

UNIQUE FAMILY OF CAMERAS

Ever since the first sharp still pictures were made on 35-mm motion picture film, inquisitive photographers and designers have wondered whether good images could be made on still smaller negatives—and if so, how much smaller? One response, of course, has been the subminiature, discussed elsewhere in this issue. Another is sub-35.

Where did the term "sub-35" come from, suddenly? It's your old friend "half-frame," along with some close relatives. Sub-35 embraces the majority format of 18x24 mm, and the minority groups represented by Robot and Tessina, for example, which make different use of the standard full-width 35-mm film.

European and Japanese manufacturers have been taking tentative nibbles at sub-35 since early in the postwar camera boom. Now, from across both oceans, we're getting whole lines of beautifully engineered, precision-built sub-35's, and our own giant, Kodak, has recently entered the lists with the Instamatics, which go even further in "tampering" with old-fashioned 35: the width is still the same, but most of the perforations are gone, and the film with paper backing is sold in Kodapak cartridges designed for simplified loading in the camera.

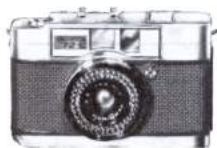
So we have a whole flourishing family of small-but-not-minuscule cameras that deserve special consideration: they're neither overgrown subminiatures nor "big" cameras that happen to be smallish. These 13 pages help put sub-35 in its place.

What do professionals think of half-frame and its friends? Many logically reason that, if our film and developer technology is twice as good as it was 10 years ago, our half-size negatives today can have the quality of yesterday's full-size ones.

On his extended Japanese assignment, W. Eugene Smith used an Olympus Pen regularly with confidence and satisfaction. This magazine's contributing technical editor Bill Pierce, likes the way sub-35's "incredible freedom" lets him "just point and push." Slim Aarons, much-traveled contributor to *Holiday* and *Town & Country*, finds it an ideal auxiliary camera for color.

Whatever you think of sub-35 now, you'll want to know about the cameras, their problems, and their triumphs. And maybe you'll be a sub-35er soon yourself!

Yashica 72E



Robot Star II



Canon Demi



Robot Royal 24S



Alpa 6C



COMING: Olympus Pen F



Ricoh Caddy



Fujica Duet



Yashica 72 Mimy



Agfa Paramat



Kodak Instamatic 400



Tessina



Ricoh Auto Half



Taron Chic



Petri Half 7



'New' format, 50 years old, comes back

You don't have to be very old to remember when every downtown city block had its roving photographer, with miniature camera and a handful of code-numbered tickets, offering candid shots "ready next day." Chances are his camera was a Univex Mercury—a popular sub-35 of the late 1930's which survived into and beyond the war years.

If you're an Air Force veteran, you may remember that when a disabled German plane was captured after a safe landing, the Allies' first concern wasn't the pilot, but the tiny Robot cameras set into the wings, which recorded in stereo whatever the plane had encountered in flight. Once more, the sub-35.

Do these sound like "early" applications of the less-than-standard 35-mm format? By no means: exactly 50 years ago, in 1913,

Herbert Huesgen of the New Ideas Manufacturing Company introduced something called the Multiple Tourist, which made 250 pictures, 18x24-mm, on a load. The idea of quantity took hold readily: soon there was the Simplex Multi Exposure, giving the user a choice between 800 half-frame and 400 full-frame shots to a load.

Two years later came the Minnigraph, providing 50 half-frames, sold with its own projector. In France in 1920, Jules Richard came forth with the Homeos, a stereo camera that made 26 pairs in the half-frame format. A further refinement was the Sept, designed by Andre Debric, which offered the option of stills or motion pictures; it had a spring motor and a 17-foot magazine—pre-loaded—for 250 pictures. It too had its own projector.

continued on next page

Today's hottest negative size:

SUB-35

Resurgence of half-frame and similar formats offers useful compromise between 35-mm and subminiature


By WILL FORBES

Back in the States in 1925, Ansco put the well-remembered Memo on the market. This was the first sub-35 to have a daylight-loading cartridge and a rapid-wind mechanism. Ansco also provided a complete system of processing, slide-making, and filmstrip preparation.

At the height of the Jazz Age, in 1928, we were presented with a "35-mm Still-Kamra" called the QRS, which made 40 shots to a roll.

