

# THE SUBMINIATURE TIMES

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



Weathermatic A:  
Versatile and  
simple to use

*Weathermatic A is excellent beach companion for braving sand, salt spray, and water.*



The Weathermatic A is great for photographers who like the simplicity of 110 film-cartridge load-

ing and fully automatic exposure, but who tend to be hard on a camera. Swimmers can take the Weathermatic to poolside, or underwater to a depth of 15 feet, to catch the action. And even if it's raining or snowing, you can get that shot of your favorite football player making a touchdown.

The rear-cover-release snaps are simple to operate, and once the cover is removed, the film and battery compartments are easy to get to. Film speed from ASA 64 to 400 is indexed automatically when the film cartridge is inserted, and a single AA-size battery powers both the built-in electronic flash and the exposure-warning light. The rear cover is attached to the camera body with a short, tough plastic strap.

The two large control knobs on top of the camera body are for focus and exposure. Five symbols for zone focusing from three ft. to infinity are shown

on the focus knob and are also displayed inside the viewfinder. The exposure control knob has three symbols, which represent sunny, cloudy, and low-light conditions.

A red warning light in the viewfinder glows if there isn't enough light for a sunny or cloudy exposure, and pulsates to show that the built-in flash is recycled when the knob is set for a flash exposure. The shutter speed remains at a fast 1/200 sec, which helps maintain picture sharpness.

Because some of us tend to forget numbers and directions, a table of focus symbols and flash-range distances is molded into the bottom of the camera body, and is also printed on the plastic wriststrap lock. Also, the film type, number of exposures in the cartridge, frame number, and a blinking flash-ready light are all clearly visible through the transparent rear cover.

For underwater photography, your best pictures will be taken in clear water—such as a swimming pool, clear lake, or tropical ocean. Turbid water causes two problems: First, there may

not be enough light for a sunlight or cloudy-sky exposure. Second, and more important, light from the flash will strike suspended particles in the water and reflect back to the lens. Picture sharpness will decline with increased camera-to-subject distance, so try to stay within three or four feet.

While the 45-degree angle of view is great for keeping distant subjects large in your topside pictures, the 34-degree underwater angle is somewhat limiting. The Weathermatic is fine for snapshots of fish, or head-and-shoulder diver portraits, but the underwater angle of view is too narrow for large subjects such as entire divers or groups of divers. (Because water refracts, or bends, light more than air does, all lenses have narrower angles of view underwater than topside.)

This little camera weighs 12.5 oz. in air, floats in water, slips easily into a pocket, and produces excellent results. The suggested retail price of the Weathermatic A is \$165. Its U.S. distributor is Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446.

# ELECTRONICS

BY STEPHEN A. BQOTH

## Filmless Photography Arrives

**J**UST THREE years ago this fall, *POPULAR MECHANICS* reported Canon's debut of the first filmless camera for professionals ("Electronics," page 56, Sept. '86). Now, filmless point-and-shooters for amateurs are here, courtesy of Canon and Sony.

Like their professional cousins, the Canon Xap Shot and Sony Mavica record color images on a magnetic disk, for instant retrieval and review on any TV. Compared to film cameras, their price is high—about \$1000.

In conventional photography, the light-sensitive chemical film serves as both the pickup device and the storage medium when it is exposed to images admitted through the camera's lens. Once the film is exposed, it can't be reused—and until it is processed, it can't be displayed.

With still video cameras no processing is required because they use a magnetic disk instead of film. Much like videotape, images recorded on the magnetic particles may be retrieved and displayed immediately after exposure. The magnetic storage medium also may be erased, and reused to record new images.

Although the magnetic disk is still video's image-storage medium, the image pickup device is a small microprocessor chip mounted behind the camera's lens. In the same manner as video cameras and camcorders, the pickup chip reads lightwaves admitted through the lens, then converts them to electrical signals for magnetic storage.

Although the 47mm-dia. disk is called a video floppy, it's actually housed in a hard, 2-in.-sq. plastic shell about the size of a 35mm slide in its mount. Only one side of the floppy is used for recording. Despite this, there's room for



New, all-electronic still video cameras from Sony (above) and Canon (right) record images on magnetic disks instead of film. The images are displayed directly on a TV monitor—no developing is required.

up to 50 images, each recorded on a concentric track, beginning with Track 1 at the circumference and ending with Track 50 near the center of the disk. Not surprisingly, the tracks are quite narrow—only 60 micrometers wide, or 24 ten-thousandths of an inch. A 12-micrometer blank band separates one track from the next. The disk spins counterclockwise at 3600 rpm and costs about \$8.

