

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.



SAVE YOUR CONTACT PRINTS Photo jewelry is becoming the mood ring of the '90s: ever changeable, but with better graphics. NYC's Olivia A. Graham makes "frames" that hang around your neck, above left. Paris-based photographer Nigel Scott sells his sterling rings and lockets with a set of his own subminiature photos, above. The trend isn't entirely new. NY dealer Marcy Sue Drexler is doing a brisk business in "remembrance" pins that were the rage in Victorian times, like the one above right.

ONGOING SHOWCASE for your electronic art: Computer Workshop, KUHT-TV 4513 Cullen Blvd., Houston, TX 77004 (713) 749-8371 300/19,200 baud.



OPTICAL FILTERS a 32 page catalog listing an expanded line of optical filters is available from CVI Laser. The catalog lists such filters as narrow bandpass interference, neutral density (Inconel), long-and short-pass dielectrics, hot and cold mirrors, and color glass. Filter sets are available for most products, including a "build your own" set of 10 filters from a wide selection of color glass. **CVI LASER CORP.**, 200 Dorado Place Southeast, P.O. Box 11308, Albuquerque, NM 87192.

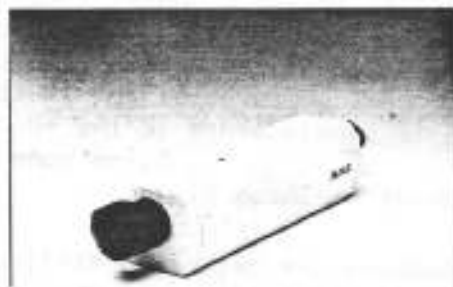
FREE CATALOG Infrared Accessories and Supplies. Everything you need for infrared work. Buck Scientific, Inc., 58 Fort Point St., East Norwalk, CT 06855 (203) 853-9444.

NOW ON SALE Minox Agfapan-36 (specify ASA) \$5.48. B&H Photo, 119 W. 17th St. NYC, NY. 10011 (212) 807-7474.

NEW PHOTO NEWSLETTER "The Ranger-finder" 1550 California Street, Suite 6162, San Francisco, CA 94109. Free information.

ADD TO YOUR PHOTO CHEMICAL SUPPLIER FILE: Artcraft Chemicals Inc., P.O. Box 2128, Clifton Pk., NY 12065. 1-800-682-1730.

MORE BACK ISSUES "The Subminiature Times" #6 through #10 have been rescreened. Topics: The Minolta 110Z. Homemade Minox film splitter. Wear-around-your-neck mini darkroom safelight. Working studio camera fits in a teaspoon. Echo-8: film, handling tips, processing. Enlarging movie stills. FG-7 + 9% sulfite. Kodak minis. All 5/\$10. Please include 10% s&h. 20% International.



COLOR SURVEILLANCE Burle Security products will augment its CCD camera line with the addition of the TC270 color CCD camera, a compact yet rugged 1/3-inch format CCD camera for professional surveillance applications. The TC270 exhibits standard resolution and enhanced sensitivity at 1 lux. Features include backlight compensation, selectable electronic shutter/automatic iris, digital adjustment control, fixed or automatic white balance, and double insulation. **Burle Industries Inc. Security Products Division**, 1000 New Holland Avenue, Lancaster, PA 17601.

THE P3 1020 WATCH CAMERA DO YOU BELIEVE IN MAGIC?

These are the halcyon days for collecting subminiature exotica. Remnants of the cold war are coming onto the general market place. And since the world is in a general state of economic depression this may be the best time ever to buy cameras built into pens, rings, and watches.

A decade ago it would have been sufficient to merely own one of the cigarette pack cameras to have an interesting collection. Never mind that it was the same old Minolta-16 you could buy for less than \$50. It had panache.

As more of them came on the market, buyers became picky. "It had no light meter, it was noisy, no slow shutter speeds, etc., etc." The KGB cig packs sit now in the For Sale lists of several "Shutter-bug" advertisers, prices dropping.