It was 1938 when the Mercury arrived, made by the Universal Camera Company, which had previously put its name on a little nonstandard, 50-cent Bakelite "toy" camera. The Mercury was a serious piece of equipment, with a 35-mm *f*/3.5 lens that stopped down to *f*/22, shutter speeds to 1/1,000 second (with a unique rotary focal-plane shutter that accounted for the semicircular projection atop the body), and a focusing scale reading down to 18 inches. This paragon used standard 35-mm cartridges for 72 exposures, and sold for \$25.

A specialized model of the Leica, called the 72, was introduced in 1954, intended principally for making educational and commercial filmstrips. It had a certain popularity because of film economy and the long-load feature, but U.S. import was discontinued in 1957.

The big burst of activity in the sub-35 field came when Japanese manufacturers had begun to meet the demand for "regular" 35's and reached into new product areas. Half-frame photography caught the imagination of at least two continents—and that brings sub-35's history right up to date.—



Some veterans of sub-35 (all now deceased). From left: Ducati with 35-mm *f*/3.5; Ansco Memo (1920); Photavit; kissing-cousin Zeiss Box Tengor that used 1/2-127 film; Univex Mercury, an early leader with whirling disk shutter.

COMPARISON CHART:

Camera	Format (in mm)
Agfa Parat I	18x24
Agfa Paramat	18x24
Alpa 6C	18x24
Alpa 4B	18x24
Canon Demi (Coming)	18x24
Fujica Duet	18x24
Kodak Instamatic 100	26x26
Kodak Instamatic 300	26x26
Kodak Instamatic 400	26x26
Kodak Instamatic 700	26x26
Nikon S3M	18x24
Olympus Pen	18x24
Olympus Pen D	18x24
Olympus Pen S	18x24
Olympus Pen EE	18x24
Olympus Pen EES	18x24
Olympus Pen F (Coming)	18x24
Petri Half 7	18x24
Ricoh Auto Half (Coming)	18x24
Ricoh Caddy	18x24
Taron Chic	18x24
Yashica 72E	18x24
Yashica 72 Mimy	18x24
Tessina	14x21
Robot Star II	18x24 (18 exp.), motor
Robot Star II/D	18x24 (50 exp.), motor
Robot Royal 24S	24x24
Robot Royal 18 Sa	18x24

All cameras have eye-level viewing except the Alpa 4B

HALF-FRAME LEICA?

Yes, there is a Leica that makes 72 exposures on a standard roll of 35-mm film. It is made by E. Leitz, Canada, but no longer imported by E. Leitz, New York. It is called the Leica 72X, and is listed in the current catalog of Burke and James, 321 S. Wabash Ave., Chicago 4. It is furnished with 50-mm f/2 lens at \$445; with 35-mm f/3.5 lens at \$495; and with 100-mm f/2 "speed telephoto" at \$545.

SUB-35 CAMERAS CURRENTLY AVAILABLE

Lens	Shutter	Focusing	Price
30-mm f/2.8	1/30-1/225	Zone	Not avail.
30-mm f/2.8	1/125 or 7 LVS	Zone	Not avail.
Interchangeable*	1-1/1,000	Scale	\$399 less lens
Interchangeable*	1-1/1,000	Scale	\$279 less lens
28-mm f/2.8	1/30-1/250	Zone	
28-mm f/2.8	1/30-1/300	Zone	\$69
43-mm f/11	1/90 and 1/40	Fixed	Under \$16
41-mm f/8	1/60 and 1/40	Fixed	Under \$45
41-mm f/8	1/60 and 1/40	Fixed	Under \$53
38-mm f/2.8	1/60, 1/125 and 1/250	Scale	Under \$110
Interchangeable*	1-1/1,000	Scale	Special order
28-mm f/3.5	1/25-1/200	Scale	\$34.40
32-mm f/1.9	1/8-1/500	Scale	\$69.95
30-mm f/2.8	1/8-1/250	Scale	\$44.50
28-mm f/3.5	1/40-1/250	Fixed	\$49.95
30-mm f/2.8	1/40-1/250	Zone	\$59.95
Interchangeable*	1-1/500	Scale	Not avail.
28-mm f/2.8	1/30-1/250	Zone	\$49
25-mm f/2.8	1/25 (auto.) 1/30 (manual)	Fixed	Under \$75
25-mm f/2.8	1/4-1/250	Zone	\$54.95
30-mm f/2.8	1/25-1/250	Scale	\$49.95
28-mm f/2.8	1/8-1/250	Fixed	\$45
28-mm f/2.8	1/60	Fixed	\$45
25-mm f/2.8	1/2-1/500	Scale	\$169
Interchangeable*	1/2-1/500	Scale	\$159 less lens
Interchangeable*	1/2-1/500	Scale	\$179 less lens
Interchangeable*	1/4-1/500	Scale	\$239 less lens
Interchangeable*	1/4-1/500	Scale	\$279 less lens

