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Table of Contents

1 President's Letter

2 Zeiss stereo microscopes: Non-identical twins from Jena and Oberkochen — **John Schilling**
A pre-World War II prototype lived on as instruments from East and West

5 The Contarex family of cameras — **Lawrence J. Gubas**
Zeiss Ikon's last hurrah, too pricey and too heavy for most potential users

11 Zeiss Tele-Microscope — **Jack Kelly**
The kit shown on our cover can serve as telescope or low-power microscope

13 Are Zeiss binoculars the preferred instruments for birdwatching? — **François Vuilleumier**
Once the favorite equipment, Zeiss glasses have now yielded to other makes

22 A 25 mm Topogon finder? — **Stefan Baumgartner**
It bears a "Zeiss Ikon" logo, but we don't know who made it

24 Two interesting ZIAG cameras — **Pierpaolo Ghisetti**
A Colora and a Contessamat with trademarks for a particular market

The Zeiss Historica Society of America is an educational, non-profit organization dedicated to the exchange of information on the history of the Carl Zeiss optical company and its affiliates, people and products from 1846 to the present.

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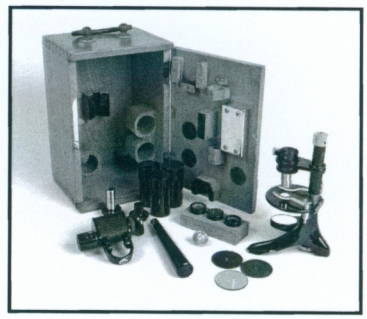
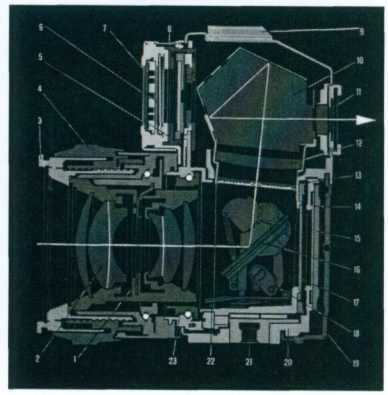
Front cover: Jack Kelly took this photograph of his Zeiss Tele-Microscope with its fitted wooden box. As described in his article on page 11, this 1937 kit can function both as telescope or as low-power microscope.



Back cover: A cross-sectional view of one of the Contarex family discussed by Larry Gubas in his article on page 5. Another view appears on the inside back cover, together with a key to the numbered call-outs. Both illustrations, from Zeiss publicity, are in Larry Gubas's collection.



President's Letter

I thank all of you who were patient with the disappointingly delayed distribution of our most recent journal. By mistake the copies for US-based members went out by printed-matter mail instead of first-class, as usual. This error has something to do with the migration of the Editor, Treasurer and me to other parts of the US so that our former practice of sorting, stuffing and placing stamps by hand as a team was no longer practical. The mailing to non-US addresses went quickly but some domestic mail took up to six weeks to arrive. Please accept my apologies. This issue should receive much greater scrutiny and arrive in a timelier fashion. In any case, if there is a delay with the present mailing that you can see from the date stamped on the envelope, please let us know.

My thanks go to the members of Zeiss Historica Society as well as the Binocular History Society who were able to visit my home on the weekend of March 8–11. It was a great pleasure to meet with those of you who came and those others who came to visit me at a later date because they could not visit on the appointed days. This was not a regular meeting of Zeiss Historica since it was my personal invitation to the membership and was not paid for in any way by the Society's treasury. I did learn one lesson in that the membership does not have as active an appetite as I do: I over-ordered the catered luncheon meal by a factor of four, which gave Nancy and I a huge amount of leftovers for the following weeks.

