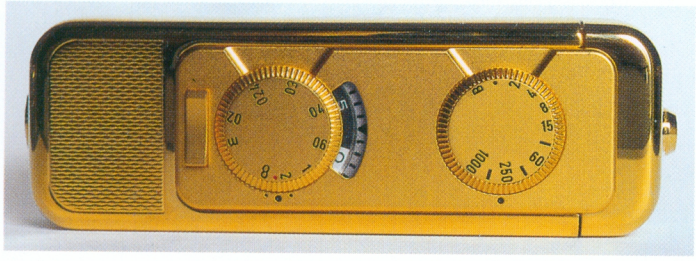
Classic CAMERA



Tettuccio con i comandi manuali.

Frontale chiuso con obiettivo Minox 15mm f/3.5.

Frontale aperto.

On the cover, Minox AX Gold
Twelve years after the Minox A was taken out of production and as the rest of the photographic world was changing over to electronic-based cameras, the all-mechanical Minox A was revived in a special limited edition called the AX. Only a few hundred Minox AX cameras were made with anodized, gold-plate or black finish.
The Minox AX Gold, identical to the original Minox A in terms of operation and appearance, was built in two lots of just 250 cameras each. The Minox AX Gold is not only a small, commemorative camera, it is also a veritable gem created for discerning camera enthusiasts and collectors.

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25

Original pre-war Biogon.

The "classic" Luftwaffen Eigentum Robot II with black top plate, "high" 48-exposure tensioning spring.

Condor II.

Officina Galileo, Florence.

Index 1997-2002 2
A wide angle quick-change artist 5
Minox, and to think it was so small 8
Veriwide, a german-american Super Wide Angle 16
Robot cameras from the 1939-1945 war 20
Murer, a slice of italian history 23
Start, a super Zenit from the Kruscev period 28
The Officine Galileo in Florence 36
Condor II, the fastest italian 35mm 40
Technical Spec Sheets - Leica M4, M4-2, M4-P, MD 44

CLASSIC CAMERA INDEX 1997-2002

	ISSUE
Alpa	
Alpa reflex	11
Angenieux	
Angenieux lenses for Exakta	12
Benser	
Extremely rare Benser lens panels	22
Bloch	
Edmond Bloch's photo scarf 1890	19
Canon	
Canon F-1	03
Canon AE 1	05
Canon 7	09
Canonflex, the first Canon SLR	10
Canon FA: unveiling of a mystery	15
Dating Canon reflex cameras	16
The secret eye of the Mikado - Canon X ray	16
Topogon and its cousins	18
Ducati	
Ducati, leader in Italian optics	16
FED	
Russian lens prototypes for the Leica M	22
Ferrania	
Astor: six-by-six signed Ferrania	20
Flexaret	
Flexaret, a Czech TLR	09
Gallo	
Carlo Gallo and the origins of the SLR	06
Gamma Roma	
A Leica (copy) born on the Tiber	22
Hasselblad	
Hasselblad saga	04
The Hasselblad story	14
Kilfitt Hasselblad compatibility	18
Ihagee Exakta	
Square format Exaktas	06
Exakta Vs Exakta	09
The legendary Exakta Real	17
Klein Ultrix aka Parvola	20
Exakta on the net: the torch is passed	18
Iso	
ISO a German-Italian reporter	08
Iso Lux	11
Janua	
Janua: a Leica made in Genoa	04
Kiev	
From Contax to Kiev	01
Kiev, the double mystery of the Russian Contax (part 1)	11
Kiev, the rewards of perseverance (part 2)	12
From Vega to Kiev: the 16mm Soviet pocket cameras	19
KMZ Krasnogorsk	
The Narcissists	23
Kowa	
Special cameras for photographing the eye	20
Kodak	
Retina Rectrospective	19
Kodak Vest Pocket	20
Leica	
Colourful Leicas	01
Compur Summicron for better flash synchronisation	01
Leicas, what you may not have seen	02
Leica Stereo Brackets	02
Leica M6 J: back to the future	03
Leica viewfinders	03
Leica fascination	04
Chance rarities	04
Tessar Zeiss, Hektor Leitz	04
Wehrmacht Leicas	05
Grey clad Leicas	05
Dedicated to professionals	06
An unusual Leica M5	07
The strange story of the Leica Post	07
Non-Wehrmacht Leica deliveries 1939-1945	07
The Leica Post	07
Leitz lens prototypes	08
Rare Leicas for my photographic collection	08
The Mooly-C	10
Well done, Ivan!	10
The grey Leica M3	10
New York, New York, the 16.476 adapter ring	11
Leicaflex SL, the first TTL from Leitz	11
Early Leica advertising	11
Leica IIId, 1940-1944	11
Leica Reporter	12
Leica of the German Kriegsmarine	13
100 million lire for a Leica Luxus?	13
On-board the Zeppelins	14
Leica M4 Leicavit MP	15
Telyt optical viewfinders	15
HIIBE and VZDOO, a tale of two stands	16
One-of-a-kind Leitz: the gold-plated Leica M3	18
A Leica for Rasmussen	19
Leica M Special issue: Leica M1	21
Leica M Special issue: collecting and markets	21
Leica M Special issue: infrequently encountered	21
Leica M Special issue: Leica M lenses	21
Leica M Special issue: Commemorative Leicas	21
Leica M Special issue: Leica M military cameras	21
Leica M Special issue: Leica M6	21
Leica M Special issue: Leica M literature	21
Leica M Special issue: Leica M5	21
Leica M Special issue: Leica MD	21
Leica M Special issue: Dedicated to the Leica M	21
Leica M Special issue: Leica M2	21
Leica M Special issue: Leica M4	21
Leica M Messucher	23
Leningrad	
The Leningrad, halfway between Leica and Robot	06
Linhof	
The Linhof Technika 70	19
Mimosa	
A camera named Mimosa	18
Minolta	
Pre TTL Minolta reflexes	22

Nikon
From Contax to Nikon 02
Classic Nikons: the Nikon F2 02
Classic Nikons: the Nikon F 03
Nikkormat FTn 06
Two special Nikon F2 08
Nikkor for rangefinder Nikon 15
Topogon and its cousins 18

Olympus
Olympus OM-1 02
Olympus Pen F, a complete half frame system 13
The eyes of the Olympus Pen F 14

Pentax
The revolutionary Electro Spotmatic 08
A blind Spotmatic 15
Special cameras for photographing the eye 20

Pentacon
Between Contax and Pentacon 20

Praktina
Praktina: the first system reflex 18

Rectaflex
The Rectaflex phenomenon 01
A Rectaflex made of gold 09

Robot
Color Robot De Luxe 22

Rollei
Rolleiflex Automat 1937 02
Rolleiflex: 2.8 twin-lens reflex 03
Reinhold Rollei 07
Rolleiflex for sheet film 14
Rollei designer Claus Prochnow 15
Mutar for the Rollei TLR 23

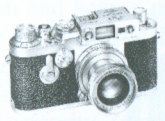
Schneider
Schneider Variogon: Two Classic Zoom 04
Schneider metered lenses 05

Topcon
Special cameras for photographing the eye 20

Voigtlander
Voigtlander Prominent 11
Vitrona Voigtlander 12
Superb, the twin-lens Voigtlander 15
Voigtlander Bessa L: return to the past 16
Long live the Vitessa 19
Bessamatic, the Voigtlander 35mm reflex 20
The six-by-nines from Bessa to Super Ikonta 22

Wollensak
Wollensak, American lenses for the Leica 09

Zeiss
From Contax to Kiev 01
From Contax to Nikon 02
A very special Tenax 03
Tessar Zeiss, Hektor Leitz 04
Ermanox, child of the night 05
Contax Zeiss Ikon serial numbers 05
The Contaflex saga (part 1) 07
Contaflex tradition and innovation (part 2) 08
Kriegsmarine Contax cameras 08
Zeiss Olympia Sonnar 10
35mm pre-war Zeiss 12
Super Nettel, siblings of the pre-war Contax 13



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Zeiss viewfinders 1950-1960	14
Kripo, an out-of-the-ordinary Contax	16
Stereo attachments for Zeiss Contax and Kiev	16
Contax Jena	17
Super Ikonta	17
Topogon and its cousins	18
The six-by-nines from Bessa to Super Ikonta	22
Between Sonnar and Biotar: the 75mm f/1.5 Biotar	23
Zeiss Ikon, we've got your number	23
Between Contax and Pentacon	20
Special cameras for photographing the eye	20

Internet

The Internet and photographic collection	10
The largest market in the world	11
Auctions, fairs and Internet	12
Italian web sites	13
Continuing research on the web	14
www.cameraquest.com	15
Your on-line bookstore	16
A thousand and one collecting alternatives	20
Exakta on the net: the torch is passed	18

Interviste

Interview with Romolo Ansaldi	20

Schede Tecniche

Leica A - 1925-1936	01
Leica B - 1° Version 1926-29 / 2° version 1928-41	01
Leica Zero -1923	01
Leica I (C) 1930-1933	02
Leica Standard (E) - 1932-1950	02
Leica III (F) - 1933-1939	02
Leica II (D) 1932-1948	02
Leica Motor - 1938	03
Leica IIIb - 1938	03
Leica IIIa (G) - 1935	03
Leica 250 - 1934	03
Leica III (F) - 1933	03
Leica IIIc 1946-1951	04
Leica IIIc 1940-1945	04
Leica IIc 1948-1951	04
Leica IIId - 1940-1945	04
Leica If - 1952-1957	05
Leica IIIf - 1950-1957	05
Leica IIf - 1951-1956	05
Leica Ic - 1949-1952	05
Leica 72 Ontario - 1954	06
Leica Ig - 1957-1963	06
Leica IIIg - 1957-1960	06
Leica IIg Prototype - 1956	06
Leica 75 Prototype - 1934	06
Leica 72 Wetzlar Prototype - 1940	06
How to find your way out of the screw mount Leica maze	11
Leica M3 - 1956	15
Leica M3 - 1954	15
Leica MP 2 - 1958	22
Leica MP - 1956-1957	22
Leica M2 Type I- 1958	23
Leica M2 Type II- 1959	23
Leica M2 Type III - 1960	23
Leica M1 - 1959	23

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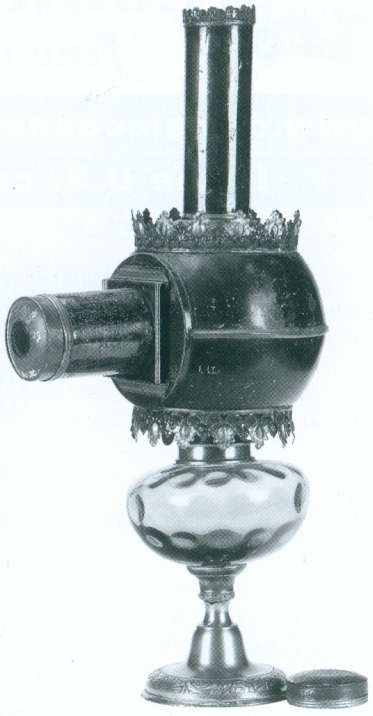


A WIDEANGLE QUICK-CHANGE ARTIST

An homage to Ludwig Bertele

Four 35mm lenses for Contax; from left, pre-war Biogon, Biogon Jena, Jupiter and post-war Biogon.

In early 1926, Ludwig Bertele had only just arrived at Zeiss Ikon from the Ernemann company and was under pressure to demonstrate that the acquisition of his old firm had been a profitable one. In reality, the Ernemann deal had only been a pretext, a sort of "Trojan horse" to get the best lens designer of the day inside Zeiss doors.

As a priority, Zeiss assigned him the standard lenses and fast-medium telephotos for the major 35mm camera system Zeiss Ikon was planning. The result was the birth of the Sonnar 5cm, 8.5cm and 13.5cm family. These lenses would become the leading edge of the Contax rangefinder system.

At the beginning, wide angle lenses were considered less important. In fact, the only lens of this family that existed was the 2.8cm f/8 Tessar, an adaptation of the classic 4-element design with a speed absolutely out-of-line with the other Carl Zeiss lenses for Contax.

In 1935, Bertele found himself at his desk, faced with a blank sheet of paper to be filled with the new important task that had been assigned him. He had been asked to create a medium wide angle whose speed would be up to the rest of the family. The result was the creation in 1936 of the 3.5cm f/2.8 Biogon equipped with six elements in four groups, the wide angle solution of the Sonnar optical design with its excellent relative aperture. The chosen focal length was ideal for a small format camera and its fast speed appropriate to a wide range of situations.

These features gained the Biogon instant fame that was also reflected in its sales. With a weight of 230 grams, the special aspect of this lens was its highly-accentuated, curved rear lens group that meant it could only be used on the pre-war Contax. In fact, the new, narrower re-design of the post-war Contax meant the original Biogon could never be used on it. But, of course, Bertele could not have foreseen how the camera would evolve.

The Biogon was the most expensive wide angle of the Contax system, but the proof of its excellent design was the fact that it was also the largest seller. Around 10,000 units of this lens were manufactured, compared with the 8,000 2.8cm Tessar and just 2,000 of the more modest and economical 3.5cm f/4.5 Orthometer. Production of the Biogon also probably continued during the war, even if in only limited quantities.

To better appreciate Bertele's efforts, it should be remembered that in that period the Leica could use the 3.5cm f/3.5 Elmar, i.e., a wide angle derived from the classic Elmar/Tessar scheme. It was not until 1949 that Leitz would present the 35mm f/3.5 Summaron, a lens finally realized with a true wide angle, 6-element optical scheme. However, it would only be twenty years later, in 1958, that Leitz would present the Summaron with a f/2.8 speed equal to that of the Biogon and the fastest Summicron.

Perhaps this explains why Zeiss Ikon was determined to acquire the quality Ernemann name, despite the latter's disastrous economic situation. Ludwig Bertele alone represented the company's entire financial worth, given the fact that his claim to fame was the Ernostar, one of the fast lenses from the 1920s.

After the war, production of the 35mm Biogon would follow different paths, each tied to a different geographical region.

The DDR Biogon

The first post-war variant of the Biogon was offered in 1950 by Carl Zeiss Jena in the DDR. Its aluminum barrel and red T rendered it immediately identifiable as having been produced after the war. Its release lever slightly set off from the lens body was also different from the one used by Zeiss before the war.

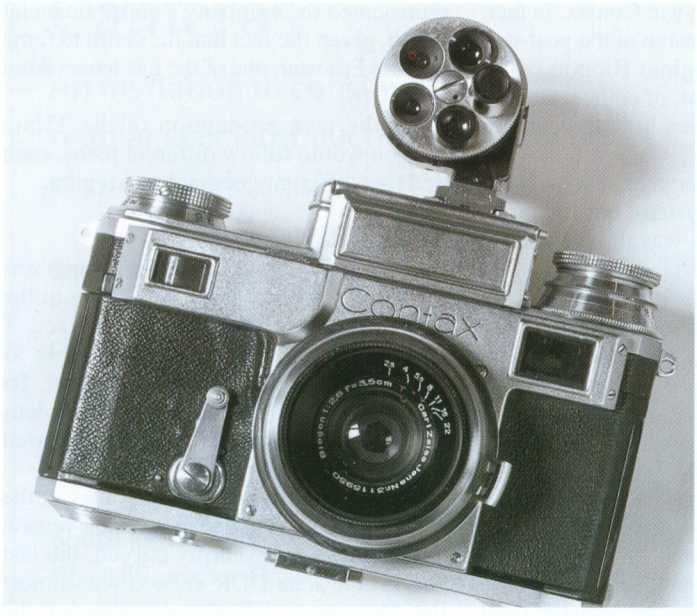
However, the main difference was in the rear lens group. While in the pre-war version the rear lens was sharply curved, the last lens on the Jena DDR version was almost flat. Despite its different rear element, the Jena DDR Biogon could not be mounted on the Contax IIa. It is probable that during those difficult years the problems Carl Zeiss Jena engineers encountered in producing

Contax III with pre-war Biogon; note the prominent depth of field scale.

Contax III with Biogon Jena and visible red T.

Kiev with Jupiter 12.

Contax IIa with post-war Biogon and special finder.



Contax III and revolver finder with post-war Biogon by Zeiss Jena; although it is not known exactly how many of these lenses were produced, it is believed they numbered a few hundred.

the rear group forced them to modify its curve.

The Russian Biogon

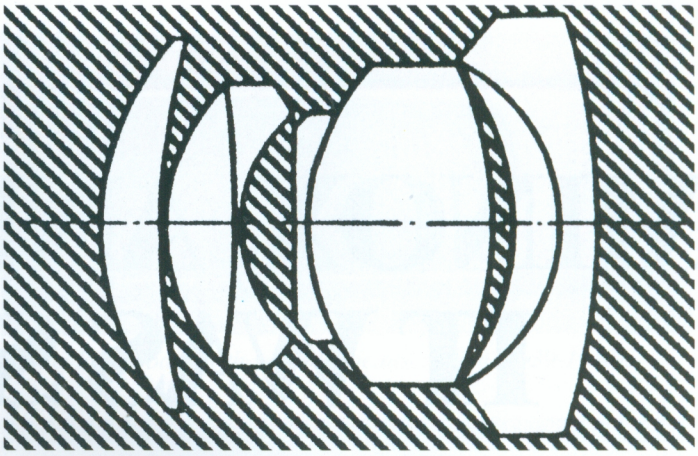
As has been documented, a number of lenses derived from Zeiss schemes and bearing the Jupiter name began to be manufactured in Krasnogorsk following the war. The Jupiter 12, at first called the BK (Biogon Krasnogorsk), was the Russian version of the 35mm Biogon and was built with a bayonet mount for Kiev rangefinder cameras (copies of the Contax), as well as with screw mount for the Leica copies, the Fed and Zorki.

The outside finish of the Jupiter 12 was slightly different from the original with the barrel in aluminum. The rear part of the Jupiter, however, was completely the same as the original's highly-curved last element. Thanks to its extremely light barrel, the Jupiter is the lightest of the lenses covered in this article, weighing just 120 grams. Among all 3.5cm Biogon variants, the Jupiter was the one of which the greatest number were produced and over the longest period of time. In fact, it was built in both unfinished aluminum and black-finish versions at both Krasnogorsky and Lutkarino from the early Fifties until the mid-Eighties.

The Oberkochen Biogon

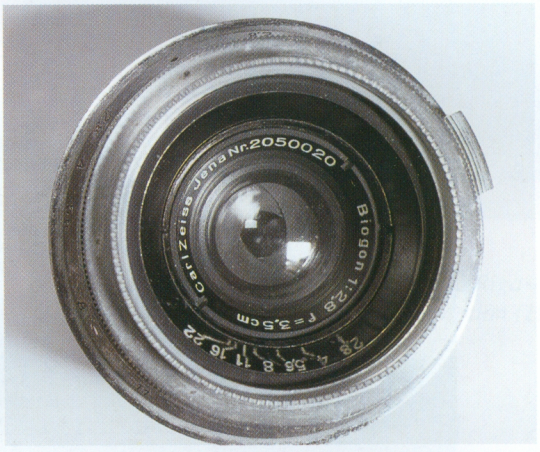
While the Biogon clones were being built in Jena and Krasnogorsk, Bertele got down to work in the new Carl Zeiss plant located in

Comparison of Biogon rear lens element on the pre-war (left) and post-war (right) models.



35/2.8 Biogon optical scheme, post-war version.

Original pre-war Biogon.



Jupiter 12; the aluminum barrel betrays its post-war construction while the engravings are the same as on the original pre-war Biogon.

the Bundes Republik in Oberkochen. The new Biogon lens had to be adapted to the different dimensions of the new Contax. Its optical scheme was completely re-designed with seven elements in four groups. Thanks to its additional lens elements, the new Biogon was surprisingly compact, just 3.5cm compared to the 5cm of the pre-war model, and its weight kept to 240 grams, just 10 grams more than the older version despite the added element. Thanks to its anti-reflection coating that allowed for a design less-tied to the number of air/glass surfaces, Bertele completely reversed the design of the new lens, placing the two combined elements on the front of the lens and a large double element at the center.

The rear group was completely recomputed and replaced by a pair of combined elements and a separate rear element, thus drastically reducing the size of the lens and eliminating the internal bulk that had characterized the pre-war Biogon.

A comparison of the pre- and post-war Biogon shows the progress that had been made through the war years and how the anti-reflection coating not only improved already-existing lenses, but also, indirectly, the design of new ones.

Released in 1951, the new 35mm Biogon at first carried the Zeiss Opton brand, as did almost all other lenses produced in Oberkochen, but then around 1953 it took on the classic Carl Zeiss name. Production was halted in 1960 with the end of the Contax rangefinder system.

For correct framing with the 35mm wide angle, Zeiss Ikon created a number of special finders. The pre-war Zeiss 432/5 was marked 3.5cm in reference to the focal length, while the post-war version with the same catalog part number had a smaller inscription and the focal length was sometimes given in centimeters and sometimes in millimeters. It is likely that Carl Zeiss Jena sold the pre-war finders even after the war, mixing the output of the two Zeiss plants. The Russian finder for the 35mm focal length was very bright with slight distortion at the edges. Naturally, the 35mm focal length was also included in both the pre- and post-war multi-focal finders.

The Biogon name was synonymous with wide angle and, in 1953, was also given to the 21mm f/4.5, Bertele's all-time masterpiece, even if the optical design of this lens had nothing in common with that of its older sibling. In fact, the magnificence of the 21mm overshadowed the success of the 35mm focal length among the greater public.

Biogon forever

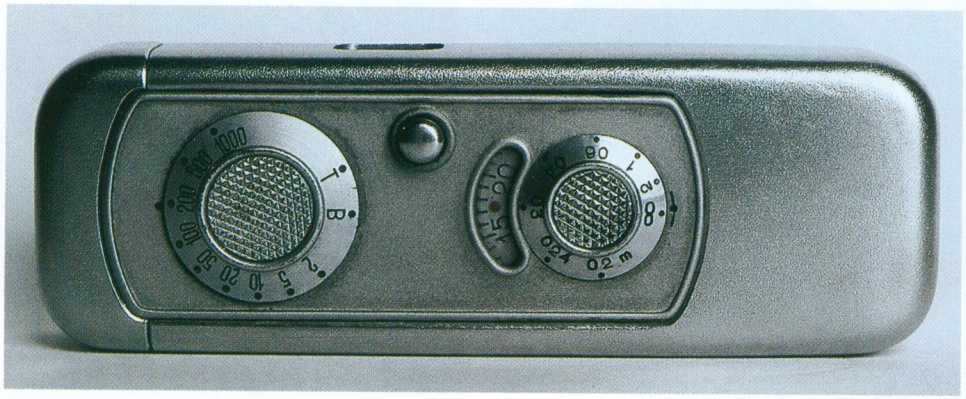
The Biogon name did not die with the Contax rangefinder system and continued to live on in the larger formats with the 38mm Biogon for Hasselblad and other lenses. Surprisingly enough, a wide angle Biogon with 28mm focal length and speed of f/2.8 was offered with the autofocus Contax G. The Contax G's 35mm lens was the Planar f/2. The new 28mm Biogon had a completely new system that was very similar to the 21mm Biogon and differed from the traditional pre- and post-war Biogons both in its optical scheme and focal length. And that is as it should be. Bertele's masterpieces can never be copied, let alone surpassed.

Pierpaolo Cancarini

35mm f/2.8 BIOGON

		Country	Period	Scheme	Weight
Biogon	Carl Zeiss JENA	DeutschReich	1936 - 1945	6/4	230
Biogon	Carl Zeiss JENA T	DDR.	1950 - 1953	6/4	130
Jupiter	Jupiter 12	USSR	1948 - 1980	6/4	120
Biogon	Zeiss Opton/Carl Zeiss	BRD	1951 - 1960	7/4	240

MINOX, AND TO THINK IT WAS SO SMALL



Minox Riga - top deck with controls.

Subminiature cameras, those tiny cameras for small and very small formats, have intrigued collectors throughout the years and can be found in all major private and public collections. The charm of the tiny format is due to many factors, from the aura of mystery that surrounds mini-cameras because of the belief that they are used for espionage or other illicit or risky activity (but therein lies the appeal!), to the amazement of getting good-quality prints from negatives little bigger than a thumbnail.

In addition, the fact that an entire collection of subminiature cameras can be contained in a single drawer is not a secondary question for many collectors. Even if many subminiatures made from the end of the war to the current day are no more than attractive playthings without effective focusing and setting systems and fixed focus and single shutter speed, others are true masterpieces of engineering, optics and micro-mechanics.

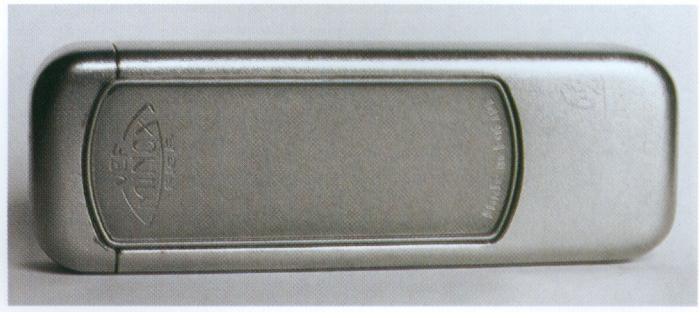
If small half frame 18x24mm format cameras are interesting and even smaller 16mm cameras intriguing, then the tiny 9.5mm Minox has and continues to generate enthusiastic response. A recent visit to Romolo Ansaldi's private collection of 9.5mm Minox cameras rekindled my latent interest in these unique and inimitable pieces and spurred me on to prepare this brief summary of their history and evolution.