which has waist-level viewing and the Tessina which has both eye- and waist-level viewing.

*Additional or recommended lenses for cameras with interchangeable lens mounts.

Alpa 6C and Alpa 4B—	35-mm f/2.8 Curtagon	\$159
	50-mm f/1.8 Micro-Switar	\$209
Olympus Pen F—	38-mm f/1.8 Zuiko	
	40-mm f/1.4 Zuiko	
	50-mm—90-mm f/3.5 Zuiko Auto Zoom	
Robot Star II and Star II/D—	38-mm f/2.8 Schneider Xenar	\$ 79
	40-mm f/1.9 Schneider Xenon	\$ 99
Robot Royal 24S—	38-mm f/2.8 Xenar	\$109
	40-mm f/1.9 Xenon	\$149
	45-mm f/2.8 Xenar	\$ 99
Robot Royal 18 Sa—	38-mm f/2.8 Xenar	\$109
	30-mm f/3.5 Xenagon	\$129



MECAFLEX: the first Sub-35 Reflex

By Norman Rothschild

Who made the first 35-mm SLR taking pictures smaller than the standard 24x36-mm format? Laurels may well go to the Kilfitt MecaFlex pictured here (but no longer made).

This camera, first introduced around 1954 by Heinz Kilfitt of West Germany, makes a 24x24-mm or 1x1-inch negative on standard 35-mm film; also known as the "Robot" format. This size gives 50 exposures per standard 35-mm exposure roll of film. At this writing no lab we know of mounts this size transparency as a regular service.

In addition to being probably the first sub-35 SLR, it claims some other firsts. It was the first 35-mm to be made with a leaf shutter and full lens interchangeability. In the MecaFlex the shutter is located behind the lens. In early leaf-shutter SLR's, such as the Contaflex and the first Retina Reflex, front-lens components only were interchanged. It was also the first leaf-shutter reflex to have a fully automatic diaphragm.

The camera shown here has a 40-mm f/3.5 Kilar lens; M-X synchronized Prontor shutter with speeds from 1 to 1/300 sec, and B. Interchangeable lenses include a special 40-mm Makro-Kilar and some telephotos. Other features include a groundglass with curved field lens, waist-level magnifier, rapid combined film transport and shutter cocking. With hood folded the MecaFlex measures 2 1/2 inches high, 4 inches long and 2 3/4 inches from back to front with the 40-mm f/3.5 Kilar lens set at infinity.

Is this camera available? Reports have it that the MecaFlex never went into large-scale serial production. Why? Probably for lack of a slide-mounting service. They are sometimes found on the used-camera market.

Films for SUB-35

Obviously, any 35-mm film can be used in any sub-35 camera (with the unique exception of the Instamatics). It is also clear that with a film area half as large as full 35-mm, some films are going to work a lot better than others.

Chiefly, of course, it's a matter of grain and sharpness characteristics. And nobody has yet found a way to combine fine grain and high speed in a single emulsion, so it follows that the quality films for small-format photography will be the slow ones. You will, of course, be able to get increased film speed without sacrificing too much quality—depending on what you consider “too much.”

First of all, here's a rundown on currently available black-and-white films recommended for finest grain and best image quality:

	Daylight ASA	Tungsten ASA
Adox KB14	20	16
Adox KB17	40	32
Agfa Isopan FF	16	12
Agfa Isopan F	40	32
Ilford Pan-F	25	16
Kodak Panatomic-X	40	40

Among color films, those which will stand enlargement and projection best are:

Daylight	ASA
Dynachrome	10
Kodachrome II	25
Artificial light	
Dynachrome Type F	10
Kodachrome II, Pro Type A	10

Holding promise for the future in this category is new Agfa-color CN-14, a negative material with a speed of 20; it was not available for testing as this story was prepared.