The latest piece of genuine spy equipment to appear is the electronic watch camera. A 'spook' tool. Magic. If a pre-owned watch camera would be important to your collection perhaps you should call Tim Smith, at KEH Camera Brokers before you finish reading this. (404) 892-5522.

Producing pictures from subminiature cameras is a pursuit apart from merely owning the equipment. It involves well-practiced picture taking technique, high quality optics, and well chosen film, combined with the utmost care in processing. Taking pictures with a really small camera, one that produces 5.5mm diameter negatives is subminiature to the fringes of microdot technology. A 5.5mm contact print is shown at right.

To compound the degree of difficulty, the P3 1020 is designed around chromogenic technology done with tweezers and hypodermic needles. If this isn't intimidating, roll up your sleeves. Let's start with page 1 of the 6-page instruction manual.

"The P3 1020 is a fully functioning wrist watch with LED counter, start/stop function, date indication and timer alarms. The film cassette consists of an ultra thin .8mm disc. It has three parts, an upper and lower plastic case, and a mask in the middle which splits the film into seven sectors each with a diameter of 5.5mm."



"The disc can be opened either in the darkroom or in the supplementary changing bag. The P3 1020 set contains 'pincettes' for the removal of the negative in order to avoid fingerprints on the film material, a thermometer, injection needles, and small bottles to prepare the developing and fixing baths. The camera has a fixed focus 7.5mm/2.8 lens with a single 1/30th sec. shutter speed."

Two emulsions are available, one is an ISO 50 black and white negative film. The second, called 'vario' is a critical element in working with a camera that has a single aperture and shutter speed.

Our guess is that it's the same Agfapan Vario-XL reviewed with pictures and commentary by Bob Schwalberg in "Popular Photography" November, 1980. The P3 instructions advise that this film can be rated at indexes from ASA 50 to ASA 1600, and the density of the negatives is dependant upon the developing time. "45 seconds for ASA 50, ten minutes for speeds of 1600 and above." Thus we deduce the first important piece of information. You would not want to mix exposures taken under varied light conditions, or the exposures made in the brightest light will be dense. Schwalberg confirms this, and more..

"Unlike conventional, all silver films that grain up when overexposed, chromogenic Agfapan Vario-XL and Ilford XP-1 400 produce progressively finer grain when overexposed. This path to near grainlessness is blocked, however, by a progressive loss of image contour sharpness, or acutance, which limits the trick to about ASA 100. Huskier negatives made at lower indexes than this have an unpleasantly smeary lack of sharpness and require surprisingly long - even impractical enlarger exposure times."

Our best Agfapan Vario-XL negatives were those exposed at either ASA 400 or 200."

Item number two. You wouldn't use your watch at the beach. The correct exposure for an f/2.8 lens with ASA 50 film on a normal sunny day is f/2.8 @ 1/1000 sec!

At this point it may be helpful to set your light meter at ISO 50 and walk around your home or office to see how much light is required to produce a camera setting of f/2.8 @ 1/30. It comes to 130 footcandles. With your meter reset at ISO 1600 look for another area that requires a setting of f/2.8 @ 1/30. This will be approximately 4 footcandles.

The importance of knowing these two light levels can be found in Schwalberg's comment on "Long even impractical enlarger exposure times." He was talking about 35mm, where the enlarger light is closer to the paper. Extrapolated to ultraminiature, you'd have to consider using negative reducing solutions should you mix in a few pictures taken in brighter light than the ones you've just examined.

An option is to use slower film, something nonchromogenic like Tech Pan. Although you'd normally rate it at about E.I. 25, you can use highly dilute Rodinal to slow it down to ISO 1, which is exactly what you'd need to use a setting of f/2.8 @ 1/30 in daylight. Processing times will be glacial, and a film punch is not a part of the camera kit. You'll have to cut your own discs. The 'vario' discs are only available from Personal Protection Products* at \$10 apiece.

A limited option is to carry a set of neutral density filters. 'Limited' because fitting a 4x neutral density filter over the watch crystal and aiming this assemblage at someone isn't at all stealthy.

