

Tessina 35



ALL PHOTOGRAPHIC PUBLICATIONS AGREE...

TEST REPORTS AND QUALITY CONTROLS



WORLD'S SMALLEST, LIGHTEST 35MM AND SUBMINIATURE CAMERA

modern PHOTOGRAPHY

... results far superior to any ultra or sub-miniature ... 35mm film ... processed in any 35mm tank ... any enlarger having a standard 35mm carrier ...

POPULAR PHOTOGRAPHY

... extremely well conceived and engineered ... Swiss workman's discipline which is put into timepieces became evident in the Tessina ...

buyer's guide reports

... uses standard 35mm film ... jewelled film advance and shutter ... compares to watch-like accuracy ... a quality camera indeed ...

POCKET CAMERA PHOTOGRAPHY

... clockwork precision ... versatility appeals to the pocket camera enthusiast ... quality of enlargement is best of any pocket camera ...

The Moore-Neubauer Report

... marvel of miniaturization ... adds mighty mouse meter ... off the wrist or from the belt ... 8-10 frames on one winding ...

POCKET STUDIO

... at last the ideal personal camera ... professional quality results in both black and white and color ...

Lab report FIELD CHECK

... precision device ... excellent 8 x 10"s ... clear sharp prints ... functioning with all systems A-OK ...

Lab report INSTRUMENT READOUTS

... watchmakers' touch is evident ... a very clever design with every cubic centimeter being utilized ... confidence-inspiring, utilization of space without undue miniaturization of parts ...

CAMERA 35

... the ultimate in fine workmanship to reduce bulk without reducing film size ... came through the most difficult tests with flying colors ... if camera size is a factor, Tessina is the hands down winner ...

35mm PHOTOGRAPHY

... small and light and like a wrist watch ... versatile system of photography ... parallax corrected focusing down to 9" ...

U. S. CAMERA

... image sharpness is boarding on the fantastic ... tiny negative can be blown up to a sharp grainless 20 x 24" print ... quality is superb ... it meets professional standards ...

N P X National Photographic Exchange

... the ideal candid sequence camera ... close to 400 precision parts ... ruby jewelled movement ... Swiss watchmakers' gem ... a precision photographic instrument ...

PMI Photo Methods for Industry

... I use a Tessina 35L ... with 14 x 21mm frame size ... for the larger film area ... which resolves more detail with the high speed films that are often necessary ...

TINIEST 2½ x 2 x 1" CAMERA, FOR LARGER THAN LIFESIZE PICTURES, UP TO 20 x 24" AND BEYOND

modern PHOTOGRAPHY

TESSINA ULTRA MINI USES STANDARD 35MM

One of the major problems facing the ultra or subminiature user has been non-standard film. Whether 8, 9.5 or 16mm is needed, the photographer depends on the camera distributor for loaded cartridges or must go through a very elaborate and complicated cartridge reloading scheme using movie film. Processing of the very tiny and delicate color and black-and-white images is good, bad or indifferent depending on the lab. It's fairly expensive in any case.

The Tessina manufacturers, Concava S.A. of Switzerland, have cleverly obviated all this trouble. The tiny ($2\frac{1}{2} \times 2 \times 1$ in.) light (5 oz.) Tessina uses standard 35mm film in special slim plastic cassettes similar in construction to standard 35mm cassettes. An extremely clever daylight bulk loader (\$6.95) allows the user to load his own film from any ordinary 20 or 36-exposure film cassette, black-and-white or color. The plastic Tessina cassettes hold $16\frac{1}{2}$ in. of thin-based black-and-white film or $14\frac{1}{2}$ in. of color or thick-based black-and-white. About 23 thin-film or 19 thick-film pictures, 14×21 mm, can be made on one loading. If you figure some loss of film for front and rear leader, a standard 20-exposure 35mm cassette yields about 40 Tessina pictures, bigger than any other ultraminiature size yet slightly smaller than the standard single frame 18×24 mm area.

Incidentally, you don't have to do any frame counting when using the loader. It measures either length of film automatically and has a built-in knife to cut the film, too. It takes about three minutes working time to load a single cassette.

The 35mm film when processed in any 35mm tank using standard 35mm developing procedures can be enlarged in any enlarger having a standard 35mm negative carrier.

So much for the system. Now to the camera. The Tessina is slightly larger than a matchbox, and you hold it like one. The viewing and taking lenses on one long edge are protected by a sliding metal shield. Unless the shield is slid open, you can't fire the camera. The shutter release button is on the front of the camera. At the back are the spring-wind film advance wheel, the rewind knob, click position shutter speed dial, MFX sync dial, and push-on flash contact, plus lift-up rewind lever. On top of the Tessina near the front are two wheels.

The right one focuses the camera, the left has non-click-stop aperture settings and a central, concentric, manual-resetting exposure counter. Dials and numerals are for nimble fingers and good eyes. Behind the focusing dial is a 14×21 mm ground glass with rails to

hold either the folding reflex and optical sportsfinder, condenser field lens or the new eye-level prism. At the left is an exposure guide plate. On the bottom of the camera is a removable plate with brief loading instructions. This can be replaced with a plate attached to a wrist-watch-like strap or metal plate with tripod socket and neck chain.

At this point you may begin to wonder how the lens can be at one long end of the matchbox shape Tessina and the film rolling along on the bottom. It's done with a front surface mirror set at 45 degrees between lens and film plane. Consequently all film shot by Tessina is reversed, as in a mirror. By reversing the film when printing or enlarging you get a right way 'round result.

You load the Tessina very much like any 35mm camera—the entire bottom (back in a standard 35mm camera) is removable. You then wind the film advance spring knob about four full turns, set the film counter at the red dot before zero and click off three frames to reach exposure 1. When all shots have been made, you flick up the rewind knob, rewind the film and take the film out.

When the smooth Tessina shutter release is pressed, an almost inaudible click of the shutter is followed by a whirring wind of the film advance clock work mechanism. It sounds much like the Robot camera film advance.

However we were delighted recently to obtain the long awaited pentaprism viewfinder



TESSINA 35 is the ideal travel companion, always ready to capture the most memorable moments on land, sea or in the air.

We put the prism into one pocket, the camera in another. In seconds we could slip both out, attach them and have a most critical focusing eye level prism reflex. The view through the prism is adequately bright with a fairly coarse ground glass which provides amazing ease of focusing—and from a 25mm lens too. Pin-point focus portraiture by natural light from 9 in. to 3 ft. proved a snap.

Results from the overly large negative area were understandably far superior to what could be achieved in like circumstances with like film of any ultra or subminiature. Quality ap-

proached what could be expected from full sized single-frame cameras.

Once we got the location of the controls down, we found operation of the camera to be fairly easy. Good fingernails to lift out the spring wind and rewind knob are helpful. Incidentally if the whir of the film advance spring mechanism disturbs you or the subject, just shoot while holding the rewind knob tightly. After shooting, release the rewind knob slowly. The Tessina then becomes as quiet as a mouse.

While you can keep right on using the \$1.25 23-exposure rolls of KB-14 (ASA 20), KB-17 (ASA 40) or KB-21 (ASA 100) the advantages of reloading and shooting your own favorite film—Kodachrome, Agfachrome, Anscochrome, Plus-X, Panatomic-X, etc., while saving money to boot will undoubtedly prove over-powering. With moderate care we were able to load our own easily. With thick-based films such as Tri-X Pan it's advisable to load and let the film "set" in the cartridge for a few days. The extreme curl of the film in the small cartridges will limit the number of shots on each spring winding if the film doesn't have time to adapt itself. Even Tri-X Pan pulled through with no trouble if loaded at least 36 hours prior to use.

If you buy the already loaded Adox cassette to begin with and ask your processor to return the empties to you, you'll have a supply of cartridges to load yourself. If not, extra cassettes are 95¢ each.

While you can send your Ansco or Kodak color film to almost any independent lab for processing (not to Kodak or Ansco, however), the film will not be returned mounted at present. One lab, Berkey Photo, 77 East 13th St., New York 3, does offer full Tessina color processing facilities plus mounting in Tessina cardboard mounts. However, you can mount your own in special glass binders. A box of 25 cost \$3.95 We tried Kodachrome with Berkey processing and mounting. Results were good although the outlines of the Tessina mounts seemed to have a slightly rough edge. The importer says however that Berkey will soon have new, cleaner-cut mounts. The transparencies projected nicely on a 30×40 -in. lenticular surface screen. In black and white, Kodak Plus-X Pan gave us good quality to 8×10 and Kodak Panatomic-X allowed enlargements to 11×14 with results we would accept from larger negatives.

And we simply never could get over those large negatives coming out of that tiny, shiny metal box.—H.K.

25mm f/2.8 Tessinon

Aperture	Center Sharpness	Edge Sharpness
2.8	Very good	Acceptable
4	Very good	Acceptable
5.6	Very good	Good
8	Good	Good
11	Good	Good
16	Good	Good
22	Acceptable	Good

Did you ever hold a camera in the palm of your hand which when clicked had a sound like a mouse's startled squeak? Or one so compact that members of our nation's security forces can hide it in hollowed cigarette packs for undercover work? Shooting with the Tessina, it becomes immediately apparent we are handling an extremely well-conceived and engineered camera.

Its high standard of precision is understandable when you realize that a watch manufacturing firm in Lugano, Switzerland is responsible for its construction. The Swiss watchmaker's discipline which is put into timepieces also becomes evident in the Tessina.

We found the Tessina to be essentially a twin-lens reflex, making pictures with a format of 14x21-mm on standard 35-mm film. The photographed image is reflected to the film plane by a front-surface mirror set at 45 degrees. This reflects the light rays downward, onto the film, which runs horizontally inside the base of the camera. Thus a vertical picture is formed across the film, but the negative is laterally reversed, i.e., left is right. In order to obtain a laterally correct print it is necessary to invert the negative in the enlarger—emulsion toward the light source. Likewise, color slides should be viewed through the emulsion side. Tests and examinations of both prints and negatives produced by this optical system showed no apparent deterioration of image quality from the mirror.