Each recording track can hold a single TV field of 262.5 vertical scanning lines. In the NTSC system used in the United States and elsewhere, a full TV frame consists of two interlaced fields, for a total of 525 lines. At this writing, all amateur still video cameras record single-field images only. Some pro cameras can record 25 full-frame images.

Despite single-field recording, on-screen image quality is quite good, because amateur SV cameras use the High-Band recording system similar to that of the Super VHS and High-Band 8mm motion video formats. Theoretically,

High-Band recording should yield horizontal resolution of up to 560 lines. In practice, though, Xap Shot and Mavica record 300 lines—still better than conventional videotape's roughly 240 lines.

### Easy to use

Another area where Xap Shot and Mavica differ from their professional forebears is in user convenience. With each SV camera, the built-in disk drive records images and plays them back. Earlier pro models required a separate deck for playback. Instead, the amateur SV cameras connect directly to a TV monitor through a combination AC adapter/battery recharger and video-input cable. In Sony's case, the unit is called a playback controller, and includes pushbutton controls for operating the Mavica. These controls are duplicated on an infrared remote. With Canon's Xap Shot, all controls are built in.

In size and physical appearance, Xap Shot and Mavica resemble compact binoculars—

with a single lens. Each weighs in around 1 pound, including its built-in rechargeable battery. Xap Shot uses an 8-volt lead-gel battery while Mavica has a 6-volt NiCd. Each is rated for about 500 exposures, or 250 with flash, and recharges in about an hour.

As you might expect in a point-and-shoot camera, all exposure functions are automated—including flash. Focusing is not automatic—it's fixed. Everything beyond 3 ft. is in focus with Xap Shot, 4.5 ft. with Mavica. A macro-switch lets Xap Shot focus as close as 1 ft. Mavica requires a macroconverter lens.

In specifications, Xap Shot's 11mm f/2.8-22 lens offers shutter speeds from  $\frac{1}{30}$  to  $\frac{1}{500}$  sec. The shutter speed of Mavica's 15mm f/2.8-16 optic ranges from  $\frac{1}{30}$  to  $\frac{1}{500}$  sec. The 11mm and 15mm focal lengths do not represent superwide-angle lenses. They're actually the equivalent of about 60mm in a film camera. Why the low measurement? Because the chip that serves as the focal plane of an SV camera has a smaller area than a 24x36mm film frame. To calculate the film-camera equivalent of an SV lens, multiply its focal length by 4 for a  $\frac{1}{4}$ -in. pickup (Mavica) and by 5.33 for a  $\frac{1}{2}$ -in. chip (the diagonal measurement of Xap Shot's chip). Another area of comparison with film is the light sensitivity of SV cameras.

For both Xap Shot and Mavica, flash sync speed is  $\frac{1}{125}$  sec., triggered automatically. In terms of film speed, the SV cameras have a rating equivalent to ISO-100. In an age of ISO-3200 and faster films, this is quite slow. But SV cameras probably will increase their light sensitivity rapidly, much as motion video camcorders did.

# Throwaway Cameras

Surprise! They've been hitting the trash bin for more than 100 years.  
By Eaton S. Lothrop, Jr.

**R**are, yet affordable, and boasting a character all their own, older disposable and returnable cameras can serve as a singular source of interest and even amusement for camera enthusiasts. The first were common objects of humble, mom-and-pop design, marketed with all the sunny bravura of post-World War II commerce ("Snap and Mail!"). Viewed as a group, they reveal a lot about photography's role in pop culture. Often used as incentives or promotional items, they've sold a lot of breakfast cereal, too.

What, exactly, is a disposable or returnable camera? In the 100 years since George Eastman introduced the first returnable, the Kodak, camera manufacturers have showered consumers with returnable/disposable schemes. There were, for example, return-for-processing systems in which a camera came back to the photographer, but not necessarily the same one the photographer mailed in. Other returnables came back "reconditioned"; the box was new, but the lens/shutter mechanism was lifted from the wreck of a pre-

viously used camera. Finally we have the current generation of 35mm and 110 disposables (including Kodak's Fling and Fuji's Quick Snap); from these the photographer receives only the pictures.