Let's assume for the moment that chromogenic 'vario' is the right film for your needs. There are two parts to the human element in this equation. One, any reluctance you may have to using syringes or having them in your possession. And two, your ability to take sharp pictures on ISO 400 film using a setting of f2.8 @ 1/30. For many it's difficult. For others, impossible. Novices will have to use a solid support, a lamp post, a coffee table, anything. If you've never done it, shoot a roll of 20 exposures with your smallest camera strapped to your wrist and make a few enlargements.

It can be humbling. Which brings us to the next set of tasks, getting the 25mm disk out of the processing tank, wiping it clean, drying it, and making a print.

You can approximate the degree of difficulty involved by processing a single 35mm frame, then get a little 6mm paper punch found in most stationary stores. Make a paper mask, punch a hole in it, put this over one of your negatives made at f/2.8 @ 1/30 on ISO 400 film. Put it in your enlarger. Racked as high as it can go most enlargers will produce at least a 4" diameter print with a 50mm lens, or an 8" diameter print with a 25mm lens. The image quality will tell you if you can play in this league.

That covers the fundamentals. It isn't the end of your chores by any means, but we assume that you can deal with a C-41 processing kit, that you'll get all the chemicals dissolved properly and into the right bottles, that you'll write and attach all the labels, buy a water filter, and funnel, improvise a tightly masked glass negative carrier, and acquire a mini sponge strip, film clips, a light oil for the needles (steel rusts), and have a pristine file waiting to receive the negatives immediately after you make a print. (You wouldn't file and print later. Dust and scratches will bite you.)

Take some consolation in knowing that ring cameras are an order of magnitude smaller. After all, if you're willing to plunk down two thousand dollars for a camera this specialized you weren't planning to leave your film at the Fotomat.

* For supplies, new cameras, developing boxes, changing bags, pincettes, film discs, etc., contact Personal Protection Products, 405 Park Avenue, NYC, NY 10022. (212) 421-4757 TLX 4938084

LETTERS



UPDATE: STEKY LENSES Ernie Swanks of Atlanta, GA., wrote to remind us of a C mount lens unmentioned in newsletter #55. His candidate for our list is the super wide, super fast 1.98mm/0.98 Tegea Kin-optic available from Ron Speicher: Phone/Fax (516) 868-6411.

Reprint from "Darkroom Photography"
submitted by Paul Price, Downers Grove, IL.

Below: Size comparison—Minox LX, Tessina L, Rollei T6s.



Sub-Mini — The Forgotten Format

by Dave Howard

Has your tide of photographic drive crested and receded, leaving your creative spirit beached high and dry for lack of a challenge? You know every Ansel Adams book by heart, and you routinely make masterful contact prints from your 8x10 view camera negs? You've papered the walls of your den with first-place award certificates and tiled the kitchen floor with gold medals? And now you're bored?

Well, let me suggest a small cure for a large malady. Stop thinking, for a moment, of negatives measured in fractions of an acre, and contemplate what your finely honed printing skills could produce from 88-square millimeters of emulsion. That's right, about the size of your little fingernail, or less. Who am I kidding? No one. The prints accompanying this article were made from just such negatives. Have I piqued your curiosity? Good—read on!

The class of cameras it produced the attendant imagery is the subminiature. In its childhood years, 35mm was termed "miniature" photography, and indeed it was, compared to its predecessors. The much tinier negs produced by the subjects of this article earned them the "sub" prefix.

The subminiature camera's infancy can be traced to the last century, when many cleverly inventive souls vied with each other to concoct the ideal spy camera. The mid-1880s saw a proliferation of tiny photographic mechanisms concealed in or disguised as everything from watches and walking sticks, to hats and cravats. As the technology of miniaturization progressed, minuscule lenses could be found peeking out of rings, binoculars, cigarette packs and radios. At one time or another, just about anything you can name had a camera built into it.

Although many of the earlier cameras were of the finest workmanship, most of them were doomed to failure due to the fact that film technology of the day

kept these mini-marvels from reaching anywhere near their full potential.