In shutter speeds the Tessina offers 1/2 to 1/500 second, plus B. It has M, F, and X synch. The lens can be stopped down to f/22, which with the 25-mm f/2.8 Tessinon's short focal length gives amazing depth of field. The 25-mm focal length on the 14x21-mm format is roughly equivalent to a 43-mm lens on full-frame 35-mm. Thus it has slightly wide-angle coverage.

A spring-wound motor, which we found impossible to overwind, automatically cocks the shutter and moves the film forward.

TEST REPORT TESSINA—a unique SUB-35

ward. This allows you to get off from five to eight shots before rewinding. Film for the Tessina comes in special cassettes of 23 exposures for black-and-white on a 16½-inch strip of film and 18 exposures for color on a 14½-inch strip. In factory-pre-loaded cassettes of this type for the Tessina there are Adox KB14, KB17, and KB21, with exposure indexes of 20, 40, and 100 respectively. Soon color film of the same ratings will be available. For photographers who wish to use other types of film there is an ingeniously designed daylight self-loader. This accepts a standard 35-mm cartridge and allows you to spool film from it into an empty Tessina cassette in daylight. A lever with an attached razor-edged protuberance quickly cuts and squares off the necessary footage once it has been cranked off.

Enlarging the negative is done just as with other 35-mm work, except it must be remembered that the negative is placed in the enlarger with the emulsion (dull side) side toward the light. Again, since you are dealing with a negative of only 14x21-mm, dust or a careless scratch becomes a more critical problem.

In mounting the color slides special cardboard slide-binding frames which fit ordinary projectors are available from the distributor. They come in boxes of 100, measure 2x2, and sell for \$3.95. Metal and glass binders are 25 for \$3.95.

We found the newest accessory viewer—the pentaprism—most practical. Working under available-light situations, or for critical focusing, the pentaprism neatly fitted the bill. It gave a large image which is upright and laterally unreversed at all times.

For quick panning with a subject, and sequence shooting, we found the sports-finder best. For fast shooting we set the distance at ten feet and stopped down to f/5.6. Varying only the shutter speeds, according to our ASA rating and light conditions, we were able to get sharp images from infinity to seven feet.

Because of the small separation between the taking and viewing lenses, parallax in the Tessina is so small that it can generally be ignored. However, at the closer working distances, 11.8 inches and closer, ignore about 15mm at the right and 10mm at the left of the subject.

The Tessina handles very well. There need never be fear that the camera is too delicate for continual shooting. Even the most ham-fisted individual will have no trouble focusing and releasing the shutter. Lens hoods are not ordinarily necessary, as both taking and viewing lens are recessed. Accidental firing is prevented by a sliding cover plate which automatically locks the shutter until it is slid aside to uncover the lenses.

For a camera that can use any available 35-mm film, focuses down to nine inches, has a groundglass viewing screen, fantastic depth of field, weighs in at five ounces, and measures only 2½x2x1 inches, the Tessina has few competitors.

TECH DATA

FILM LOAD: Special 35-mm cassettes. Film may be spooled into empty Tessina cassettes from cartridges.

CAMERA TYPE: 35-mm motorized twin-lens reflex; sub 35-mm.

LENS: Viewing lens/taking lens: two Tessinon 25-mm f/2.8's with built-in haze filters, stopping down to f/22. Focusing: infinity to 9 inches.

SHUTTER: Rotary type. Linear speed range from 1/2 to 1/500 second, plus B; M, F and X synch.

VIEWING-FOCUSING: Twin-lens reflex system with groundglass viewer. Removable self-erecting eye-level and waist-level sports-finder. Pentaprism finder (6X), waist-level magnifier (8X), and snap-on field lens available as accessories.

AUTOMATION: Built-in spring-wind motor automatically cocks the shutter and exposure counter, transports the film and re-cocks the shutter. One winding gives five to eight shots.

OTHER FEATURES: Sliding lens guard prevents accidental exposure. Cable release socket. Film counter dial. Dimensions: 2½x2x1 inches. Weight: 5 ounces. Accessory shoe takes Metaphot or other small exposure meter.

buyer's guide reports

TESSINA 35L

Viewing: A twin lens reflex system uses parallax corrected lenses. Continuous focusing varies from infinity to 9 inches with a preset for universal distance ranges.

Lens: 25mm f/2.8.

Shutter: 1/2 to 1/500 sec. plus B; X or M sync.

Other Features: Small size and weight, 5 1/2 ounces, 2 1/2" x 2" x 1"; standard 35mm film size; miniature flashgun; choice of chrome, red, gold or black finishes; wristwatch type strap; custom filters; sports and reflex view finders; 14 x 21mm format.

This ultra miniature camera has one advantage over similar midgets, it uses standard 35mm film instead of hard to find 16mm. However, the film has to be loaded from the standard cartridges into special Tessina cartridges. This can be done in the daylight. The smaller format of the picture size allows about twice as many pictures per roll as with an ordinary 35mm camera.

When the image is passed through the lens it is directed by a mirror toward the film positioned along the bottom of the camera. Since the image passes through a mirror it will be reversed on the negative. This is corrected by processing the prints from a negative placed wrong-side up in the enlarger.

Although the camera uses two lenses, one for viewing and focusing the other to take the photograph; the two lenses are so close together, optically, that they almost can be considered one lens.

This Swiss made camera uses jeweled film advance devices and jeweled shutter components, for watch-like accuracy. The shutter has a range of 1/2 to 1/500 sec., accommodating a variety of light conditions.

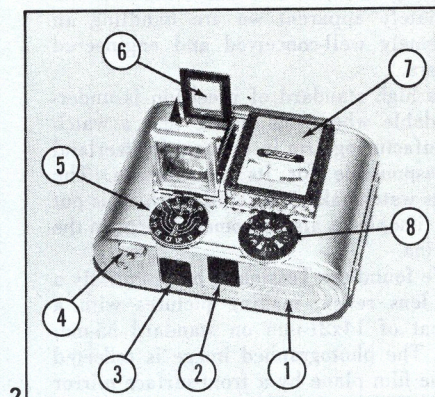
A sports type viewfinder comes with the camera and optional pentaprism and magnifying views are offered.

A spring wound motor automatically cocks, the shutter and moves the film forward. A sliding lens guard prevents accidental exposure. There is also provision for a cable release.

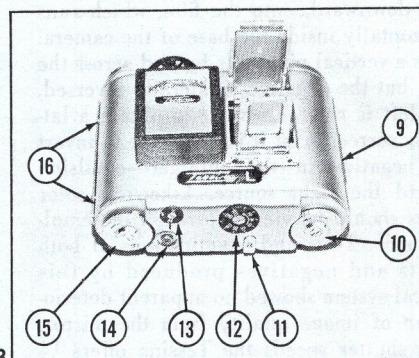
The Tessina



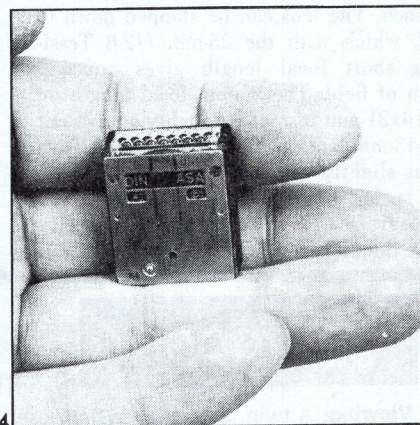
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One of the most unusual of the pocket cameras, the Tessina is manufactured in Switzerland and has long been imported to the United States by Karl Heitz Inc. of New York. A twin lens reflex, the Tessina produces the largest (14x21mm) of the pocket camera negatives. Its use of regular 35mm film loaded into special cartridges makes it not only a pocket camera but the world's smallest 35mm camera. A favorite tool of the CIA, FBI and other investigative agencies, the Tessina doesn't really

resemble the traditional camera (or other pocket cameras) in appearance and so makes a fine companion for travelers who like to take candid photos—by the time the subject has figured out that his picture is being taken, a half-dozen or more are in the camera.

CROSS-COUPLED EXPOSURE CONTROL

The Tessina is equipped with twin 25mm f/2.8 Tessinon lenses—one for viewing and one for taking the pic-

ture. Its taking lens has a built-in haze filter, can be closed down to f/22 and focuses from 12 inches to infinity. A rotary shutter provides a full range of speeds from 1/2 to 1/500 second and Bulb. The Tessina can be used as any other nonautomatic camera—that is, you determine the correct combination of lens opening and shutter speed by using a separate meter, then set the camera controls and take the picture. Or you can use the cross-coupled exposure meter, which fits into an accessory

you must first set the meter to the ASA index of the film in use. This is done by removing the meter from the camera and turning it over. On the back, you'll find two tiny windows (one for DIN ratings, one for ASA ratings) and a tiny milled dial just beneath the light cell. Turn the dial until the correct film speed is centered in the ASA window. Then set the lens for coupling to the meter by turning the lens opening dial until f/4 appears in its window. Carefully slide the meter into the accessory shoe all the way; a ball bearing mechanism then comes into play to prevent an accidental uncoupling of the meter and lens.

The meter scale is composed of three shutter speeds—1/30, 1/125, 1/500—separated by two white lines. The line between 1/30 and 1/125 represents 1/60 second while the one between 1/125 and 1/500 equals 1/250 second. In use, the Tessina meter will read light situations ranging from 1/30 at f/2.8 to 1/500 at f/22. When turning the lens opening dial to determine the correct shutter speed, you may find that there is not enough light to get a shutter speed reading, even at f/2.8. In such cases, you'll have to make an educated guess at which speed below 1/30 second will give a correct exposure and then refer to the back of the Tessina, where the entire shutter speed range from 1/2 to 1/500 second appears in silver numbers (the 1/125 and B settings are both in red) on a black dial. The dial revolves counterclockwise and the speed desired is set opposite a heavy black line engraved on the camera body. In actual use, you should brace the Tessina or use a tripod when any speed below 1/60 second is chosen.

