

# 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.



THE PHOTO ABOVE (left) is the first submitted as a sample of the images produced by the P1020 Electronic Wristwatch Camera\*.

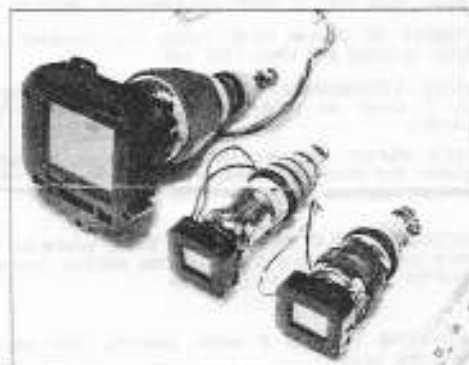
It isn't a large print, but true to Bob Schwalberg's advice (see ST 56) Vario film images have finer grain with overexposure. The expected change in resolution isn't at all distracting.

The third car in the second row is recognizable as a VW beetle. At higher magnification the logo on the delivery truck can be seen.

\*Personal Protection Products, 405 Park Ave., NY 10022 (212) 421-4757

COMPUTER WALL the most recent offering from RGB Spectrum magnifies and splits high resolution computer images across multiple monitors or projectors (above right). Compatible with all software, inputs any workstation or PC imagery.

RGB Spectrum, 950 Marina Village Pkwy, Alameda CA. 94501-9828.  
(510) 814-7000

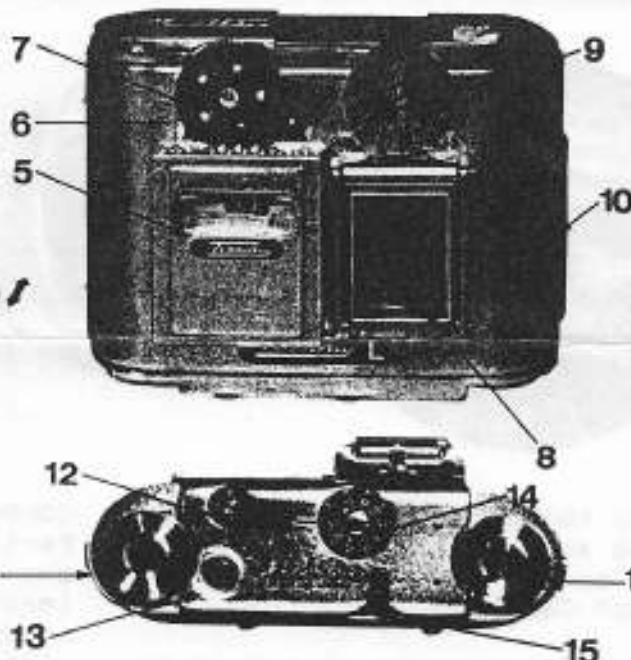
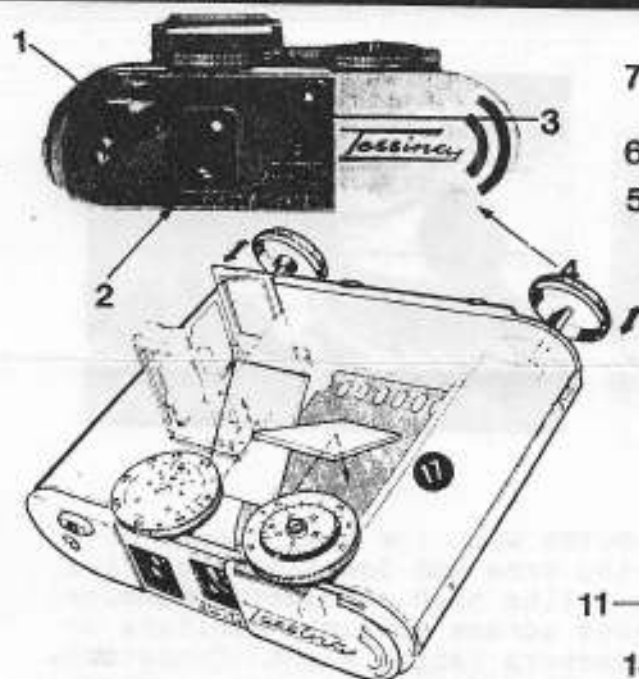


THE ENTRY LEVEL MARKETING WAR continues. Kodak is now offering the Cameo 110, film, and batteries, for less than the regular price of the camera.