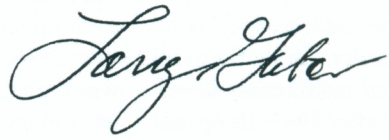
Many of our visitors were members of both societies, and there was a great many wonderful examples of rare binocular items. My particular favorites were some rare texts brought by Steve Stayton and some particularly delightful items by John Anderson and Jack Kelly. There were some very interesting and technical presentations that brought significant action to both Peter Abrahams and my computer scanners, my library of various collectible books and Rolf Fricke's volunteering to do some translating of technical German texts. Many of our participants were the usual east-coast folks who braved the unexpectedly expensive hotels of Las Vegas.

I was very pleased by the interaction at this meeting and I am looking forward to the actual Zeiss Historica annual meeting at the Zeiss facility in Thornwood, NY on the weekend of July 7th. There will be a fee for this meeting, but the expenses will be considerable even with the aid of the Zeiss firm who is providing the location and some support. I am not sure that this issue will come to you before that meeting but Warren Winter will be contacting you via mail and emails. It is important that you keep Warren notified of your current addresses to keep communication flowing. His email is at the end of this letter and his address is on the opposite page.

In the last issue, quite a few articles could have precipitated a response from the membership about hypotheses that were innovative but made with limited input. I had two points of view that disagreed with the authors and I shared those opinions with them after my own late issue arrived. I hope that others of you have done the same. With regard to my own article on the Zeiss lenses for Leitz cameras, I did find too many images and primary sources of information to include in the published article, but I invite correspondence in which I could share those materials with you if you are interested.

We trust that all of you have renewed for this year and continue to enjoy the excellent work of our Editor in refining and organizing our published material. Let us know what materials you are interested in seeing in future issues that we have not already covered.

Contact our secretary at the following email address: secretary@zeisshistorica.org



Zeiss stereo microscopes: Non-identical twins from Jena and Oberkochen

John Schilling, Gardnerville, Nevada

A pre-World War II prototype appears to have survived as the ancestor of the very similar instruments that emerged from Zeiss East and West.

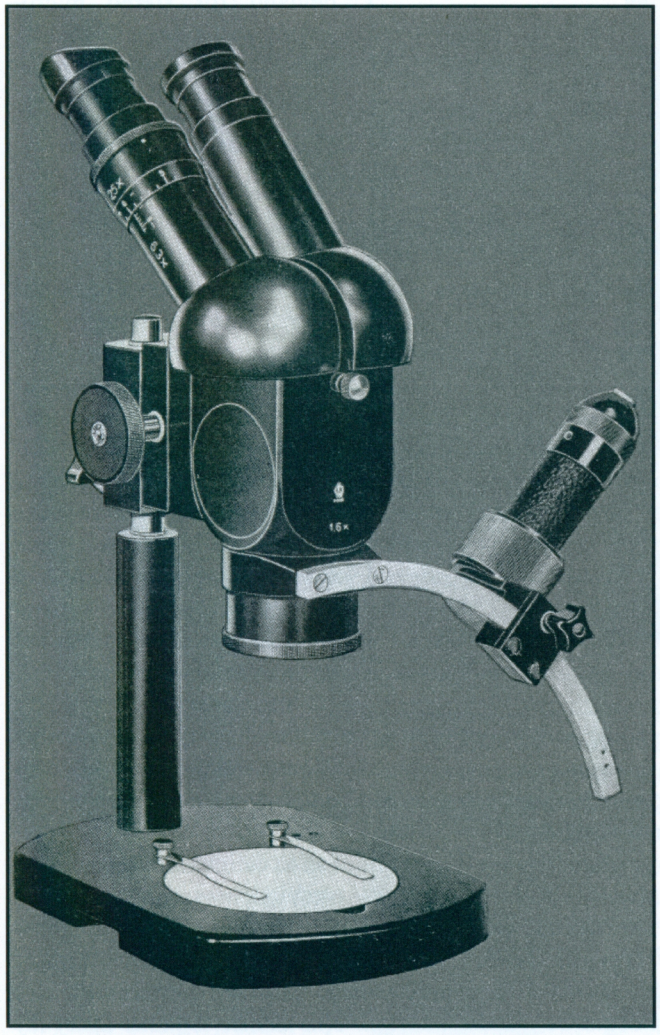
Although the two descendants of the Zeiss company that came into being after World War II, one in the East (Jena) and one in the West (Oberkochen), were not officially on speaking terms, there have long been rumors of communication between them. For example, a prototype stereoscopic microscope made by Zeiss before World War II spawned two very similar instruments made in the East and the West after the War. These were the stereo microscopes and operation microscopes from both Jena and Oberkochen that made many areas of microsurgery possible; they were the Jena Operation Microscope and the Oberkochen Opmi 1. Design details of that one prototype microscope, from 1938 or perhaps earlier, in fact turn up again in many other instruments developed and produced after 1945. Its optical system appears in the slit lamps[1] of the 1950s and 60s, and the Interference Surface Tester used the rotating magnification-changer principle. Later on the same optical system showed up in instruments made by American Optical, Topcon, and some models of Wild products.