OPTICAL SYSTEM

Unlike other cameras, the Tessina uses a 45-degree front surface mirror in its optical system. Light enters the lens, hits the mirror and is reflected downward onto the film emulsion, which runs horizontally along the bottom of the camera body. This system is the answer to how such a small camera (2 1/2x2x1 inches) can accommodate 35mm film. A vertical 14x21mm picture is thus formed on the horizontal strip of film, but the negative is laterally reversed from left to right because of the mirror. Tessina negatives must be placed in an enlarger with the emulsion facing upward instead of toward the enlarging paper to correct this reversal.

Each time the camera bottom is removed for loading or unloading of film, this mirror is exposed and so care must be taken not to accidentally smudge its face. The small brush included with the camera should be

used to clean both lens and mirror as any specks of dust or lint on the mirror will reflect their appearance down to the film.

FILM ADVANCE

The standard Tessina is equipped with a spring-wound motor. To wind, pull the knurled film advance dial straight out, just as you would a watch stem, and turn in the direction of the engraved arrow until the motor is fully wound. Push the winding dial back into place and you're ready to take pictures. When the shutter button positioned at the top right of the camera face is depressed, you'll hear a tiny click as the rotary shutter opens and closes. Release the button and you then hear a rather loud whirring noise as the spring film transport moves the film to the next exposure and recocks the shutter. As one winding gives five to eight shots, it's possible to shoot short sequence bursts, especially useful in a candid photo situation. When the motor lacks enough power to move the film a full frame, it locks until it's wound again, making impossible overlapped pictures due to insufficient power.

1. Quality of enlargement from 14x21mm Tessina negative is best of any pocket camera and comparable to full-sized single-frame 35mm. Camera was set at hyperfocal distance setting (nine feet); exposure 1/125 at f/8 on Adox KB 21.

2. Tessina 35L features sliding lens cap (1), taking lens (2), viewing lens (3), shutter button (4), distance scale and depth of field indicator (5), reflex viewer and sportsfinder (6), exposure meter (7) lens opening scale and exposure counter (8).

3. Tessina 35L features sliding bottom latch (9), motor wind knob (10), rewind release lever (11), shutter speed dial (12), flash sync dial (13), flash contact (14), rewind knob (15), bottom cover latch pins (16).

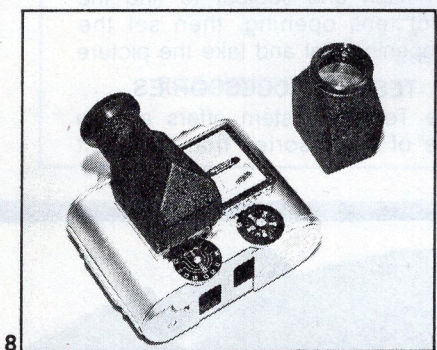
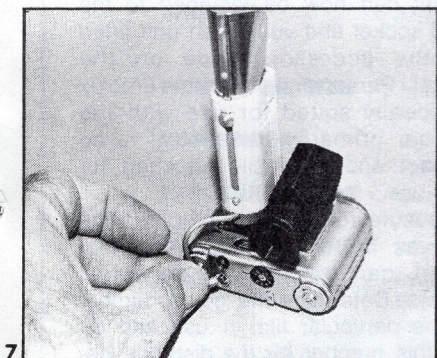
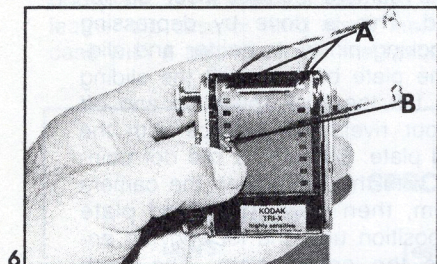
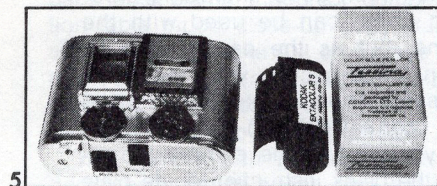
4. Before using the Tessina in its cross-coupled mode, turn the milled dial below the meter cell until the ASA index of the film can be seen in the ASA window. Then set the lens opening dial to f/4 and slide the meter in place until it locks.

5. Tessina film is prepackaged in 18 and 24 exposure loads. Tiny cartridge can be reused and loaded with any 35mm emulsion.

6. When film is properly loaded in Tessina, sprocket holes will engage sprockets A and B. Camera bottom can now be replaced.

7. Tiny Emolux flash gun fits into meter accessory shoe. Reflector slides into gun for carrying. Be sure to connect short cord to PC terminal as shown.

8. The accessory prismfinder gives a 6X magnification and allows use of the Tessina at eye level. Shown beside camera is the 8X magnifier for precision ground glass focusing.



shoe on the camera's top plate. This masterpiece of equipment miniaturization has an ASA sensitivity range of 12 to 800 and can be set to lock into the Tessina's lens opening ring. Turning the ring to open and close the lens moves a shutter speed scale to match with the meter needle. Once you've determined the correct shutter speed for the situation, transfer the meter reading to a separate speed dial on the camera back and you're ready to take the picture.

To use the cross-coupled feature,

The Tessina

Once all exposures have been made, the film must be rewound into the Tessina cartridge. This is accomplished by flicking the little arm marked R on the camera back out and upward 90 degrees to disengage the film transport system. Now pull the knurled rewind knob (marked R) out and turn in the direction of the engraved arrow until the film is rewound. As with any other camera of its type, the sudden reduction in tension when you turn the rewind knob signals that the film has separated from the take-up spool and a few more winds will finish drawing it all into the cartridge.

Everything about the Tessina operates with a clockwork feel of precision, although you may feel a bit uneasy about snapping candid shots when the film transport takes over and advances the film to the next frame. If that whirring sound bothers you, two special Tessina models designed to pacify the nervous are available—a noise-reduced Tessina using nylon gears, and a noiseless one without the spring advance motor; you must wind the film after each exposure. Personally, I enjoy the advantage of the regular spring motor and have found that there is a way to render the film advance almost inaudible in situations where you might possibly feel embarrassed by the sound of the transport mechanism in action. Hold the rewind knob tightly while shooting to prevent slack in the exposed cartridge. After taking the picture, let up on the shutter button and gradually release the tension on the rewind knob, allowing the advance to operate slowly. This cuts film advance noise to almost zero.

LOADING THE TESSINA

Tessina cartridges preloaded with a variety of film emulsions are cut, respooled and packaged by Concava Ltd., the manufacturer of the camera, and are available from most larger photographic dealers. You can also purchase empty Tessina cartridges (or save the preloaded ones for reuse after processing the film) and load your own with any 35mm film. If you send your exposed cartridges to a commercial photofinisher, tape a small piece of paper to them requesting return of the empty cartridges.

To prepare the Tessina for picture-taking, push the sliding latch positioned on the camera's right side to the rear and remove the bottom. Pull out both the wind and rewind knobs completely, then turn the camera's take-up spool toward the mirror until its black spring clip faces the film path. You'll notice two raised metal teeth, one on each side of the clip.

These must engage the film's sprocket holes to secure it to the take-up spool as the film is inserted under the spring clip.

You'll also see the traditional-type 35mm film transport wheel along the rear edge of the film path. This sprocket wheel advances the film once the bottom is replaced. Clean the camera's interior carefully, paying particular attention to the mirror. Now pull an inch or two of film from the cartridge to act as a leader and fasten it to the take-up spool, then continue pulling the cartridge back until it drops into place in the opposite chamber. Check to make sure that the sprockets on the take-up spool engage the sprocket holes and that the film is tight, with the two visible film transport sprockets engaging the film; then replace the camera bottom.

This is done by first fitting the bottom over the two pins at the left side of the camera, then gently seating it into position. Lock it by moving the sliding latch forward. You'll find it easiest to squeeze the camera top and bottom together while sliding the latch forward. Film tension is checked by pushing the rewind knob in to about 1/8-inch from the camera body and turning it gently in the direction of the engraved arrow until a slight resistance is felt. Now wind the spring motor until the wind knob stops—don't force! Push the wind and rewind knobs in completely, then set the exposure counter dial by rotating it with the nail of your index finger until its red dot is opposite the red index mark on the surrounding black ring. Press the shutter button twice to transport the first frame of film into picture-taking position and watch the rewind knob; it should turn each time you hear the spring motor advance the film. If the knob doesn't turn, it indicates that the film end was not secured to the take-up spool correctly. You'll have to repeat the entire loading procedure, which will reduce the number of pictures on that cartridge by two frames.

USING FLASH

Equipped with a standard PC flash connector, the Tessina is synchronized for use with flash bulbs at 1/30 second, or electronic flash at any shutter speed. Just to the right of the rewind knob, you'll find the PC connector and above that, a tiny black dial marked X and M. When using the camera with the Emolux flash gun supplied by Karl Heitz Inc., the dial should be revolved until the M is opposite the black line. The X position is for use only with electronic flash.

