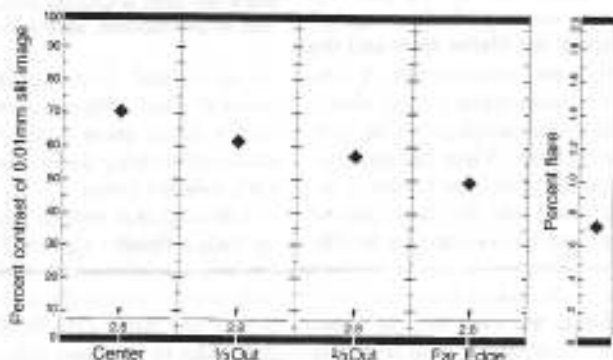
FOR SALE "Minolta 16mm System" by Ted Rosenberg, Minolta Mark II with manual and accessories. V.M. Ouzoonian, 1565 E. Highland Ave., Redlands, CA 92374

Lens Performance

Pentax-110 24-mm f/2.8 Ser. No. 1209852

Dimensions: O.D. 29.7 mm (1.17 in.), L. 13.6 mm (0.54 in.) Weight: 12.5 g (0.44 oz.) Filter size: 25.5 mm
 Close working limit: 324 mm (12.75 in.) Close limit field size: 175x254 mm (6.89x10.00 in.)
 Focal length: Marked: 24 mm Measured: 24.73 mm f-number: Marked: f/2.8 Measured: f/2.75 T-number: T-3.00

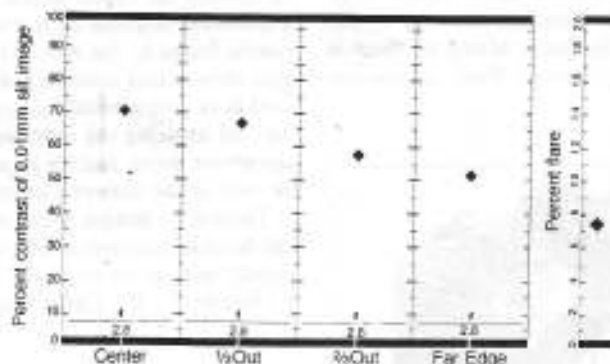
Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	V. slight	Slight	Slight	Critical f-stops
Astigmatism	None	V. slight	Moderate	
Lat. chrom.	None	None	None	
Long. chrom.	blue — red = 0.05 mm			Focus shift
Spherical	N.A.			
Distortion	None			
Vignetting	N.A.			
Centering	Perfect			



Pentax-110 18-mm f/2.8 Ser. No. 1123245

Dimensions: O.D. 34 mm (1.34 in.), L. 22 mm (0.86 in.) Weight: 27 g (0.94 oz.) Filter size: 30.5 mm
 Close working limit: 213 mm (8.38 in.) Close limit field size: 160x233 mm (6.29x9.17 in.)
 Focal length: Marked: 18 mm Measured: 18.4 mm f-number: Marked: f/2.8 Measured: f/2.52 T-number: T-2.75

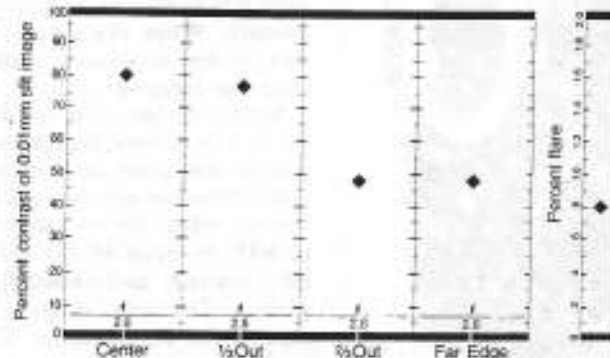
Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	None	Slight	Moderate	Critical f-stops
Astigmatism	None	None	None	
Lat. chrom.	None	None	None	
Long. Chrom.	blue — red = 0.05 mm			Focus shift
Spherical	N.A.			
Distortion	Very slight barrel			
Vignetting	N.A.			
Centering	Perfect			



Pentax-110 50-mm f/2.8 Ser. No. 114325

Dimensions: O.D. 42.7 mm (1.68 in.), L. 28 mm (1.10 in.) Weight: 51 g (1.78 oz.) Filter size: 37.5 mm
 Close working limit: 865 mm (34.05 in.) Close limit field size: 218x317 mm (8.58x12.48 in.)
 Focal length: Marked: 50 mm Measured: 50.73 mm f-number: Marked: f/2.8 Measured: f/2.82 T-number: T-3.08

Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	None	None	Slight	Critical f-stops
Astigmatism	V. slight	Moderate	Moderate	
Lat. chrom.	None	Slight	Moderate	
Long. chrom.	blue — red = 0.04 mm			Focus shift
Spherical	N.A.			
Distortion	Very slight pincushion			
Vignetting	N.A.			
Centering	Perfect			



Mechanical: This is a special series of lenses. All three share the same diaphragm—the two-bladed front shutter within the camera—so their exit pupils must be identical, as indeed they are. Lacking diaphragms and with focusing actions that employ the rotation of the entire lens head, these lenses are

mechanically as simple as can be. The outer sleeves of the mounts and barrels are plastic, but the focusing threads and the inner barrels, containing the (glass) elements, are aluminum.