My own experience

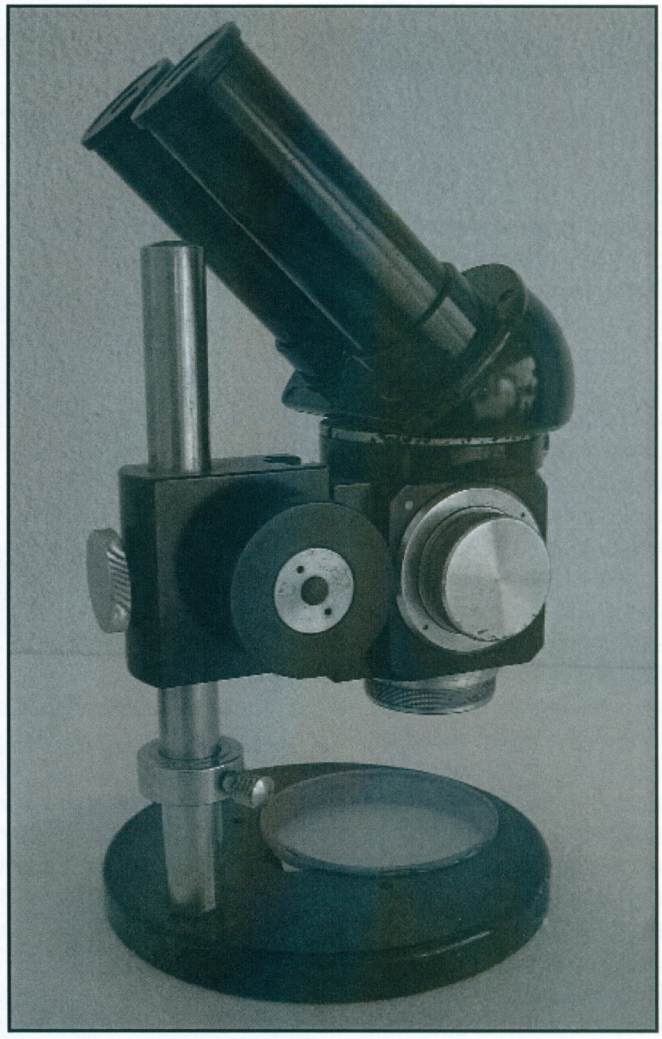
In 1960 I joined Carl Zeiss, Inc, and worked out of their Bay Area office in California. The head of the office was Martin Silge (1900–86).[2] Some time in the early 1960s Martin told me of a pre-World War II visit he made to Jena. There he had been shown the prototype stereo microscope that later became the two Zeiss stereo microscopes. Martin was born in the US but at the age of two he moved with his family back to Germany. He never gave up his American citizenship. He told me that, even in 1938, a combination of his years with Zeiss and his American citizenship gave him better entree both to Germany itself and to the factory at Jena.