ROOM TEMPERATURE INFRA RED is easier with the SU128-1.7 RT subminiature cameras (above). Based on 128 x 128 focal plane arrays and capable of high sensitivity room-temperature operation. Applications include thermal or fluorescent imaging on the factory floor, night vision, covert eye-safe surveillance, and 2-D NIR spectroscopy. Sensors Unlimited, 3490 US Rt 1, Princeton, NJ 08540.

# Tessina 35

## WORLD'S SMALLEST 35 MM CAMERA



1. Release button
2. Viewing lens
3. Taking lens
4. Sliding lens cap
5. Exposure meter
6. Diaphragm scale
7. Exposure counter
8. Reflex and sports finder
9. Distance scale and depth-of-field indicator
10. Lock for camera back
11. Rewind knob
12. Synchronization dial
13. Flash contact
14. Shutter speed dial
15. Rewind release knob
16. Motor winding knob
17. Tessina 35 schematic showing twin lens reflex system

**A Technical Miracle of Swiss Chronometer Precision.** carried as conveniently as a wallet, watch, lipstick or pack of cigarettes—always ready to shoot—anytime, anywhere.

**SMALLER AND LIGHTER:** Lightweight (5½ ounces), compact (2½x2x1"). smaller than a pack of cigarettes, and any 16mm subminiature camera, but

**LARGE IMAGE:** 14x21mm picture is 2 to 3 times larger than that of other subminiature cameras.

**CHOICE OF 35mm FILM:** Takes any standard 35mm color or black and white film, but

**MORE ECONOMICAL:** Same film length renders 2½ to 3 times as many pictures as standard 35mm camera.

**EVER READY:** Pressing the button takes the picture, counts the exposure, transports the film and cocks the shutter, readying the TESSINA for the next shot.

**AUTOMATIC FILM TRANSPORT:** Swiss precision miniature motor provides 8-10 pictures without rewinding, ideal for rapid action photography.

**TWIN-LENS REFLEX:** 2 reflex systems with parallax-corrected lenses.

**NEEDLE SHARP:** High resolution TESSINON 25mm f/2.8 renders precise color fidelity, critical sharpness and authentic contrasts, suitable for bigger-than-lifeseize enlargements and projection, Angle of view 53°.

**GROUNDGLASS IMAGE:** Through-the-lens viewing for accurate framing, focusing and depth-of-field control.

**CHOICE OF DISTANCES:** Continuous focusing from infinity down to 9" for close-ups, but TESSINA may also be PRESET for universal distance range.

**CHOICE OF LENS STOPS:** From f/2.8 to f/22.

**CHOICE OF SPEEDS:** Swiss precision movement with speeds from 1/2-1/500 seconds and B.

**CHOICE OF SYNCHRONIZATION:** M or X, attachable Tessina flashgun.

**CHOICE OF FINDERS:** Reflex and Sports-finders permit waist level, eye level and 90° angle shots.

**CHOICE OF FILTERS:** Yellow, green, red.

**CANDID SHOTS:** In your hand or pocket, on its wrist-strap or neckchain, the TESSINA is ideally suited for taking unsuspected pictures.

**JEWELLED MECHANISM:** Ruby stones as used in fine Swiss watches eliminate friction and wear, guarantee smooth operation.

**EASY PROCESSING:** Any finisher who processes 35mm film—any 35mm tank.

**CHOICE OF ENLARGER:** Giant enlargements, up to 20x24" and beyond, with standard 35mm enlargers.

**CHOICE OF PROJECTOR:** Any 35mm projector, with cardboard or glass mounts and NEWTON-ring-free glass.

**EASY FIT:** Can be conveniently carried all year, in coat, hip or shirt pocket, on your belt, in a lady's purse, folio, etc.

**EASY TO USE:** Detachable plate on camera with brief instructions for use.

**CHOICE OF COLORS:** The TESSINA is available in chrome, black, red or gold finish.

**CHOICE OF NOISE REDUCED AND NOISE FREE MODELS.**

**PROTECTION:** Shockproof construction withstands the most rugged use, for lifelong durability.

**SWISS CHRONOMETER PRECISION:** Custom-built with meticulous precision like a fine watch, as only the famous watchmakers of Switzerland can do it.