Subminiature photography didn't catch on with the public until World War II, when spy cameras were all the rage. The little cameras were at their height of popularity during the '50s through mid-'60s, until the advent of Kodak's Instamatics. Public interest in the minis waned sharply, then dropped like the proverbial rock. The minis were relegated to oblivion by the Pocket Instamatics. These new 110 format cameras were less expensive than the finely machined subminiatures. Being plastic, they were also lighter in weight. Most importantly though, was the highly desirable asset of easily available film and processing.

There were nearly as many film formats and cassette designs as there were submini cameras. This, in turn, resulted in hard-to-find and expensive film processing, a situation not conducive to mass popularity. A few subminis of German manufacture shared the same 16mm format and cassettes, and Yashica's Aton used Minox film, but, for the most part, each maker marched to his own drum.

When the submini craze was at its zenith, almost any major type of still camera could be found in miniature form. The majority were of what I call the "ice cream sandwich" design, featuring a straight-through optical viewfinder and guess-focus by means of a footage scale.

Good examples of this design were the Rollei T6 and the MEC S8. Both were German 16mm machines with Gossen selenium exposure meters (auto-exposure with the Rollei, through-the-lens design in the MEC) and good lenses. The Rollei had a 25mm f/2.8 Zeiss Tessar, while the MEC sported a 22mm f/2 Rodenstock Heligon.

The Italian GaMi 16, with its coupled rangefinder and six-element 25mm f/1.9 lens, was the Rolls Royce of this type of submini. The accessory list was rather

extensive, including 4X and 8X telephoto lenses, microscope adapter and an enlarger. The GaMi sold for nearly \$300 during the late '50s and early '60s!

Japan fielded several entries by such familiar firms as Minolta, Mamiya and Ricoh. All were considerably more modestly priced than the European offerings, which were generally in the \$40 range.

The twin-lens approach was represented by such unique machines as the Mincord and Tessina, although neither resembled a "classic" twin-lens camera in the Rolleiflex tradition.

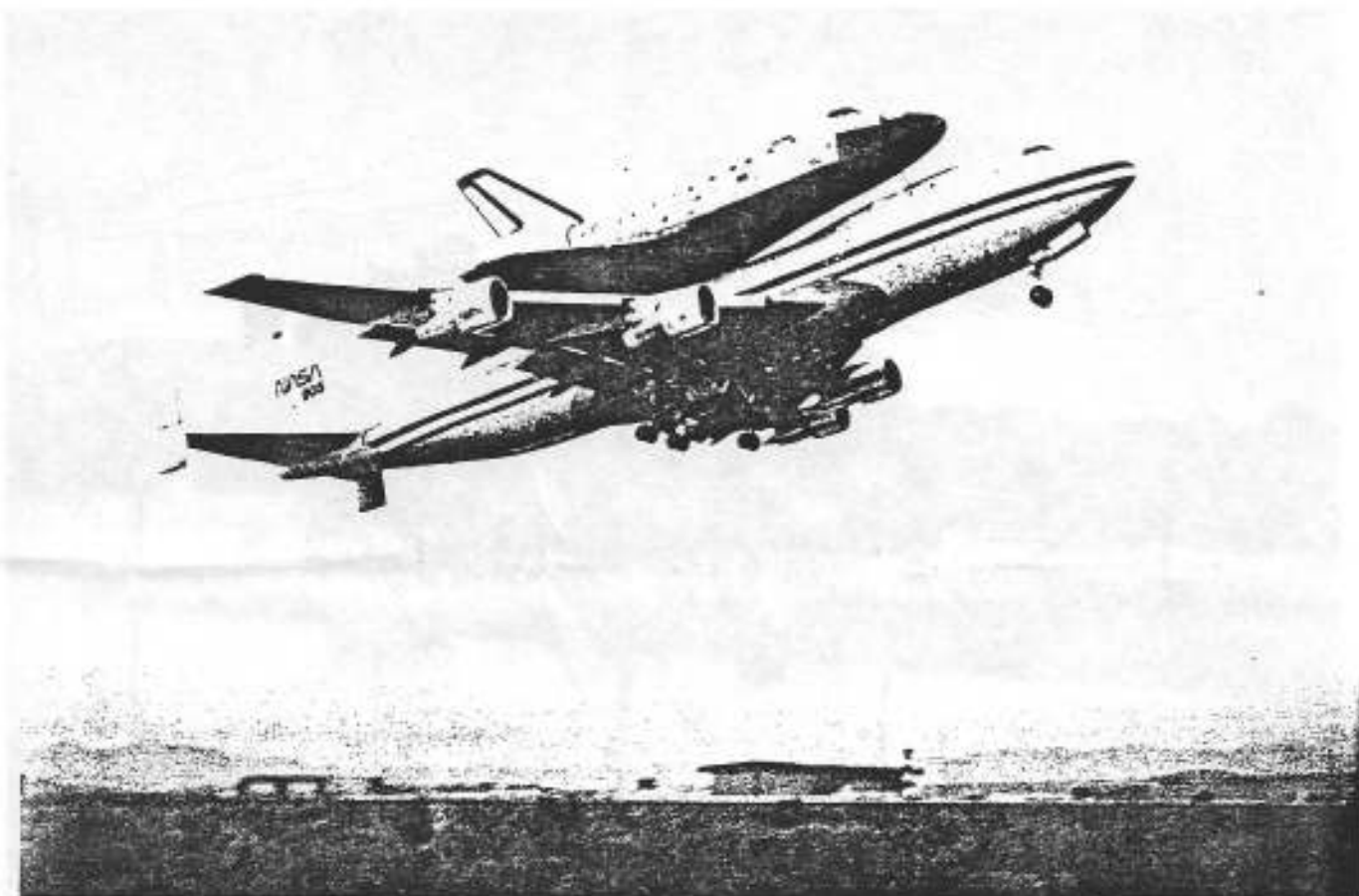
The Mincord had an excellent six-element 25mm f/2 Goerz Helgoland lens and upright, unreversed ground glass focusing. Film format was a square 10x10 mm. Many accessories were available, including the Minilux enlarger and Minigrand slide projector. The Mincord III sold for \$140. Wealthier folks could opt for a 24kt gold-plated model.