A special Tessina adapter plate on the base of the Emolux gun allows it to be used directly on the camera. Remove the meter and replace it with

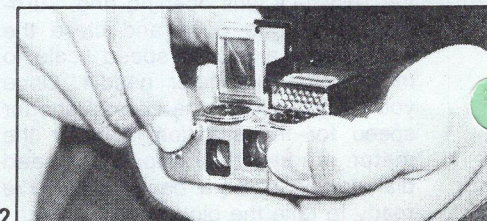
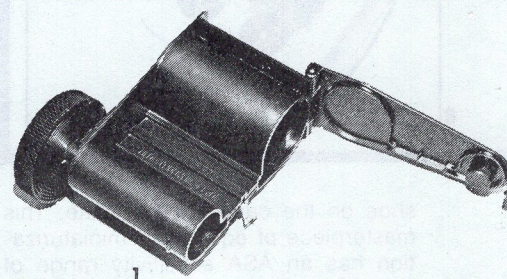
the flash. Be sure to plug the short connector cord into the PC receptacle. With its tiny reflector that slides into the unit when not in use, the Emolux is an ideal choice for pocket camera use with the Tessina; it accepts AG-1B bulbs and is powered by a standard 15-volt Mallory M-504 (or equivalent) battery, which should easily last a year or more.

Other flash guns, including electronic units, can be used with the Tessina, but as the camera has no built-in tripod socket, you'll need the accessory tripod plate (\$9.95) and flash bracket (\$5.95) to accommodate your unit to the camera. To attach, the black instruction guide plate on the camera bottom must be removed. This is done by depressing the locking pin in its center and sliding the plate back toward the sliding latch. Lift the guide plate up and off the four rivets and replace with the tripod plate. Be sure its red dot coincides with the red dot on the camera bottom, then slide the tripod plate into position until the locking pin engages the center hole. The flash bracket can now be fastened to the tripod socket and your flash unit fitted into the accessory shoe on the bracket. Personally, I find the Emolux gun ideally suited for use with the Tessina, primarily because it is so compact and so easily attached for quick use.

Exposure for flash is computed the same as for the Minolta and other pocket cameras with mechanical shutters. Determine the guide number for the particular film in use and divide this number by the distance between flash and subject to find the correct lens opening, then set the lens opening dial and take the picture.

TESSINA ACCESSORIES

The Tessina system offers a wide range of accessories that makes it



one of the most versatile of the pocket cameras. Four interchangeable finders give a choice of viewing modes: waist-level, eye-level or 90-degree angle candid shots; with reflex sportsfinder, 8X magnifier or 6X prismfinder. The latter two have individual eyepiece adjustment to provide the sharpest image possible. A compact table clamp/tripod, or combination table tripod/close-up/copy stand allows users to take full advantage of the Tessina's continuous focusing range to 12 inches; four snap-on filters add impact to outdoor photos.

The camera can be carried on a neck chain, which snaps onto the tripod plate, on a watch strap, in a soft leather zip case or hard cover leather case with a belt loop. For the fashion

conscious, the Tessina can be purchased in a choice of chrome, black, red or gold finish and there's even a 17-jewel precision Swiss watch that slips into the meter shoe, giving you the only combination pocket camera/watch in the world.

Available are a film trimmer for cutting color transparencies to fit the special Tessina glass or cardboard slide mounts and a daylight self-loader for transferring film from regular 35mm cartridges to those used with the Tessina. Pneumatic and electric remote shutter releases are also available for serious amateurs interested in specialties like nature photography, and Karl Heitz is continually expanding the list of accessories available to the Tessina owner.

PICTURE TAKING

How you hold the Tessina to take pictures will depend upon which viewfinder you're using. When equipped with the reflex sportsfinder, or the 8X magnifier, cup the camera in your left hand, place the right index finger on the shutter button with the thumb resting on the wind knob. Release the shutter by squeezing thumb and finger together slowly, as if you're trying to break the camera. While this sounds a bit on the vicious side, it isn't really; it provides the best grip for a sure, steady release of the shutter without taking a chance of camera movement.

The 6X prismfinder allows the Tessina to be used at eye-level and again, a variation of the cupped left hand to support the camera seems to be the most natural way of holding the Tessina to avoid camera movement. This position also removes the possibility of inadvertently covering the lens or changing the lens opening. When using the cross-coupled meter, take care in adjusting the lens opening dial to obtain a reading, as the dial rests in front of the meter cell and it's quite easy to end up with a misleading reading if too much of your finger gets in the way.

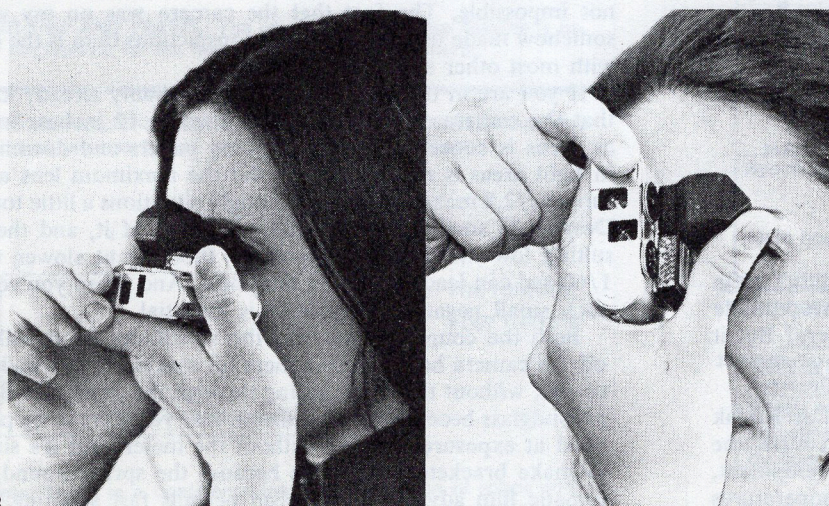
Horizontal pictures are easiest with the prismfinder. Cup your hand as if you were going to hold the camera for a waist-level shot, then turn the camera on its side with the thumb resting on the prism roof and the fingers along the camera bottom. Sighting with the left eye, press the Tessina against the nose and use the right index finger to press the shutter button. If the Emolux flash gun is in place for indoor pictures, let the gun rest on the left thumb as you won't be able to reach the prismfinder; this is equally comfortable and steady.

The Tessina is a good choice for those interested in fine craftsmanship, unusual cameras and larger negatives. By following instructions carefully, the novice can take excellent pictures without difficulty, while those who demand a great deal from their pocket camera will find that the Tessina is capable of delivering even under difficult conditions.

SPECIFICATIONS

TESSINA 35L

LENS:	Tessinon 25mm f/2.8 in continuous focusing mount from 12 inches to infinity
SHUTTER:	Mechanical rotary type with speed range of 1/500 to 1/2 seconds; MX flash synchronization
FILM/FRAME SIZE:	Standard 35mm film in Tessina cartridges, 18 or 24 exposures 14x21mm
VIEWFINDER:	Reflex sportsfinder; 8X, magnifier or 6X prismfinder optional
EXPOSURE METER:	Selenium cell cross-coupled to lens, removable
MEASURING RANGE:	ASA 12 to 800
FILM ADVANCE:	Precision miniature spring motor provides 5-8 automatic one-by-one pictures without rewinding; double exposure prevention
OTHER FEATURES:	Built-in haze filter, cable release socket, twin lens reflex viewing with ground glass for framing, focusing and depth-of-field control
SIZE/WEIGHT:	2 1/2x2x1 inches; 5 1/2 ounces



1. Tessina self-loader accepts standard 35mm cartridge of film for reloading into Tessina cartridges in daylight. Built-in knife blade cuts film leader when reloading is complete.

2. For waist-level viewing with the Tessina, hold camera as shown. This gives a firm grip without interfering with the lens or meter.

3. Variations of the same cupped hand position are used to hold the camera at eye level when using the prismfinder or sportsfinder for horizontal or vertical pictures.

N P X National Photographic Xchange

Then I remembered reading several articles in some of the older photo magazines about a camera that was reported to be a true mini-marvel, the TESSINA 35, introduced at around \$150.00 a decade or so ago.

Could it be true? "The ultimate in fine workmanship... motor drive with 8 to 10 shots per wind... noted for sharpness of the image," etc., according to Camera 35. Or as U.S. Camera put it, "Image sharpness is bordering on the fantastic... the tiny negatives blow up to sharp grainless 20x24 prints or needle sharp 8x10 and 11x14 prints... and Kodachrome transparencies fill a 60" screen with a sharp image." "Ruby-jeweled shutter and film transport... a marvel of Swiss precision... the TESSINA is in a class by itself... a precision and reliability matched only in fine Swiss watches... the ideal personal candid camera... depth of field is from 21 inches to infinity at F/22," etc., etc. Repeat - COULD IT BE TRUE?

Then, gravitating to more recent publications and reports which are somewhat more conservative, or should I say 'realistic?' in their praise: "Results far superior to what could be achieved

in like circumstances with like film in any ultra or sub miniature... the ideal travel companion, always ready" to quote Modern. And "Excellent 8x10's with Tri-X... an extremely well conceived and engineered camera," according to Popular Photog.

Still a skeptic? Then consider the quotation from Government Photography - The Moore-Neubauer Report, "CIA and FBI are the ones who use the TESSINA most... 8 to 10 frames on one wind of the spring motor, focusing to 9 inches on 8-1/2 x 11 sheets fills the frame almost exactly in copying documents," etc. So much for the Madison Avenue commercials.

My own experience with this camera, when used with the available wrist strap - like a watch - for candid shots -- the IDEAL CANDID SEQUENCE CAMERA giving up to 10 exposures in rapid firing per wind on a TESSINA cassette with 24 exposures in B&W and 18 in color.

Using a regular 35mm cartridge (available most all emulsions) in a TESSINA DAYLIGHT LOADER - you get 4 TESSINA cartridges per 36 exp. roll. Frame size is 14x21mm or about 3-1/3 times the area of the Minox negative, or just a bit smaller than regular 1/2 frame size. A twin lens reflex in design, a front surface mirror reverses the image on the film (so you have to flip over the negative in printing) with F/2.8 - 25mm TESSINON lens, MX synch and shutter speeds from 1/2 to 1/500 second, the camera

weighs a mere 5-1/2-oz. and measures 2-1/2x2x1" - a real mini-marvel!