Recently, using the Internet, I studied passenger lists for vessels bound for New York. I found a record[3] of Silge's return from Germany in August 1938, thus confirming his story about seeing the prototype microscope. He was also shown to have come to the US in 1925. Perhaps he was assigned by Zeiss to join the Bennett Company, which was established by the Foundation in 1919; it later became Carl Zeiss, Inc. in December 1925.[4]

I had earlier begun my career in 1958, as a scientific-instrument sales representative for a firm that sold the



The Carl Zeiss Jena SMXX stereo microscope, also known as the "Citoplast," distributed in the US by the Ercona Corporation of New York. Figure 1



The Zeiss Opton Stereo Microscope, which became the Carl Zeiss Stereo Microscope after the "Opton" name was dropped in 1953. Figure 2

Carl Zeiss Jena SMXX (also known as the "Citoplast") Stereo Microscope (figure 1), the Zeiss Opton (later Carl Zeiss) Stereo Microscope (figure 2) and the American Optical Co. "Cycloptic" Stereo Microscope. All three of these instruments shared a common feature, a rotatable magnification changer in the body of the microscope between the eyepieces and the primary objective lens. The magnification changer had two pairs of lenses and one clear or empty position. Without changing eyepieces or objectives, five different magnifications were available to the user. With 10× eyepieces, the Oberkochen instrument yielded total magnifications of 6.3×, 10×, 16×, 25× and 40× (the 16× position appeared twice in the changer).

Microscopes from east and west

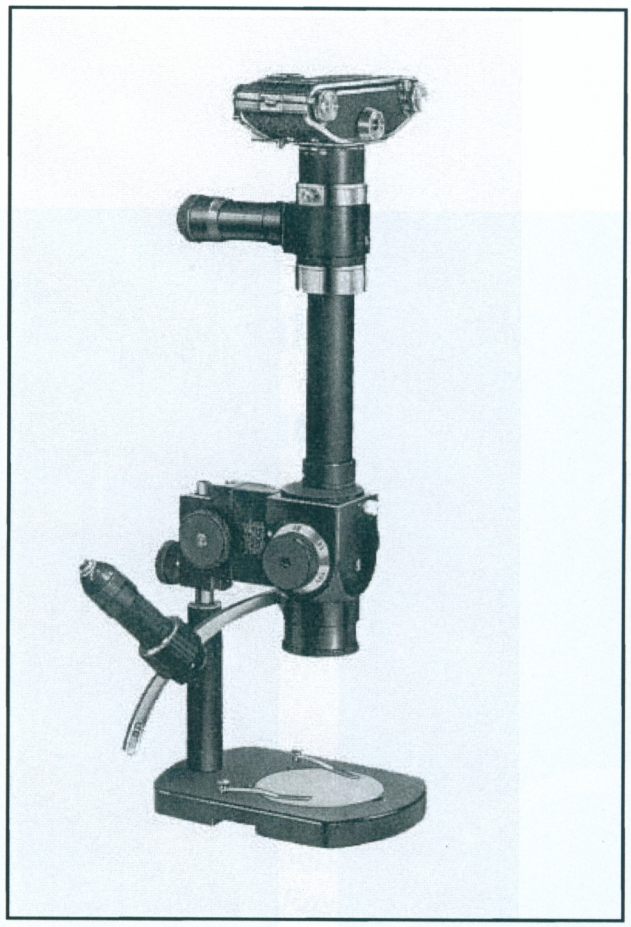
In 1958, the firm I worked for offered the Carl Zeiss Jena Toolmakers Microscope (the US distributer was Scherr-Tumico), the Jena "L" and Lumipan compound microscope stands and the "Citoplast" stereo microscope. Ercona Corporation distributed the latter microscopes. After almost fifty years I cannot recall if these products were branded "Carl Zeiss Jena," Prime Quality symbol, or perhaps "aus Jena." The Oberkochen stereo was branded Carl Zeiss. The use of "Zeiss Opton" was discontinued in 1953[5] although in the scientific and industrial communities

that Oberkochen stereo microscope was often called "the Opton" even after the name change from Zeiss Opton to Carl Zeiss.