I will deal with the Swiss-made Tessina at some length, later in the article, along with the epitome of ultraminiature cameras, the Minox.

The 4 1/2-inch long Stylophot resembled a fat fountain pen with a viewfinder window at the top and a pen-type clip for carrying in a shirt pocket. Film format was 10x10 mm on 16mm double-part film. The price, about \$40.

If you yearned for something a bit more exotic, there was no shortage of options. Consider the following trio of delightful collectibles.

In the early 1950s, \$400 would gain you possession of a CamBinox. As the name implies, this unit combined a top-quality pair of 7x35 binoculars with a center-mounted 16mm camera, producing 10x14 mm negatives. There were four interchangeable lenses available for the camera, ranging from 35mm to 180mm in focal length. The differing fields of view of the lenses versus the binoculars were accommodated via an accessory viewfinder for the 35mm and eyepiece reticles



Above: Columbia, Florida-bound; Tessina, Technical Pan, Technidol CC.

Below: Tessina, close-up, rear view, pentaprism finder attached, illustrating viewfinder eyepiece, shutter speed selector, pc connection, sync selector, rewind lever, rewind knob (left side), and spring wind motor knob (right side).

for the 135mm and 180mm. The quality was exemplary German craftsmanship throughout.

If you were into 3-D, the Czechoslovakian manufacturer Meopta, of enlarger fame, offered their 16mm Stereo-Mikroma camera. Or, if panoramas were more your cup of tea, there was the Viscowide -16, from Japan. It produced a 140°, 10x52 mm image via a rotating lens, similar to a Widelux.

Suffice it to say that a complete history of subminiature cameras would fill volumes. If names such as Steky, Compass, Petal, Tuxi, Minute -16, Echo-B, Rubix, Sala, Snappy, Hit, Steineck ABC, Galdeck 16, Biflex and Pettux arouse your curiosity, then you should acquire a new book on the subject by Dr. William White, titled *Subminiature Photography*. It is distributed by Phillips Publications.