A part-Estonian, part-Latvian prototype

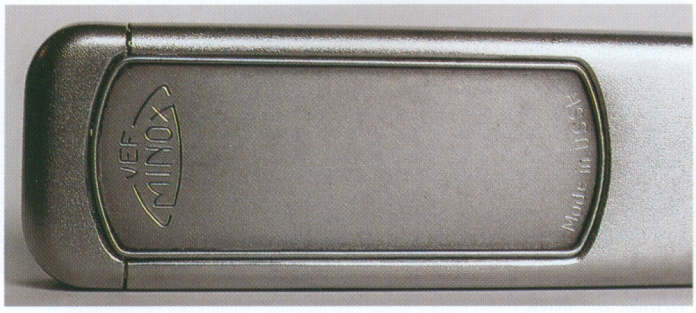
It is a historical fact that the designer of the Minox, Walter Zapp, born in Latvia in 1905, began to work on his prototype during his stay in Estonia in the early 1930s, starting from a wooden model with rounded corners and 75x28x13mm in size. Zapp himself and the rest of his staff saw this model as representing the utmost in a pocket-size, easy-to-use camera. The frame size originally chosen by Walter Zapp for his subminiature camera was four times smaller than the 35mm format, the equivalent of 1/16 of the surface area of the Leica format and measured 6.5x9mm.

By 1934 the plans had been drawn up down to the last detail and the camera was enthusiastically given the name Minox on the suggestion of Nylander, Zapp's friend and associate. In the summer of 1936, a prototype was completed in satin-finish stainless steel; it was perfectly functional and was used to take a number of demo photos. The only thing missing was a manufacturer prepared to mass-produce the Minox. The possibility of building the Minox in Estonia was rejected and Zapp, together with his financial-backer, Jurgens, began contacting a number of different companies, including getting Agfa interested in the project. An industrial partner was finally found in the fall of 1936 - the VEF company (Valsts Electrotechniska Fabrika) with headquarters in Riga in neighboring Latvia. It was a company known for its technologically advanced and highly-

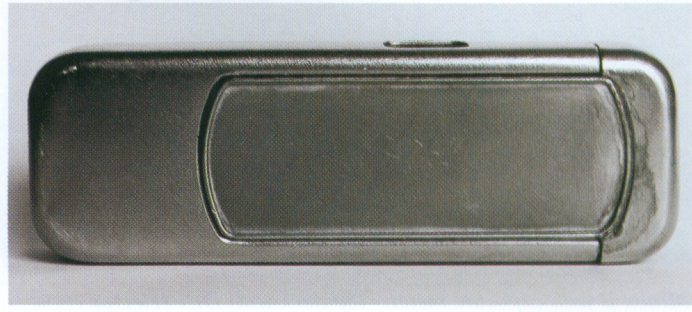
Minox Riga - back with first type inscription (1938).



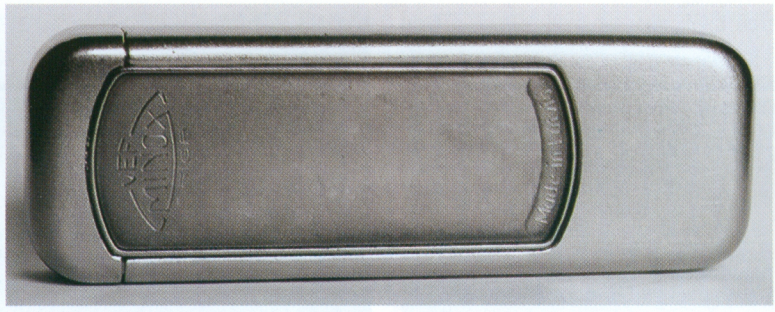
Minox Riga - back with second type inscription (1939-1940).



Minox Riga - back with inscription Made in USSR (1940-1941).



Minox Riga - back without inscription (1941).

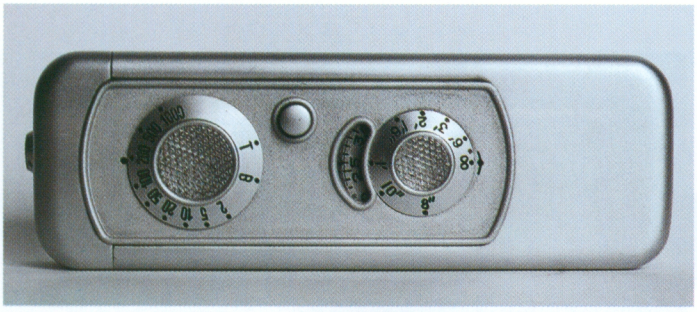


Minox Riga - back with last type Made in Latvia inscription (1941-1943).

diversified output and it had sales offices abroad, including across the Atlantic.
Zapp's prototype was modified slightly, the format upped to 8x11mm and the 3-element Minostigmat lens brought to a focal length of 15mm with aperture f/3.5. Production of the Minox series began in the spring of 1938. This small camera was even advertised in the foreign press and in British and American magazines where it did not fail to excite considerable interest. The mass-produced model was approx. 80x28x16mm in size and weighed approx. 120 grams.
Shutter speed ranged from a half second to 1/1000s, plus time and bulb exposure and focusing from 20cm to infinity. The depth of field was enormous in relation to the very short focal length of the lens and the Minox offered the possibility of using additional lenses for even closer shots. Focusing and shutter speed controls were located on the camera's top deck, together with the frame counter and shutter release button. Focusing was based on estimate or using a graduated chain for shorter distances. The aperture could not be adjusted and remained fixed at f/3.5, but the depth of field was very large. A built-in filter that automatically retracted after each shot, halved shutter speed in the event of excessive light. Opening the camera cocked the shutter and the use of the viewfinder and each of the special Minox cassettes made it possible to take fifty shots in a row, later reduced to thirty-six.
Thanks to these features and a series of accessories for the developing and printing of 8x11mm negatives, Minox conquered the international market and over 17,000 of them were manufactured by VEF in Riga, the serial numbers starting (it would appear) from 1000. Engraved on the back of Minox cameras made in Riga were the Minox logo and the inscription "VEF - Riga", as well as "Made in Latvia". Two different types of engravings are known, one with the "VEF - Riga" in cursive letters located under the Minox logo with a decorative border around it, and a second type with "VEF" and "Riga" placed around the Minox logo, but without any type of decoration.

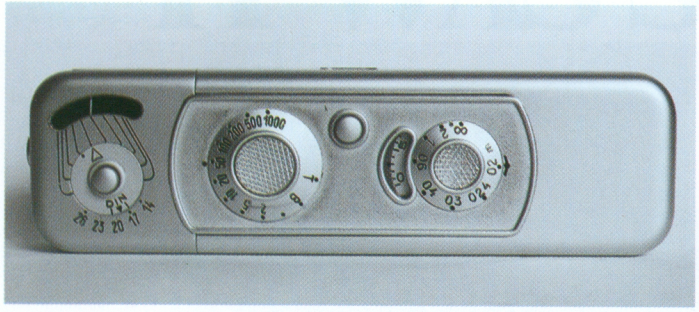
Straddling the war years

Unfortunately, even the small Latvian republic was drawn into the war. Riga was occupied starting in June 1940 by the Soviet army which also took control of the VEF factory. Minox production continued under Russian control, but the inscription "Made in Latvia" was replaced by "Made in USSR" and the "VEF - Riga" inscription replaced by "VEF" alone. Some of the cameras already marked "VEF - Riga" and "Made in Latvia" were re-named by simply changing the inscriptions.
The Minox Rigas manufactured before Soviet control had serial numbers reaching about up to 9000, while those made under Soviet control had serial numbers up to approx. 12000. Belonging to this second period were also some cameras without any type of inscription on the back, probably set aside to see how events would unfold. The Russian occupation was brief and at the end of 1941 the retreating Russian troops were replaced by the German army.
Minox production continued until 1943 under the control of the German AEG company, but once again bearing the "Made in Latvia" inscription and with serial numbers up to 18460. In the spring of 1944, the Russian army marched back

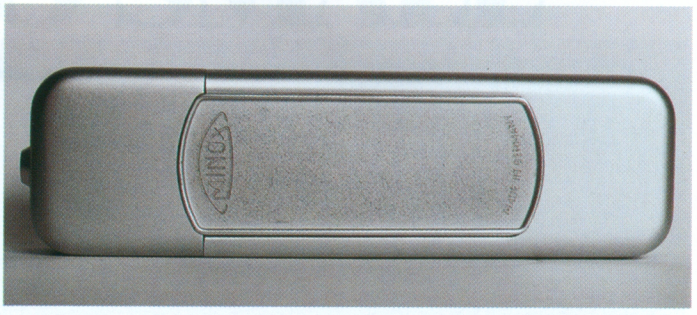


Minox A - top deck with controls.

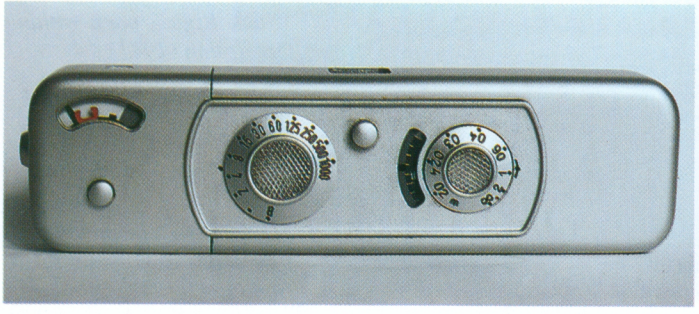
Minox A - back with inscription Minox Wetzlar.



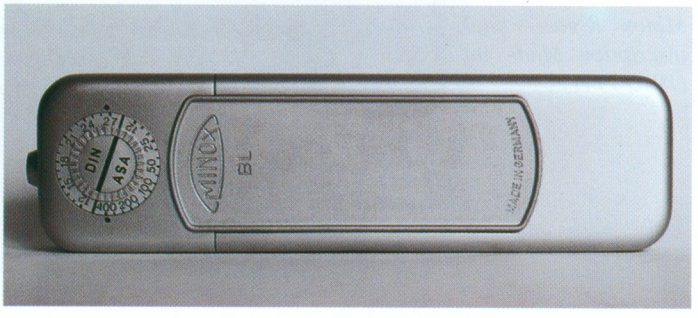
Minox B with exposure meter - top deck with DIN selector.



Minox B - back .



Minox BL with CdS meter - top deck with controls.



Minox BL - back with DIN/ASA selector.

into Riga, but in the meantime, the VEF plant and equipment had been transferred to AEG in Germany as well as in Switzerland, and Walter Zapp himself had been assigned to other tasks in Germany.

From the Riga Minox to the Wetzlar Minox

The war over and following much back-and-forth, in 1947 Zapp and his associates finally reached agreement with German industrialist Ludwig Rinn for the restarting of production of the Minox in a factory in Giessen near Wetzlar. Production of the Minox began again in 1948 based on the pre-war model, but the shell material was changed to an aluminum alloy that drastically reduced the weight of the camera to just 70 grams, while leaving the overall dimensions intact.

From the standpoint of its appearance and operation, the post-war Minox, or Minox II as it was called, was identical to the Minox Riga. The inscription on the back of the camera read "Minox Wetzlar - Made in Germany" and production began with serial number 20001.

In Fall 1951, the 5-element Minostigmat lens that had replaced (with little success) the original 3-element lens, was in turn replaced by a new 4-element Complan lens with identical focal length and aperture designed by Arthur Seibert. The Minox equipped with the Complan were called the Minox III and their production began with serial number 31275.

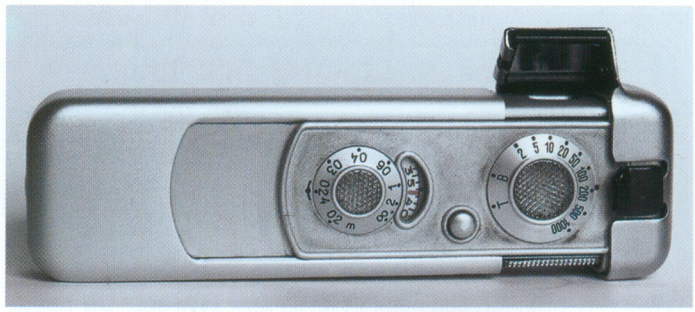
The model equipped with flash sync started being manufactured in March 1954 with serial number 58500 and was identified at the time as Minox IIIS. However, the model number was not always engraved on the back of the Minox III. On the other hand, the post-war Minox cameras, including the Minox II, Minox III and IIIS were generally all marked the same way: Minox A.

Production of the Minox A ended in 1969, with over 125,000 having been manufactured with the serial number reaching 147494. Starting in 1962, alongside the normal silver chrome finish, a black-finish version was also offered.

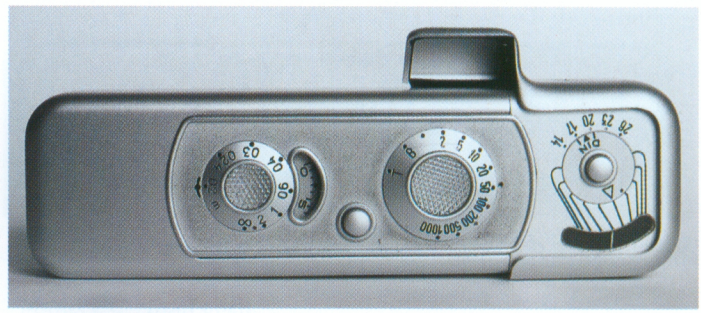
Minox B with exposure meter

Starting in 1953, a small selenium cell meter designed by Walter Zapp together with the Gossen company was made available as a separate accessory for the Minox A. This small meter, initially called the Minosix but later shortened to just Minox, had a viewfinder similar to that on the camera to ensure correct measurement of the area actually framed.

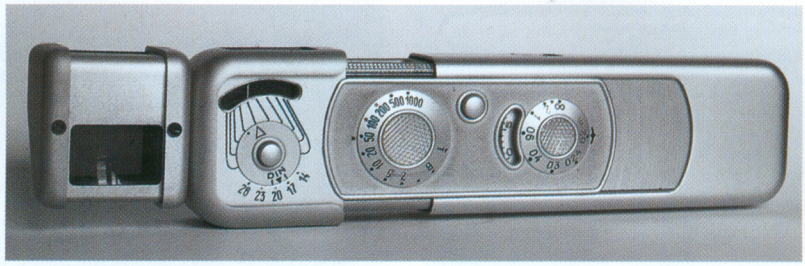
In 1958 the Minox A was joined by a modified model with selenium cell meter built into the sliding cover. The needle of



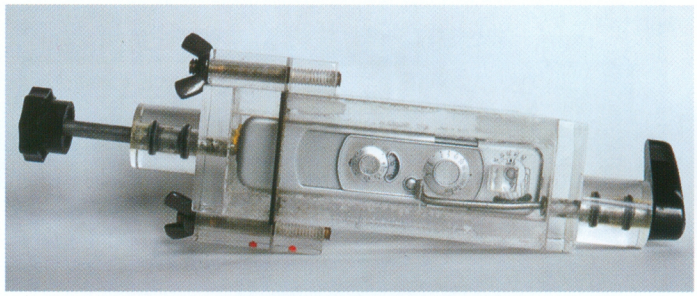
Minox A with right angle finder.



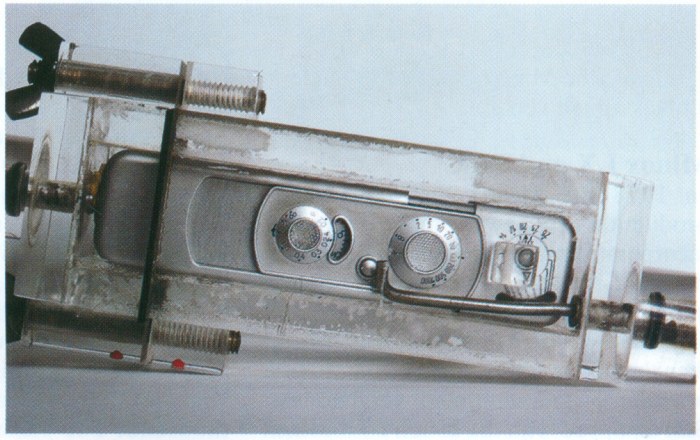
Minox B with right angle finder.

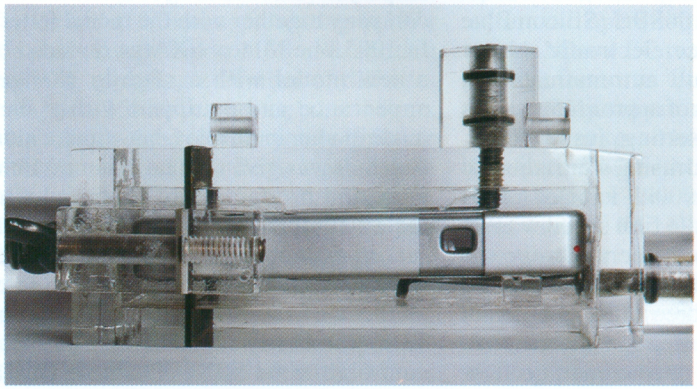


Minox B with supplementary finder.



Minox B with diving suit in plexiglass.





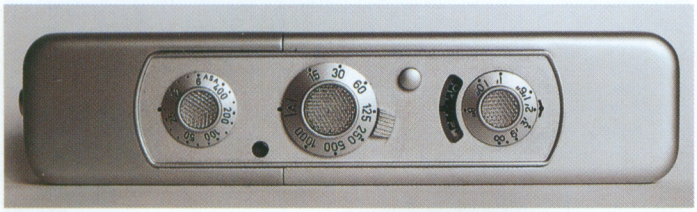
the galvanometer could be seen from the top deck which also housed the film speed disk and shutter speed selection was coupled to the needle itself.

The Minox B was mechanically and operationally identical to the Minox A, but its shell was longer in order to be able to house the exposure meter and the cell window itself. Two versions of the Minox B were produced, with the exposure meter window with flat grid until 1965, and later with a honeycomb grid. For both versions, a small number of black-finish cameras were made. The Minox B measured 97mm in length and weighed just over 90 grams. Engraved on its back was the letter B as positive identification of the model. A total of 385,000 Minox B cameras were produced with just a few modifications until 1972 with serial numbers starting at 600000 up to 984328.

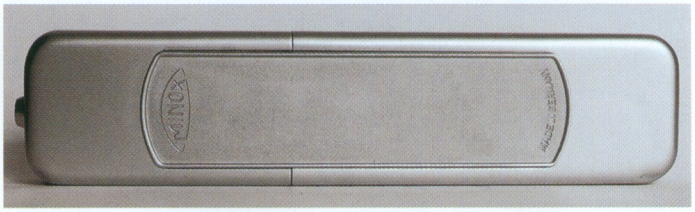
When production stopped on the Minox B, between 1972 and 1973 fewer than 18,000 of the Minox BL were built with serial numbers ranging from 1200001 and 1217880. From a visual standpoint similar to the Minox B and Minox BL, instead of the selenium cell it used a modern CdS cell coupled to the speed selector and another difference was that the film speed selector was on the back instead of the top deck.

Minox C with automatic exposure

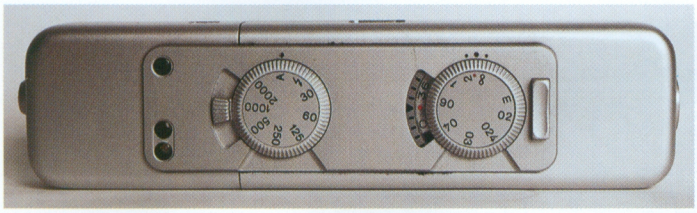
In 1969, with the Minox A no longer being made, production was begun on a new camera dubbed, for continuity's sake, the Minox C. Longer and more complex than the other Minox cameras, the Minox C had a 5.6 volt Mallory PX27 battery used to power the CdS cell and the electromagnetic shutter, as well as offering



Minox C - top deck with controls set to A and ASA selector.

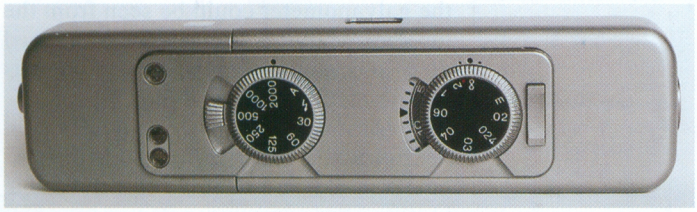


Minox C - back.

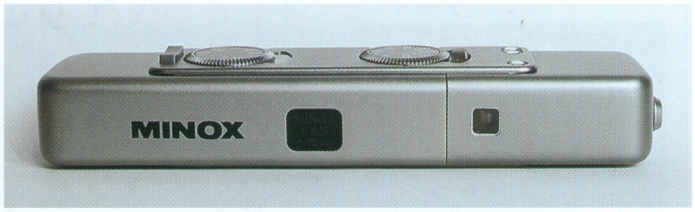


Minox LX - top deck with controls and LEDs.

Minox LX - front with 15mm f/3.5 Minox lens.



Minox TLX with titanium finish - top deck with controls and LEDs.



Minox TLX - front with new Minox logo.

the possibility of automatic exposure. Automatic shutter speed ranged from 1/1000s to approx. 10 seconds. For speeds under 1/30 second, an indicator light (later replaced by a diode), warned against movement. Manual selection was only possible for speeds ranging from 1/15 and 1/1000 sec. The Minox C was 120mm long and weighed just over 100 grams. There were three selectors on its top deck for focusing, shutter speed and film speed, while the aperture and shutter cocking system remained unchanged.

The Minox C made use of a lens incorporating new types of optical glass, but for a time the Complan name was maintained, to be changed later to Minox. The viewfinder included a bright-line that showed the exact field framed and included parallax correction. The count down film counter of the Minox C had to be set to the number of frames of the cassette used (36 or 15) and displayed the number of exposures left to be shot.

Production of the Minox C began with serial number 2300101 and continued until 1978 with serial number 2473694, coming close to 170,000 cameras built. Like the Minox B, the Minox C was also made in a black-finish version.

Minox LX and TLX

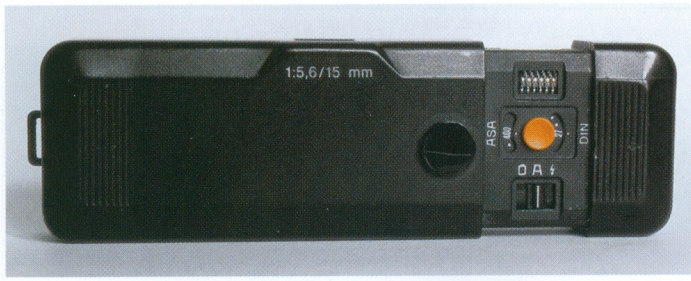
In 1978 the Minox company began production of a new 9.5mm camera that incorporated many innovations, including the shell, shutter, shutter release button and LEDs on the top deck.

The shell of the Minox LX was shorter than that of the Minox C, just 108mm and, at under 90 grams, it also weighed less. Still equipped with the 15mm f/3.5 Minox lens (aperture remained fixed), the Minox LX used a meter with SBC (Silicon Blue Cell) and 1/2000sec electronic shutter which, when in full automatic mode, reached slow speeds of approx. 15 seconds and, with manual setting, just 1/30sec. Shutter speed and focusing were adjusted using two flat disks with knurled edges on the top deck, while film speed was set from the rear of the camera. On the top deck, the release button was elongated and contoured and three LEDs of different colors signaled shutter speeds less than 1/30 with risk of movement (yellow diode), overexposure and need to insert correction filter (red diode) and battery status (green diode).

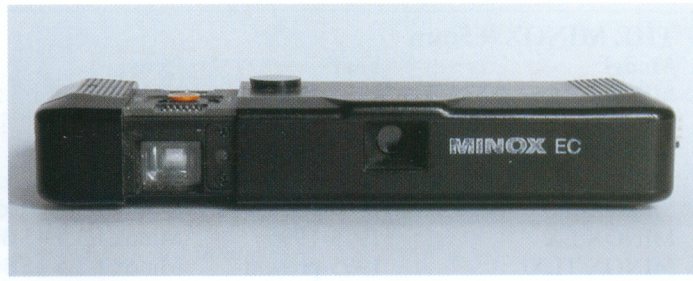
The Minox LX began production with serial number 2500001 and continued until 1996 with an unspecified number of cameras having been built, including a version with black finish.

At the end of 1994, the highest serial number among those known was 2537003 and the average number of cameras produced each year in its first seventeen years of life was approximately two thousand. The back of the Minox LX displayed the new logo of the Minox company together with the model letters.