An unusual property of the lu- / continued on page 6

Stripdown: Auto 110

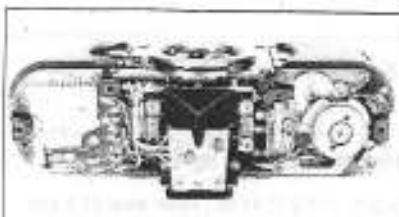
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with corresponding areas that vary from the equivalent of $f/2.8$ down to $f/13.5$, respectively.

So what the camera produces is a programmed auto-exposure system whose shutter speeds (one to $1/750$ sec) and f -stops are established by just two blades. This is accomplished by regulating the amount the blades open and the length of time they remain open. A simple electromagnet traps a lever that's spring-loaded to disengage the shutter-blade driving arm. When the electromagnet is de-energized the blades close, even though they may not have opened fully, as would be the case in bright light.

As soon as the blades close, the mirror assembly drops back into its viewing position, thus sealing light from the film, and the shutter blades reopen fully. This complex sequence all proceeds as quickly and smoothly as the blink of an eye.

While the internal parts are small, they're not miniscule or dainty. Still, the balance between the size of the parts and the forces acting on them is such that the impact from the tripping




With top cover, front cowl removed, Auto 110's electronic network is seen on camera's left side, photocell circuit board over rear of pentaprism, above eyepiece.

action is small. Consequently, the three strips of plastic foam beneath the view-screen frame serve well to handle the shock-absorbing duties from the mirror's upward swing.

The electrical system could be tidied up with a flexible circuit. Perhaps Pentax will get around to doing this now that they have seen the commercial success of the Auto 110. While they're at it, I'd like to see them redo a few of the leaf switches in the little camera. Gold-plated contacts with cross-line contact would be better than the ones used (nickel-plated straight-line contact).

Another change for the good would be making the tripod socket from hard aluminum instead of the nylon-like plastic found in the Auto 110. The robust three-screw mounting of the tripod socket is commendable, especially in view of its being the mooring point for the motor drive, and its location at the far side of the camera's bottom.


There is no section of the camera that can be characterized as delicate; no one should mistake its small size as making it a fragile toy. It's a little toughy. 

Lens Performance: Auto 110

continued from page 5

bricant in the focusing threads made focusing stiff initially, but once this resistance was overcome, it became silky-smooth. When the mount was left undisturbed for several minutes, the effect was repeated.

Besides the simplicity resulting from the lack of internal diaphragms, the f -stop for any given exposure is neither controllable nor knowable by the user. For this reason our tests were conducted with the lenses off the camera (our usual practice) and, necessarily, at full aperture. The latter condition caused a departure in our tabulation of the test results.

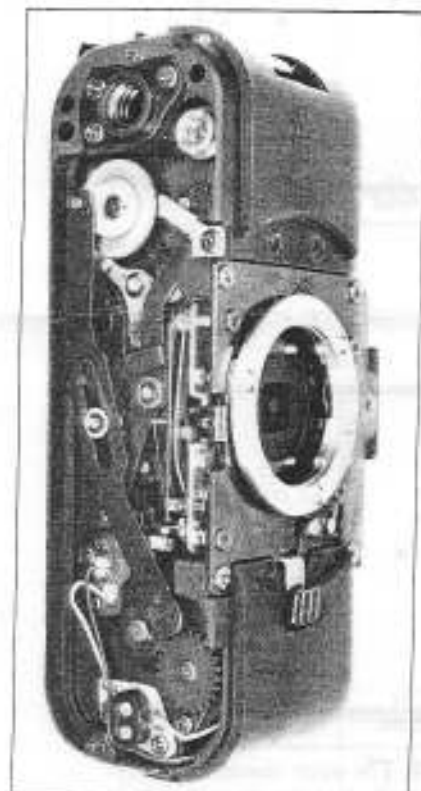
Readers will note this change in those areas that refer to f -stop-dependent lens properties, where "NA" (not available) appears instead of an f -stop. 

QUICKFINDER 2/94

GaMi w/flash +5 cass	\$849 W
Instamatic 60	39 B
Kiev Vega	149 B
Minolta-16 EE II w/cse	19 M
-16 QT	84 AS
Minox B	169 AS
B w/case	149 AS
B w/case	129 S
"Latvia"	1195 B
Binocular clamp	59 AS
RT angle view for B	29 AS
Narciss	575 B
35/2.8	399 A
28/2	249 A
Pentax 110 w/flsh+3 lns	189 AS
PK 420 Watch Cam	1595 B
P 1020	1899 K
Rollei-16	349 B
Simplex-Pockette 16	79 B
Steky III w/case	79 M
Tessina Chrome	504 K
Univex Model A	29 AS
Yashica Atoron kit in box	69 W
A Adorama	(212) 741-0052
AS All Seasons	(914) 478-0931
B Brooklyn Cam	(718) 462-2892
K KEH Camera	(404) 892-5522
M Midwest Photo	(614) 261-1264
W Woodmere Cam	(516) 599-6013

ROBOTIC PHOTOGRAPHY

Radicame is the ultimate adult toy. This radio-controlled miniature tank can load a pocket camera, click a shutter, flash lights, wind 110-film cartridges, and change the standard lens angle up to 90° . And it can move within a 100-meter range at 6-kph speed. Introduced at the Tokyo Toy Fair this fall, Radicame is sold at better toy stores for about \$105.



Auto 110's bottom section is nearly all-mechanical. Note three screws securing tripod socket at the far end.