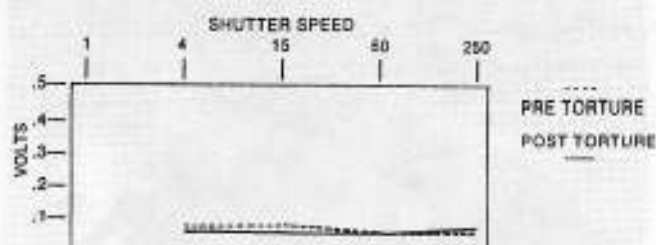
**SWISS QUALITY CONTROLS:** Meeting the most rigid precision standards, every TESSINA is scrupulously quality controlled, carries a FULL LIFETIME WARRANTY.

### Tessina 35

THE ONLY SUBMINIATURE THAT REALLY MAKES SENSE!

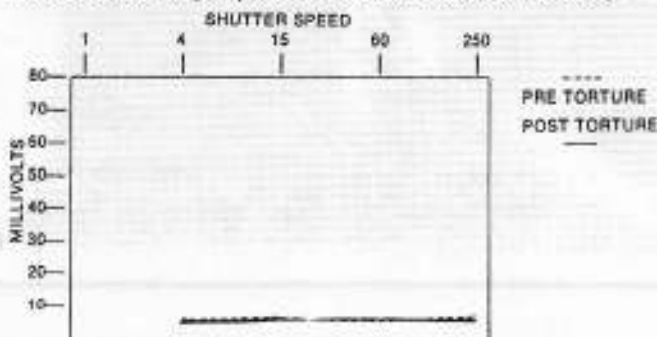
**SHUTTER TRIP AND TRAVEL:** The gentle release of the Tessina is especially appropriate for the low inertia of this tiny camera.

**VIBRATION LEVEL:** The Tessina shows less vibration than all the more conventional cameras tested, putting it in the Minox league.



**Comments:** There is a confidence-inspiring utilization of space without undue miniaturization of parts. Typical of the good design practices is the placement of the mainspring inside of the take-up spool. The watchmaker's touch is evident elsewhere, though—the slow-speed gear train features jeweled bearings, for instance.

**NOISE LEVEL:** This, too, is below level of conventional cameras.



Noise and vibration standards do not exist, but relative levels become evident when charts for several cameras are compared.

#### METER SPECIFICATIONS:

Type: Selenium	Zeroing provision: No
Accuracy: Within 1/4 stop	Parallax: No
ASA range: 12-800	Battery test: —
Acceptance angle: 40 degrees	
Response discrimination: Good	
Accessories: None	Scale legibility: Fair
Movement balance in various positions: Fair	

**LENS PERFORMANCE:** Because of the camera's design, the mirror that "folds" the image was considered to be part of the optical system, and therefore all tests performed included the mirror in the system. When off-axis tests were at first somewhat disappointing, the mirror was suspected. Sure enough, there was a smudge on it—my fault. Results with a clean mirror were very much improved. So, take care: when changing film, keep your fingers clear of the mirror chamber to assure the best possible results.

Electronic bench tests indicate that the lens has very good contrast, with the center region peaking at  $f/4$ . Even at the short edge of the frame (which is quite a pronounced oblong), the optimum was reached by  $f/5.6$ . On the long side of the oblong, where the lens must cover a field of more than 47 degrees,  $f/8$  was needed to optimize performance.

The lens appears to be up to yielding good results on the small, 14x21-mm negative. Color fans should be pleased with it too, as the residual chromatic aberrations were very small.

All of this speaks well for the entire system, both lens and mirror. The latter has just as important a role as the former and too often is considered to be a non-critical component. A mirror not perfectly flat, when placed in the ray-path of a lens, can introduce aberrations (astigmatism, etc.) of which the lens itself may not be guilty.

**Conclusion:** Because of the small negative, the camera requires a very well corrected lens to answer the demands of greater than average enlargements. This lens can meet those demands.