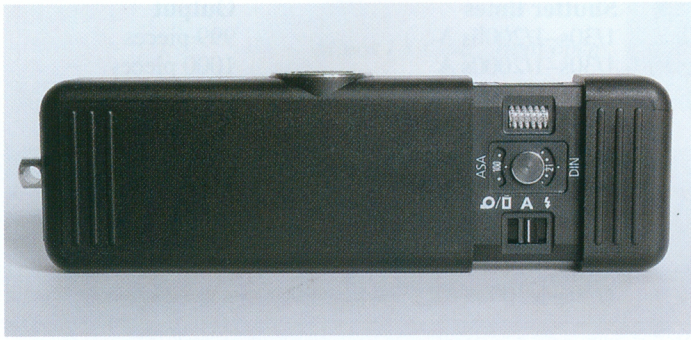
In 1995, the Minox LX was replaced by a new model with a slightly changed appearance and equipped with a shell made of aluminum alloy, but with titanium finish. It was given the new name Minox TLX and production of it started with serial number 2600001. Its technical features, such as the lens and shutter, remained unchanged and were the same as those of the Minox LX. The Minox TLX was easily identified by its black controls and the MINOX name in capital letters on the front. It remained in



Minox EC - top deck with release button and ASA/DIN speed disk.



Minox EC - front open.



Minox ECX - top deck with release button and ASA/DIN speed disk

Minox ECX - front open.

Minox ECX with coupled flash.

production until the dawn of the new millennium, with a price tag of over two million Italian lire.

Minox EC and ECX

After having been seduced by the 35mm format and 110 format, presenting in 1974 the short-lived Minox 110S and, starting in 1975, releasing a number of different compact 35mm cameras, the Minox company decided to offer a subminiature 9.5mm format, calling the new camera the Minox EC.

The Minox EC was born in 1981 and differed from all other Minox cameras for its black plastic Macrolon (instead of metal) body, 15mm f/5.6 non-focusing lens and completely automatic exposure. Thanks to its Macrolon body, the Minox EC weighed less than 50 grams and it returned to a length of 80mm, while the width increased slightly to 30x18mm as opposed to the 28x16mm of the original Minox. The maximum shutter speed of the Minox EC was 1/500sec and slow speed reached eight seconds with fully automatic operation. The release button on the Minox EC remained hidden when the camera was closed and the only manual adjustment required was that to set the film speed in use.

Production of the Minox EC began with serial number 2700001.

The end of the 1980s saw a general economic crisis that also affected the Minox company and, despite the policy of production diversification it had been following for the previous fifteen years, the company ran the risk of folding. This precarious situation continued for a number of years until the Minox brand name was bought up by the neighboring Leica Camera company in April 1996. The new corporate management revamped the entire photographic production line, presenting new 35mm models and even new camera models that utilized the APS cartridges. But the production of the 9.5mm subminiature camera continued with the Minox TLX.

Photokina 1998 saw the presentation of the Minox ECX, a version of the Minox EC with slightly modified shell and lens, still fixed-focus 15mm f/5.6, but with identical structure and shutter. The new Minox ECX also offered a small flash accessory with reference number 9.

The Minox ECX also remained in production until the new millennium and was flanked by a less-expensive model

THE MINOX 9.5mm

Model	Years	Lens	Shutter times	Output
MINOX Riga	1938-1943	Minostigmat f/3.5	half second - 1/1000s B T	1000-18460
MINOX A	1948-1969	Complan f/3.5	half second - 1/1000s B T	20001-147494
MINOX B	1958-1972	Complan f/3.5	half second - 1/1000s B T	600001-984328
MINOX BL	1972-1973	Minox f/3.5 + CdS	half second - 1/1000s B	1200001-1217880
MINOX C	1969-1978	Minox f/3.5 + CdS	1/15s - 1/1000s A	2300101-2473694
MINOX LX	1978-1996	Minox f/3.5 +SBC	1/30s – 1/2000s A	2500001-
MINOX TLX	1995-present	Minox f/3.5 +SBC	1/30s – 1/2000s A	2600001-
MINOX EC	1981-1997	Minar f/5.6 + CdS	A (8s - 1/500s)	2700001-
MINOX ECX	1998-present	Minar f/5.6 + CdS	A (8s - 1/500s)	

THE MINOX 9.5MM "LIMITED EDITION"

Model	Years	Lens	Shutter times	Output
MINOX LX Gold	1988	Minox f/3.5	1/30s–1/2000s A	999 pieces
MINOX LX Platinum	1990	Minox f/3.5	1/30s–1/2000s A	1000 pieces
MINOX LX Sterling	1991	Minox f/3.5	1/30s–1/2000s A	100 pieces
MINOX LX Gold	1995	Minox f/3.5	1/30s-1/2000s A	500 pieces
MINOX AX	1992	Minox f/3.5	half second –1/1000s	500 pieces
MINOX AX Gold	1994	Minox f/3.5	half second –1/1000s	250 pieces
MINOX AX Gold II	1995	Minox f/3.5	half second –1/1000s	250 pieces
MINOX AX Black	1997	Minox f/3.5	half second –1/1000s	222 pieces
MINOX CLX	1998	Minox f/3.5	1/30s–1/2000s A	
MINOX LX Millennium	2000	Minox f/3.5	1/30s-1/2000s A	

produced in Japan called the Minox MX and equipped with a 15mm f/4.8 Minox lens with four focusing positions and a simple, single-speed mechanical shutter.

Special Minox cameras

The mass-produced 9.5mm Minox cameras were generally finished in natural metal color in an anodized chrome aluminum alloy. From the second half of the 1950s, a few cameras in the Minox A and Minox B series were also produced with black finish.

In the Seventies and Eighties, black finish for the Minox C and Minox LX became fairly common. Some Minox A and B cameras planned for a gold-plated finished, were made using other metals than those of the standard series. A very small number of Minox A and Minox B cameras in gold plate are known to have been made expressly as gifts for important dignitaries, such as American President Eisenhower and Prince Philip, Duke of Edinburgh.

From the end of the Eighties, Minox also became caught up in the same whirl of jubilees, anniversaries and commemorative events that infected other companies. As a result, in 1988, to celebrate fifty years of production of Minox cameras, 999 Minox LX cameras were produced in 24-karat gold plate, complete with walnut presentation box, gold chain to measure distances, leather case and flash cube accessory. Because gold-plating aluminum alloy was no easy task, the shell of the Minox LX Gold was made of solid brass, upping the weight of the camera to 160 grams.

Two years later, in 1990, this initiative was repeated with the creation of a thousand Minox LX cameras with platinum-covered gold finish, known as the Minox LX Platin.

In 1991, a hundred or so Minox LX cameras were made and sold with the shell in solid silver, complete with wooden box, silver chain and special gloves to be used when handling such a precious item. The Minox LX Sterling weighed 175 grams and was, apparently, built on request.

In 1995, a second limited series of 500 Minox LX cameras with gold finish and the dates 1945-1995 inscribed on the back were produced.

The Minox LX cameras with gold, platinum and sterling silver finish all had the same technical characteristics and optical and mechanical equipment as standard Minox LX cameras and, except for the material used in their finish, had no other special features.

At the 1998 Photokina, in order to celebrate Minox's sixtieth birthday, the Minox CLX was released. It was similar to the LX model, but its shell was made of solid brass with chrome finish and its outside was finely decorated.

In 2000, to celebrate the end of the old millennium and the beginning of the new one, a special Minox LX Millennium was produced with black, gold-rimmed finish and offered in a fine wooden presentation case together with a Montblanc fountain pen with matching finish.

Serial numbers for limited edition Minox LX cameras did not follow normal numbering and used special systems depending on the number of cameras produced. For example, the Minox LX Platinum bore serial numbers ranging from Pt001 to Pt1000.

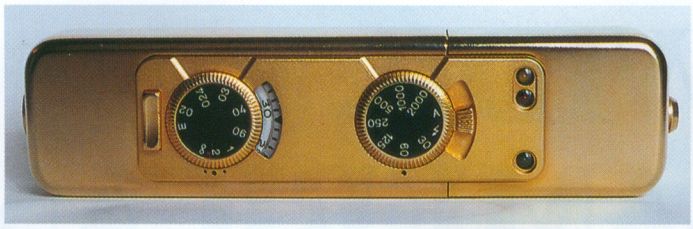
Minox AX

In 1992, production was begun on a limited series of 500 cameras called the Minox AX that replicated the shape and fully-mechanical functioning of the original Minox A. The lens used on the Minox AX was a 15mm f/3.5 focusing Minox without diaphragm and shutter speeds ranged from 1/2 to 1/1000sec plus bulb exposure. The controls were flat disks with knurled edges like those on the Minox LX, but the body was that of the Minox A. The weight of the Minox AX in chrome-finish anodized aluminum was 70 grams. The built-in neutral density filter had a reduction factor of 4x, corresponding to two stops and the camera came complete with chain for distance measurement.

Serial numbers ranged from AX001 to AX500. In 1994 the Minox AX appeared in a new series of 250 cameras in 24-karat gold-plate, followed in 1995 by a second gold-finish series, also of 250 cameras with the dates 1945-1995 engraved on the back, together with the signature of Walter Zapp, in his nineties but still mentally and physically active.

The Minox AX Gold with shell in gold-plated brass, weighed approx. 130 grams.

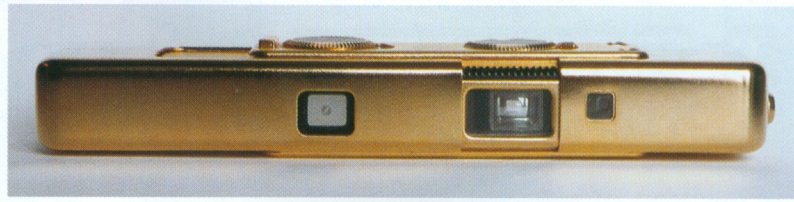
Two years later, in 1997, a third Minox AX series with black finish and limited to 222 pieces, was produced. The



Minox LX Gold - top deck with controls.

Minox LX Gold - front closed.

Minox LX Gold - front open .



Minox AX Gold - back with facsimile of Walter Zapp's signature.

MINOX ON THE INTERNET
www.minox.com
www.minoxography.org
www.minox-web.de
www.minoxclub.de

production of the Minox AX marked, in a certain sense, a return to the camera's origins, but it also confirmed the fact that the Minox phenomenon as a mass-based photographic instrument had become an aristocratic plaything destined for a small circle of collectors and aficionados.

The Minox market

According to the most reputable guides to camera collecting prices, the value of the small Minox on the collecting market spans a wide range from a minimum of 150-200 Euro for the most common models to 1000-2000 Euro for the rarer models or limited editions.
For the Minox Riga with Minostigmat lens, prices range from 1000 Euro to 1500 Euro depending on the inscriptions and whether it reads "Made in Latvia" or "Made in USSR". For Minox A and Minox B models, prices are generally around 300 Euro, with noteworthy exceptions and with peaks up to 1000 Euro for cameras with black finish (if they are authentic).
For the very rare Minox A and Minox B cameras with gold finish, prices are close to 5000 Euro, again as long as the pedigree can be authenticated.
For the Minox C with standard finish, it is rare to get as high as 250 Euro, but black-finish models bring much more. These prices must be doubled for the rarer Minox BL and more sophisticated Minor LX which reach prices just under 500 Euro. These prices are surpassed by the Minox BL with black finish.
It is not rare to encounter prices between 1000 and 1500 Euro for Minox LX cameras with gold or platinum finish, while the Minox LX in sterling silver goes for close to 5000 Euro.
By the same token, the Minox AX with chrome or gold finish, goes for around 1500 Euro and even higher. The same prices can be obtained for the luxurious Minox CLX, while the mass-produced Minox TLC with titanium shell (still in production), has an estimated value on the collecting market of around 500 Euro.
For fully-electronic and automatic EC and ECX cameras, there is no real collectors market and on the used camera market, they bring prices that are even lower than those of the Minox C.

Danilo Cecchi

MINOX LEICA AND THE OTHERS

During the year 2000, perhaps as a sign of gratitude to the Leica company, Minox began marketing a limited series of miniatures of cameras built in Japan by Sharan, styled like the Leica III and designed to utilize 9.5mm film in Minox cassettes.
These small Leicas were equipped with a 3-element, fixed focus and fixed aperture 15mm f/5.6 lens given the name for this occasion of the Minoctar. Depth of field ranged from 120cm to infinity and, as for the Minox MX, the mechanical shutter was equipped with just a single shutter speed. The small Leica differed completely from traditional Minox output and was offered as a unique collector's item in a deluxe wooden case.
This small Leica also boasted a range of accessories including neck strap, aluminum lens cap, ever-ready leather case and small electronic flash with reference number 7 designed like a traditional parabola flash tube.
In response, Sharan also built a series of small Leica I and Leica M3 cameras, again using Minox cassettes and marketed by the Minox company, while on the Japanese market the miniature versions of other famous cameras, such as the Rolleiflex, Nikon F and Spotmatic were marketed independently.

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VERIWIDE, A GERMAN-AMERICAN SUPER WIDE ANGLE

Detail of 47mm f/8 Super Angulon lens.

A venerable photography teacher with a somewhat irreverent spirit and a bit "zenish" in outlook, once said that in order to highlight a subject in the distance, a telephoto lens was not absolutely necessary. In order to obtain exactly the same effect, all that was required was to enlarge the negative enough. And to support this, he quoted this funny little rhyme: "If you have no telephoto lens/enlarge the negative to make amends."

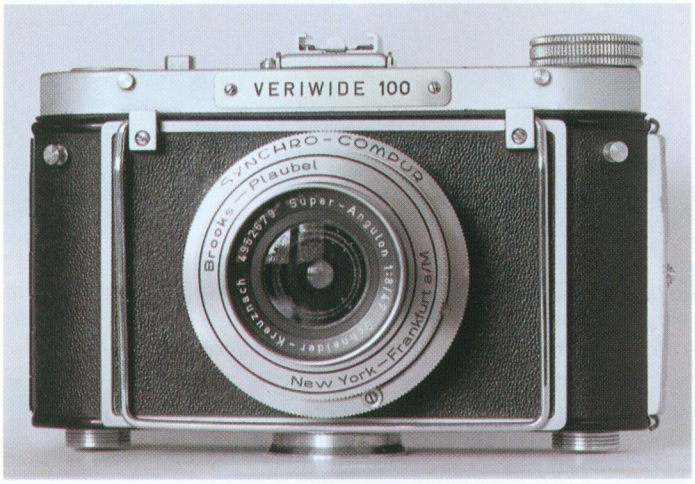
However, according to this same teacher, when speaking of wide angle shooting, the situation changed considerably. Without a wide angle lens, certain problems just cannot be gotten around or, as he would say: "No wide angle with which to shoot?/Certain problems are only moot" ... or something to that effect.

Maybe this is why the wide angle lens was invented before the telephoto, seen not as long-focus but a real telescope. Sutton patented his super wide angle Liquid Lens with 120° angle in 1859, Harrison patented his 90° Globe Lens in 1860 and Busch began marketing his Pantoscop in 1865. Wide angle versions of famous lenses were made throughout the second half of the 1800s by Darlot, Berthiot, Dallmeyer, Steinheil and Voigtländer.

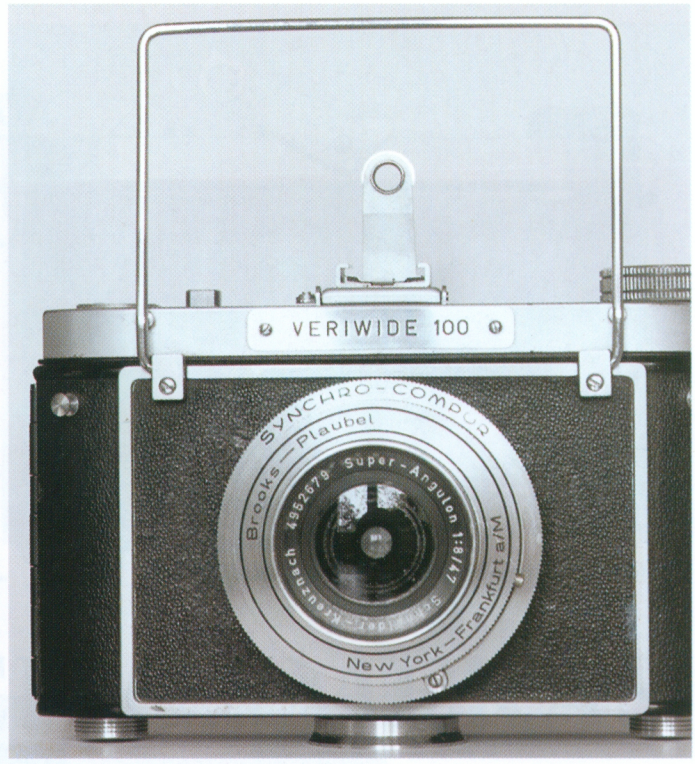
Goerz patented the Hypergon in 1900, upping coverage to 110° in 1911. And these lenses certainly cannot be considered mere playthings if Atget photographed Paris using a wide angle and the Alinari's used a Pantoscop to take many of their renowned photos of landmarks. By the same token, it is no accident that in the distant as well as the recent past, a number of special cameras were built around a super wide angle lens, including the 1931 large format Kodak Wide Angle, the 6.5x9 format Envoy Wide Angle from 1949 and the famous 1954 Hasselblad SWA.

A Super Wide Angle by Plaubel

Among the special cameras built around a super wide angle lens, the Veriwide 100 occupies a place of honor. Production began on it in 1959 by the Plaubel company of Frankfurt-am-Main, on instructions from the Burleigh Brooks company of New York which managed the project and marketed it in the US. The project was designed by Brooks' head engineer, Frank Rizzatti, and the camera body was made of steel



Plaubel Brooks Veriwide camera, front view.



Veriwide with frame finder open.

instead of aluminum. Obviously, the number "100" referred to the angle of coverage which, in reality was 93° measured on the diagonal and 82° on the long side.

Unlike the majority of Plaubel cameras that mounted Anticomar lenses, for the Veriwide 100 a different brand of lens was used. The Veriwide 100 differed from earlier Plaubel cameras in that the lens was not interchangeable, it had no built-in viewfinder or coupled rangefinder and the body was rigid without bellows. Because the Carl Zeiss Biogon super wide angle had been used by Hasselblad, the Veriwide came equipped with a lens made by Schneider - the 47mm f/8 Super Angulon with six-element symmetrical format.

The Veriwide utilized 120 roll film with eight 6x9cm frames that, in reality, measured 56x83mm, a format which at the end of the 1950s had almost completely gone out of style. Compared with the more famous and successful Hasselblad SW, the Veriwide 100 had an elongated rectangular format that proved more suitable for most landscape and architectural shooting. With the same field of view, the Veriwide's negative was fifty percent larger than the square 6x6 format.

Like the Hasselblad SW, the Veriwide 100 utilized a Synchro Compur shutter with speeds ranging from one second to 1/500s, bulb exposure and self-timer, plus a bubble level built-in to the top plate and pop-up wire frame bar on the front. Located on the camera's top plate were the shutter release button and film advance knob.

The Veriwide 100 was equipped with an automatic frame counter and mechanism to prevent accidental double exposure, but shutter cocking was independent of film advance. Everything such as aperture opening from f/8 to f/32, shutter speed and focusing using a metric scale ranging from 70cm (two-and-a-half feet) to infinity, was controlled from the lens barrel. There were two click stops on the focusing scale at 6 and 20 feet (1.8 and 6 meters), the distances most used for fairly close and fairly distant subjects. The depth of field, clearly indicated near the focusing scale, was quite wide and ranged from 3 meters to infinity when fully open and between 70cm and infinity when fully closed.

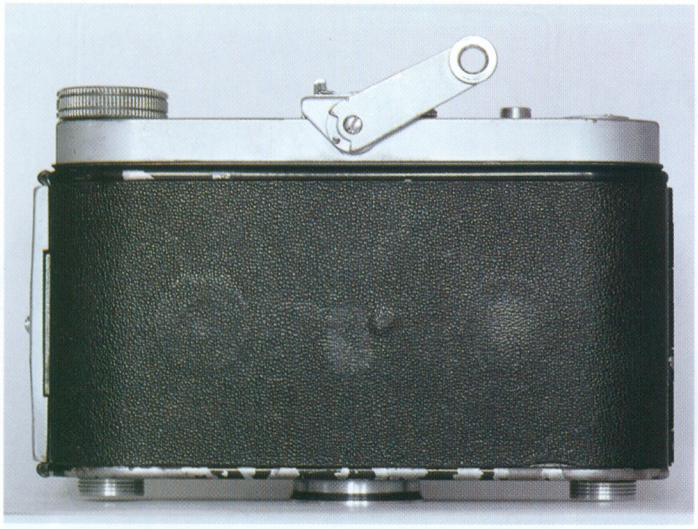
An accessory shoe positioned axially with the lens made it possible to insert an accessory finder made by Leitz. If the original finder was missing, Leica or Zeiss 21mm focal finders could be used on the Veriwide 100, as well as Nikon or Soviet finders. Parallax correction was made using a lever located under the accessory shoe that adjusted the shoe and pop-up finder connected to it to use the frame finder.

The Veriwide 100 is almost 15 centimeters long, almost 10 centimeters high and nearly 7.5 centimeters thick measured from the front lens ring to the camera's hinged back. Without viewfinder, the Veriwide 100 weighs close to one kilogram. Its design is quite restrained, its controls almost spartan and the only engravings on its front are the model name, the names Brooks and Plaubel, the geographical markings New York and Frankfurt-am-Mein and the Synchro Compur shutter brand name.

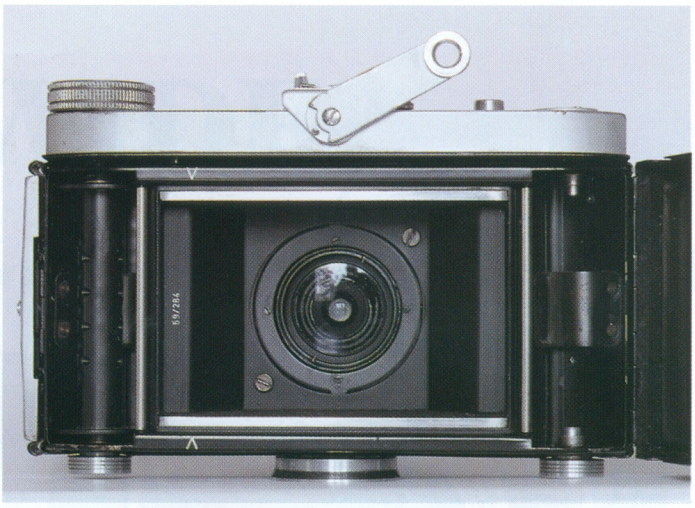
However, its German engineering, German lens, German shutter and American marketing were not enough to guarantee the success of the Veriwide 100, the only 6x9cm format Super Wide Angle.

The success (and otherwise) of the Veriwide

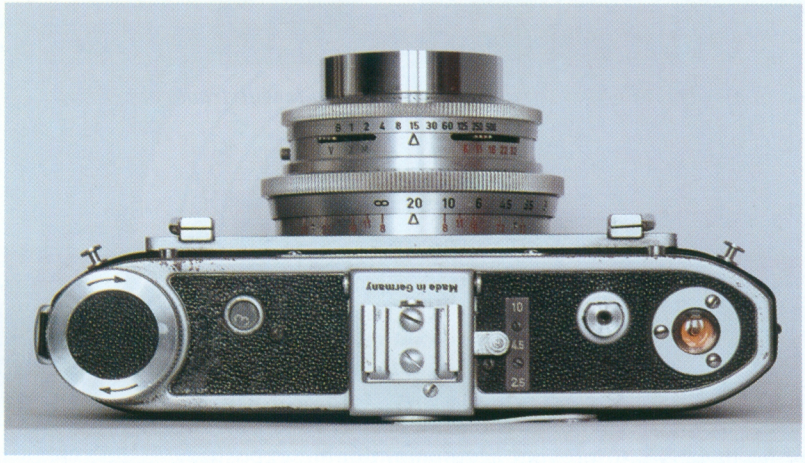
Lightweight, easy-to-handle, precise and functional, among professional photographers the German-American Veriwide 100 soon ran head-on against its Swedish super wide angle counterpart, and did not fair all that well in comparison. The commercial success enjoyed by the sophisticated Hasselblad, still being produced, unchanged, after almost fifty years, did not smile on the Veriwide 100. Most professionals veered towards the Hasselblad because of the excellent results obtained from the Biogon and also perhaps because of its interchangeable magazines.



Veriwide seen from behind with hinged finder.



Veriwide, open, seen from behind. Note the rear lens very close to the film plane and the serial number 59/284 in which 59 could indicate the year of manufacture and 284 the camera number.



Veriwide seen from top plate with controls on top plate and lens barrel.

During the same period, there was a decrease in interest for the 6x9cm format with the disappearance from the market of many of the traditional bellows 6x9s. Added to this was the success in the Sixties of the Biogon and Super Angulon 21 mm super wide angles for 35mm rangefinder cameras that offered results similar to those of the Veriwide on cameras that were easier to handle. The success of the retrofocus scheme designed by Angenieux for the super wide angles for use on modern 35mm reflexes also caused a drop in interest for larger formats, and by the end of the 1960s, the 100° coverage limit was superseded by 18mm focal length lenses and the 15mm Hologon.