The most useful accessories available include: Daylight loader, wrist strap, sports-finder, light meter, prism finder (6x), magnifier (8x), tripod plate, flash bracket and gun, air release and electric release, tripod, filters, 17 jewel watch, silver, black, red or gold finish, and noiseless gears - FBI and ICA buffs take note!

Close to 400 precision parts and a ruby-jeweled movement go into this Swiss Watchmaker's gem, so the 1975 list prices do not seem out of line: TESSINA 35 (no coupled meter), \$299.50. TESSINA L (with meter), \$359.50, distributed by Karl Heitz, New York.

In short, at long last after 82 years of mini-marvels - a true precision miniature, rapid sequence camera that can produce better than satisfactory results with care in loading, composing to a full frame, and fine grain developing. Currently selling from \$100 to \$150 on the used market, depending on model and accessories.

Synopsis: If you need a large negative from a small pocketable camera, try a no. 127 folding VP full frame Zeiss Icarette, or Ihagee Auto Ultrix, but for true candid rapid sequence photography with a camera that is always ready on your wrist for quick action, we recommend the TESSINA L, not a toy but a precision photographic instrument - YOU'VE COME A LONG WAY, BABY!

PHOTO- GRAPHY

Lab report TESSINA 35L

FIELD CHECK

Camera Type:	Sub 35-mm twin-lens reflex, using 35-mm film in special 18-20 exposure cassettes.
Lens:	Tessinon 25-mm f/2.8; min. focus, 12 in. Diaphragm closes to f/22
Shutter:	Between-the-lens; 1/2 to 1/500, plus B
Viewfinder:	Groundglass plus slip-on sports finder
Flash Synchronization:	M, X
Film Transport:	Spring-wound automatic film advance and shutter cocking
Other Features:	Coupled meter (optional), cable socket
Weight:	5 1/2 oz.
Dimensions:	2 1/2x2x1 in.
Accessories:	Wrist strap, focus magnifier, tripod plate

When I was first asked to test the Tessina 35L, I didn't quite know whether to laugh it off or not. After all, what respectable pro would go out on a job with such a tiny camera? But it only took me a few rolls of film to gain a healthy respect for this precision device.

I got excellent 8x10s, using even fast films such as Kodak Tri-X, from the 14x21-mm Tessina negatives. Of course, the main secret is in the processing—fine-grain development, great care to equalize processing and washing temperatures—and a good, sharp enlarging lens. But, of course, your camera's lens must first resolve a sharp image on the film. And unless the shutter, diaphragm, and exposure meter are

also functioning right on the button, no amount of critical handling in the darkroom can enable you to produce clean, sharp prints at the more than 12X magnification needed for an 8x10 print from the small Tessina negatives. The Tessina I tested was functioning with all systems "A-OK."

Because it is such a small camera, you can handle and carry the Tessina in a variety of ways. I chose a wrist strap, so that I could carry the camera around with me as if it were a watch. By wearing the Tessina just under my jacket sleeve until ready to shoot, I was able to get some interesting photos that larger, bulkier equipment would have made more difficult if not impossible. The fact that the camera was on my wrist somehow made using it seem less conspicuous than is the case with most other subminiature cameras.

If you are in the spy business, you probably already know that the camera can be focused as close as 12 inches. So far as focus is concerned, photographing papers and documents in tight areas is relatively easy. But the maximum lens aperture of f/2.8 makes the really dim-light situations a little tough. Despite its smallness (or perhaps because of it, and the resulting low inertia of the camera) shooting at slower than 1/60 sec can lead to lack of sharpness. And when you've got such small negatives, sharpness is essential.

Both the coupled meter and the viewfinder hood will slip off the camera body. Taking them off makes for less bulk. Of course, without the hood, seeing through the small viewfinder groundglass becomes more difficult, and you have to be pretty good at exposure-guessing without the meter. But it's simple to make bracketed exposures because the spring-wound, automatic film advance mechanism permits fast shooting. One disadvantage here, however, is that the cassettes will hold only enough film for about 20 exposures. When you bracket-shoot, you can use up that much film quickly.

The Tessina cassettes are made of thin plastic, and I found that I had some fogging troubles at first—at least until I learned to take seriously the manufacturer's advice about loading and unloading the camera in subdued light.

I have a Tessina cartridge loader (the manufacturer calls it a daylight selfloader for bulk film, but it accepts standard 35-mm cassettes—not bulk film), so reloading into them from standard 35-mm cassettes proved to be no trouble. If you intend to get into Tessina photography, I strongly advise you to get the loader for convenience.

Do-it-yourself darkroom people will have to get used to printing the negatives from the Tessina with the emulsion facing away from the sensitized surface of their printing papers. The internal reflex mirror of the camera causes the image to land on the film laterally correct—which, compared to the standard of other cameras, is wrong side around.

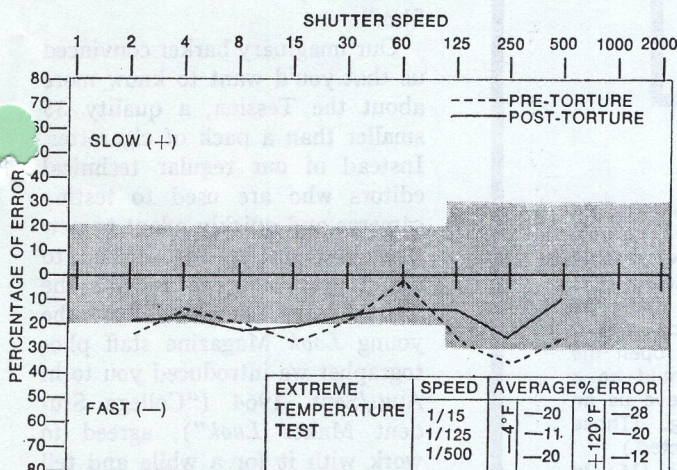
Having worked with this truly precise, tiny camera, I came away with the impression that the Tessina is potentially a serious piece of photo equipment. I would definitely choose the Tessina over the teenie-tiny format of most other subminiatures.—*Harvey Zucker*

INSTRUMENT READOUTS

CAMERA: TESSINA 35 No. 865643

LENS: 25-mm TESSINON F/2.8

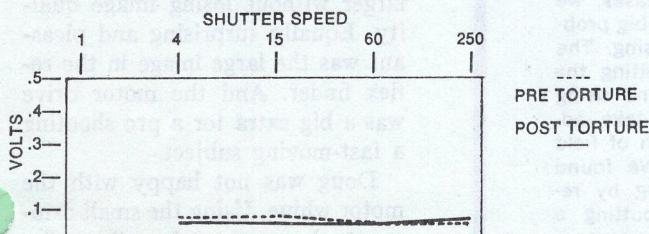
SHUTTER PERFORMANCE: Most errors are within tolerances; since all are on fast side, they can easily be adjusted for accuracy.



Suggested USA (formerly ASA) shutter accuracy standards are shown by shaded area. Higher speeds have more tolerance.

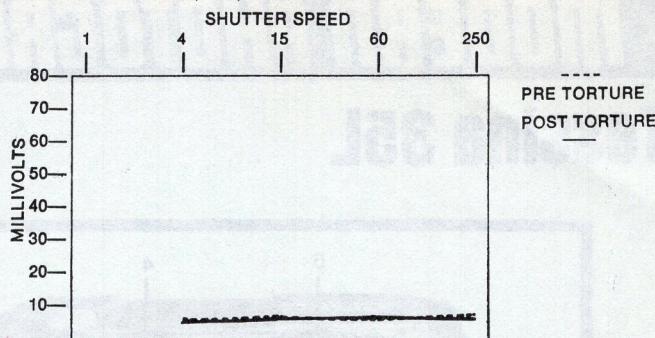
SHUTTER TRIP AND TRAVEL: The gentle release of the Tessina is especially appropriate for the low inertia of this tiny camera.

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

	PRE-TORTURE			POST-TORTURE		
	1 ft—∞			1 ft—∞		
Focusing System: Groundglass and Sports Finder						
Range	∞	5M	1M	∞	5M	1M
Accuracy over range	OK	OK	OK	OK	OK	OK
Shutter-trip force:	265 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		

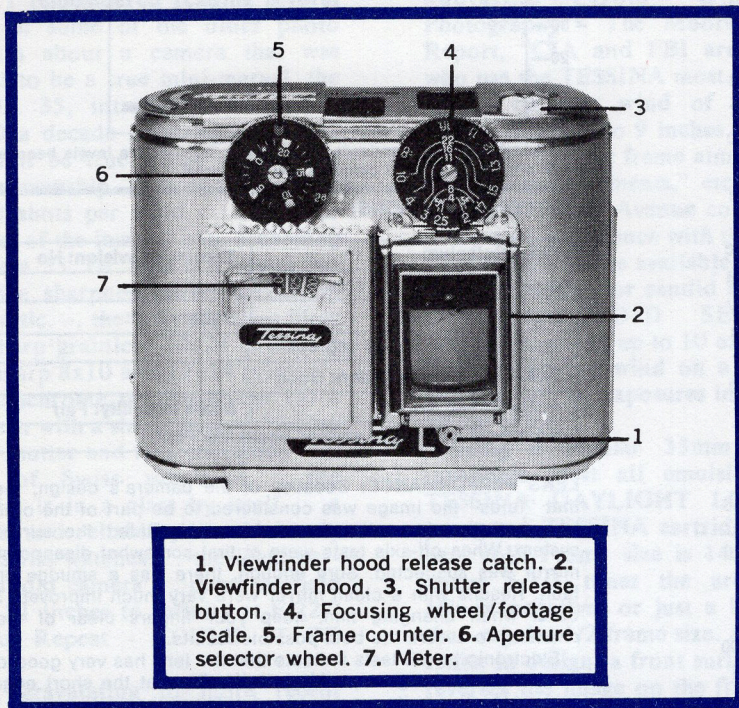
STRIPDOWN REPORT

	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*

MODERN PHOTOGRAPHY

Tessina 35L



Most ultraminiature cameras use ultraminiature film and give you an ultraminiature picture. The Tessina gives you an ultraminiature negative too (14 x 21mm, slightly more than half the 35mm format) but from a grown-up (35mm) film and does it with the same equipment the big boys use. On this box, less than half the size and weight of most 35's, you'll find two lenses (for focusing and viewing a la twin-lens reflex), a full range of adjustable f/numbers and shutter speeds, a cable release socket, a film advance-shutter cock motor, flash sync and the usual film rewind items. Then there's a flock of accessories you can add. This model 35L, the latest Tessina, comes with a coupled selenium meter as standard equipment.