#### MISCELLANEOUS DATA

MISCELLANEOUS DATA		PRE-TORTURE			POST-TORTURE		
Focusing System: Groundglass and Sports Finder							
Range Accuracy over range		1 ft—∞			1 ft—∞		
		∞	5M	1M	∞	5M	1M
		OK	OK	OK	OK	OK	OK
Shutter-trip force:		285 gm			250 gm		
Shutter-trip travel:		1-1/2-mm			1-1/2-mm		
Self-timer:	Minimum	—			—		
	Maximum	—			—		
Viewfinder: Twin-lens reflex							
Framing Accuracy		OK			OK		
Parallax Corrected		No			No		
Synchronization: Std. PC outlet							
Flashbulb		8 msec			7 msec		
Strobe		0.0 msec			0.0 msec		
Contact Resist		0.4 Ω			0.5 Ω		
Insulation		OK			OK		

#### STRIPDOWN REPORT

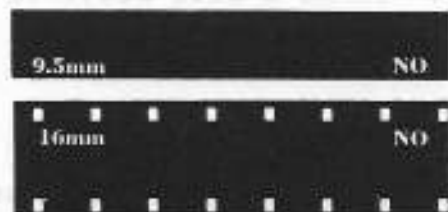
	Interior	Exterior	
Material choice:	Good	Good	Modular construction? Yes
Assembly, Finish:	Good	Good	Replace key parts easily? Yes
Repair access:	Good		Seal against dirt: Poor
Adjustment provision:	Good		
Do frequently made adjustments require major stripdown?	No		

**Conclusion:** A very clever design, in which every cubic centimeter has been utilized without unnecessarily complicating the various modules. However, the small size dictates fine parts, and close tolerances, so it must be kept clean —Norman Goldberg

#### THE INIMITABLE

*Tessina 35*

#### NEGATIVE-LY SPEAKING



#### AND...POSITIVE-LY SPEAKING



#### 35 MM AND SUBMINIATURE CAMERA

...USES ANY 35 MM FILM,  
PROCESSED ANYWHERE



RICK BERMAN of Houston, Texas, supplied the Tessina information on the two previous pages. One of his series of pictures taken in Michael, Ill., is shown at right. Camera: Minox LX. Film: Minocolor 100. Rick has been involved with subminiature photography for 25 years, and can be contacted regarding Minox cameras. Specifically: B Black, B Chrome "\$175 and up" and LX Black. Rick Berman, The Camera Exchange, 4014 Richmond Ave., Houston, TX. 77027 (713) 621-6901

RESPOOLERS ARE RAVING over Panther film introduced March 1, London U.K. by Eastman Kodak. The T-grain color slide film comes in 5 emulsion speeds: 50, 100T, 100D, 400, and 800/1600. Reportedly "as close to Kodachrome as you can get with a Minox and kitchen table processing." Mailshots\* should have 35mm stock for U.S. export by the time you read this.

\*Mailshots, 4 Grosvenor Ave., Stoke-on-Trent ST4 5BQ, UK. (0782) 746909.

BARGAIN OF THE MONTH possibly the year Plus-X 7231, and Double-X 7272. Both work well at EI 400. The Double-X has an easier time getting up to 2500 with extended processing. 16mm x 400' (that's 6800 pictures) for \$5 per roll.

S&G Traill, (215) 474-7663

#### FREE CLASSIFIED

WE RECEIVED notice of the 16th Annual Antique & Classic Camera show in Wichita Ks., too late for the February issue of this column. The annual event has a mailing list. Kirk Graham (316) 265-0393

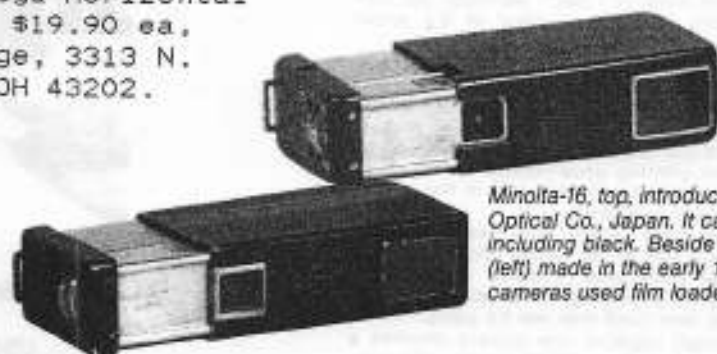
THE TECHNOLOGY TO MAKE a mural from a Minox negative at home is still low budget. Omega Horizontal Projection Mirrors, \$19.90 ea. Midwest Photo Exchange, 3313 N. High St., Columbus, OH 43202. (614) 261-1264