The Seventies also saw the crisis of the German camera industry in competition with its Japanese rivals and even Plaubel was forced to compromise, releasing in 1982 the 6x7cm wide angle Makina W67 equipped with a 50mm Nikkor lens. Nonetheless, the allure of wide angle photos in 6x9cm format persisted and in the same year (1982) Plaubel presented the spiritual heir of the Veriwide, a sophisticated and highly-professional camera with the somewhat pretentious name of Super Wide 69W Proshift. The Super Wide had much in common with the Veriwide 100. It had a 47mm Super Angulon lens with a speed of f/5.6, a 1/500sec Copal leaf shutter, a 6x9cm format negative, and included a frame finder on the front, a bubble level on the top plate and accessory shoe with parallax correction.

The Super Wide was longer, taller and heavier than the old Veriwide 100 and, coming twenty years after the first model, also included a number of new features such as a rapid winding lever, a second bubble level for vertical shots, a choice of 120 or 220 roll film, new optical finder with mobile bright-line and new shutter. Finally, the Super Wide offered the possibility of shifting the lens panel and this was the feature that distinguished the sophisticated Super Wide from the previous Veriwide, apart from the optical and mechanical improvements the result of normal technological evolution. But the austere appeal of the Veriwide, even compared with its direct descendent, remains unchanged.

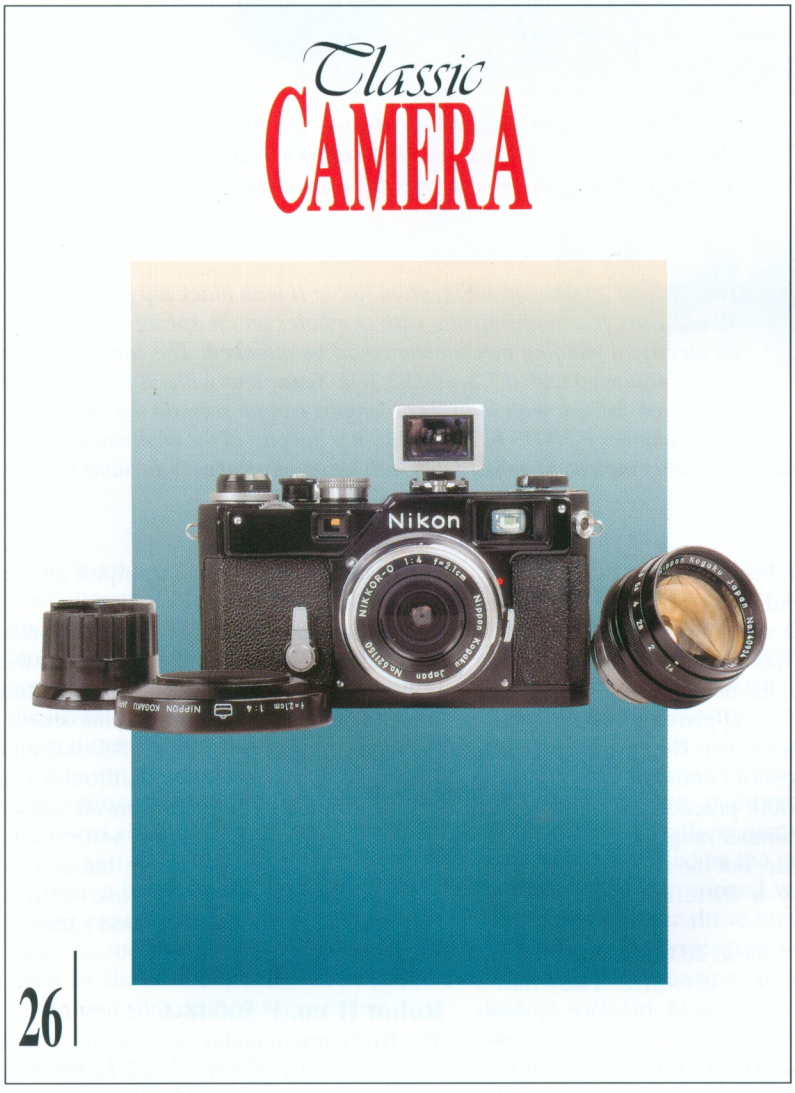
Danilo Cecchi
and Massimo Bertacchi

Classic CAMERA

SPECIAL ISSUE

NIKON

RANGEFINDER CAMERAS



History

Cameras

Lenses

Prototypes

Books

Collecting Nikon rangefinder cameras

We thank:
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ROBOT CAMERAS FROM THE 1939-1945 WAR

Two 75mm Schneider Tele-Xenar lenses, the first fully chrome-plated with aperture and focusing scale, the second with black finish and only aperture adjustment.

The "classic" Luftwaffen Eigentum Robot II with black top plate, "high" 48-exposure tensioning spring with two holes on the spring cover so that an electrical winding mechanism could be attached. The camera shown here is equipped with a 7.5cm f/3.8 Tele-Xenar lens without focusing. The field mask for use with long focal lengths can be seen on the viewfinder. Serial number F 50048-6. The last digit is not part of the numbering system, but rather indicates compatibility with lenses marked with the same number.

In Fall 1939, shortly after the start of the Second World War, the commander of the crew of a German bomber was decorated with the "Ritterkreuz" (the cross of the Knights of the Iron Cross) for having sunk a British war ship, the Royal Oak, which the German press had covered widely. Unfortunately, just a few weeks later the ship, fully operational, was sighted once again by the Germans themselves.

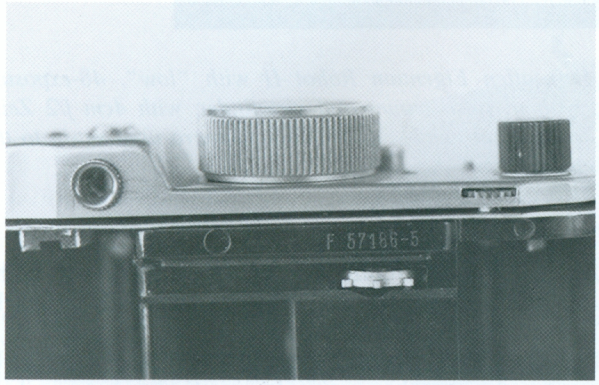
The Commander-in-Chief of the Luftwaffe, Field-Marshall Göering, infuriated by how Germany had been made a fool of, issued the order that every military victory (shooting down of enemy planes, sinking of ships, destruction of land targets) must have photographic documentation. The Luftwaffe, which had already experimented with a number of cameras, decided upon the Robot II made by the Berning company. This camera, because of its reduced size, sturdiness and, above all, the possibility of shooting a series of frames (from 24 to 48) without having to wind-on after each shot, best met the needs of field conditions. For this reason, approx. 20,000 cameras were produced for the armed forces, identified by serial numbers ranging from 31000 to 61000, preceded by the letter F. Within this number range are also cameras for civilian use, but the serial numbers are preceded by a different letter of the alphabet.

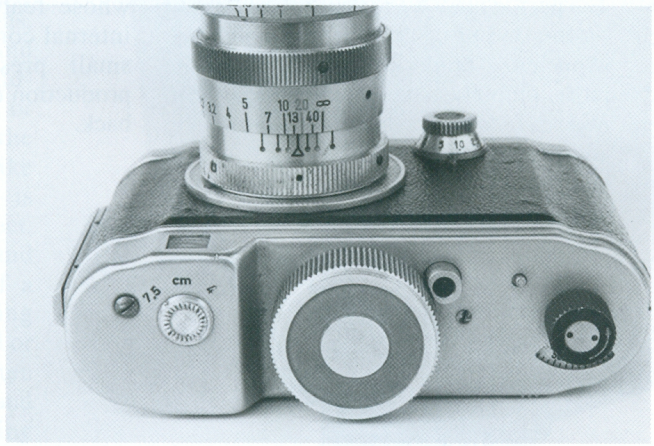
Almost all of these 20,000 cameras were delivered to the Luftwaffe. They had a black paint finish and average or high tensioning spring, enough for 48 exposures. There are many fewer with 24-frame, low tensioning spring and cameras with chrome top plate are rare. Almost all have "Luftwaffen Eigentum" stamped on the back of the top plate.

The same mark is also found on the screw plate or lens collar. The latter were, for the most part, 40mm f/2 Zeiss Biotar and 75mm f/3.8 Schneider Tele-Xenar lenses, but there were also 40mm f/3.5 Tessar and 75mm f/4 Sonnar lenses. Although the standard focal length lenses were all regular production with diaphragm setting and focusing dials, among 75mm lenses it is not uncommon to find those with a diaphragm setting dial only and focusing set to infinity.

Robot II no. F 50048-6

The first camera under examination could be considered a "classic" black Luftwaffen Eigentum with 4cm high winding knob, for 48 exposures, right angle finder, speed





Robot II F 57186-5 series without markings indicating a specific branch of the military, including chrome top plate, no flash mount, aperture scale from 1/2s to 1/500s. On the top plate, above the finder, a knob that rotates when pressed varies the field within the viewfinder from 7.5cm to 4cm.

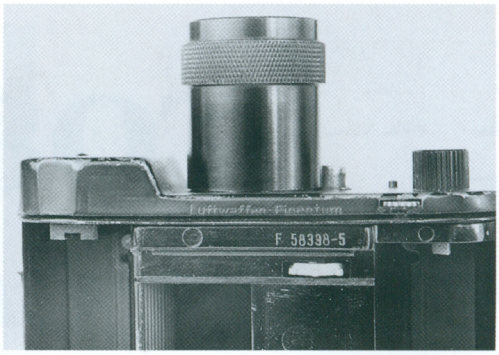
scale from a half second to 1/500s + B, flash mount, 7.5cm f/3.8 Tele-Xenar lens and finder mask for use with long focal length lenses. On the top of the tensioning spring, note the presence of two holes for the insertion of a shoe which, on bombers, when triggered electrically, made it possible to tension the spring without human intervention. However, how useful this accessory actually was is a bit of a mystery, given the fact that the 48 exposures permitted by complete tensioning of the spring used up the entire roll of film in the cassette and the Robot II series cameras used by the military were not equipped with rapid film change accessories.

Robot II no. F 58398-5

More interesting the second camera shown here, also a Luftwaffen Eigentum with 48-exposure spring, but 3cm high, traditional exposure times, no finder and equipped with a 4cm f/2 Biotar lens. It was housed built-in to the wing of fighter planes or dive bombers, the notorious "Stukas", and connected to an electromagnetic shutter release mechanism controlled by the pilot or, alternatively, with a bracket attached to the guns, on the main machinegun of the bombers, usually in pairs or groups of four, and controlled by the gunner using a mechanism synchronized with the firing command. Under these conditions, it is clear that a viewfinder was useless. All that was required was to aim the camera directly in line with the plane or sighting line of the guns. These cameras, like those with simple holes for a viewfinder ("pinhole" finder without lenses), all have fairly high serial numbers, evidently produced in the final years of the war when savings on material costs and, above all, production times, had become a priority in Germany unheard of in 1939 and 1940.

Robot II no. F 57186-5

The third camera shown is unquestionably the most interesting. Marked F 57186-5, it is certainly part of a military consignment, but there is no indication which branch of the armed forces it belonged to. The bottom of the internal compartment base is in Bakelite and the pressure plate is smaller in size, indicating that it dates from a fairly late production period, a fact also confirmed by the high serial number. However, the camera top plate is chrome-plated, like those supplied during the early years of the war. The back bears no trademark, nor is there any on the

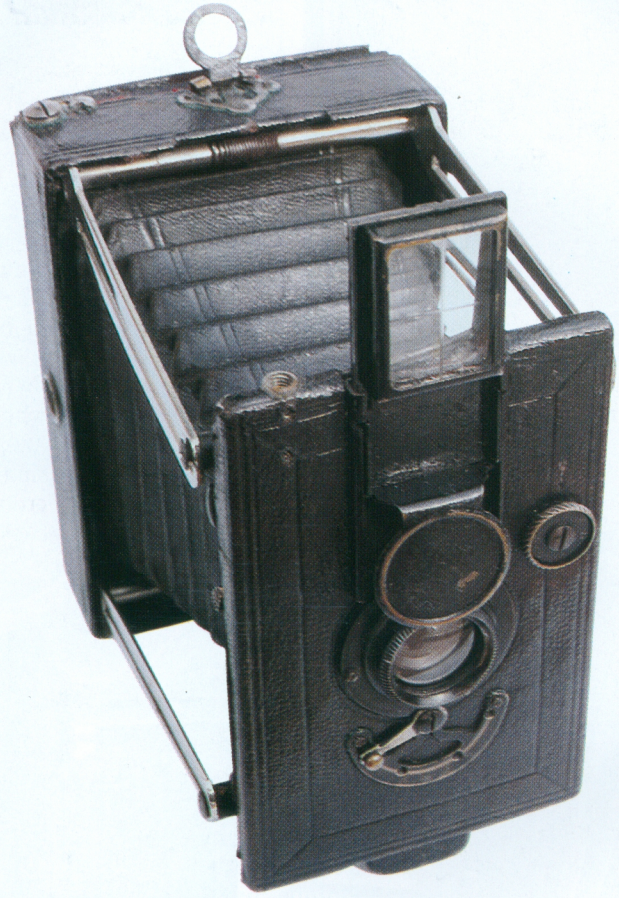


Black Luftwaffen Eigentum Robot II with "low", 48-exposure spring, without flash mount and viewfinder, with 4cm f/2 Zeiss Biotar lens. Serial number F 58398-5. Camera used set-in to the plane wing or gun.

film focal plane or the flash mount.
But the most interesting feature is its viewfinder. There is no right angle deviation and the top plate has a knob with two markings: 7.5 and 4 cm. Turning the knob inside the viewfinder inserts or retracts a mask that limits the image field to the two focal lengths (expressed in centimeters) most commonly used in that period, 4cm and 7.5cm. The winding knob is the low 28-exposure type.
Was this an experimental camera or a model custom-built for special applications? Existing literature regarding Robot cameras makes no reference to such a viewfinder that otherwise has all the features of the originals produced.
The person I believe to be the world expert on the output of the Berning company, Monsieur Claude Bellon (author of the most comprehensive book on the subject, *Robot Historica*) confirms the complete authenticity of the piece and for which he believes he has found a second example in a collection in Tokyo. However, he has been unable to come up with a plausible theory about the manufacture of an accessory that is clearly more complicated than a simple viewfinder, but in a body whose features (lack of flash mount, internal compartment base in Bakelite, small pressure plate) indicate that production costs were already being cut back.

Brunello Brunelli

MURER, A SLICE OF ITALIAN HISTORY



Murer 6x9cm NL0 open.

No camera, not even the most economical, most ordinary or most banal is completely devoid of interest for those who are able to appreciate its history, origins, relationships, evolution and importance. Whether hand-crafted in just a few pieces or mass-produced by the thousands, each camera - like all manufactured products - is the fruit of a particular project, of a certain intellectual and economic commitment, of a historical and manufacturing journey, whether short-lived or long-term, that is often worthwhile reconstructing and can even lead in surprising directions.

Out of the attic

Like any self respecting romantic tale, it all began with a trunk containing the forgotten mementos of grandpa, great-grandpa or some great-uncle or other. And like many tales of adventure, it began with the discovery, or re-discovery, of an object from the past whose existence was only vaguely remembered. In our story, it was a black leather case that for decades had harbored a small folding camera, a little black box without any inscriptions or markings that had grown lazy over the years, difficult to open and to get to work. Together with the camera in the same trunk were some 6x9cm black metal plate holders numbered on the back. Closed, the camera measured 11x8cm, was 3cm thick and weighed approx. 430 grams, including the ground glass back. Once opened (after considerable effort), the camera appeared for what it was, a bellows camera on four struts, naturally made for 6x9cm format plates and with a sliding optical finder with a large focusing cross. Pulling out the finder revealed the lens. The shutter was a guillotine type with B exposure and three speeds: 25, 50, 100. The lens could be stopped-down from f/8 to f/32 and focused from one meter to infinity using a lever on the front. A strange series of spots on the sliding plate that contained the front lens of the viewfinder and the lens cap seemed to indicate that some kind of plate or tag that might have given the name or brand of the camera had been glued on there. However, engraved in small letters on the ring around the lens was the name APLANAT MURER and FOYER 90:8, indicating the 90mm focal length of the lens and its maximum speed. If the lens bore the Murer name, it was also very probable that the camera was also a Murer given the fact that the Murer company of Milan built its own lesser-expensive lenses that it then mounted on its cameras. So, off we went in search of documentation on the Murer brand name.

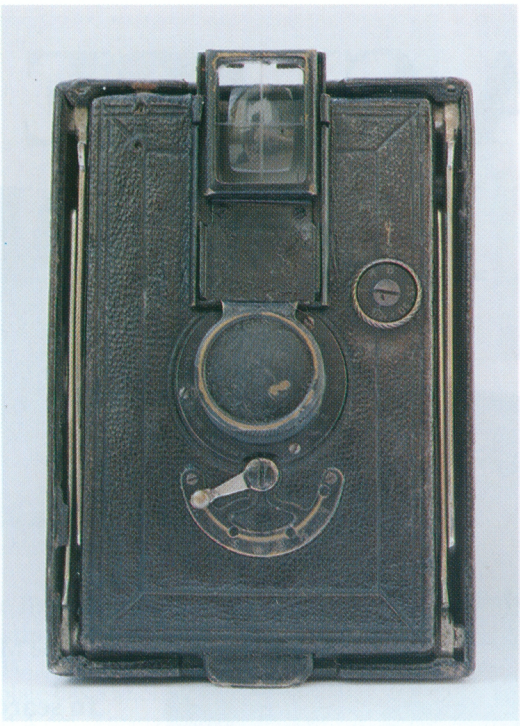
In search of Murer

The Murer name is fairly well-known and present in a number of camera history books. The latest edition of the McKeown guide dedicates a couple of short columns to the company, naming thirteen different camera models, showing them in three illustrations, but without offering any information about the company itself. The Kadlubek guide lists (without photos) over thirty Murer cameras, including a 6.5x9cm plate model with 90mm f/8 Aplanat lens that is marked NL. Among those books dedicated to Italian cameras, Antonetto's *Made in Italy* dedicates two-and-a-half pages to the Murer brand that existed in Milan from 1892 to 1934 and, in the second part, illustrates almost seventy Murer cameras of various types and formats.

Malavolti, in his *Fotocamere Italiane*, dedicates sixteen pages to the Murer name, briefly describing forty-or-so cameras. Both Antonetto and Malavolti publish photos of the 6x9cm Murer NL strut model, the former giving 1905 as the year of construction and the latter 1912. In his 1995 pamphlet dedicated exclusively to the Murer brand, Malavolti describes the prolific output of the Murer company in a bit more depth and also provides a general reference guide that is useful, albeit imprecise, incomplete and characterized by carelessly prepared text and photos that are blurred and hard to read.

A brief history of Murer

The Murer name is tied to the early days of Italian camera production, a young



Front of Murer 6x9cm NL0 closed.

Front of Murer 6x9cm NL0 open.

Murer 6x9cm NL0 strut opening system.

Front of Murer 6x9cm NL0 open.

industry just emerging from its artisan roots and centered around Milan from which it sprung in the last decade of the 19th century to expand and then decline with the tragic years of the second world war. Around the year 1890, a number of camera companies were founded in Milan including Lamperti & Garbagnati and Duroni, followed in 1900 by others such as Piseroni & Mondini, Torrani, Bellani and Albini.

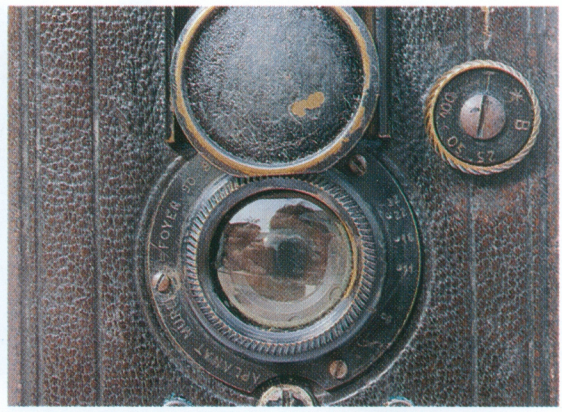
Of these companies some, such as Lamperti & Garbagnati and Piseroni & Mondini were destined to enjoy a long, productive life, while others did not survive the first world war. Others, such as Albini, Torrani and Duroni, soon changed their names. First Albini and then Torrani were taken over by the company Ganzini and Namias, while Duroni took on the family name of Duroni's brother-in-law, Teodoro Murer, who had joined the company in 1892, becoming famous in the first years of the new century as Murer.

Box cameras

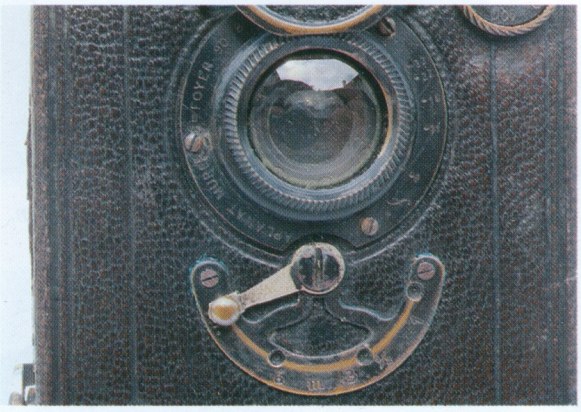
In the beginning, the output of first the Duroni company and later Murer was concentrated on the most economical and simple cameras, the so-called "detective" or "box camera". As is well-known, box or detective cameras have a rigid, cubic or rectangular structure and are equipped on the front with a simple, fixed focus meniscus lens, simple reciprocating motion shutter and simple reflection viewfinder. With these simplified features, box cameras made it possible to take good photographs only out-of-doors and under excellent lighting conditions but without too many technical problems in calculating exposure and focusing. In addition, they were easy to carry and conceal, hence the nickname "detective", and were a commercial success in both Europe and the United States.

The Duroni and Murer box cameras were

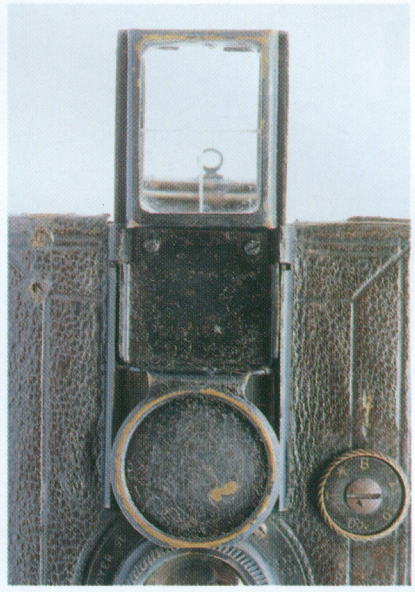
Detail of Murer 6x9cm NL0 front with speed dial and focusing lever.



Detail of lens with inscription APLANAT MURER - FOYER 90:8.



Detail of lens with focusing lever on position m. 1 3 1/2 6 and infinity.



Detail of viewfinder extracted.

no exception to this. They were made of polished wood and lined with leatherette, utilized 9x12cm plates and created the conditions for the company to take off in a period of tremendous enthusiasm for photography in the wake of the spread of dry gelatin plates. Compared with the competition, the Duroni and Murer box cameras offered an attractive system for automatic changing of exposed plates which guaranteed their commercial success.

In the years 1890 to 1905, the line of Murer and Duroni box cameras expanded considerably, diversifying in a range of models, formats and optical equipment: alongside the models with single plates, there appeared those with magazines for six or twelve plates; in addition to the 9x12cm format, there were 6x9cm format models; and, in addition to models with simple achromatic lenses, there appeared others with rectilinear lenses. A coding system was also created that made it possible to identify each model on the basis of a two- or three-letter code that indicated the format, type and equipment of each camera.

Following the Lampo boxes, there appeared the Express cameras - both the Simple Express and Newness Express - with models equipped with Goerz Dagor or Tessar Koristka lenses, and special box cameras for stereoscopic photography were also developed, equipped with pairs of identical lenses and shutters with synchronized aperture.

Large format reflex cameras

Alongside these economic and deluxe model box cameras, Murer also manufactured professional, large format (13x18cm or 18x24cm) square cameras for both vertical and horizontal shots, as well as folding field cameras. Murer's most sophisticated camera was the single lens reflex with focal plane shutter and interchangeable lens built during the 1920s in imitation of the English models of the same period for 10x15cm, 9x12cm and 6.5x9cm formats, as well as for 6x9cm roll film.

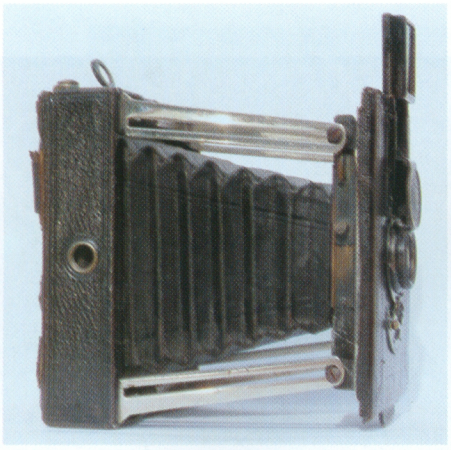
The Murer reflex camera was built in the version for horizontal shooting, or the version with rotating back for both vertical and horizontal shots. The model with rotating back was created to get around the impossibility of utilizing the waist-level or reflex finder when shooting in a vertical position.