While there were these and probably other disposable/returnable schemes, the collection we're about to peruse includes only those cameras that users returned for processing and never saw again. (Although they may have received a reloaded camera by return post, it wasn't the one they submitted.) The collection includes both true disposables (which were destroyed) and those that were recycled into new cameras. Most were loaded with black-and-white film rated at around ISO 125 and outfitted with simple trip shutters set anywhere between 1/40 and 1/60 sec. The cameras included few instructions about exposure, because from experience, box-camera users knew to shoot only in bright sunlight.

The earliest in our collection is the Picture Box, which hit the American market in the late 1940s. It was a tall, thin mail-in camera constructed of heavy-duty

cardboard with an outer paper wrapper. Mailing instructions for obtaining finished pictures were printed right on the camera. The photographer advanced the film by pulling a tabbed paper leader marked with exposure numbers. As the leader was drawn from the back of the camera, the exposed film wound into a loose coil within. No expensive spools here! This camera was destroyed to extract the exposed film, although the lens and shutter assembly may have been recycled in new cameras.

Like most disposable cameras (and disposable-camera-producing companies), the Picture Box was short-lived. I've run into no evidence of its existence beyond a short span in the late 1940s.

Another long, skinny, and equally transient example of these early returnables was the Photo-Pac, with packaging that instructed the user to simply "Aim-Snap-Mail." Produced by the Photo-Pac Camera Mfg. Co. of Dallas, TX and introduced around 1950, it looked a lot like the Picture Box in size, shape, and packaging. It did, however, introduce a *plastic*

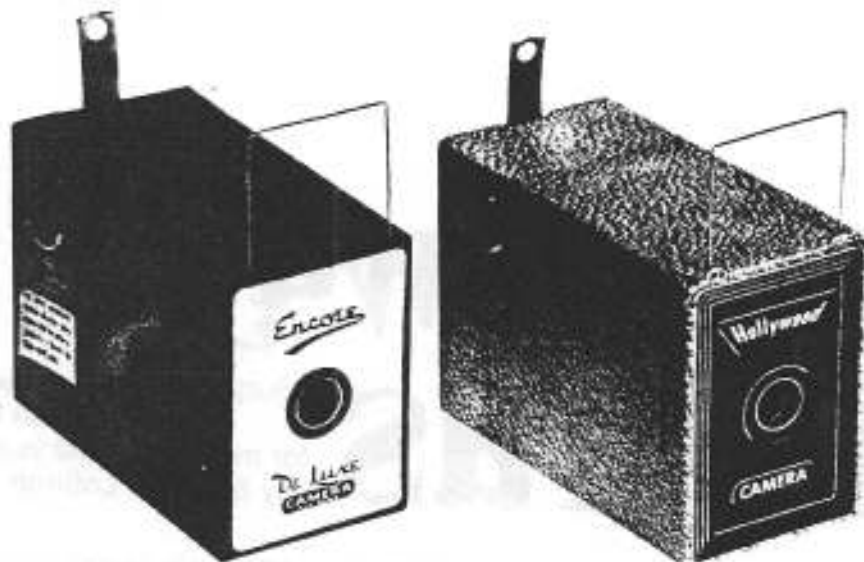
## THE FIRST RETURNABLE

Introduced 100 years ago, the Kodak was the earliest camera to successfully utilize rollfilm. This 35-ounce wooden box was purchased for \$25, no small sum at the time. It had film for 100 2½-inch-diameter circular exposures, which were developed, printed, and returned to the photographer—along with the reloaded camera—for a whopping price of \$10.



## SNAP AND MAIL

The Photo-Pac of 1950 is one of the early return-for-processing cameras. It featured a collapsible viewfinder of stiff paper mounted toward the back of the camera. Its packaging proclaims it to be the "most convenient way to take snap shots."



### A HOLLYWOOD ENCORE

The Encore De Luxe camera, introduced around 1950, included a plastic film-advance knob and a retractable viewfinder consisting of a thin wire frame and metal ribbon with a peephole. The Hollywoods were probably recycled Encores.

inner box (as opposed to cardboard). The Photo-Pac was the first returnable to include a mailing label affixed directly to its side, making it probably the first camera to double as a mailing carton. Return postage was less than a dime. These, too, were largely demolished during the film-extraction process.

The packaging flatly proclaimed the Photo-Pac the "most convenient way to take snap shots." Its original price included processing and eight "Jumbo" pictures printed  $3\frac{1}{4} \times 4\frac{1}{2}$  inches "And Mailed to You!"