#### FREE CLASSIFIED

FOR SALE Cassettes for Tessina \$15, Steky \$9. Lionel Linex, Ticka, Rollei-16s tripod adapter + more. Pentagon Camera, 161 Hillwood Ave., Falls Ch, VA. 22046 (703) 534-8815

CAN'T SNEAK YOUR CAMERA into the "big" shows? Exclusive concert photos. Backstage shots. Large alternative selection. SASE for free catalog. Enchanting Productions, Box 262925, Houston, TX 77207



#### Small-scale imitation:

A number of subminiatures bearing the Minolta name were produced after World War II. The first of these was the

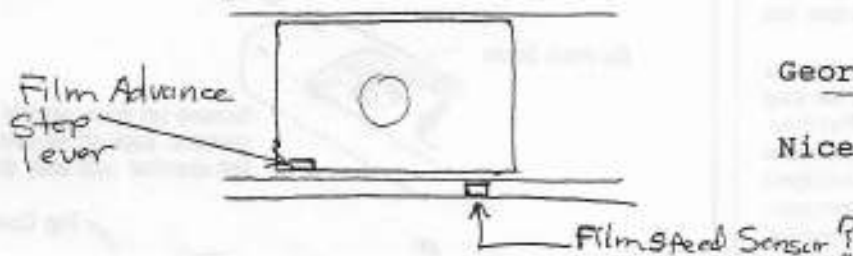
Minolta-16, top, introduced in 1957 by the Chiyoda Optical Co., Japan. It came in a variety of colors, including black. Beside it is a black Kiev Vega (left) made in the early 1960s in Russia. Both cameras used film loaded in Minolta-16 cassettes.

Al:

A few quick questions,

Reference your article on reloading 110 cartridges in the Mar 93 newsletter: How do you set up the 110 cartridge so you know when end of film has been reached? Remember, those cameras don't have counters. If you wind the film end into the cartridge, all is lost! Perhaps, at the end of that article, you were alluding to cutting a notch near the end of the film to simulate a index hole for the advance stop probe?

How are (or were) 110 cartridges configured to key the film ASA into the more elegant Instamatics? I've had an Instamatic 60 and Trimlite 48, which are rangefinder equipped autoexposure models with nice fast lenses; I believe there was an Instamatic 70, even better in that it incorporated a more precise German rangefinder system. These cameras were able to accomodate slide film, which is rather critical stuff. Kodak now claims 110 cartridges aren't, and never were, designed to key in ASA. I believe differently. I recollect it had to do with a small probe just outside of the film path at the lower right of the frame, as viewed from the back. Currently, however, there seems to be no cartridge configuration difference in that area between 400 and 200 ASA cartridges; most curious, and it's impossible to find ASA 100 cartridges in your friendly village K-Mart to further check out this theory. It seems to me that a notch of some specific depth in the cartridge in that area set a 64, 100, 200 or 400 ASA into the camera, depending upon the depth of the notch. Apparently, current 110 cameras are so rudimentary that this feature is deemed useless, and 200 and 400 ASA film is treated as the same. Any ideas?



George Fallenbeck

Niceville, FL 32578

Dear George:

You never know when the end of the respooled film is coming once you tape up the back of the cassette and the inside of the camera. Cut the exact same length of film each time, and start with the same number of film winds before taking pictures. Give yourself some leeway for leader and trailer. After a few respoolings you'll get extremely accurate. Tape a small piece of paper under the camera and tic off the frames if you use the camera infrequently. Rather than try to decode the cassettes, load ISO 100 films in ISO 100 cassettes. It works fine. For other films, use a camera with variable aperture/shutter speeds like the Minoltas, Fujica 110Z, etc. To use microfilm in non-SLR 110s with coupled light meters like your Instamatic 60, put a mask over the photocell. Adjust the size of the hole in the mask to match the film speed you want. It's a little work but once you get everything dialed in, your 110 becomes as versatile as more expensive cameras.

Al D.