The Murer reflexes were equipped with 105mm, 120mm, 135mm and 150mm Murer lenses with speeds of f/4.5, f/3.9 or f/3.5, as well as Koristka, Roussel and Zeiss Jena lenses.

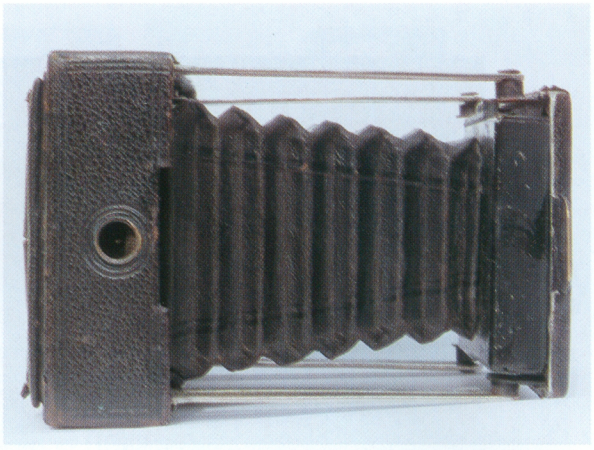
Among the Murer reflex models, there was also a stereo-photography model for 6x13cm plates, equipped with paired 90mm lenses. The Murer single reflex perhaps represents the high point of Italian camera production between the wars.

Bellows cameras

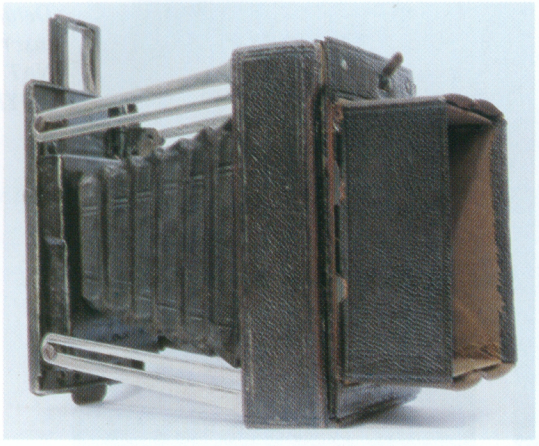
In 1905 the name Duroni disappeared from the corporate register and the company Fratelli Murer began production on new folding bellows cameras advocated by Teodor Murer's son, Alessandro. The Murer folding camera was aimed at the general public and designed to cover the full market spectrum, from the most economical to high performance. Murer folding cameras were divided into two families, each with its own range of models according to format and performance. The first family was a folding camera with a front that swung down and was hinged at the bottom. These cameras were built for plates in 10x15cm, 9x12cm and 6.5x9cm formats, and also for flat and roll film. The Murer folding cameras with opening front



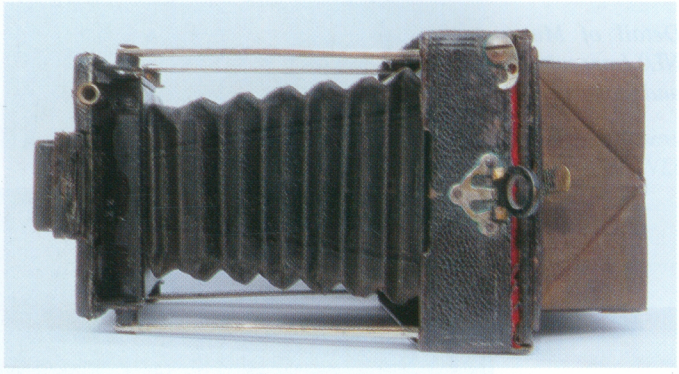
Murer 6x9cm NL0 open, side view.



Murer 6x9cm NL0 open, seen from lower base plate.

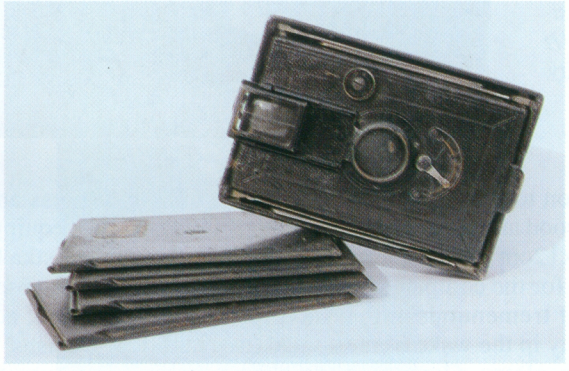


Murer 6x9cm NL0 open, seen from left side.



Murer 6x9cm NL0 open, top view with back open.

Murer 6x9cm NL0 with black leather case.



Murer 6x9cm NL0 with plate holders as part of kit.

were equipped with various lenses, including Murer, Dagor and Koristka, and were mounted on Pronto, Ibso and Koilos leaf shutters. Following the experience gained with plate folding cameras, at the end of the 1920s Murer began producing folding cameras for roll film that no longer bore complex ID initials, but actual names such as Star, Murette and Hermosa.

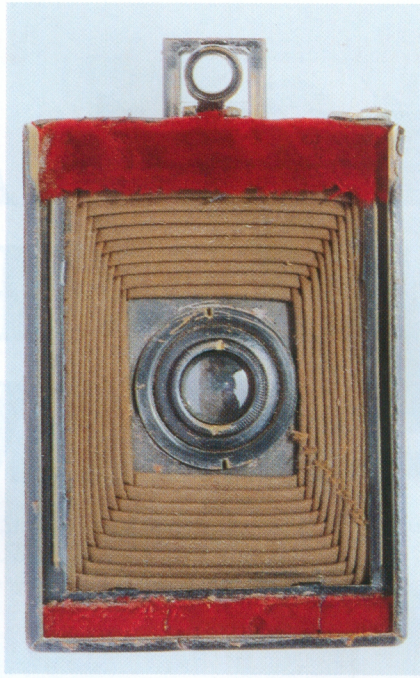
The second family was that of the 4-strut folding cameras with pull-out front plate, a simpler and more reliable system. A number of models with different formats, lenses and performance levels was also created for this type of camera. Formats ranged from 13x18cm, 10x15cm and 9x12cm to small 6.5x9cm and 4.5x6cm formats. Lenses ranged from the economically-priced Murer Anastigmatico and Aplanatico to the Dagor, Berthiot, Roussel, Zeiss Koristka and Zeiss Jena lenses. The 4-strut folding camera was divided into two different product lines: top-level cameras with focal plane shutters and speeds up to 1/1000sec on one side, and lower-priced cameras with interlens shutters (really reciprocating motion shutters) on the other. Among the Murer 4-strut folding cameras of the first type were the series D cameras with fixed front plate and the more sophisticated series F with shiftable front plate, as well as the stereo models for 4.5x10.7cm and 6x13cm formats.

The lenses used to equip the first type of camera were high-class, such as the f/6.8 Collinear, f/5.5 Korstka Meridian, f/4.5 Sideran, f/4.5 Roussel and Zeiss, but also the f/4.5 Murer and even the f/3.9 Murer. Production of this type of camera continued throughout the period between the wars and into the early Thirties.

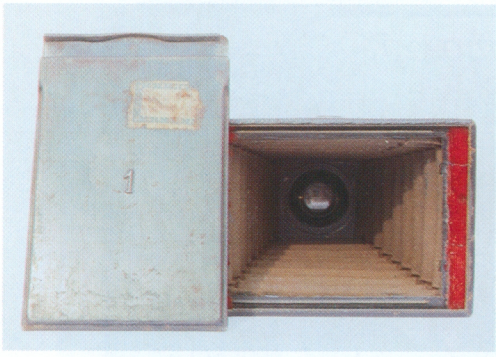
Murer NL Zero

The Murer 4-strut folding cameras of the second type were generally more modest and included the 9x12cm medium format and 6.5x9cm and 4.5x6cm Mignon formats, as well as the stereo formats up to 6x13cm. The lenses utilized were limited to the f/8 Murer Aplanatico and f/6.8 and f/6.5 Anastigmatico, f/6.8 Dagor and f/6.8 Suter. Shutters ranged from simple posing and snapshot shutters to more complex 3-speed (25, 50, 100) shutters. According to the Murer alphanumeric coding system, the format was indicated by a letter-U for 4.5x6cm, N for 6.5x9cm, G for 9x12cm-while the type of camera was indicated by a second

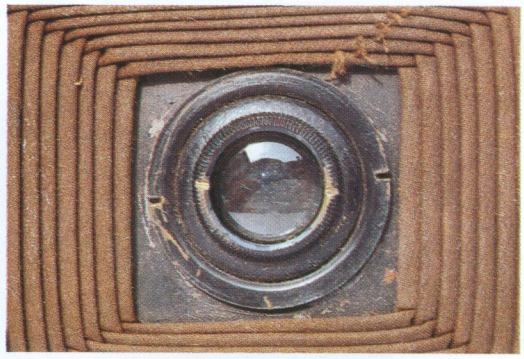
Murer 6x9cm NL0 with back pulled out.



Murer 6x9cm NL0 with back removed.



Murer 6x9cm NL0 with back open and plate holder no. 1.



Rear face of lens with bellows closed.

letter. L stood for the economical, simplified mechanism plate type, T for economical plate type with more complex mechanism and M for plate type with metal construction. Other letters were used to indicate roll film cameras. According to the same coding system, a lens could be indicated by a number or letter. The number zero indicated the f/10 or f/8 Murer Aplanatico, the number 2 the f/6.8 Anastigmatico and the number 3 the f/6.8 Dagor.

On the basis of this information, we can now ascertain that the camera found in the trunk in the attic is for 6.5x9cm plates (type N) and has a f/8 Murer Aplanatico (type zero). The Murer catalogs do not have many cameras marked with the N and zero, but they include the NF Zero model for film pack with f/10 lens, the NG Zero for film with f/8 lens and, finally, the NL Zero model for plates with f/8 lens. On the basis of these letter and number combinations, we were able to identify our camera as a Murer NL Zero.

Production of this model continued for at least twenty years and was included in company catalogs from 1905 to 1926. It was the most economical model built to be used with 6.5x9cm plates. The price of the NL Zero in the 1920 catalog was Lire 180, while the analogous GL Zero model for 9x12cm format was priced at Lire 250 and the 4.5x6cm format UL model was Lire 115.

All three cameras mounted f/8 Murer Aplanat lenses. The more deluxe models of the series with f/6.5 Murer Anastigmatico also appeared in the same catalog with prices of Lire 235 for the 4.5x6cm format and Lire 360 for the 9x21cm format, but the 6.5x9cm format is not included. For the record, cameras with the same format as the NL Zero appear in other Murer catalogs, still coded with the letters NL but equipped with different lenses, such as the NL2 with f/6.8 Anastigmatico lens and NLM with f/6.5 Anastigmatico. The NK models for plates and film also appear in two variants, the NK with f/8 Aplanatico lens and the NKM with f/6.5 Anastigmatico. The NL Zero model in our possession is thus the least-expensive of any of the cameras of this format.

By following the trail of the most economical 6x9cm Murer strut camera ever built, we have come across some pages of Italian camera history that perhaps deserve more in-depth study than has been dedicated to them until now.

Danilo Cecchi

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START, A SUPER ZENIT FROM THE KRUSCEV PERIOD

Start, first model, with large knobs and standard lens, front view.

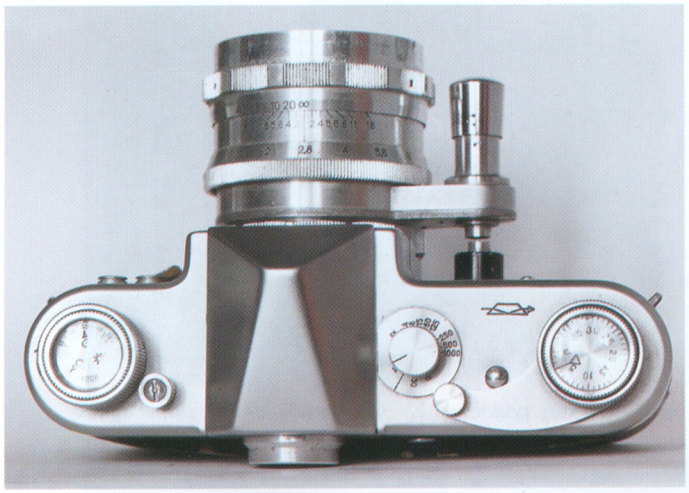
Russian reflex cameras are generally looked upon by German and Japanese reflex collectors with a mixture of disdain and commiseration. This attitude can be explained by the perennial technical shortcomings and low-quality structural and cosmetic aspects of Russian reflexes, in particular the Zenit with its penchant for quantity over quality. Equipped with small mirrors, not-very-bright view finders, shutters with speeds ranging from 1/30 to 1/500sec and no modern features, but of which hundreds of thousands were produced, the Zenit cameras from the Fifties, Sixties and Seventies are not held in much esteem or highly-valued by collectors.

The exception to this are a very few Zenit prototypes, a number of experimental models of which just a few thousand were ever made and some cameras with special commemorative markings. Those collectors who prize Russian pieces know how to sift through the massive output to find those slight variations, changes made without any major fanfare and improvements that did not give rise to new markings and therefore passed unnoticed. Among those Russian reflex cameras that were innovative in their own way, of which only a limited number were ever produced and for this reason (unlike the Zenit) interest also less-specialized collectors, is the 35mm Start with its special features and intriguing destiny.

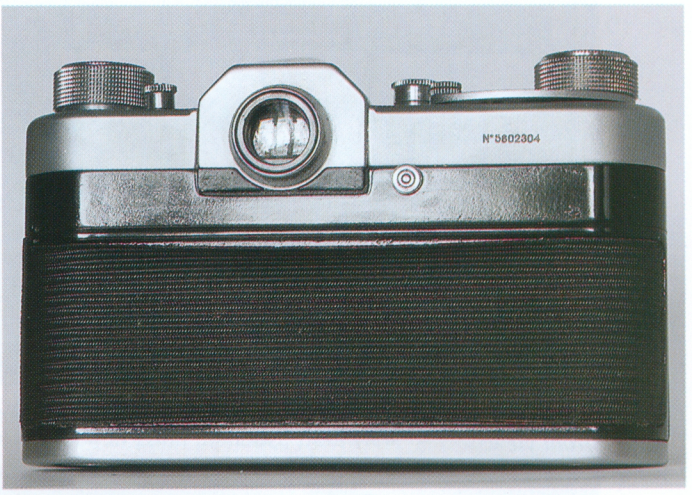
Later than the Zenit ... and better

The 35mm Zenit reflex was modified in 1956 with the addition of a synch socket and production continued until 1960 with the Zenit C (Zenit S in the Latin alphabet). It was a modest camera without rapid winding lever or self-timer and just five f-stops with Leica-style loading from the bottom, 39mm screw mount and non-interchangeable pentaprism finder. It was the only 35mm camera in production in the Soviet Union at that time and in a period of closure towards the West, and it was the only reflex available to amateur and professional photographers alike. In fact, over a five-year period, over 230,000 of them were produced.

In 1958, in the same Krasnogorsk plant, production was started on a professional 35mm reflex called the Start that was destined to stand alongside the Zenit and even replace it for more demanding types of applications.



Start, first model, with large knobs and standard lens, view from top plate.



Start, first model, with large knobs, rear view, serial no. 5802304.

Start, first model, with large knobs without lens.

Birth of the Start

The Start was very different from the Zenit. Larger, heavier, more complete, it utilized technical solutions that had previously been experimented successfully in Russia and East Germany. The Start was 8cm tall to the top plate and 10cm to the top of the prism. It was 14.5cm long and 3.5cm thick, increasing to 5cm at the lens changing catch. The camera body, including the prism, weighed 700 grams. In its construction, the experience garnered with the Zorki 3 and later the Zorki 4 in 1956 was taken into account. The focal plane shutter, like that used on the Zorki 4, included all speeds from one second to 1/1000sec as well as bulb exposure. Synch time was 1/30sec and the two X and M synch sockets were on the upper left of the front, while on the Zorki 4 there was just one synch socket located on the upper right of the front. The speed selector was identical to that on the Zorki 4, was located on the top plate and could only be operated with the shutter cocked. It had to be lifted before being turned and moved during shutter release. The back connected to the base plate - attached using two keys - was completely removable and similar, but not identical, to the Zorki 4, but it was not compatible with the latter because it was longer and slightly taller.

Although its shutter, self-timer and mechanics were very similar to that of the Zorki 4, the Start utilized a new winding lever that was long and contoured. At its base was a frame counter with manual zero reset and it used a large rewind knob with a built-in film speed memo disk. The pentaprism finder was compact and could be slid out of its seat to be replaced by a waist-level finder whose hood could be opened in two parts similar to the waist-level finders on German Edixa cameras.

Heir of the Exakta

The first Russian reflex camera with interchangeable viewfinder, the Start seemed to draw its inspiration to a certain extent from the Exakta. And it did have a number of things in common with the Exakta, such as the possibility of using two receiving cartridges for rapid film take-up without rewinding and the built-in film-cutting knife to avoid wasting unexposed film. A further interesting point of similarity between the Start and the Exakta was the system used for automatic aperture closing. Although the Zenit with 39x1mm screw mount and even those with 42x1mm screw mount continued to utilize lenses without automatic lens diaphragm throughout the 1960s, the Start was equipped with a proprietary bayonet mount and automatic diaphragm lens.

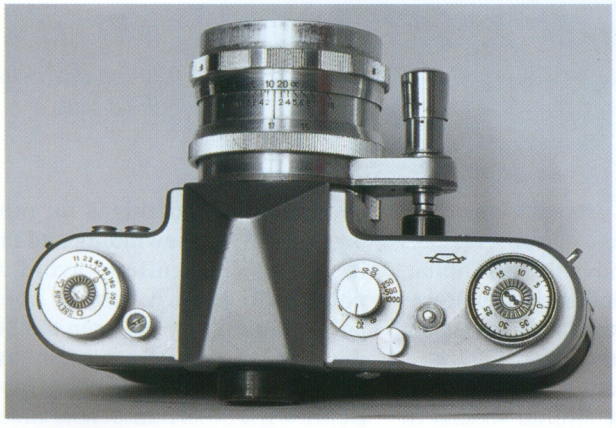
Like the Exakta, the Start had the shutter release button on the front, but on the right instead of the left and, like Exakta lenses, Start lenses had an external coupling to close down the aperture spring that was linked to the release button. When the couplig was turned, the aperture closed immediately to the value selected and this movement was transmitted to the release button which opened the shutter. The lens mount on the Start had to assure perfect alignment of the lens coupling with that of the camera, and a 3-sector

Start, second model, with small knobs and standard lens, front view.

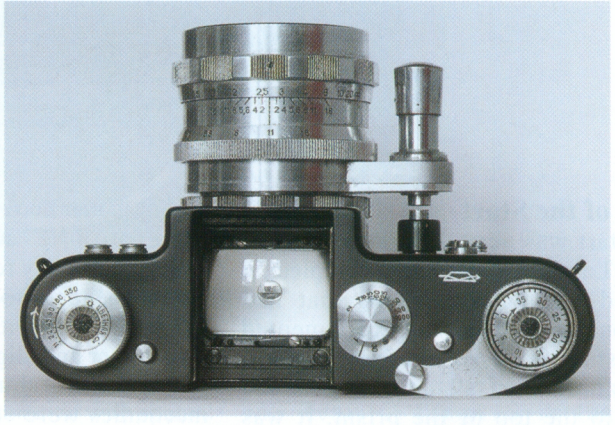
Start, second model, with small knobs, black finish and standard lens, front view.

Start, second model, with small knobs, rear view, serial no. 5900060.

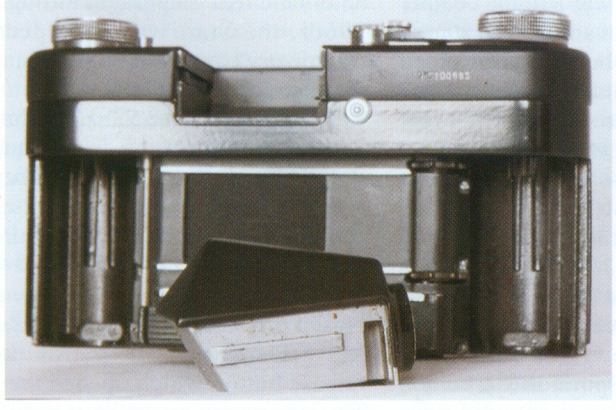
Start, second model, with silver finish, rear view, serial no. 6105703.



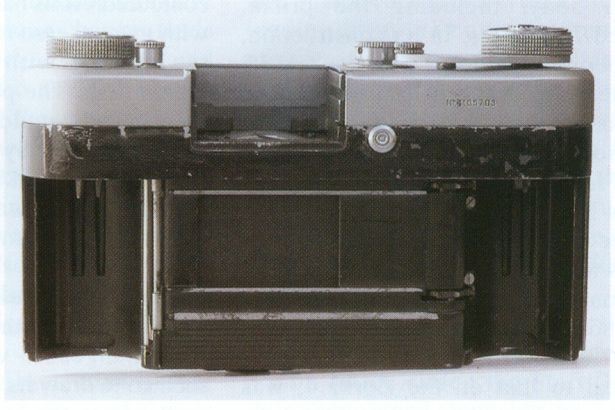
Start, second model, with small knobs and standard lens, view from top plate.



Start, second model, with small knobs, black finish and standard lens, view from top plate without viewfinder.



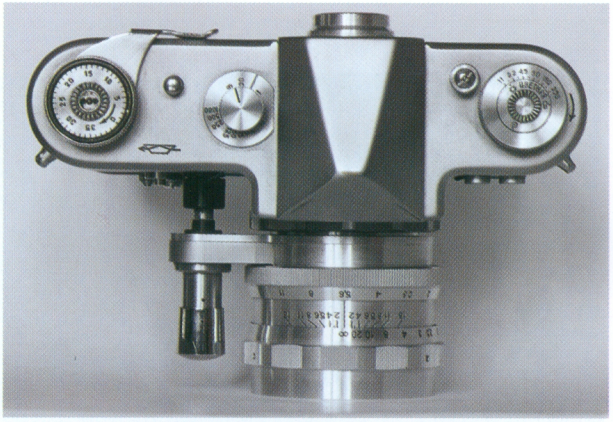
Start, second model, with small knobs and black finish, rear view without viewfinder and back open, serial no. 6100695.



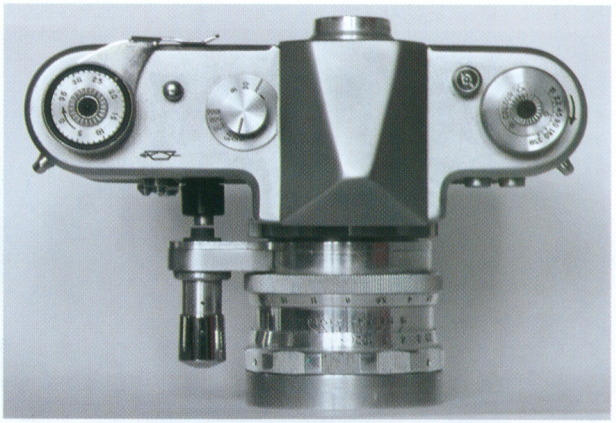
Start, second model, with back open, serial no. 6105703.

Start, third model, with modified lever and standard lens, front view.

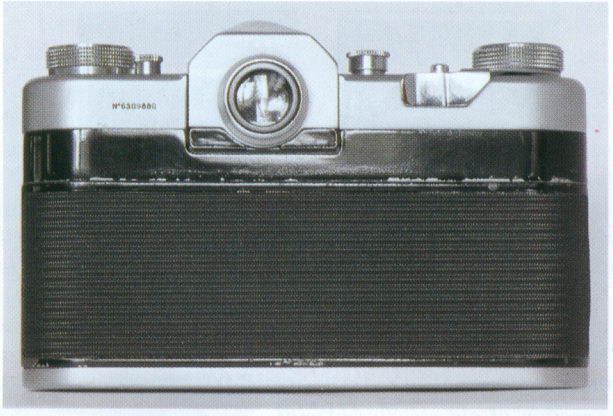
Start, third model, with modified lever and standard lens, inscription in Latin alphabet, front view.



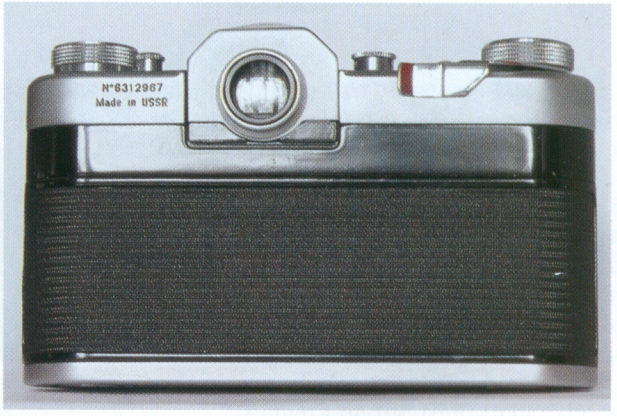
Start, third model, with modified lever and standard lens, view from top plate.



Start, third model, modified lever and standard lens, view from top plate.



Start, third model, with modified lever, rear view, serial no. 6309880.