Somewhat faster, and still fine-grain, black-and-white films:

	Daylight	Tungsten
Agfa Isopan ISS	100	80
Ilford FP3	125	100
Perutz Peromnia-21	100	100

The next-faster group of color films that also stand up well in projection and enlargement include:

Agfachrome CT-18	50
Ansochrome Daylight	32
Ektachrome-X	64
Kodachrome-X	64
Peruchrome	32
Agfacolor CN-17 (neg.)	40
FR Color (neg.)	40
Kodacolor-X (neg.)	64

For Kodak's Instamatics, programmed to a speed of 64, there are Kodapak cartridges of the three color films already listed—Kodachrome-X, Ektachrome-X, and Kodacolor-X—and in addition the b&w Verichrome Pan.

If you've wished sometimes that half-frame loads weren't *quite* so long, you'll be grateful for the 12-exposure rolls now made available by Ansco and Agfa; they provide 24 sub-35 shots.

PROJECTORS and ENLARGER LENSES for SUB-35

When you've finished mounting those little semi-precious gems of sub-35 color—or picked them up from the processor—the next thought is about displaying them to your admiring but dubious audience. Will the old standby senior-35 projector do the job? Must you buy a new one?

The answers, respectively: yes and no. Your standard 35-mm projector will of course throw an image of your sub-35 picture on the screen, but you'll have to settle for smaller size, or back up with the projector into the next room to get your accustomed-size screen image.

The obvious solution: a lens of shorter focal length. Conventional 35-mm slides are usually projected with a lens of about four inches, or double the length of the taking lens. So a corresponding projector focal length for sub-35 would be about 55 mm. Many of the standard 35-mm projectors now sold have accessory short-focal-length lenses, for users who need large screen-image size with short throw. These are very good for sub-35.

Manufacturers have approached the small-format projector field with caution, usually hedging with a product that will project full-frame and sub-35. Olympus, quite understandably, has come forth with a projector designed specifically for the half-frame Pen's slides—and of course, all other sub-35's. (It, too, will take full-35, but this is more of an accommodation than a hedge.) Its 55-mm Zuiko *f*/2.8 lens will put a 3½x5-ft image on the screen at ten feet. With a fitted case, it's \$39.95 from Scopus, Inc., 257 Park Ave. S., New York 10, N.Y.; an automatic changer is

\$8.95, and a filmstrip adapter with vertical and horizontal masks is offered for \$6.95.

Accura provides a special device to adapt its compact portable projector for half-frame. The Doubl-it lens gives an image twice the size of that provided by the projector's 75-mm lens. The Accura itself is \$29.95; the Doubl-it attachment is \$5.95; the vinyl fitted case, \$3.95; and filmstrip carrier, \$4.95. It's from Accura, 708 Byron Ave., Franklin Square, N.Y.

Minolta attacks the problem from two directions. Its Mini 35 is primarily for full-frame, and its Mini 16 intended for sub-miniature; but both handle sub-35 quite nicely. The Mini 35 has a 75-mm Rokkor *f*/2.5 lens, and Airequipt adapter. With case, it's \$37.50. The Mini 16 has a 40-mm *f*/2.5 lens, and its price is the same. Shown in our illustration is the SV filmstrip carrier which fits the Mini 35, for previewing color before mounting. It is an additional \$9.95. Source: Minolta Corp., 200 Park Ave. S., New York 3, N.Y.

The especially efficient Prado 500 projector made by Leitz, which normally uses a 90-mm or longer lens for full-frame projection, will take a 35-mm accessory lens for big pictures with short throw from sub-35 slides. The company will soon have a 50-mm lens available for its Pradolux, too. E. Leitz, 468 Park Ave. S., N. Y. 16.

A shorter lens is a distinct advantage in enlarging sub 35's. It provides a greater degree of enlargement, and can cut down exposure time if used with the proper condenser. It is also handy for blowing up cropped portions of full 35's.

Several lenses ideal for enlarging sub-35 are currently available. Here are some, with their sources:

A 30-mm *f*/3.5 lens, stopping down to *f*/11, with click stops and Leica thread. In satin chrome finish, \$13, from Bogen Photo Corp., 28 School St., Yonkers, N.Y.