More in the traditional shape of the classic rectangular box camera was a contemporary of the Photo-Pac called the Encore. Introduced in about 1950, it eschewed the expense of plastic for a more economical, stiff cardboard inner box. By embossing the Encore's simple, black outer wrapper with a lizard-skin pattern, the manufacturers offered class-conscious photographers an upscale version of the camera, the Encore De Luxe.

Its most unusual feature, a patented one, in fact, was the inclusion of a dotted line

on the mailing label. Its function? When the time came to mail it in, the photographer would slit the box open along this dotted line and insert money to cover processing and return-postage costs. In 1950, it came to a buck.

Both Encores were used as promotional items and marketing come-ons by airlines, banks, and other relatively high-end consumer-oriented operations.

A third product of the Encore Camera Co. was the slightly larger Hollywood. Similar in most respects to the Encore, it's probable that the Hollywood was a recycled Encore stuffed into a new outer shell of thin cardboard.

A correlation seems to exist between the degree to which a returnable camera was rendered useless during processing and the longevity of the product line. Those that could be recycled *in toto* survived the longest. This certainly was true of the long-lived Imp. Made in Minnesota by Beaurline Industries and first introduced in 1951, the Imp resurfaced periodically under a variety of disguises until the mid-1970s. It was simple, boxlike,



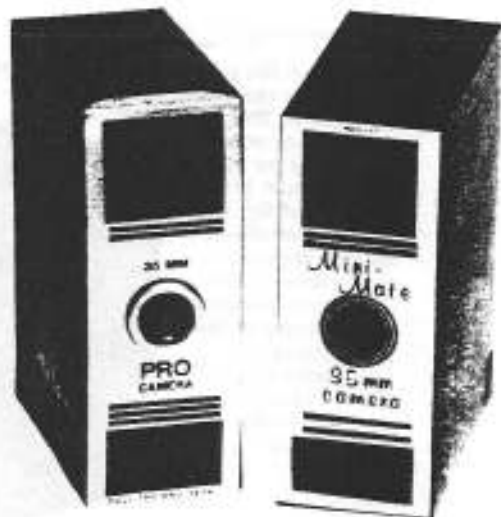
### LES RETURNABLES

When the French got in on the returnable act, they called it the Fex. Introduced in 1968, it used paper-backed black-and-white film on a spool and included a large direct-vision viewfinder in front and a small red window on the back panel that displayed frame numbers.



### IN-CAMERA VIEWFINDERS

One of the earliest returnables with a through-camera, direct-vision viewfinder was the Imp, produced in 1951. Its sister cameras included the Pro (1953) and the Mini-Mate (1971). Cost for the original camera, film, and a dozen  $3\frac{1}{4}$ -inch snap-shots was \$1.79.



# Throwaway Cameras



## ENTER: THE F-STOP

The first returnable to include variable-exposure stops ("Bright" and "Cloudy") was the Techni-Pak-1 brought out by Technicolor, Inc., in 1973. Loaded with 35mm color-print film, it resembled many of the 126 "instant" cameras of its day. Five wrappers from Winston cigarettes and \$2 got you the camera. When you returned it with \$5.95, plus postage, you got back 20 3½-inch-square prints, negatives, and a reloaded camera.

and made of solid plastic with a thin, expendable cardboard covering. The Imp's contribution to the evolution of disposables was simple yet significant: a sliding plastic panel located on the camera's back that was held shut by adhesive tape. This design improvement allowed the Imp to be reloaded, repackaged, and—*voilà!*—reshipped with virtually no demolition of any of its parts.

A curious name, Imp. In fact, it drew upon a long history of mass-market snapshot cameras named for turn-of-the-century cartoon characters. There were Brownies, Kewpies, and Pixies along with Imps, although the former weren't return-for-processing cameras.

In the mid-1950s, the Imp consulted a public-relations firm and entered a second life named the "Pro." While a decal on its side identified it as such, you can clearly discern the word "Imp" faintly stamped into the plastic box. A third reincarnation appeared in 1971, in which the Imp (still stamped as such) became the Mini-Mate. In about 1975, the Mini-Mate would become the first American-made returnable camera in our collection to of-

fer consumers a choice between black-and-white or color film.

All returnables were not made in the U.S., however. One foreign product was the Fex, introduced in France toward the end of the 1960s. Tall and thin, it used 127 film. The instructions on the back (in French) directed the user to break open the camera after exposure, remove the film cartridge, and return it for processing. Neither reused nor recycled then, this truly disposable camera didn't last long.