It's interesting to note that this product of Switzerland also offers a wrist strap as an accessory so that it can be worn like a watch. And upon handling the camera, certain similarities between it and a watch are apparent. All dials are knurled, close to the body and wind and turn with precision and authority; the clickstopped shutter speed (11), sync (14) and frame counter (5) dials click in decisively; and the combination focusing hood-sports-finder (2, 15) and meter (16) slip into the accessory shoes on the camera top tightly but smoothly.

A further accessory—a daylight film loader—lets you roll your own film from a standard 35mm cassette into the Tessina cassette, but we prefer the factory-loaded Tessina variety. Loading

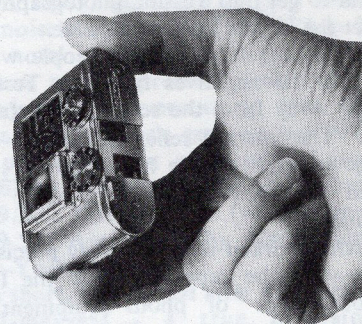
the film in the camera is standard, but on a smaller scale, of course. The only drawback here (a minor one) is that the Tessina's back is detachable. The sliding lens cover (17) must be open for the film to advance, and if it's not actually all the way open the camera won't work. This could be a nuisance, but we found it gave us an unexpectedly secure feeling. (Those tiny lenses were being protected.)

Before slipping the meter (16) in place you set the film speed (from ASA 12-800) on the underside, then set the aperture wheel (6) to f/4 so the coupling gears will mesh properly and slide the meter in place. Here you have to be a little careful not to move the meter wheel off its ASA setting. Now you can operate the Tessina in the usual match pointer control ways.

The manufacturer claims you get from five to eight shots on one winding of the motor, but, in some cases, we squeezed out a few more. The big problem with the Tessina is focusing. The manufacturer recommends setting the footage scale (4) to 10 ft. and using a small aperture (f/5.6) to take advantage of the extended depth of field of the 25mm focal length. We found we could get critical focusing by removing the hood (2) and putting a small magnifier over the finder screen. As with any TLR, the image on that screen is reversed left to right. So is the final picture. That means you must project your slides and put the negatives in the enlarger backward.

CAMERA 35

SHOOTING THE TINIEST 35



LADIES and gentlemen, I have here the smallest 35mm camera in the world. Pick it up, look it over, slip it in your pocket. It is the ultimate in fine workmanship to reduce bulk without reducing film size. That's right, ladies and gentlemen, this little lovely uses standard 35mm film."

Our imaginary barker convinced us that you'd want to know more about the Tessina, a quality 35 smaller than a pack of cigarettes. Instead of our regular technical editors who are used to testing cameras and quickly adapt to new sizes and shapes, we decided to ask a practicing pro to give the Tessina a try. Douglas Gilbert, the young *Look* Magazine staff photographer we introduced you to in Aug./Sept. 1964 ("College Student Makes *Look*"), agreed to work with it for a while and tell us what he liked and disliked about it. After two weeks of shooting with the tiny camera in a great variety of situations, he reported back to us.

Doug was extremely pleased with the sharpness of the image. He enlarged to his customary 6x8 inch prints, but could have gone larger without losing image quality. Equally surprising and pleasant was the large image in the reflex finder. And the motor drive was a big extra for a pro shooting a fast-moving subject.

Doug was not happy with the motor whine. Using the small camera to be unobtrusive, the noise attracted attention. "As I stealthily photographed a folk singer in concert in a dim, small auditorium, the whining motor caused several

For a rigid shooting test we turn this postage-stamp camera over to a working pro. Here's his report on two weeks with the Tessina.

uncombed heads of hair to turn and stare. My ever-thinking wife whispered loudly, 'Don't tell them you're from the FBI,' which quickly put everyone at ease again (including myself) as they laughed."

An unexpected experience for Doug as a pro was the attention the camera attracted. Until you have tested an unfamiliar-looking camera, you have no idea how many photo-hobbyists can hear the whisper of a new lens cap coming off from 100 yards away.

Some of his experiences were typical of a pro with an unfamiliar camera. While shooting at Coney Island, he forgot to wind the motor before starting to take pictures. A large hostile woman throwing sand at him for taking her picture didn't help him recall the instruction book. But this problem disappeared after he missed the first shot.

Having gotten used to longer focal lenses for his usual magazine work, Doug found that he had to move much closer than expected to fill the frame. (He recommended that all photography students be required to use the Tessina for six months. They would get used to filling the frame or have to work on negatives to pull the images out of the background.)

Since Doug uses Tri-X for his magazine work, we asked him to stick to it for a realistic test. But we didn't expect to make him work as hard as he did. He had no trouble loading Tri-X into the cassettes, emptied of the commonly used Adox-14. But he did encounter an unusual problem. The Tri-X had to be loaded into the Tessina cassettes for a couple of days before use. Apparently the degree of curl needed to fit the thicker film to the smaller diameter cassette was something the film had to learn in storage.

Doug makes a strong plea for the extra viewfinder which gives an enlarged image. Otherwise you will have trouble framing except in outdoor photography. The extra

finder slips on and off very easily and is inconspicuously stored in its own loop inside the carrying case.

By way of summary, the Tessina came through the most difficult test with flying colors. It may not be the ideal camera for available darkness pictures. But for

the majority of pictures in black and white or color, this tiny marvel is a big performer. Whether you use your 35 for pictorials, note-taking or document copying, Tessina can compete with its bigger relatives. If camera size is a factor, Tessina is the hands-down winner.



QUALITY of blow-up from minute negative (actual size contact shown here) surprised Gilbert. With camera 18" from statue, he shot Tri-X at f/5.6 for 1/125.



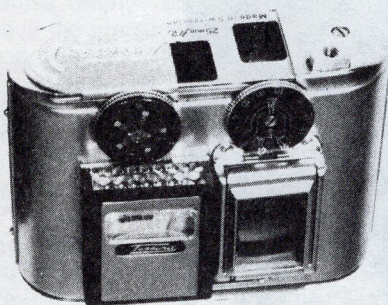
35-mm
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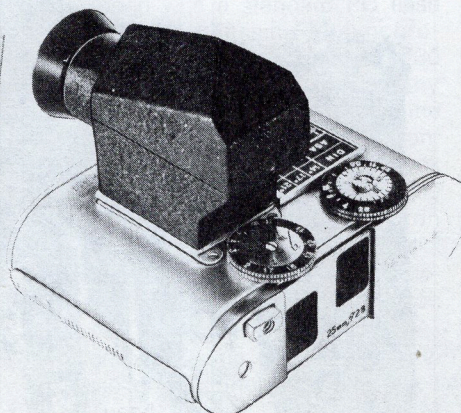
Actual Tessina image size above.
Twin-lens viewing/focusing lets you
see expression at moment of exposure.

TLR

The Tessina 35L is so small and light, it's often worn like a wrist watch. But, don't let its diminutiveness fool you. The Tessina is part of a versatile system of photography. Image size is 14x21-mm, giving up to 24 exposures in a special Tessina cartridge. These are available from the distributor preloaded. Or, you can buy empty Tessina cartridges and load them yourself directly from standard cartridges. Color slides in Tessina size may be mounted using special Tessina 2x2 slide mounts. The taking lens in the Tessina is a 25-mm Tessinon f/2.8 with stops to f/22. There is parallax-corrected focusing down to 9 inches. You have the choice of focusing through the normal waist-level finder, or using an accessory eye-level prism, as well as special 6- and 8x magnifiers. Shutter speeds in the Tessina are 1/2 to 1/500 second with full MX synch for flash or electronic flash. And, as if all this weren't enough, the Tessina has a built-in spring-wound motor drive. This automatically advances the film and cocks the shutter for a total of 5 to 8 exposures per wind. A list of the unique series of accessories for the Tessina make fascinating reading. There is, for example, an attachable 17-jewel Swiss watch. There is a cross-coupled exposure meter that gives the Tessina exposure automation. Other devices include a wrist strap, tiny flash units, sports finder, pneumatic and electrical Gitzo remote releases, cardboard and glass slide mounts, filters, and more.



Tessina BL is normally supplied with waist-level finder. Accessory eye-level prism is available (right). Also available is exposure automation. Camera has motor drive, focus to 9 in.



U.S. CAMERA

THE SWISS-MADE Tessina is a true ultra-miniature camera. It is tiny ($2\frac{1}{2}$ "x2"x1") and light (5 oz.). Its features, however, make it outstanding and unique in that class. The Tessina is the only ultra-miniature that uses standard 35mm film, available anywhere in a variety of black-&-white and color emulsion types. From the standard cassettes the film is reloaded (in daylight) into special Tessina cartridges. The cleverly designed daylight loader is small, light and troublefree.

The Tessina cartridge holds film for 18 color or 21 black-&-white exposures. Since four Tessina cartridges can be loaded from one 36-exposure roll or film, the user gets about twice as many negatives or transparencies from each roll.

The image size is a surprisingly large 14x21mm, which is only a fraction smaller than the regular 18x24mm half-frame 35mm image.