Start, third model, modified lever, rear view, inscription MADE IN USSR, serial no. 6312967.

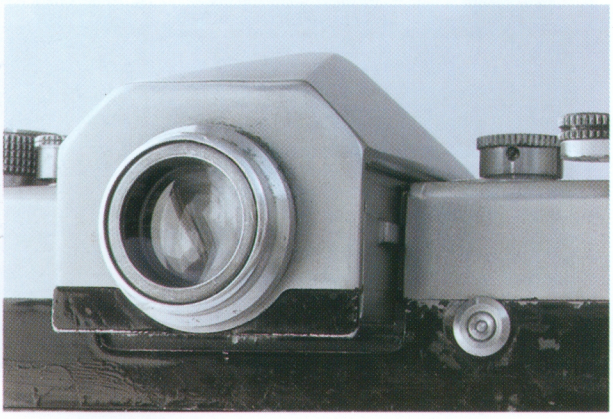
bayonet mount, different from that on the Exakta in terms of size and type, was used. While the Exakta bayonet required the lens to be positioned and then turned until the spring "caught", the Start bayonet was a breechlock-type mount with tightening ring. The lens was positioned and locked in place by a ring on the camera mouth in a way that was similar but not identical to the bayonet mount on the Praktina.

In fact, there were quite a few points of similarity between the Start and the Praktina. Aside from the similar bayonet mount, their viewfinders also had quite a bit in common. The finder slid in and out horizontally, as on the Praktina, and not vertically as on the Exakta. The ground glass also remained attached to the camera body using two little locks as on the Pratina, and not fixed to the finder Exakta-style. The Start's ground glass had a focusing wedge in the center that divided the image. In the end, the only point of similarity with the Exakta was the external aperture probe. A similar device was used in the later half of the Fifties on a number of reflex cameras such as the Alpa, Praktica, Edixa, Topcon and Miranda, before the advent of internal transmission to the lens knob.

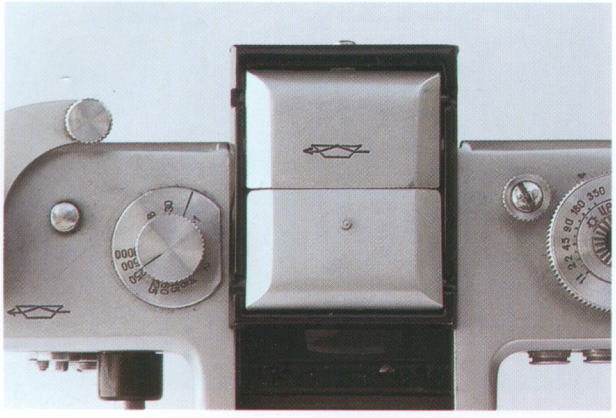
A (non-existent) array of lenses

A successful combination of Russian technology found in the Zorki 4 and that from East Germany as in the Exakta and Praktina, the Start represented a major step ahead in Soviet reflex camera production, but this modernizing trend

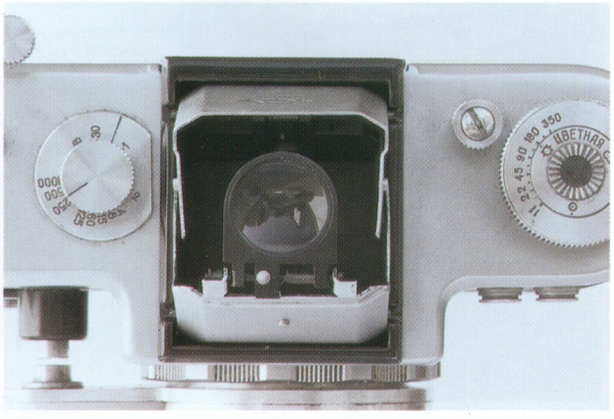
Start, detail of front with lens changing catch and breechlock mount, synch socket, self-timer lever, shutter release button and focusing wedge lowered.



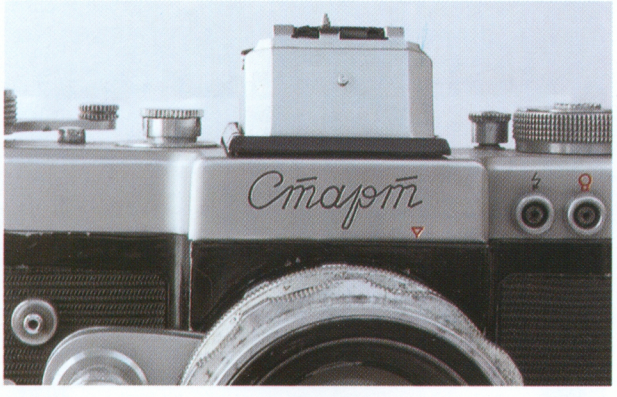
Detail of viewfinder release.



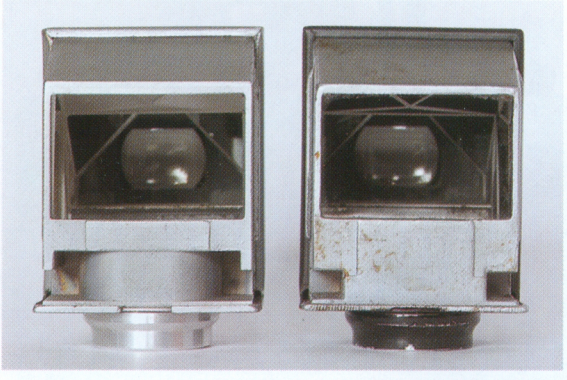
Detail of waist-level finder insertion.



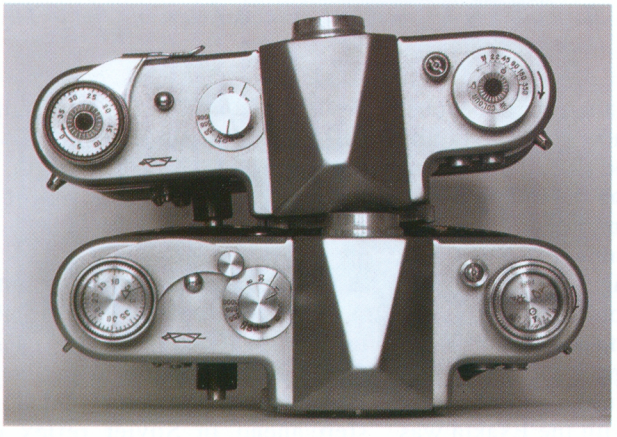
Detail of open waist-level finder, seen from above.



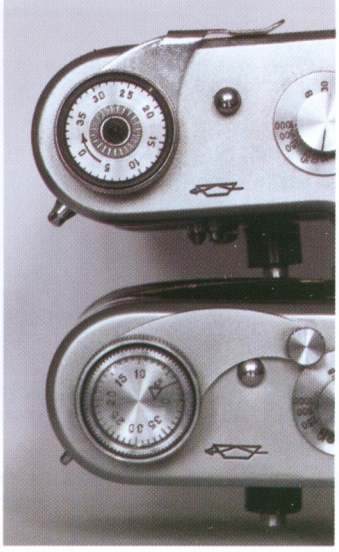
Detail of open waist-level finder, front view.



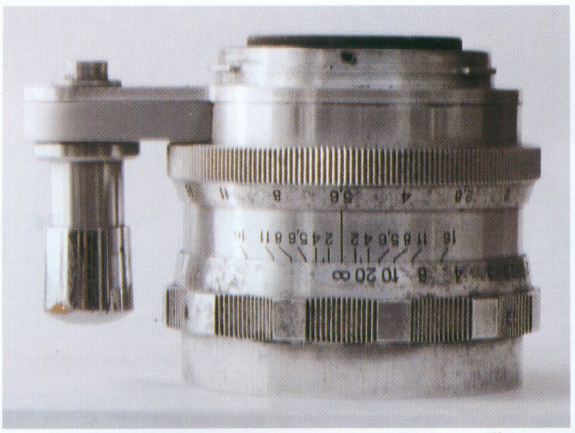
Comparison of lower section of old viewfinder with side notches and new type with lower grooves.



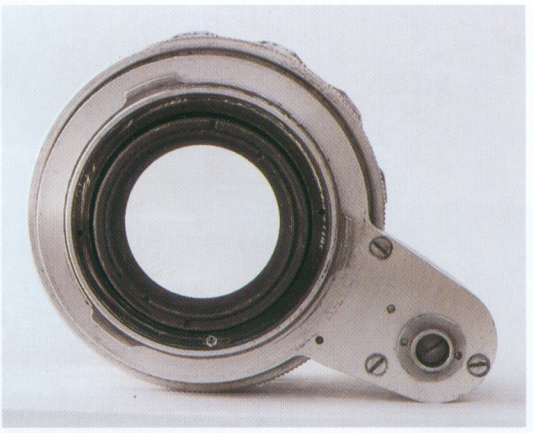
Comparison between top plates from types 1 and 3.



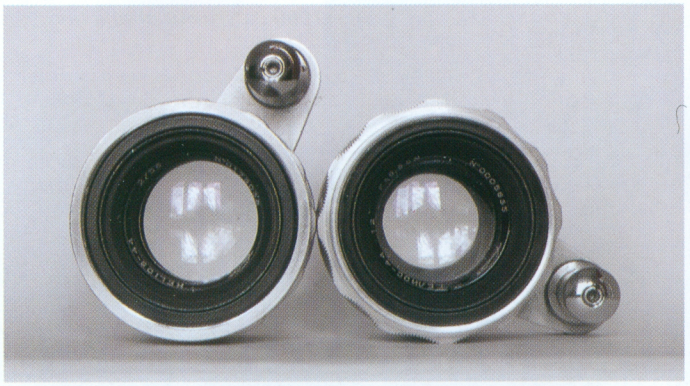
Comparison between old and new winding levers.



58mm f/2 Helios 44 lens with Start mount and aperture control.



58mm f/2 Helios 44 lens with Start mount, rear view of bayonet.



Comparison between old and new Helios 44, front view.

Comparison between old and new Helios 44 on minimum focusing.

was not exploited fully. Apart from the intrinsic fragility of its shutter which made the Start not all that suitable for heavy applications, what the camera lacked first and foremost was a system of compatible automatic lenses.

The only bayonet-mount lens made for the Start was the standard 58mm f/2 Helios (or Gelios) 44 used previously on the Zenit in a non-automatic, 39x1mm screw-mount version, an exact copy of the East German 58mm f/2.0 Biotar, itself based on the pre-war Sonnar. In 1958, wide angle Mir and telephoto Tair lenses with Start mounts were announced but never put into production. An adapter ring made it possible to use Zenit screw-mount lenses on the Start, but this compromise solution greatly reduced the Start's potential and appeal for professional photographers of the day.

The result was that approximately 10,000 Start cameras were built each year in Krasnogorsk which, simultaneously, was turning out 30,000 a year each of the Zenit 3 and Kristall and 100,000 per year of the Zenit 3M. As is well known, a number of non-automatic lenses were marketed during that period for the Zenit, including the 37mm Mir, 85mm f/2 portrait Jupiter 9 and MTO catadioptric telephoto lenses. In 1964, production began in Krasnogorsk of the Zenit 4 reflex with interchangeable viewfinder, interchangeable lenses and Compur-type leaf shutter with speeds from one second to 1/500sec. The Zenit 4 and the later motor-driven Zenit 5 marked the end of the Start, despite the fact that they proved a commercial disaster and only a few tens of thousands of them were manufactured.

Variants of the Start

Between the years 1958 and 1964 just over 75,000 Start cameras were manufactured and, over this period, it underwent a number of technical and cosmetic changes. The original Start, easily identifiable from its serial number preceded by the digits that indicate the year it was constructed, had a long, flat winding lever that was set-off from the camera body in a pre-wind position. In the new Start cameras built after 1961 the winding lever was curved and contoured and stuck out from the back of the camera, much like the winding lever used on the Zenit 4 and later on the Zenit E.

The old Start also had a viewfinder release button that did not appear on the models built after 1961. This necessitated a change in the lower part of the interchangeable viewfinders. The camera had the name "Start" engraved on its front in italic Cyrillic letters and, less frequently, in Latin letters and only on those cameras destined for export.

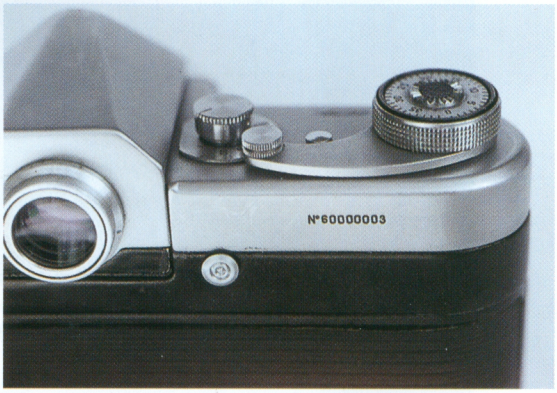
The logo of the Krasnogorsk factory was engraved on the top plate and the serial number appeared on the back of the camera on the right under the winding lever in older models and on the left under the rewind knob in later ones. The design of the controls, frame counter and disk on the rewind knob also underwent some slight changes over the years. After having been modified in 1959, they were altered again in 1961.

The standard Helios 44 external lens mount was also subject to slight changes, such as the front ring which was thicker on some cameras and thinner on others.

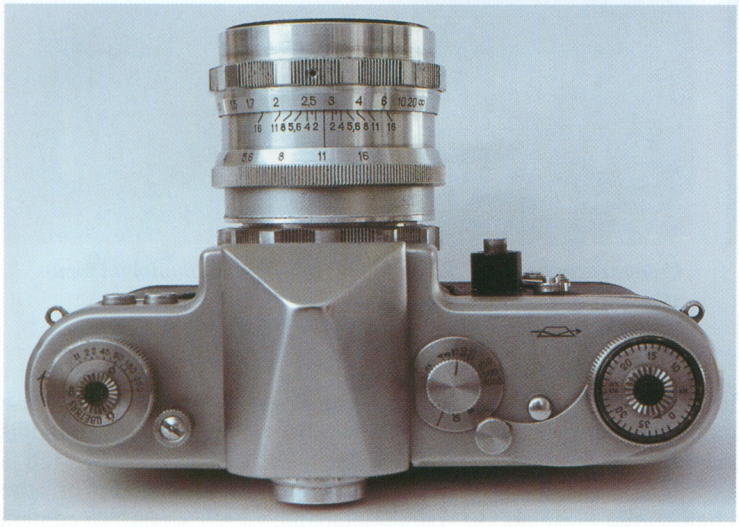
Rare variants

With its standard chrome satin finish and leatherette body covering with horizontal stripes as on the Zorki 4 of the same

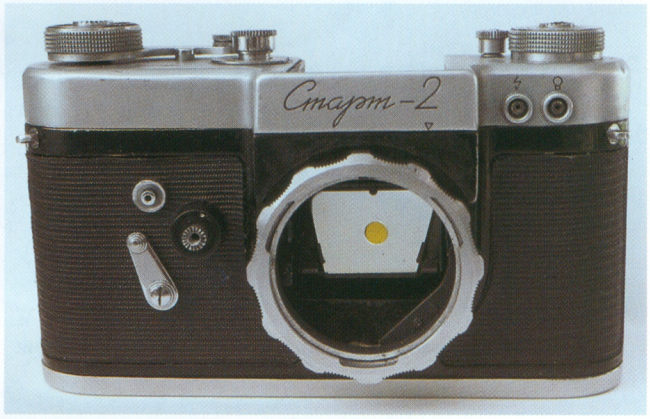
Start 2 developed from second model Start with standard lens and viewfinder, front view.



Detail of Start 2 back with serial number 60000003, indicating 1960 as year of production.



Start 2, view from top plate.



Start 2 without lens or viewfinder, front view.

period, a very small number of Start cameras seem to have been produced with all-black finish, although doubts remain about the authenticity of these pieces. Nonetheless, those black-finish cameras examined have been produced with extreme care.

A second rare version of the Start was the model marked "Start 2" on the front and erroneously dated 1964 at the very end of the camera's production life. In reality, the Start 2 was unveiled in 1960 and the intention of its designers was that it would solve some of the functional problems encountered in the previous model. Identical to its predecessor in terms of casing and performance, the Start 2 did not have the large knob to close the diaphragm and transmit the motion inside the lens changing catch. Snubbed by the authorities and Soviet industrial planners, the Start 2 did not enjoy the success of the old Start and only a very few were ever produced, while production of the traditional Start with external aperture mechanism continued.

Ryshkov also mentions a Start 3, but without giving any details about how it differed from the Start 2. Victim of the lack of a viable strategy regarding the professional sector, overly-conservative policy-making and literally crushed by the sheer number of the Zenits, the Start was taken out of production before it had the opportunity to mature and exhibit its full potential. For a reflex with focal plane shutter and a full range of shutter speeds between 1 second and 1/1000sec to be produced in Krasnogorsk, we would have to wait for the ill-starred Zenit 7 in 1968 and subsequent Zenit 19 at the end of Seventies, neither with interchangeable viewfinder.

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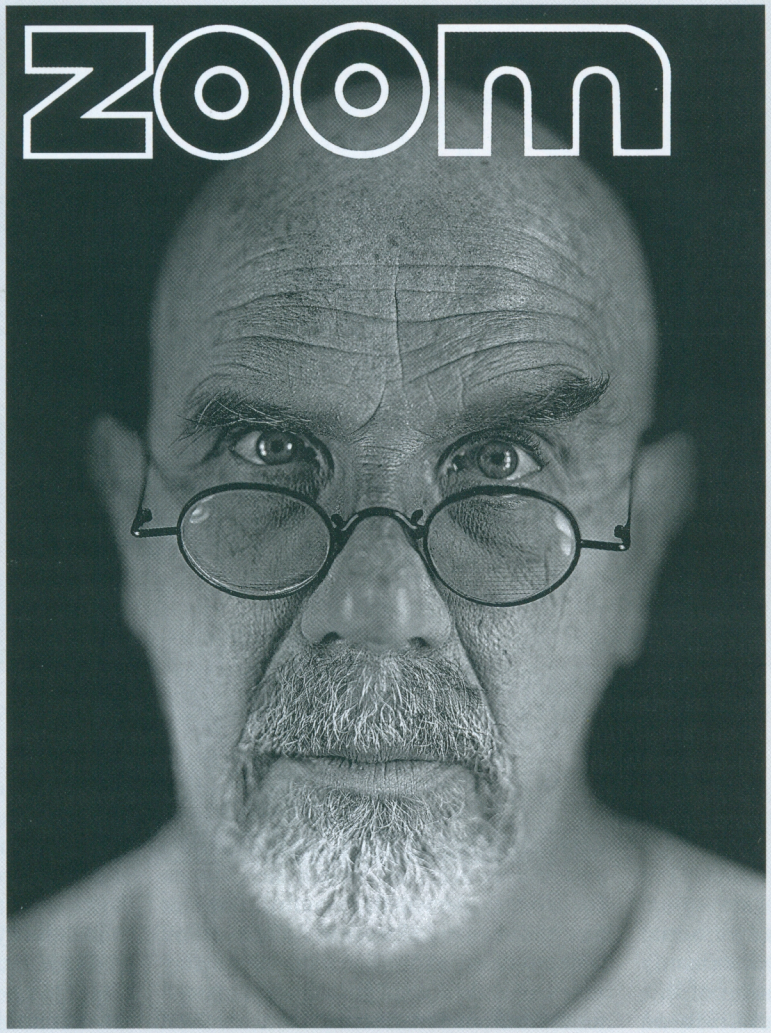

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THE OFFICINE GALILEO IN FLORENCE

Photo from the book: Archeologia industriale: Le Officine Galileo, Alinea Editrice.

Between the two world wars, the Officine Galileo in Florence organized a small optics and photographic department that was not designed for commercial products, but rather to produce equipment for surveying, aerial photography and aerial photogrammetry destined predominantly for military use. Documentation of this production is based almost exclusively on catalogs published during those years by Galileo itself, and among the equipment manufactured were the phototheodolites and Santoni cameras for aerial photography and aerial photogrammetry. All these came equipped with Koristka as well as Galileo Aerostigmat lenses, and the same type of lens was also used during that period for some military aerial cameras made by other manufacturers, such as OMI of Rome.

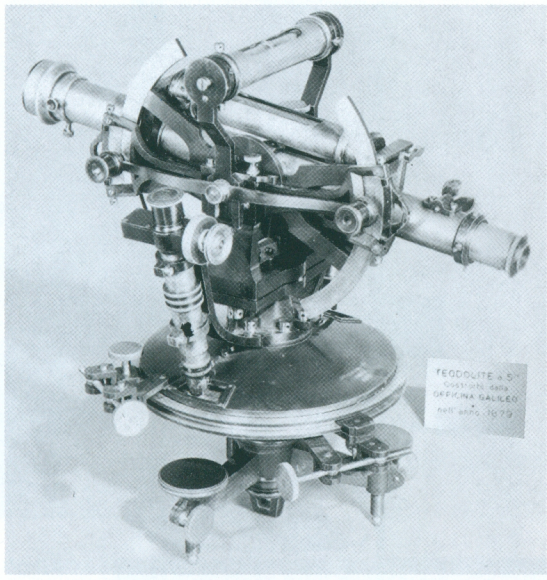
Immediately following the second world war, Galileo was forced to give up almost all of its military orders and it decided to use the experience it had accumulated in that sector with lenses and cameras to reorganize its output for the civilian market. This was in line with the decisions made in that period by other Italian engineering firms that had been active in war production, such as San Giorgio in Genoa or the above-mentioned OMI in Rome, but it was not a trouble-free decision. Within the Officine Galileo management there were differences of opinion which became quite marked between those involved in light engineering and lens and camera production destined for the consumer market, and those involved in heavy engineering dedicated to the industrial and textile market.

This difference of opinion mirrored the split in political views at that time and differing market strategies. Those behind the light engineering faction were managers tied to left-wing working class circles who were more open to the mass market, while those backing heavy engineering were managers connected to the interests of traditional property owners more oriented towards supplying heavy industry. Engineer Brini and the group of managers tied to the SADE wanted to aim production towards mechanical looms for textile firms in Prato and in the Veneto, while the management faction backed by the workers lead by Musco and his close collaborators such as Dr. Ricci and Prof. Giotti, promoted optical and light engineering production aimed at technical and scientific development. The manufacture of cameras was part of this latter approach, but one that brought with it instability and a shift of power within Galileo.

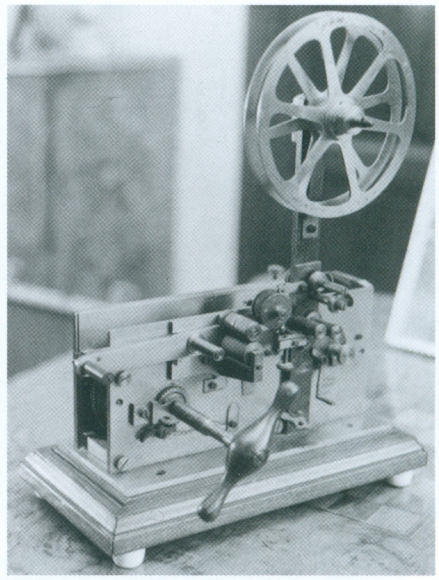
Towards the building of the photographic sector

The corporate philosophy of the Officine Galileo had always been to produce everything in-house, from design to painting of the finished piece, and the photographic sector was organized on the same basis. Plus, in the late 1940s, the Officine Galileo possessed all the technical know-how required to design cameras from start-to-finish, shutters to lenses. From the standpoint of engineering design, the contribution of Engineer Santoni—the creative genius behind stereo-surveying equipment and cameras used for aerial and aerial photogrammetric shooting—was decisive.

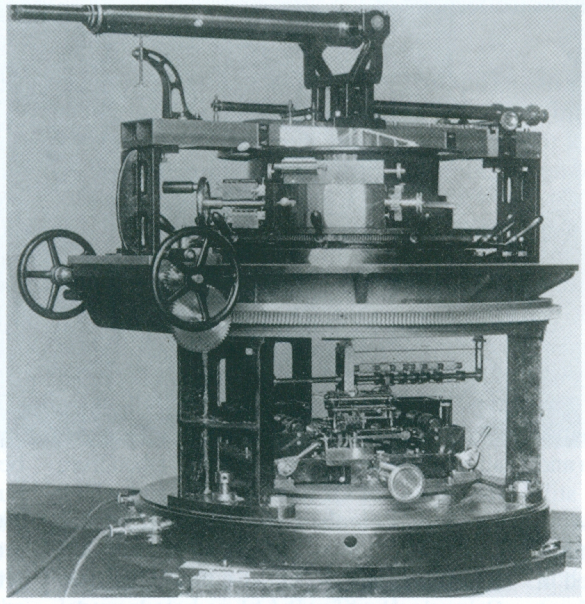
The engineering skill of the Galileo work force also formed the basis for the decision



5" theodolite (1879), (Officine Galileo archives).



Field telegraph, 1873, (Officine Galileo archives).



Braccialini rangefinder for the Japanese government, 1898, (Officine Galileo archives).

to produce the Iscus interlens leaf shutter (later replaced by the Aplon interlens shutter), abandoning the concept of fabric focal plane shutters. The choice of the interlens shutter affected the type of cameras that were designed to be equipped with a Leica-type retractable mount lens, but not interchangeable. In that period, interchangeable lenses were not considered an indispensable requirement and, in any case, a fixed lens allowed the camera to remain smaller and more pocket-sized.