These were all revolutionary stereo microscopes for their time. Each of the Zeiss models had a reversible binocular viewing tube (useful in allowing the observer unrestricted access to the specimen) and a very long working distance, 100 mm, between the object being examined and the primary objective lens (1.6×). The numerical aperture, n.a., was 0.08. ("Numerical aperture" is a function of the diameter of the lens, the working distance or focal length, and the refractive index of the medium between lens and specimen, and is a measure of the obtainable image resolution.)

The "Opton" and Jena instruments were of very high optical quality. While the Jena instrument at that time was available only with 6.3× and 25× eyepieces, the Opton could only be supplied with 10× and 20× eyepieces. Thus it was difficult to compare the two microscopes at equal magnifications. Other than that they shared many of the same features. The Opton sold in greater quantities than the Jena instrument. The 25× eyepieces of the Jena microscope were too powerful, resulting in "empty" magnification at step 4 of the magnification changer (that is, magnification beyond the resolving power of the instrument). Also, a few potential customers were somewhat put off by its origin in East Germany—an attitude that I still encountered in the late 1950s.

The "Cycloptic" from the American Optical Co., of "good" optical quality (that is, not "very high"), was priced significantly lower than either of the two German instruments. It came with 10× eyepieces, but 15× and 20× eyepieces were also available. However, unlike the "Opton," the maximum magnification using 10× eyepieces was 25× compared with 40× for the "Opton."



The photo tube for the Jena microscope. Mounted in place of the binocular viewing tube, the camera attachment could be equipped with a 35 mm camera (as shown) or a larger-format camera back such as 6.5 × 9 cm. Figure 3

The photo tube for the "Opton" had an iris diaphragm for varying the depth of focus and was on a transverse slider, so that one photograph could be taken through the optics on the left side and then, by sliding the tube and the attached camera, a second photograph could be taken through the optics on the right side, thus resulting in a stereo pair. In 31 years (1958-1989) of visiting scientific and industrial laboratories, I never saw any interest in producing stereo pairs. Figure 3 shows the Jena phototube and attachment camera. The "Opton" microscope and photo tube were shown in an earlier issue of *Zeiss Historica*.[6] As a side note, let me add that American Optical offered a stereo camera attachment using a special 35 mm body made from a modified Graflex Stereo Camera. With this attachment a single exposure sufficed to produce a stereo pair. I do not recall that the dealer where I was employed ever sold one of these outfits. Apparently American Optical did not forecast the market demand for stereo micrographs any more successfully than did Jena and Oberkochen.

The Zeiss prototype

The prototype microscope, if it still existed in 1945, was located at the Jena works. Perhaps Zeiss Opton produced their Stereo Microscope from the memories of the personnel who went to the West, because it seems doubtful that they would be able to bring the prototype instrument with them. Illustrations of the Oberkochen instrument and the one from Jena show their marked similarities. No, they were not identical twins but born at nearly the same time from the same parent.

The Opton Stereo Microscope was a major product for the Oberkochen works, a real source of profit in addition to their many thousands of camera lenses.

* * *

I am very appreciative of the writings by other authors in earlier issues of the Journal. This article is made up of my personal recollections, internet searching, and information in the cited issues of Zeiss Historica. *The illustrations, from the Archives of the Zeiss Historica Society, were provided by Larry Gubas.*

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The Contarex family of cameras

Lawrence J. Gubas, Las Vegas, Nevada

The swan song of Zeiss Ikon camera design included many original, ground-breaking features, but was too heavy and too expensive for many potential purchasers.

The pinnacle of Zeiss Ikon camera design, the Contarex in its various embodiments exhibited all the characteristics of that company's products, both the positive ones that we, the members of the Zeiss Historica Society, revere, and the negative ones that helped ensure the company's downfall. That is, it was the best possible camera that could be made at the time, yet it was too heavy and too expensive to appeal to more than a few buyers. (Figure 1 and back cover.)