## Unwanted grain

■ Recently my black-and-white prints made from Kodak Tri-X negatives have been coming out unusually grainy. What have I been doing in film development to cause this?

Todd J. Engle, Plymouth, Mn.

Your negatives suffer from a combination of excess density, contrast, and graininess that is typical of certain development errors. They result in prints



with the same kind of faults. (See the section of an 11x14 print made from one of your films.)

One cause for this can be in developing film with a solution that is far too warm, due to an improperly reading thermometer, or carelessness in its use. Another can be that you are developing film in a straight, undiluted developer but using the considerably longer time recommended when the developer has been diluted.

So check such points out. Remember also that just developing much too long can lead to similar results. Furthermore, avoid overagitation that increases film contrast. And try not to subject film to sudden changes of temperature, because this alone can lead to some unwanted graininess. In other words, keep all processing solutions, including the wash and wetting-agent solutions, to within 2-3 degrees of each other, if possible, or at the most, 4-5 degrees.

## QUICKFINDER 3/94

Minicord	\$449 W
Minox B	249 W
B	199 W
B	169 W
P1020 Watch	1995 H
Tasco Binocam	149 S
Tessina Chr	525 B

Bki Cam	(716)462-2892
Hayden	(416)862-8585
Spcher	(516)868-6411
Womere	(516)599-6013

## OPEN FORUM

Two years have passed since this article appeared in "Shutterbug" 3/92. Yet mechanically inclined Minox owners continue to search for 'a good shop' to do basic shutter lubrication. Didn't this information help? Let's hear from you.

## HOW TO REPAIR YOUR MINOX

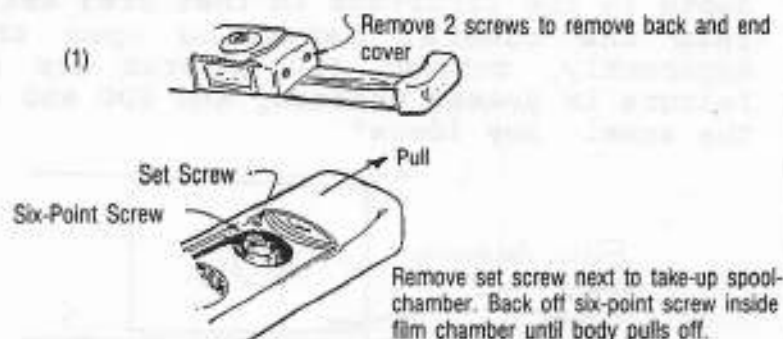
The famed Minox sub-miniature camera was first introduced in Riga, Latvia in 1936. Its 9.5mm film format has been used by many other camera designers since and has proven to be very successful over more than 50 years. The mechanical Minox models were made right up until the introduction of the electronic LX in 1978, and the smaller, EC in 1981. Since there are so many of the mechanical cameras still in circulation and use, the question is often asked: How can you determine if an old and worn

Minox can be fixed, or if it is worth fixing?

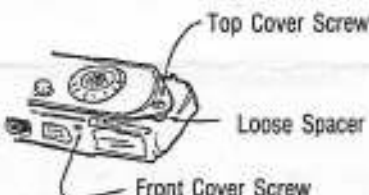
To ascertain the condition of a mechanical Minox it is very necessary to know how it works and what the different parts do. With the aid of the excellent drawings and explanations graciously provided to me by Rick Oleson of Lexington, Kentucky, we'll try and show you how to go about dismantling a Minox. You will need a set of very good jeweler's screwdrivers, a set of strong nosed jeweler's pliers, and a magnifying glass on a stand to leave your hands free.

### The Minox-Disassembly:

- (1) Open camera, release shutter, open back.



- (3) Then remove 1 screw at end of cover. Watch for loose spacer underneath. Lift cover and slide to right to remove. (Note: Set shutter dial to 1/2 sec. before replacing.)



To reach shutter springs and blades: Remove 1 screw in front cover, lift viewfinder end and slide to the right. Watch out for viewfinder cover glass and filters which are loose.



Shutter blades (curtains) and springs may be removed by gently pulling cocking slide out past its detents and away from camera. Note well: (1) shutter must be released and (2) shutter blades must not be jammed or obstructed. We strongly recommend against removal of the focusing disk, frame counter mechanism or lens!!

(Continued next issue)