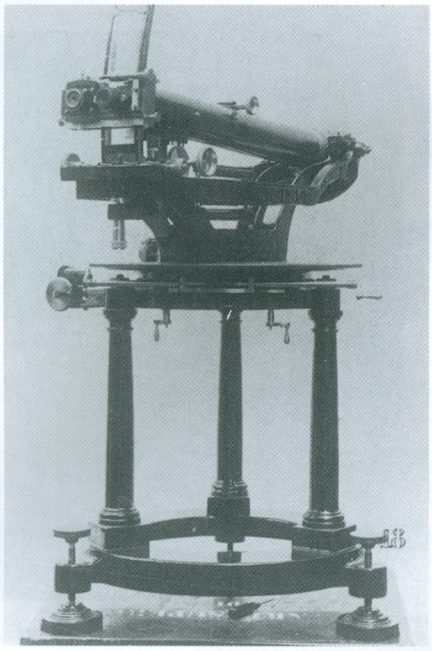
Most Italian camera manufacturers of the day, such as Gamma, Sonne and Kristall, built rangefinder cameras with interchangeable lens, but they did not build any type of lens themselves and their catalogs did not offer lenses with focal lengths other than 50mm. Only San Giorgio and ISO offered telephoto lenses for their cameras and, for its half frame Sogno camera, only Ducati offered a complete series of interchangeable lenses with a wide range of focal lengths. The lenses used by Gamma, Sonne and Kristall were furnished by Italian companies such as Koristka in Milan or Galileo in Florence, or came from abroad. The Officine Galileo in Florence did not lack for either theoretical knowledge of optics or practical experience in the grinding of lenses, and their camera lenses were built according to the designs of Prof. Giotti and Dr. Ricci and using lens glass imported from the German company, Schott.

What Galileo did lack was an industrial mentality and adequate marketing structure.

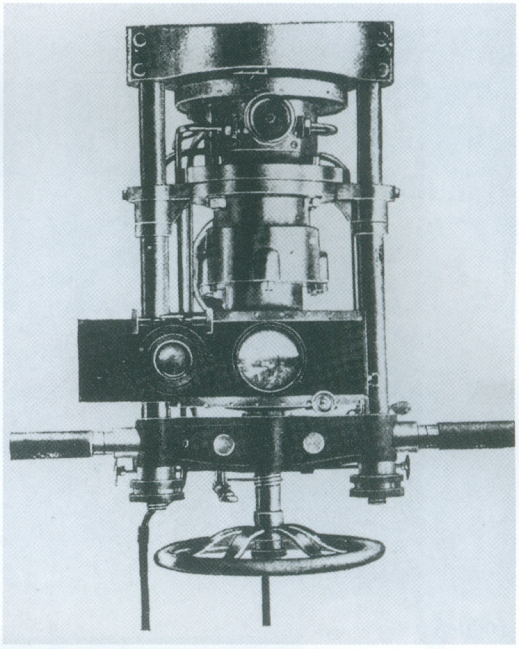
Galileo and Ferrania

In an attempt to make up for the sales network it lacked, the Officine Galileo looked to the most important Italian photographic company of the day, Ferrania of Milan, to market its cameras. A contract was drawn up with Ferrania that provided for not only the exclusive distribution of Galileo cameras under the Ferrania name, but also the supply of medium format lenses by Galileo for cameras built directly by Ferrania. In addition to the simple meniscus lenses for its least expensive cameras such as the twin-lens 6x6cm Elioflex, for Ferrania, Galileo also created the 3-element Terog with 105mm focal length f/6.3 and f/4.5 for the 6x9cm Falco bellows camera, and 75mm focal length f/6.3 and f/4.5 for the 6x6cm Astor.

Nothing is known of the details or conditions of the agreement with Ferrania, but it must have been a very binding and exclusive relationship. Even the name chosen for the cameras by the Officine Galileo, Condor, seems to have been dictated by Ferrania. After having used the letters of the alphabet (Alfa, Beta, Delta, Eta and Zeta), in the post-war period,



Horizontal base Braccialini range-finder, 1890, (Officine Galileo archives).



First periscope made by the Officine Galileo and mounted on the Swedish sub-marine, Hajen, 1902 (Officine Galileo archives).

Ferrania began using names of birds for its cameras, such as Colibri (hummingbird), Rondine (swallow) and Falco (hawk), to be followed later by Ibis and Astor (goshawk).

While the relationship with Ferrania was purely commercial in nature, relations with Koristka, designated the Officine Galileo in Milan after the war, were much more complex. They were not limited to a mere exchange of goods and services, but also an overflow of optical technology. The Officine Galileo in Milan remained virtually autonomous and marketed their camera and projector lenses independently, often still under the Koristka name and sometimes in direct competition with GalileoFlorence.

The Officine GalileoFlorence, included in its catalog the Terog 105mm and 75mm lenses for medium format, but also created a number of interchangeable lenses for 35mm format equipped with Leica 39x1 screw mount. The 3-element lenses for small format cameras were made with 50mm f/3.5 focal length with retractable mount and were called Eliog, like the lenses mounted on the Condor, but they were also sold under other names. The 4-element small format lenses, on the other hand, were named Tesog and were built with retractable mount for the 50mm f/3.5 focal length and rigid mount for the 35mm f/4.5 focal length. Of special interest is the 4-element 135mm f/4.5 Teleog that appears in catalogs of the period, but which was perhaps never marketed.

The fastest of the lenses built by GalileoFlorence, including with screw and retractable mount, was the 6-element 50mm f/2.0 Esaog. Some catalogs also include an 85mm f/2.8 Esaog and a 35mm f/3.5 Eliog which were perhaps never marketed.

The Officine Galileo in Florence also made 3-element magnifying lenses: the 50mm f/3.5 Eidon, the 75mm and 105mm f/4.5 Eidon and the 50mm f/2 Supereidon, as well as the Cinegon cinematographic projector lenses.

For their part, the Officine GalileoMilan built and marketed (in competition with Florence), the 7-element 50mm f/2 Eptamitar Leica-mount lenses (different from the Esaog) and the 90mm f/4.0 Ogmar portrait telephotos.

The photographic lenses made in Florence all have names that end in "OG", taken from the initials of Officine Galileo and which also constitute the company's logo.

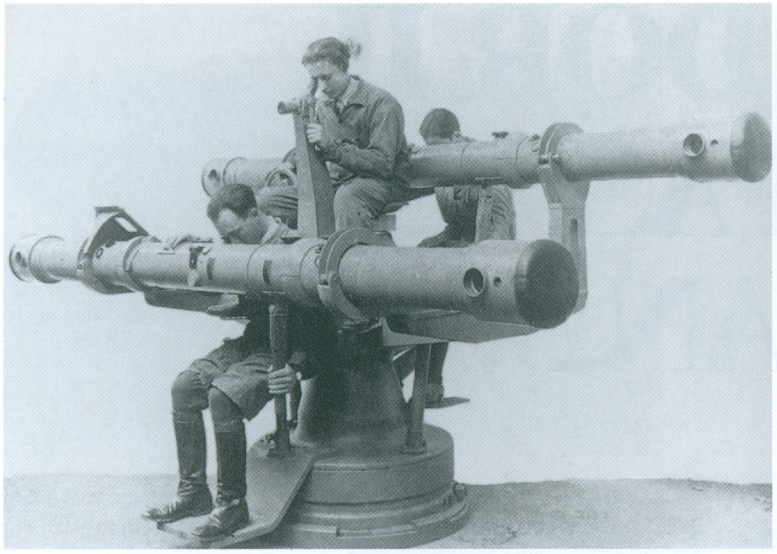
The Condor

Once the decision had been made at the Officine GalileoFlorence to produce precision cameras, work was begun enthusiastically in 1946. For the mechanical aspects of camera production, the O7 department was organized under the direction of Engineer Portolani, while the lens manufacturing department was run by Tasselli.

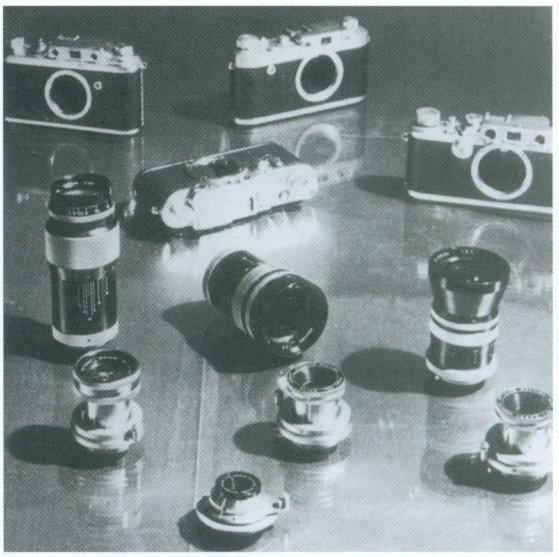
Production began slowly but with great determination and, over the course of 1947 the new lens sector showed a noteworthy increase in production. It was hoped that a production rate of approximately five thousand cameras per month could be achieved within just a few months but, despite the initial enthusiasm, production rates settled into an average of 500 pieces per month. In fact, each camera was produced as a unique, sturdy and reliable piece of precision engineering and was built and tested singly. The Officine Galileo were still based on the concept of individual craftsmanship and each specialized worker was required to follow the entire production cycle, including the finishing of each piece, assembly, chrome-finishing and setting. The concept of rationalization and mass production was not part of their philosophy.

The first camera to leave the Officine Galileo assembly lines was the Condor, a compact, sturdy camera with a rangefinder separate from the viewfinder, but coupled with the lens focusing. Alongside the basic model, a less-expensive version without rangefinder and called the Condor Junior was also created. The Condor Junior could be transformed into a Condor, even after purchase, by simply adding the rangefinder. The Condors were equipped with 3-element, retractable mount 50mm f/3.5 Eliog lenses with focus range from one meter to infinity and stopping down to f/25. The leaf shutter was an Iscus Rapid with speeds ranging from one second to 1/500sec plus bulb exposure, and it had to be cocked after each shot using the lever on the front. For film advance, there was a knurled knob and the shutter could not be released if the film had not been properly advanced, but deliberate double exposures could be taken. The front lens unit screwed off and the serial number was visible on the front ring. The lenses and camera bodies were matched without any special order and there was no correspondence between the serial numbers of the two components.

Condor cameras were released on the market starting in 1948 but, independently of its agreement with Ferrania, the Officine Galileo found another new foreign sales outlet and an unknown number of cameras were exported to Australia. Because these cameras could not be called Condor, those intended for the Australian market were given the name Candog.



3-meter duplex rangefinders on anti-vibration supports, 1940 (Officine Galileo archives).



Lenses for Leica cameras, 1950 (Officine Galileo archives).

Iranian delegation visiting Galileo plant, 1952.

Over the course of production, improvements and modifications were made. A synch socket not found on early cameras was added and, alongside the Condor, other cameras of different types and formats were developed. Prototypes of a stereo camera were produced but never put into production, as well as a camera with four lenses—perhaps for taking ID photos—that has not survived. However, an accessory for stereoscopic photography to be applied to the front of the Condor was put into production. Under the Officine Galileo name, a number of accessories for the Condor were created, including a lens hood, colored filters and additional lenses of various focal lengths for close-up shooting. All these accessories snapped onto the protruding external mount of the front lens element.

Following the Condor with f/3.5 lens and Iscus Rapid shutter, was the Condor model with f/3.5 lens and Aplon Rapid shutter that from a mechanical standpoint was simpler and more reliable than the Iscus, but with the same performance level and speeds up to 1/500sec.

Finally, there was the Condor Ic that utilized the same body as the Condor I, but came equipped with a faster 50mm f/2.8 Eliog lens mounted on an Aplon Rapid, complete with self-timer.

Around 1953, production was started on the Condor II, larger and heavier than the Condor and equipped with a winding lever, rewind crank, coupled rangefinder and 6-element 50mm f/2.0 Esaog lens, the fastest lens mounted on an Italian camera in that period.

The Ferrania sales network had proven critical for the spread of the Condor in Italy and abroad, but by the middle of the 1950s this relationship had deteriorated. Ferrania cameras were no longer equipped with Galileo lenses, using instead German lenses supplied by Steinheil, and this plunged marketing of the Condor into crisis. Breaking off of relations with Ferrania occurred at a difficult time in the history of the Officine Galileo in Florence and contributed to putting an end to the company's brief photographic experience. Within Galileo - Florence, the old power centers re-formed, the group around the scientists found themselves a minority, Musco himself was ousted from Galileo and the Condor assembly lines boycotted fairly openly. Within the lens sector, the future of projects was uncertain and often changed, the sales office did not carry out adequate market surveys and production organization was inadequate. In the mid-Fifties, the warehouses of the Officine Galileo contained camera accessories whose value in that period was estimated at 14 million lire. Production began on a lower-priced camera without rangefinder, the Condoretta, but its production was entrusted to a factory outside Galileo which was given the dies and equipment and provided with the lenses and even trained personnel. Maintenance and repair services for the cameras was no longer handled directly by the Officine Galileo, but farmed out to ex-employees such as Banchelli who had been head of the repair department before leaving the company in 1954.

Then finally, in the second half of the Fifties, the Officine Galileo of Florence ceased all photographic production forever.

CONDOR II, THE FASTEST ITALIAN 35mm

Front of Condor II. Note the coupled rangefinder with wide base, synch socket on camera body and 50mm f/2 Esaog lens, the fastest Italian lens mounted on a 35mm camera.

The Condor II remains the most interesting camera ever built by the Officine Galileo and, compared with the Condor, represented a leap in quality not only because of its 6-element 50mm f/2.0 Esaog lens, but also for the other new technical and design elements it incorporated.

The structure of the camera body was not that different from the Condor's—the shape of the casing and back opening were the same—but the upper part and top plate of the Condor II were completely redesigned. The viewfinder was enlarged and the rangefinder coupled to the finder. The frame counter was placed on the top plate and film advance and shutter winding were performed simultaneously using a thin, fragile winding lever whose upper disk could be set to indicate film speed. Film was rewound using a folding crank on the top plate where there was also a flash shoe with three screws that had not been present on the top plate of the Condor.

The synch socket was moved from the shutter mount on the Condor to the camera body and the lens could be removed without having to be turned.

To compensate for the excessive weight of the lens in shooting position, the base plate of the Condor II had an extractable support foot that would also later be used on the Condor Ic. Speed and aperture settings did not appear on the front of the 1/500sec Iscus Rapid shutter mount and were engraved, instead, on the upper external part of the mount.

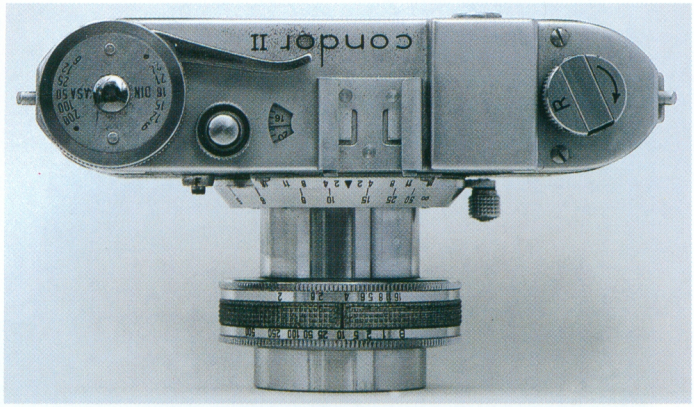
Like the Condor, the name and model number of the Condor II were engraved on the top plate and its threadless shutter release button with the outer screw crown was protected by a ring. Again like the Condor, focusing on the Condor II was performed using a protruding knob located on the base of the lens barrel. The depth of field scale was marked on a half-moon positioned on the upper part of the front and the focusing ring mount stuck out slightly and also functioned as an infinity lock.

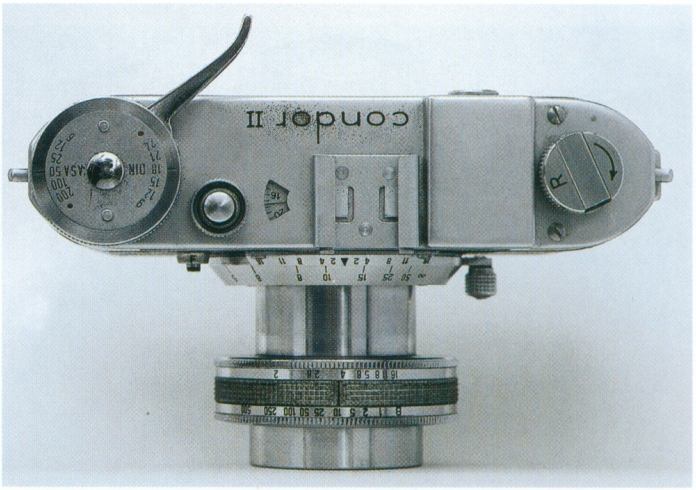
Unlike the Condor, the Condor II utilized a geometric progression of aperture values: 2 - 2.8 - 4 - 5.6 - 8 - 11 - 16.

The Condor II was included in Ferrania catalogs together with the Condor f/3.5 Iscus, the Condor Junior and the Condoretta. The birth of the Condor II with f/2 lens did not mean the end of production of the Condor with f/3.5 lens. On the contrary, it marked a diversification in camera production and underscored the technological level the Officine Galileo had attained and the extent of its product range.

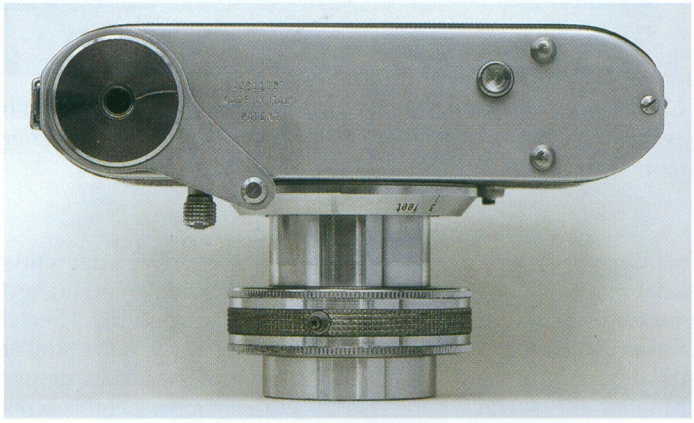
Following the birth of the Condor II (still equipped with the Iscus Rapid shutter), the Condor with f/3.5 lens was released equipped with the new Aplon Rapid shutter and the Condor Junior was replaced by the Condoretta.

From this, it can be hypothesized that production of the Condor II began in 1952,





Condor II top plate. Note the winding lever, frame counter, flash shoe and rewind crank. Also note the distance scale in feet with depth of field scale; on front lens ring note the aperture and speed scales.

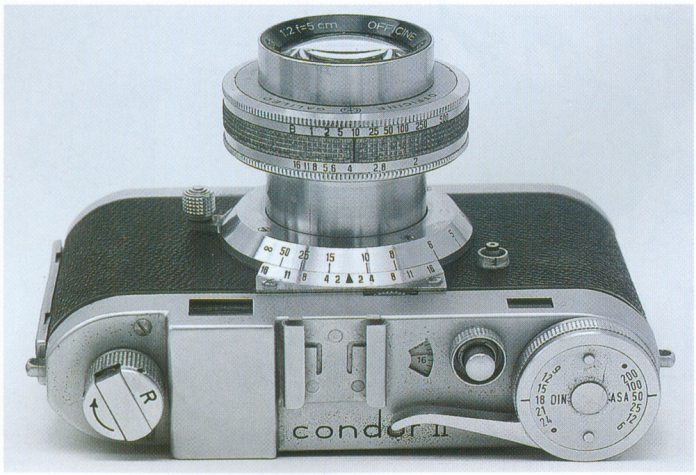


Condor II base plate. Note the fixed feet, extractable support foot, film release button and serial number.

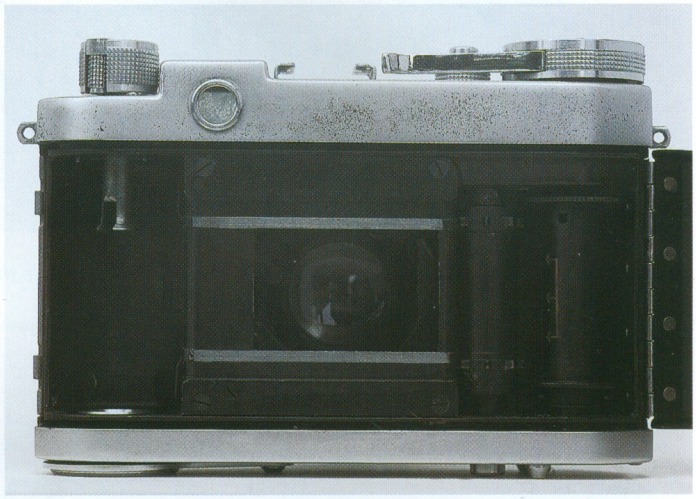
Condor II with back closed. Note the round eyepiece and the OG logo of the Officine Galileo embossed on the bottom right of the lining. The Ferrania logo does not appear either on the top plate or back. In fact, this camera belongs to the daughter of a former Officine Galileo employee and it never entered the Ferrania distribution network. This also explains the distance scale in feet instead of meters.

CONDOR 2: SERIAL NUMBERS COLLECTED TO-DATE

Condor II	00205051	ISCUS RAPID	Esaog 50/2	020045
Condor II	00206564	ISCUS RAPID	Esaog 50/2	021242
Condor II	00207600	ISCUS RAPID	Esaog 50/2	023237
Condor II	00207694	ISCUS RAPID	Esaog 50/2	020452
Condor II	00209831	ISCUS RAPID	Esaog 50/2	022591
Condor II	00211727	ISCUS RAPID	Esaog 50/2	026531
Condor II	00211576	ISCUS RAPID	Esaog 50/2	027204
Condor II	00213450	ISCUS RAPID	Esaog 50/2	028807



Condor II seen from above. Note that all commands and controls are clearly visible.



Condor II with back open. Interior with film transport mechanisms is similar to that of the Condor and is the product of the same engineering design.

while production of the Condor f/3.5 Aplon and Condor Ic f/2.8 Aplon began later, between 1953 and 1954.

Condor serial numbers

Gathering and analysis of camera serial numbers might seem a thankless and useless task or, at best, symptom of a fanatic and fetishistic approach, but it is often useful for clarifying the model order, the actual number of cameras produced and the philosophy behind production decisions. Not many serial numbers have been gathered for Condor cameras to-date and additional serial numbers could expand our knowledge of this sector. From a preliminary examination of the serial numbers gathered, it would seem that they are organized according to a code linked to individual models.

For the Condor I with Iscus shutter, the lowest number we are aware of is 4946 and subsequent numbers apparently progress continuously up to the highest number we know of, 37815. Serial numbers of the lenses also rise in a similar way to those of the machine bodies, despite sometimes significant gaps, but this is not all that strange if we remember that the lenses and cameras were paired in an ad hoc manner.

The total number of Condor I Iscus cameras built could be around forty

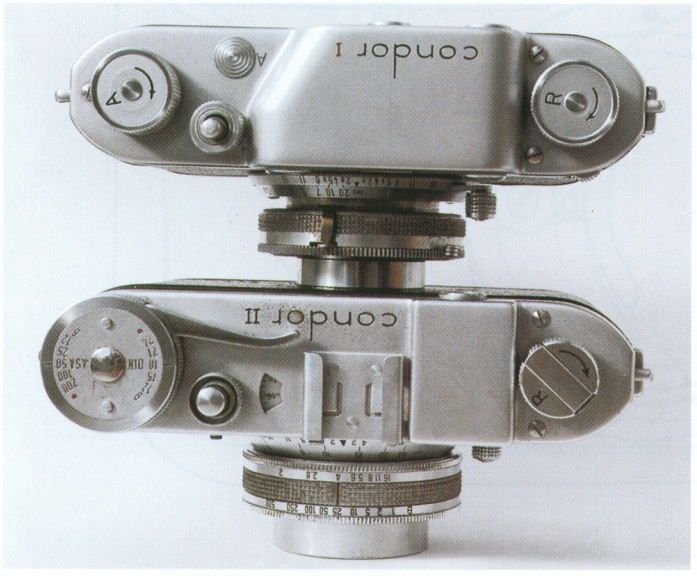
A WORKING HYPOTHESIS REGARDING THE CONDOR

On the basis of the data collected, examination of catalogs and observations made, a preliminary chronological reconstruction may be attempted. Given the fact that all archive material of the Officine Galileo before its transfer from Florence to Sesto is currently held in State Archives and not available for consultation, the only data we have to attempt to answer some of these questions is interpretation of the serial numbers we are aware of.