Many subminis were precision instruments, while others were little more than toys, quickly materialized in an attempt to capitalize on a passing fad. They now peer back at us through tiny glass eyes, some clouded with dust on hack-shop shelves, others shining brightly from the showcases of ardent collectors.

Defining what constitutes a subminiature camera used to be far simpler than it is today. In the past, if the camera was minuscule, it produced minuscule negatives. Today, micro electronics and innovative designs have made possible the compact camera craze.

This began as far back as the mid-1960s with the Rollei 35. With its collapsible lens and ability to produce a full-frame 35mm image, it was no larger than a GoMI 16 with its 12x17 mm negs (with unperforated film; 10x17 mm with perforated film).

This is now mostly a moot point, as nearly all subminis have been relegated to the mists of photographic history. Nearly all, with a trio of notable exceptions: Minox, Tessina, Acme.

The venerable Minox is the granddaddy of surviving subminis, or perhaps I should say, was. At this writing, there's very serious doubt as to whether or not Minox will con-

tinue to exist. It would be a shame if it doesn't; Minox has been in a class by itself for fifty years.

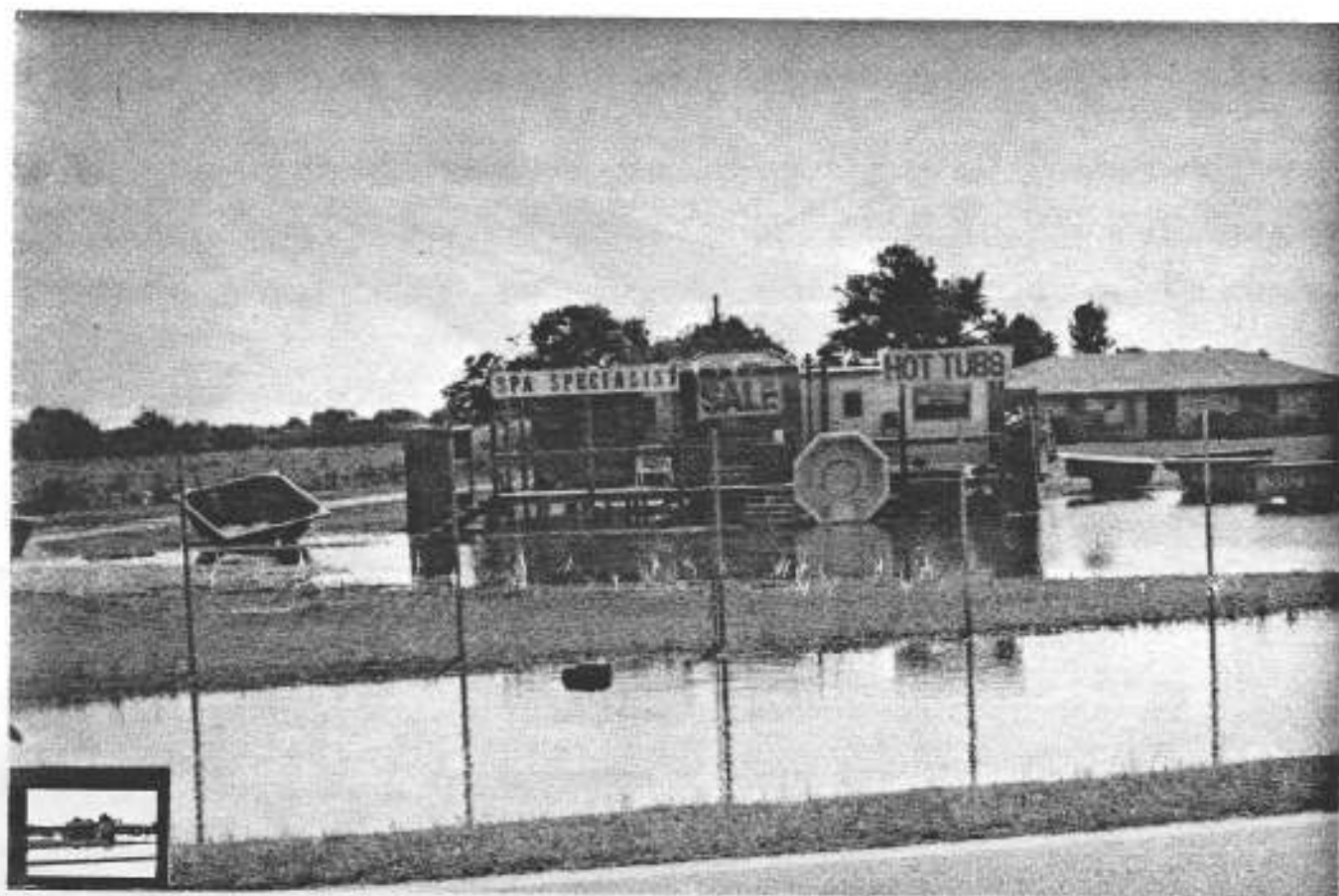
It saw first commercial light of day in 1938, in Riga, Latvia, before the Russians came to town. After the war, production was resumed in Wetzlar, Germany, of Leica fame.