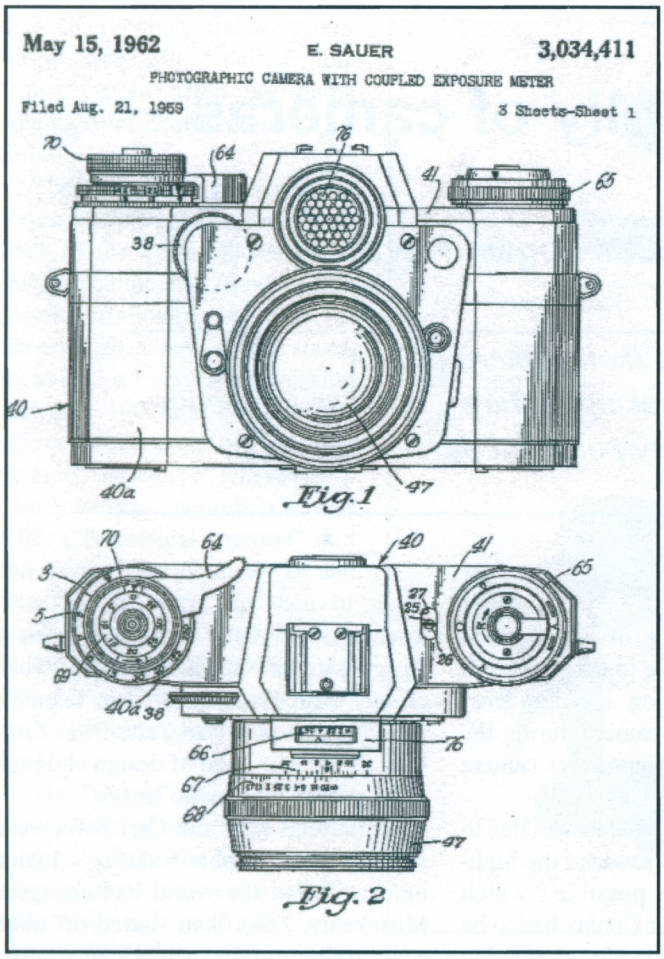
How to follow the Contax?

It was truly difficult for Zeiss Ikon in the years immediately after World War II to bring their classic Contax rangefinder camera back into the market. Although they had a largely intact factory in Stuttgart, it had never before produced a 35 mm camera; the improved Contax IIa did not arrive until 1950. Meanwhile, the East German version of the firm, Carl Zeiss in Jena, was able to replicate the older camera design much more quickly, and some cameras were being made by September 1946, despite having the Zeiss Ikon Dresden factories severely bombed and then taken apart to Kiev in 1945. The remnants of Zeiss Ikon Dresden were also able to take the work that had been done on a single-lens-reflex version of the camera during the war and produce a compromise camera in 1948, naming it the Contax S.

The long delay in Stuttgart was due to the perceived need to produce the highest quality product possible, which implied that the prewar Contax had to be significantly improved. The production process needed to be designed from scratch and new production staff trained. Much of this task was accomplished under the direction of Edgar Sauer after Hubert Nerwin left for Graflex in Rochester in 1947. Sauer had been a designer under Nerwin and would work closely with Hans Sauer (not related), who had moved to Carl Zeiss from Zeiss Ikon as the new head of design and production of photographic lenses.

Both Zeiss Ikon and Carl Zeiss were still the photographic industry's major innovators but the world had changed. Mistakenly, Zeiss Ikon started off once again trying to make every conceivable camera and photographic product, and with the resources available after the war that was clearly a problematical goal. Yes, it was important to recapture the old markets with inexpensive box and folding cameras (because there was such a shortage of any kind of camera.), but it was also important to produce the Super Ikonta again; that design was respected and popular, and the tools and skills for these cameras were already present in the Stuttgart factory. In fact, the design for the Super Ikonta II (or B) would be improved into the Super Ikonta III in 1953 and the Super Ikonta IV in 1955. Edgar Sauer designed the new and

The original "Bullseye" Contarex of 1959. Weighing well over a kilogram with the Planar lens, and with a price of about $450 in the US (rising to $500 shortly after) it was a marketing challenge. Figure 1