A 28-mm Componon *f*/4 with click stops down to *f*/16. Two models: standard thread, \$53.50; Leica thread, \$58.45. From Burleigh Brooks Inc., 420 Grand Ave., Englewood, N.J.

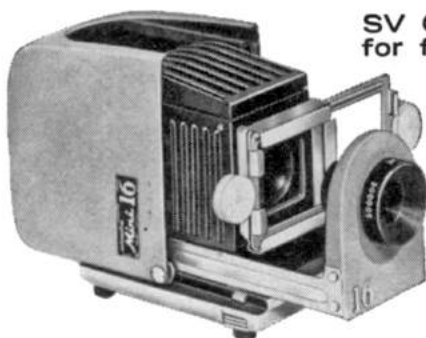
Two Leitz lenses primarily intended for photomacrography: the 24-mm Summar *f*/4.5, and the 35-mm Summar *f*/4.5. Both stop down to *f*/11 (no click stops), and both are \$68. From E. Leitz Inc., 468 Park Ave. S., New York 16.

Two models of a 35-mm *f*/3.5 Spiratone lens in recessed mount, with either Leica or "T" thread. Without diaphragm, \$7.95; with diaphragm click-stopping to *f*/16, \$13.95. From Spiratone Inc., 135-06 Northern Blvd., Flushing 54, N.Y.

A Wollensak 25-mm Raptar *f*/4.5 lens with click stops to *f*/22, Leica threading, and retaining ring. From Wollensak Corp., Rochester, N.Y. on special order only.

If your enlarger is an Omega, you'll be happy to know that Simmon-Omega makes a lens mount and matching condensers for that 25-mm Raptar. The set makes a sub-35 enlarger out of the models A2, B7, B8, B22, and D2. (The B22 doesn't need the condensers.)

For Axomat, Opemus, several other Meopta enlargers, there's a 35-mm *f*/3.5 Mirar lens. Price is about \$38.95. Consult E. Fischel Jr., 505 Fifth Ave., New York 17.

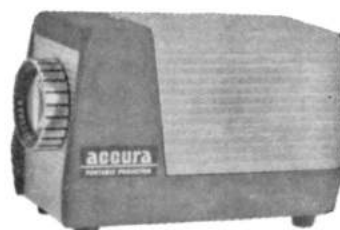
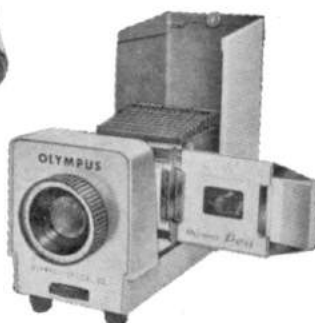


SV Carrier
for filmstrips

Minolta Mini 16



Olympus Pen



Accura, for full-35
and half-frame

SPECIAL MOUNTS & WHERE TO BUY THEM

Scopus, Inc., importer of the Olympus cameras, is offering a free processing coupon with each Pen Camera. Valued at \$2.50, it entitles the buyer to developing and mounting of, for example, 40 half-frame color transparencies. Scopus, Inc. has available also "Pen-size" cardboard slide mounts (heat-sealed) in boxes of 50 for 75 cents and 100 at \$1.50, and the slip-in type at 100 for \$3.50. For information: Scopus, Inc. 257 Park Ave. S., New York 10, N.Y.

Karl Heitz, at 480 Lexington Ave., New York, N.Y., distributor for the Tessina, Robot and Alpa, offers metal mounts for the 24x24-mm format in packages of 25 for \$4.95. Tessina in cardboard mount packets of 100 for \$3.95, and 25 metal mounts for 95 cents are also available.

Slide mounting of the Tessina format is also supplied by GEMounts (26705 Curie Ave., Warren, Mich.) and Porter Mounts (Porter Manufacturing & Supply Co., 2836 Sunset Blvd., Los Angeles 26, Calif.). Both

supply along with cardboard mounts, excellent glass mounts, which obviously offer the best protection.

Burke & James, Inc., 321 S. Wabash Ave., Chicago 4, Ill. and Emde Products, Inc. (2040 Stoner Ave., Los Angeles 25, Calif.) offer both cardboard and glass mounts for the 18x24 format. Pegco, makers of the Easymounts, who are in Sherman Oaks, Calif.; and Spiratone, Inc., at 369 Seventh Ave., New York 1, N.Y. have available cardboard slides.