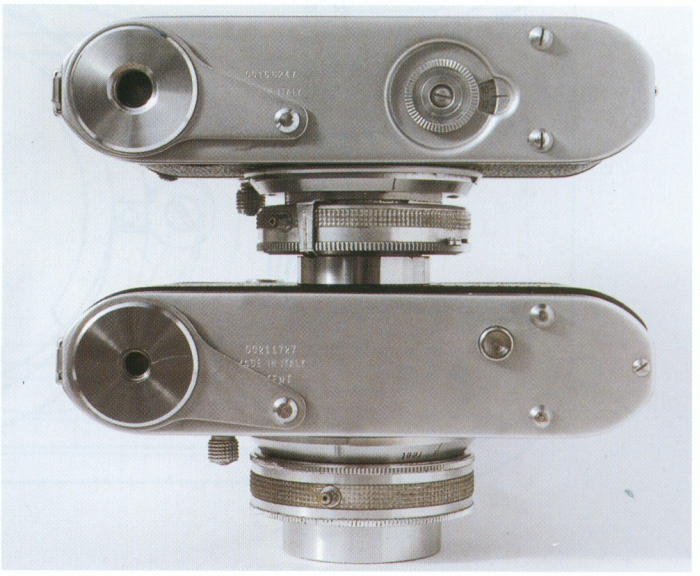
Assuming for the period 1948-1955 an overall production level of between 500 and 1000 cameras per month, i.e., 6000 and 12000 cameras per year, over an eight-year period this would yield a total output of between 50,000 and 100,000 cameras. Looking at the serial numbers, these results would seem credible, with an estimated total of not less than 85,000 cameras. In the absence of contradictory information, a hypothetical production chronology could be as follows:

Camera	Years	Known nos.	Hypothesis	Estimated Quantity	Yearly Average
Condor I f/3.5 Iscus	1948-1953	4946-37815	1-40000	40,000	6,500
Condor J f/3.5 Iscus	1948-1953	106404-110684	100000-112000	12,000	2,000
Condor II f/2.0 Iscus	1952-1955	205051-213450	200000-214000	14,000	3,500
Condoretta f/4 Aplon	1952-1955		150000-?	3,000	1,000
Condor I f/3.5 Aplon	1953-1954	50548-55542	50000-58000	8,000	4,000
Condor Ic f/2.8 Aplon	1954	58294-59858	58000-60000	2,000	2,000
Condor Ic f/2.8 Aplon	1954-1955	163050-165247	160000-166000	6,000	3,000
Total				**85,000**	

Side view of the Condor II. Note the OG logo on the lens front and back latch; also note the focusing knob, double synch socket and disk to manually reset the frame counter.



Condor Ic and Condor II, top plates compared. The body size is the same, but the controls have been modified, as has the upper casing.



Condor Ic and Condor II, base plates compared. The frame counter appears on the base plate of the Condor Ic, while the Condor II has the film release button.

thousand. For the Condor I with f/3.5 lens and Aplon shutter, there are serial numbers above 50,000, between 50548 and 55542, and it would seem that production began with the number 50000 and continued with the total number of cameras produced being six or seven thousand.

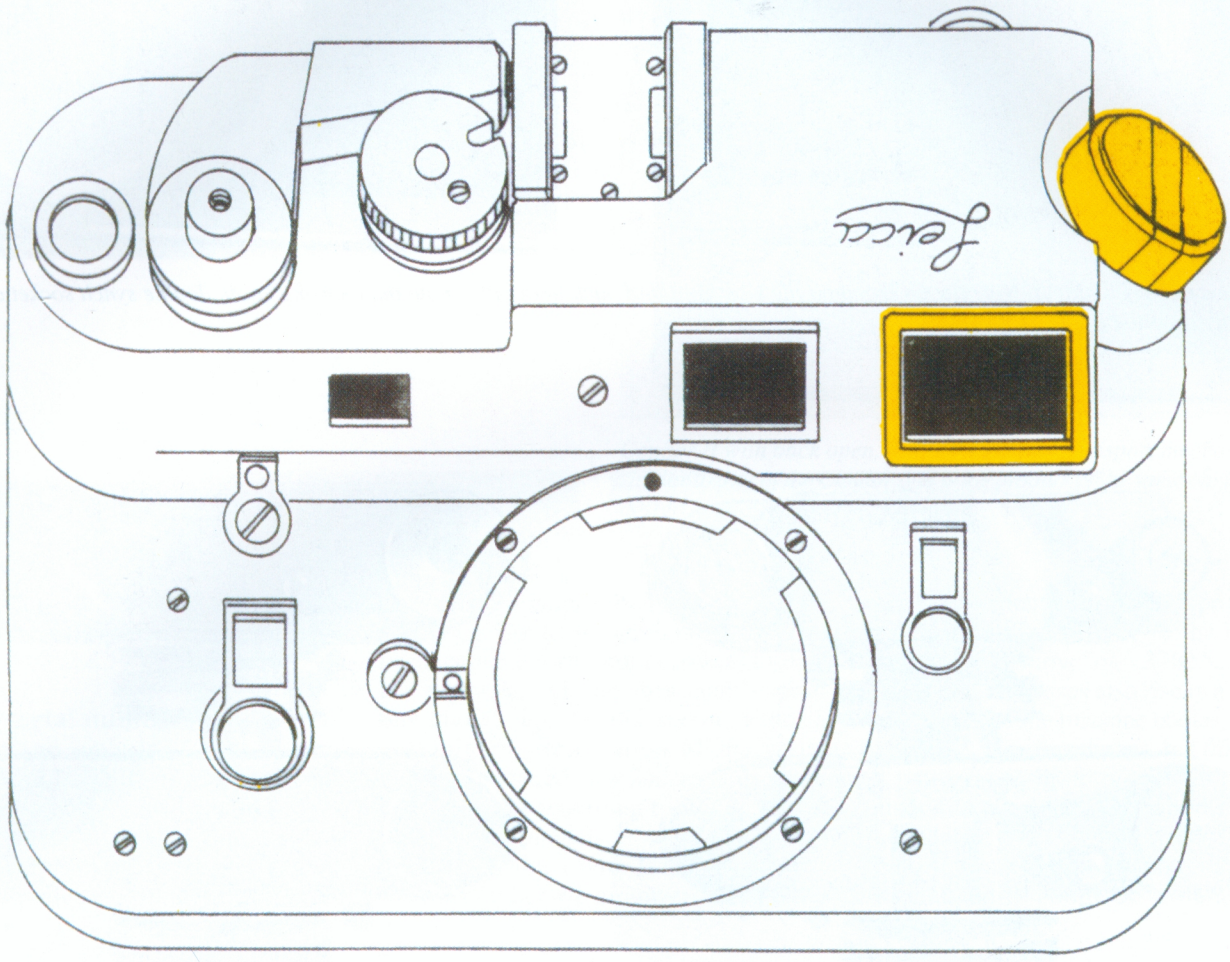
For the Condor Ic with f/2.8 lens, there is a first series with numbers above 58,000, from 58294 to 59858, and a second series with numbers over 160,000, ranging from 163050 to 165247. It is possible that starting with the number 60,000 a digit was added to transform it into 160,000 and that production continued with a total production of approximately eight or nine thousand cameras.

The Condor Junior cameras known have serial numbers over 100,000, between 106404 and 110684, while the Condoretta serial numbers start over 150,000. In both cases, numbering convention would seem to indicate that over ten thousand Condor Junior cameras were built, while the total number of Condorettas remains unknown.

Condor II serial numbers are all over 200,000, with the lowest known number being 205051 and the highest 213450. In the absence of other data, total production of the Condor II may be estimated at fourteen thousand cameras.

Danilo Cecchi

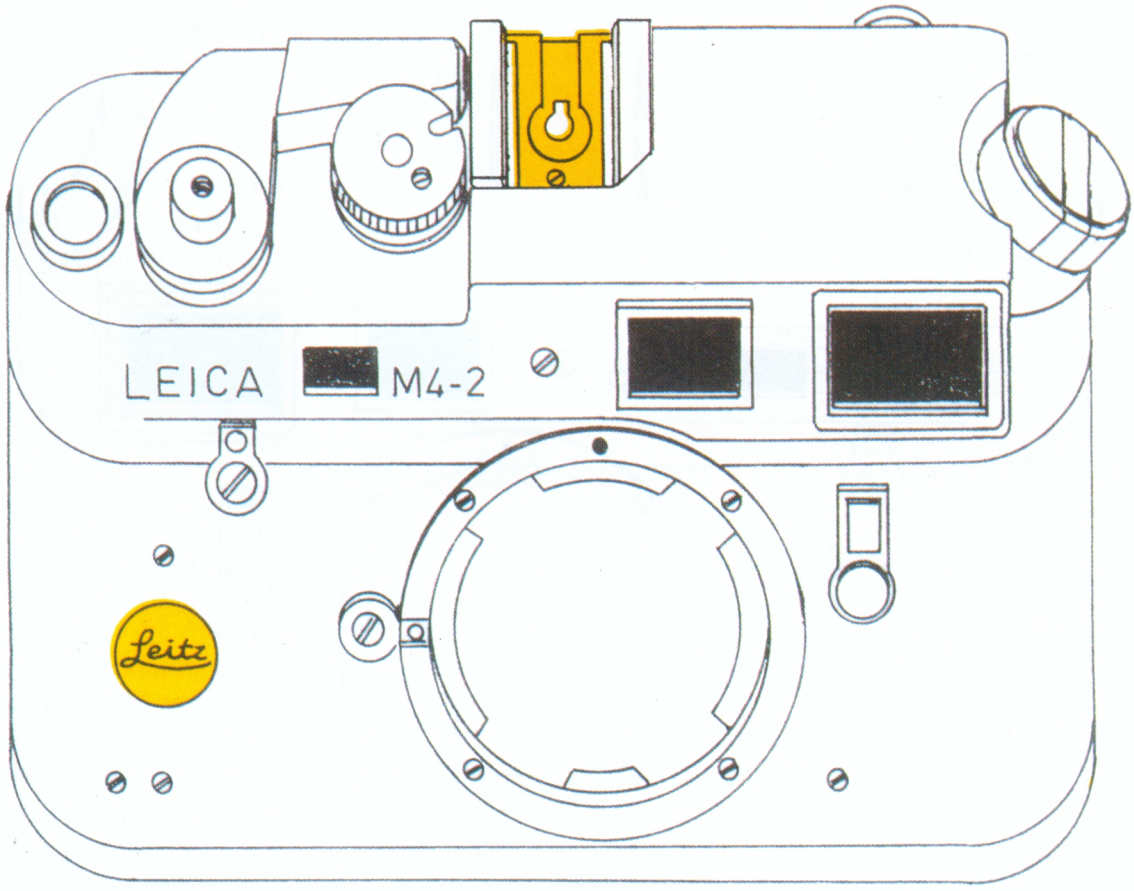
LEICA M4 ANNO 1967-1975



LEICA M4

In 1967, the Leica M3 and Leica M2 were replaced by an improved model called the Leica M4. The Leica M4 had a modified winding lever, self-timer mechanism, automatic frame counter, angled rewind lever and multi-lens finder with brightlines corresponding to the framing field for 35mm, 50mm, 90mm and 135mm lenses.
Forty-seven thousand chrome-finish and five thousand black finish Leica M4 cameras were manufactured between 1967 and 1971.
After 1971, by customer demand, an additional four thousand M4's with black finish were produced, as well as two thousand others by its Canadian affiliate.
Some of the Leica M4 cameras were made to have an electric motor attached, manufactured by the Leitz New York affiliate.
In 1975, 1,750 black Leica M4's were produced to commemorate Leica's 50th birthday, 350 of which were produced in Canada.

LEICA M4-2 ANNO 1978-1980



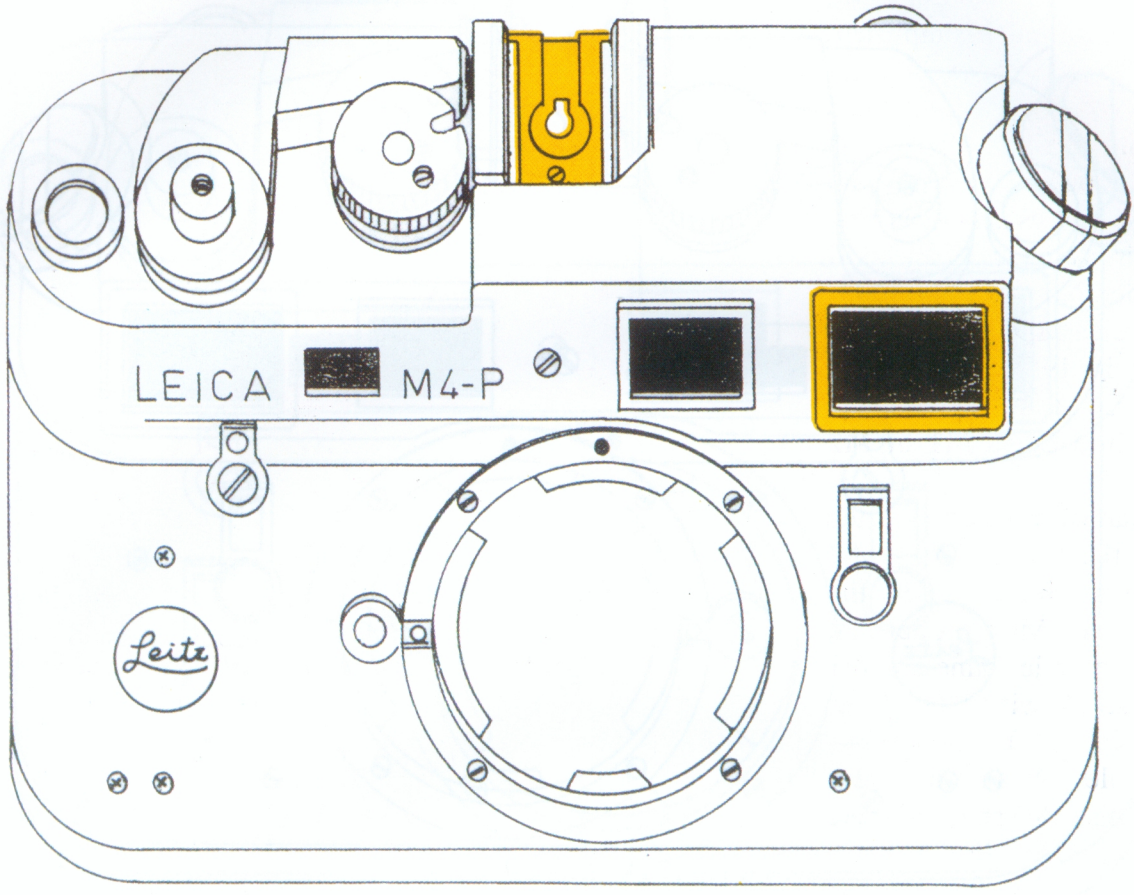
LEICA M4-2

In 1978, production began once again on the Leica M4 incorporating a number of non-structural modifications such as the elimination of the self-timer mechanism and the replacement of the flash shoe with a hot shoe without cable.

Sixteen thousand black-finish Leica M4-2 cameras were manufactured until 1980. In 1979, one thousand gold-finish Leica M4-2's dedicated to the 100th anniversary of the birth of Oskar Barnack were made.

The camera serial number is inscribed on the flash shoe, while the Leica M4-2 logo is engraved on the front of the camera. The Leica M4-2 had the same finder as the traditional Leica M4, but its base plate was modified to accept an electric motor.

LEICA M4-P ANNO 1981-1987



LEICA M4-P

In 1981, the Leica M4-2 was replaced by another model with further modifications—the black-finish M4-P. The major modification was its multi-lens finder with frame pairs for 28mm/90mm, 50mm/75mm and 35mm/135mm lenses.

The Leica M4-P was produced up until 1987 (23,000 units, 500 silver finish).

In 1983, 2,500 silver- or black-finish versions of the Leica M4-P were dedicated to the 70th anniversary of the Leica prototype.

LEICA M WITHOUT VIEWFINDER

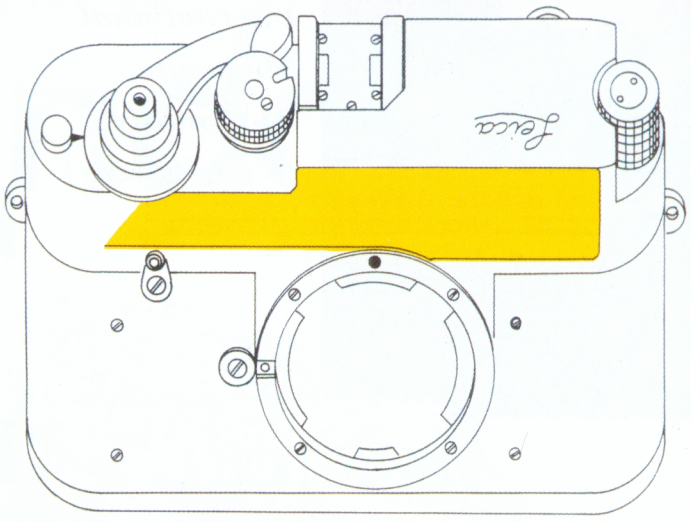
LEICA MD/MDA/MD-2

In 1963, by request, Leitz began production of a number of Leica M cameras without viewfinder, known as the Leica MD. The Leica MD has the same features as the Leica M2 and M1, but are much-simplified, do not have the self-timer mechanism and are completely blind without a finder window. The Leica MD was built for special applications, such as in laboratories, or to be paired with the Visoflex II mirror finder. No more than three thousand Leica MD cameras were produced, with 1966 being the cut-off date. Leica MD's can be converted into Leica M1 or M2 cameras.

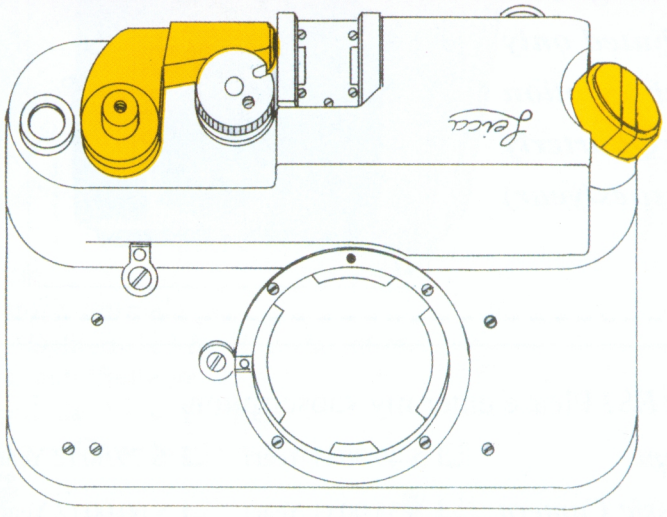
With the start of production of the Leica M4, the special Leica MD cameras were replaced by the improved Leica MDa model that included automatic frame counter and extractable rewind lever. Over 14,000 Leica MDa cameras—transformable into an equivalent number of Leica M4 cameras—were manufactured up to 1976.

In 1977, the Leica MDa was replaced by the MD-2 with black finish and equipped with hot shoe. The Leica MD-2 has the Leica name engraved on the front, a modified base plate to record data; less than 3,000 of them were produced.

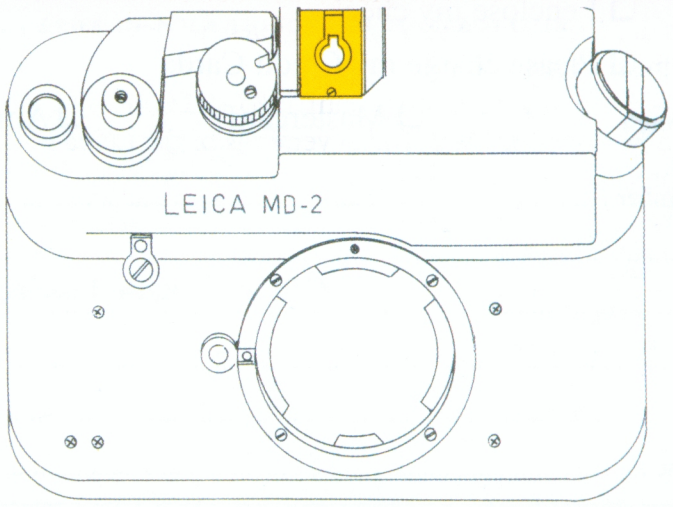
LEICA MD **ANNO 1965**

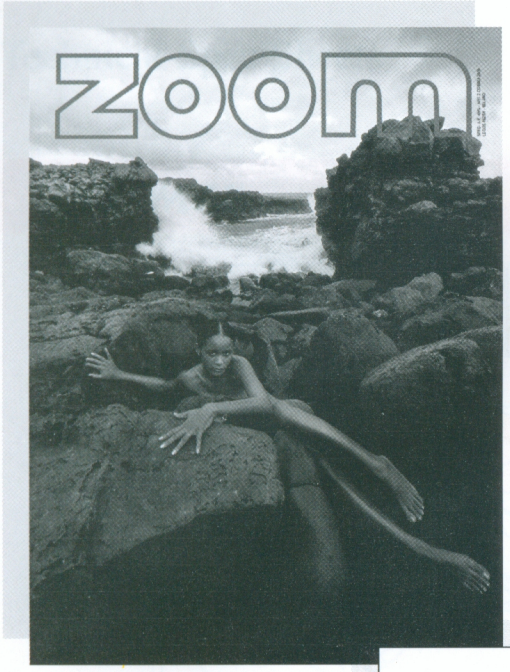


LEICA MDA **ANNO 1967**



LEICA MD-2 **ANNO 1978**





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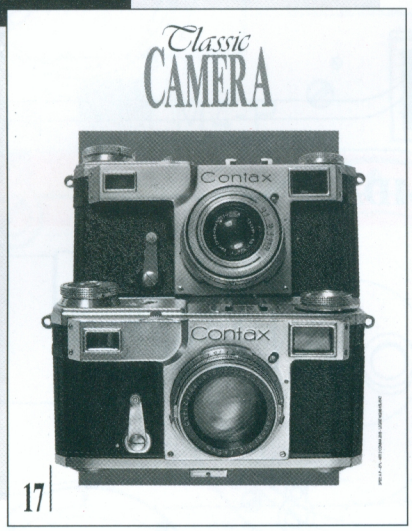

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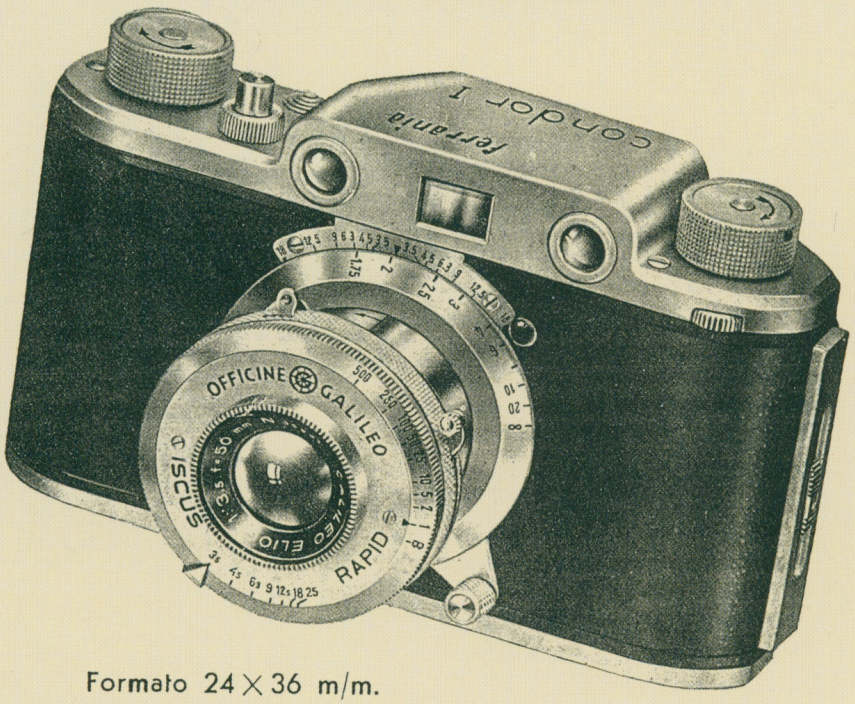

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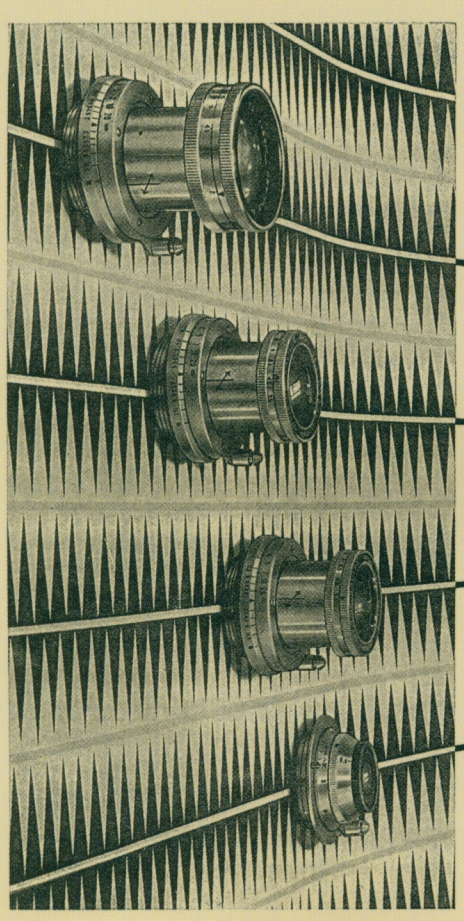

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