The Techni-Pak-1 was made in Hong Kong by Technicolor in the early 1970s. Loaded with color-print film, it was re-

turned to a Technicolor lab for processing, reloading, and eventual return to the user. The carton in which the camera was sold also served as its mailing container ("Keep this box" read the instructions). While the body could be easily opened for removal of the film, reloading was difficult to impossible because of a special, intricate spooling mechanism. This clever feature assured that the camera would not spin out of the Technicolor photofinishing system.

Also introduced in 1973, and definitely international in its marketing range, was the Lure. It appeared as the Lure X2 in Alaska; the Blick in Italy; the Rank in Great Britain; and, as late as 1985, in New York City as the Love. A relative marvel of precision for a small plastic camera, the Lure was loaded with 16mm film and, like the French Fex, was totally destroyed during processing.

Finally, we come to the present generation of disposable cameras. Kodak's Fling was the first 110 disposable in the American market. In keeping with a current trend, the Taiwanese fabricate the

*continued*



## FIRST FLASH

The little Lure camera first appeared in 1973. Loaded with a 12-exposure roll of 16mm paper-backed color film, it had a mount for Magicube flashbulbs and a film-advance shutter-cocking mechanism activated by revolving the flashcube mount.



# Throwaway Cameras

body while the packaging and film are made in the U.S. When it hit supermarket checkout lines in early 1987, shoppers across the country often mistook it for a package of Kodak 110 film. (Since then, Kodak introduced bubble packaging that clearly distinguishes the Fling cameras from the 110 film.)

Within this bubble packaging comes a tiny plastic camera body reminiscent of the current crop of foreign-made mini-110s. While instructions tell you to discard the camera after prying out the exposed film, I've discovered that you can insert a new film cartridge, resnap the body shut, and recycle the camera yourself. Kodak followed the 110 Fling with a 35mm version that will probably replace the 110s entirely.

Kodak's Fling, however, wasn't the first 110 or 35mm disposable. That honor goes to the Fuji Quick Snap. The first version of these modern Fuji disposables was a 110 released in 1986 and called the "Fu-

jicolor Super HR 100 Film with Lens." It never made it to the U.S. market.

The first Fuji disposable to cross the Pacific was the 35mm Quick Snap in 1987. In a classic case of one-upmanship, it was introduced only one day after Kodak had unveiled its 110 Fling! As if that weren't enough, at approximately the same time Kodak was announcing the Fling 35, Fuji introduced its Quicksnap Flash. This 35mm disposable comes complete with flash and can be had for about \$13.95, nearly a third more than the flashless

Quick Snap. The battery-powered electronic-flash unit snaps onto a slightly revamped Quick Snap body and is activated when the shutter release and flash switch are pressed simultaneously. Instructions reveal that the flash can be removed from the body. Maybe consumers will (pardon the pun) recycle the unit.

What does the future look like for disposables? Sales are brisk, and the products keep coming. Though the cameras themselves may be tossed, the idea seems to return again and again.

## ONE-UPMANSHIP

Just as Kodak released its Fling 35, Fuji went them one better with a 35mm disposable camera that includes flash. Known as the Quicksnap Flash, the product was first introduced on the Japanese market. The flash adds 1 1/4 inches to the camera's size and about \$4 to its \$13.95 suggested retail price. It's triggered by simultaneously pressing the shutter release and a button under the flash unit. (Note position of model's index fingers.)



## DON'T FLING THE QUICK SNAP

The 35mm Fling from Kodak (1988) and the 35mm Quick Snap from Fuji (1987) are both currently on the U.S. market, and both were preceded by similar 110 versions (although Fuji's wasn't released in the U.S.). Both of these popular disposables share a remarkably similar design and ISO 400 color-print film. The Fling 35 has a suggested list price of \$8.35, while the Quick Snap retails for "under \$10."



## SECURITY: THINK YOU'VE HEARD IT ALL?

In 1988 Martin Marietta developed a solar-powered microchip transmitter small enough to be glued onto a bee's back. It was hoped to use the technology to follow the movement of the so-called killer bee swarms.

Recently we heard about what is claimed to be the ultimate in camera security. Some of the chips have been

inserted into the casings of one collector's subminiature cameras, all tuned to 121.5 the Aircraft Emergency Channel monitored 24 hours by a global satellite network.

There's a stiff fine for using the frequency illegally. But anyone attempting to take one of the cameras into light without disarming its system will draw HEAVY attention.