Except for a change in materials (from stainless steel to aluminum) and evolutionary improvements (lens design and camera automation), modern Minoxes aren't that much different from their ancestors of a half century ago. That's quite a testimony to the soundness of the original design concept of Walter Zapp.

Resembling a package of chewing gum in size and shape, the various Minox models share several unique features. The first operational detail to capture your attention is the lack of any f-stop adjustment. A Minox always shoots wide open at f/3.5 (f/5.6 on the EC model). You might think that would be a disadvantage regarding depth of field, but such fears are not realized in practice. The advantage of this arrangement, other than having one less doohickey to fiddle with, is that a slow super fine-grained ISO 25 film is all the "horse power" needed to permit a shutter speed of 1/500-1/1,000 sec. in normal daylight. A built-in sliding neutral density filter allows daylight use of faster films.

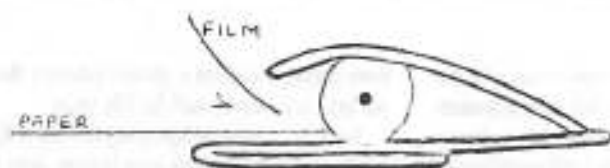


(Continued next month)



Camera: Minolta-16 QT
Film: Kodak 1461

GRAB SHOT The recent flooding that deluged the Central U.S. missed most of Texas. Houston caught just enough to turn this hot tub display into a boat yard.



LETTERS

U-CAN-DO An ordinary paper clip makes a handy tool for loading 16mm film on 17.5mm paperbacked spools. Bend the clip over the partially rolled spool just tight enough to prevent the paper from unwinding. In the darkroom insert your film then drop the clip. This eliminates the urge to cinch the roll. Submitted by T. Pancoast, NYC, NY

THE SUBMINIATURE TIMES QUICKFINDER 7/93

Expo watch/cam w/printer	\$395	G
GaMi	495	H
Goetz Minilux-16 enlarger	595	H
Golddeck-16	495	H
Kombi	389	B
Mamiya-16 auto	159	A
Mec-16 SB	295	H
Micky-Matic 110	39	C
Minicord	449	W

Minox bino/clamp	65	L
LX silver	6295	WS
LX platinum	2695	WS
LX gold	1795	WS
LX black	669	WS
Touring w/dater	399	WS
Petietux IV w/case	895	H
PK-420 watch/cam	1595	B
P3-1020 electronic watch/cam kit	1999	K
Robot Jr. w/double motor	169	B
Robot 2A prewar	175	G
Rollei-16S	195	G
Steky III w/telephotos	495	H
Stereo Mikroma	1250	B
TEssina chrome	695	H
Tessina w/prism	599	W
Viscawide-16	450	H

A Adorama	(212) 741-0052
B Brooklyn Camera Exch.	(718) 462-2892
C Columbus Cam Group	(614) 267-0686
G Guild Camera	(602) 264-5808
H Hayden Photographics	(416) 862-8585
K KEH	(404) 892-5522
L L & R Equipment Co.	(212) 675-1900
W Woodmere Camera	(516) 599-6013
WS Wall Street Camera	(212) 344-0011