At first glance it might seem hard to believe that such a tiny camera could use regular 35mm film, or that it could produce such a large image. The secret is in the use of a front-surface mirror that directs the light emerging from the lens toward the film positioned along the bottom of the camera. That way the path of light is made long enough to accommodate a lens of 25mm focal length. The largest opening of the Tessina lens is f/2.8 and it can be stopped down to f/22.

At this point a question might occur to you, as it did to me: "Will the interposition of a mirror interfere with the sharpness of the image?" It will not! Image sharpness is bordering on the fantastic. The tiny negative can be blown up to a sharp, grainless 20x24" print. I make needle-sharp 8x10" and 11x14" prints from Tessina negatives as a matter of routine. Panatomic-X film developed in Microdol-X produces extremely fine grain

negatives, as long as the film is *not* overexposed or overdeveloped. I projected Kodachrome-X transparencies made with the Tessina to fill a 60" screen and the projected image was sharp.

In short, the Tessina can be used to make negatives and transparencies that are, for all practical purposes, equal to work done with full size 35mm cameras.

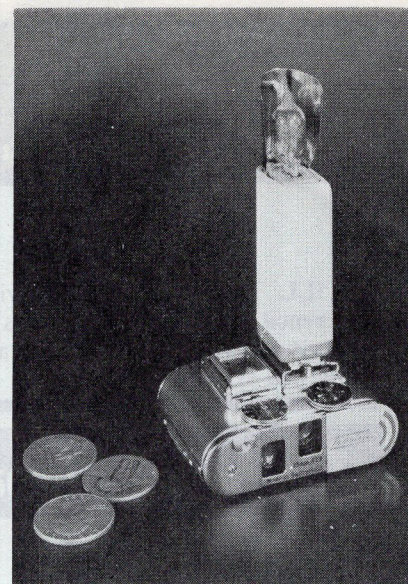
Since a mirror is used between the lens and the film, the image is reversed from left to right. This is corrected during printing by placing the negatives in the enlarger with the emulsion side away from the paper, not facing it, as usually done. Color transparencies are corrected by reversing them in the viewer or slide projector.

The Tessina is a twin-lens reflex camera. One lens takes the picture, while a second, matched lens produces an identical ground-glass image for viewing and focusing. However, the viewing lens is so close to the taking lens that, for all practical purposes, the camera can be used as a single-lens reflex camera. Automatic parallax correction is provided to assure accurate framing for closeups. The lens can be focused and the image accurately framed from infinity to nine inches.

The lenses are recessed in the camera body, eliminating the need for a lens shade. A metal cover protects the lenses when the camera is not in use. The shutter release operates only when this metal cover is fully withdrawn.

The jeweled-shutter and film-transport mechanism of the Tessina is a marvel of Swiss precision. The camera has a spring motor that winds the shutter and forwards the film. Five-to-eight exposures can be made without rewinding—in rapid sequence if desired. The shutter speeds range from $\frac{1}{2}$ to 1/500. There is also a B setting. The shutter is fully synchronized, with M, F and X settings.

Three types of viewers are available: a pentaprism, a magnifying hood and a sports finder. The sports finder is supplied with the camera, the other two are sold as accessories. I like the pentaprism finder best. It



provides six-times magnification and a clear, easy-to-focus and frame image. With the pentaprism finder both vertical and horizontal pictures are possible.

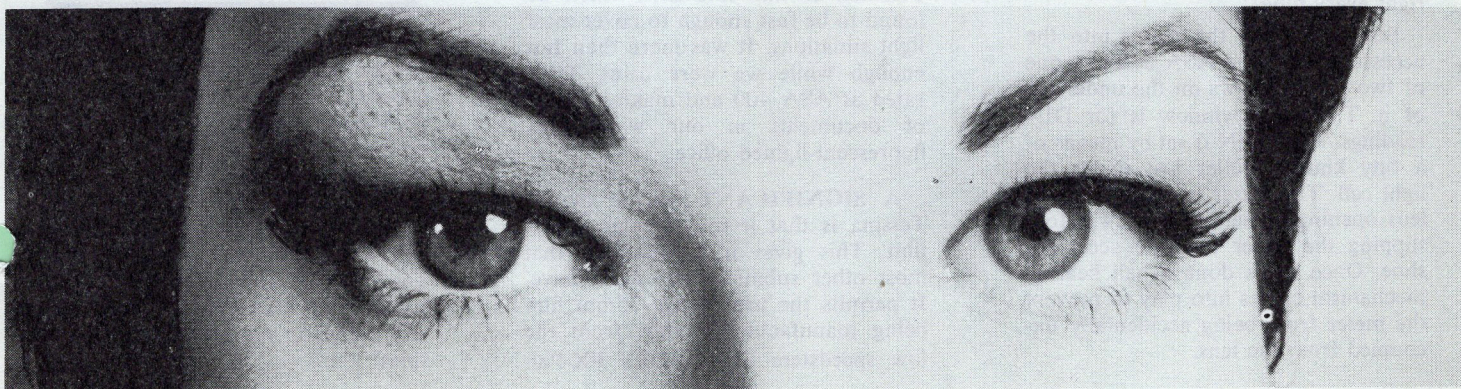
The magnifying hood magnifies the ground-glass image eight times. It is practical for vertical compositions only. The pentaprism and the magnifying hood finders can be focused to match the eyesight of the photographer.

Since it uses 35mm film, Tessina negatives can be developed in standard 35mm tanks. The 2x2" Tessina slide binders fit all standard slide projectors.

The camera is equipped with an accessory shoe to accommodate the tiny Metraphot exposure meter or a miniature flashgun. With the use of an accessory wrist strap the Tessina can be worn like a wrist watch. A neck chain with a tripod plate and a variety of leather cases are available.

To summarize: the Tessina is in a class by itself. It is an ultra-miniature in size, weight and appearance. It is the world's smallest 35mm camera. The precision and the reliability of the mechanism is matched only in fine Swiss watches (in fact, the Tessina is made by watchmakers). Image quality is superb, it meets professional standards.—Joseph Foldes

PORTION of Tessina negative enlarged approximately 20X shows fine quality possible both in sharpness and grain.



STILL TAKING NOTES with pencil and paper? There is a better way: your own personal audio-visual system.

The Moore-Neubauer Report

Karl Heitz' Tessina 35L

The Karl Heitz people have added a "Mighty Mouse" meter to their marvel of miniaturization, the Tessina 35, and added the designation L to the camera.

The Tessina 35L looks and acts like a Tessina 35 should. It is quick and sure and takes pictures surreptitiously in all those surreptitious situations that the CIA, the FBI and others like them—and they are the ones who use the Tessina most—invariably get themselves into.

The addition of the meter should add a confidence to their picture-taking when it doesn't have to be done undercover—like off the wrist or from the belt, which are two ways the camera is often used.

THE METER is little more than an inch long and a quarter on an inch deep. It fits easily into an accessory shoe on top of the camera next to the groundglass viewing screen. For a meter its size, it is very sensitive. It has a measuring range of 100 to 6,000 lumens and an ASA sensitivity scale of 12 to 800. In our tests, which were conducted principally in a windowless office, like many of those found in the Pentagon, and with four cool white fluorescents providing overhead illumination, metered exposures were right every time.

Before slipping the meter into the accessory shoe, the ASA is set in one of two tiny windows on the underside of it. The other window is for DIN readings. ASA/DIN is set by means of a tiny knurled roller just under the light cell. The meter is coupled to the lens opening by setting it at f4 before slipping the meter into the accessory shoe. Once that's done a ball bearing mechanism comes into play to prevent the meter from being accidentally uncoupled from the lens.

Just as cameras and tape recorders can be used to produce A-V material for presentation, they also may be used to provide for information storage and retrieval (ask any microfilm salesman!).

First, let's take a look at the visual system. Nearly any camera may be used, but the convenience of subminiatures usually is a strong point for their application to this use. I usually use a Tessina 35L, with 14x21mm frame size, for

the larger film area, which resolves more detail with the high-speed films that are often necessary for this application.

A good average starting point for many presentations is $f/2.8$ at 1/30th on Tri-X. This produces usable results for a surprisingly wide range of conditions. Remember, you are just using this method to record data for your own use, not to produce an aesthetically or technically high quality photograph.

Miniature Marvel Adds 'Mighty Mouse' Meter

Shutter speeds that couple to the meter are shown on top of the meter—1/30, 1/125 and 1/500. The intermediary speeds of 1/60 and 1/250 are indicated by white strokes between 1/30 and 1/125 and 1/125 and 1/500. The shutter speed dial is on a side of the camera. The range is from 1/2 second to 1/500 second and B.

ONCE THE ASA speed has been determined and the lens opening set at f4 and the meter locked in place, a reading can be taken in the standard reflected manner. This is done by simply turning the diaphragm ring, which sits immediately in front of the meter, until the speed dial positions itself beneath the pointer of the exposure needle, at whichever of the five shutter speeds may be desired. The proper f stop opening will appear automatically in a small window on the diaphragm ring.

Smaller than most cigarette packs today, and able to fit easily inside an empty pack of regulars, the Tessina can get off 8 to 10 frames on one winding of a spring wind film advance knob. A roll of film for the Tessina can be cranked off with 2 or 3 windings (a roll of black-and-white has 23 frames, of color, 18).

The camera has a haze-filtered Tessinon 25 mm f2.8 lens, which we found to be fast enough to cover most light situations. It was more than fast enough while we were using Tri-X rated at ASA 400 and making copies of documents in our windowless, fluorescent-lighted office.

A SIGNIFICANT feature of the Tessina is that it uses regular 35mm film. This gives it a capability that most other subminiatures don't have. It permits the use of any 35mm film being manufactured today, from the low speedsters like Kodak's FX-Pan

all the way to its new, super-powerful 2485. Film used in the Tessina is processed as simply and conveniently as film used in any 35mm camera.

The camera requires the use of special film cassettes, but there are no problems obtaining them, and they can be easily bulkloaded.

The Tessina produces a negative 14x21mm in size, about a half-inch by 3/4 of an inch, which is approximately a third the size of a regular frame of 35mm.

Viewing is done in either of three ways—through a waistlevel groundglass, through an eyelevel sports finder, or through an accessory prism finder. In copying documents, we found that standing at an ordinary desk, and looking down, an 8½x11-inch sheet of paper fills the frame almost exactly.

The camera comes with a number of ingenious accessories, like a tripod plate which fits over the back of the



camera and a wriststrap so the camera can be worn like a wristwatch. Other accessories include a close-up and copy stand, a flashgun, bulk film loader, remote electric or pneumatic releases, and a series of filters—yellow, green, red, and infra red.

New on the GSA schedule (GS-00S-71554, Special Item No. 20-275), the Tessina 35L (and the Tessina 35) comes in chrome and black finishes. It also comes in red and gold—for lady spies?

POCKET STUDIO

This compact outfit permits you to carry a camera and important flash accessories wherever you go.

I KNEW a photographer once who always had a camera with him. You could never catch him without the briefcase that held his camera, accessories and samples of his work. He made a comfortable living as a professional news and magazine photographer. For extra profit, he did portrait and commercial work. He admitted that the secret of his success was the fact that he always had his camera with him, and everybody knew that he did.

It is good to have a camera handy at all times. The man with the always-ready camera can capture interesting scenes and occurrences that escape the occasional photographer.

I myself attempted to carry a camera at all times, but circumstances compelled me to give it up. Situations arose that prevented me from carrying my equipment-loaded gadget bag or briefcase.

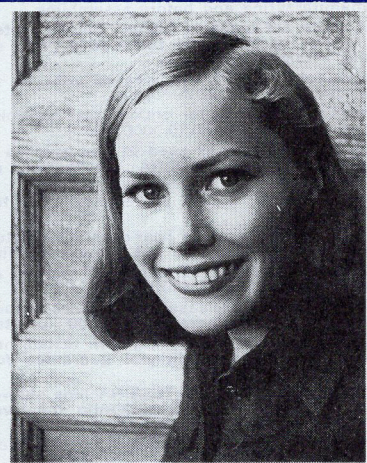
When the ultra-miniature cameras appeared I bought one and kept it with me, day and night. The fly in the ointment was the poor quality of the enlarged pictures. Good as it was, for its size, my ultra-miniature was not

suitable for standard professional work.

About six months ago I was introduced to the Tessina, a Swiss-made ultra-miniature precision camera that uses 35mm film. At first I thought that it would also have the shortcomings of my former ultra-miniature. Tests, however, proved that at last I found the ideal personal camera.

With the Tessina I was able to get professional quality results in both black-and-white and color.

To be able to take pictures under most conditions, I acquired a few additional items which, with the Tessina, serve as a complete "Pocket Studio." I can carry the



THREE flash units, one on camera and two slaves, were used for girl's portrait. Equipment is easy to carry.

equipment in my pockets without making a bulge. The pocket studio consists of the following items:

- Tessina with pentaprism finder
- Metraphot exposure meter
- Emo B-C flashgun with retractable reflector
- Minox pocket tripod
- small camera clamp
- two Kodak electric eye remote flash units
- General Electric AG-1 flashbulbs

This outfit enables me to take pictures under a great variety of circumstances.

I consider my Tessina Pocket Studio to be a hobby within a profession, a hobby that enables me to take pictures of things I like, not only of those I get paid for. Of course, I can take pictures I like with my "regular" equipment, and often do, but having the tiny Tessina with me always results in additional fun and in many interesting pictures that I would have missed without it. Last but not least, having the camera handy sometimes results in additional unexpected income.

The illustrations will give you an idea of the photographic quality that can be achieved with the Tessina and the accessories carried in the pocket studio outfit.

The girl's portrait is a flash shot. One flash on camera, one Kodak slave unit on the right and the second slave unit behind the subject, to serve as a background light. Since all flash reflectors are shallow and nondirectional, the lighting is pleasingly soft.

The striking perspective of the girl on tracks results from a low camera position, combined with the great depth of field of the Tessina lens. With the 25mm lens stopped down to f/22, the depth of sharp field reaches from 21 inches to infinity.

There is no end to what you can do with a pocket studio outfit. Assemble your outfit to suit your requirements. You will find that carrying a camera at all times is a lot of fun and occasionally it can also be quite profitable.

—Joseph Foldes



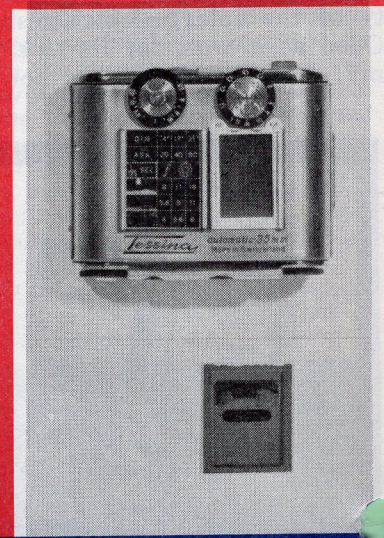
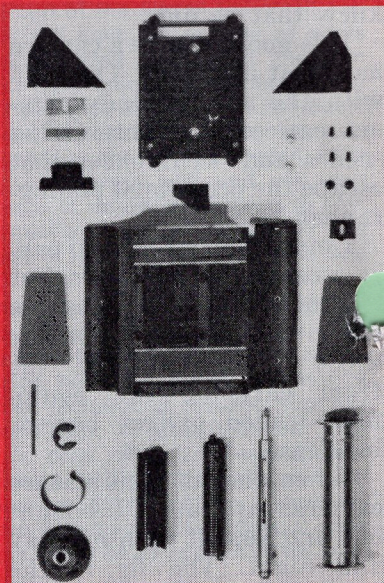
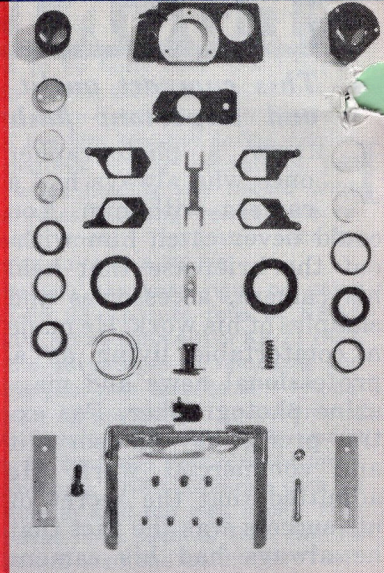
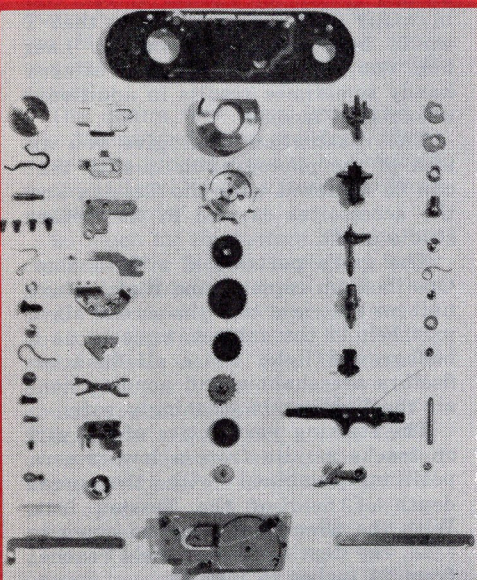
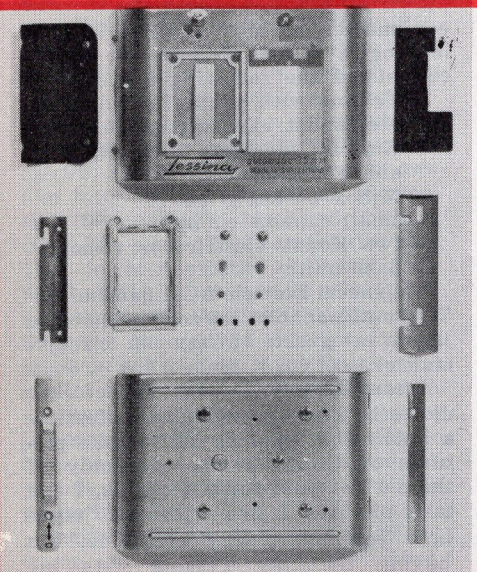
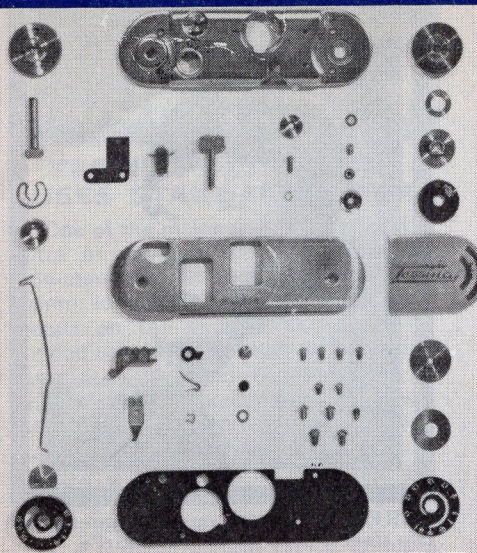
OUTFIT consists of Tessina, meter, flashgun, two Kodak slave units, tripod, camera clamps, flashbulbs.

Tessina 35

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5. Manufacturing a TESSINA means meticulous assembling of close to 400 minute precision parts.
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19. Over 50% of factory personnel is engaged in the most severe, total quality controls, using highly specialized testing instruments.
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