May 15, 1962 E. SAUER 3,034,411
PHOTOGRAPHIC CAMERA WITH COUPLED EXPOSURE METER
Filed Aug. 21, 1959 3 Sheets-Sheet 1
Fig. 1
Fig. 2

Edgar Sauer's patent application for the first Contarex, filed in the US on 21 August 1959, nine years after preliminary design work began. Figure 2

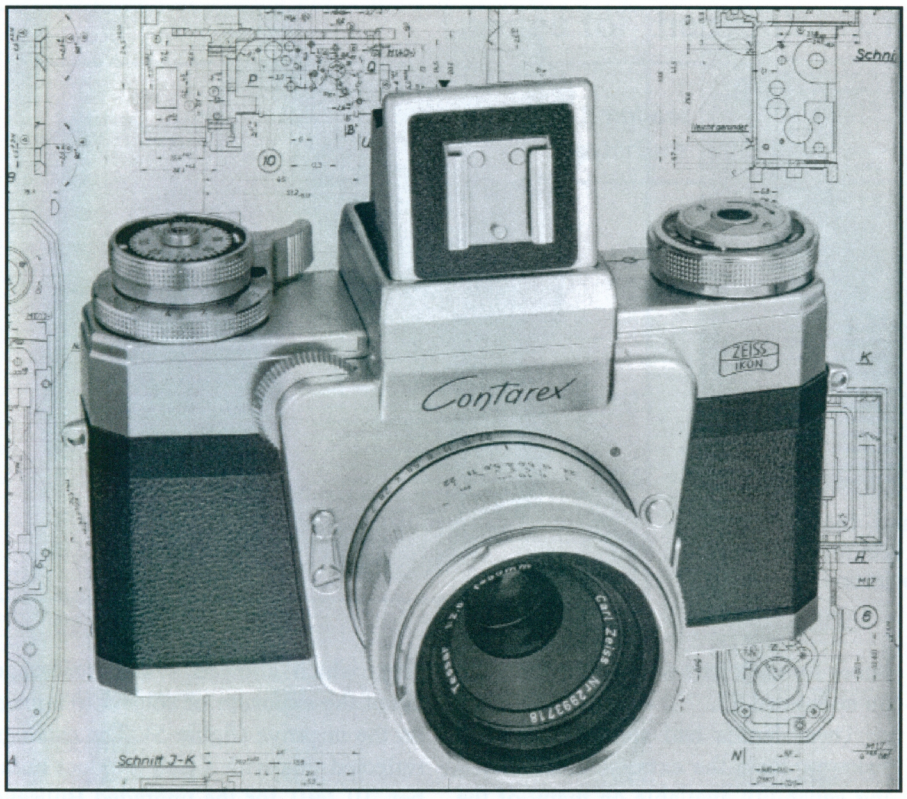
Assembling a Bullseye Contarex. The skilled hand work required to put together the 1,100 individual parts contributed to the high price of the camera. Figure 3

highly successful Contaflex SLR cameras, which were first produced in 1953 and went through nine different models before his Contarex was ready for the market in 1960.

Planning for the Contarex

This new camera had been highly anticipated since early prototypes were shown to selected dealers and the press in the mid-1950s. From patents filed in 1950 and granted in 1955, it was clearly to be a single-lens reflex with many new features: an instant return mirror; focusing at full aperture with the diaphragm closing down automatically as the shutter was released; the iris actuating mechanism built into the camera body; eye-level pentaprism viewing, and a built-in exposure meter. Now, this was certainly an incredible collection of totally new and complex ideas for 1955! So many, in fact, that it is not surprising that the camera was delayed. Another reason is the high caliber of the lenses that were being assembled for this camera. Immediately after the war, Carl Zeiss in West Germany had substantially simplified its line of lenses and the pre-war Contax lenses had to be recalculated due to a breakthrough in optical glass technology by Schott in 1943. Then, through the decade of the 1950s, glass and coating technology continued to improve and with each new optical glass improvement, lenses had to be calculated anew. For example, Zeiss Ikon simplified many of their cameras to use the same limited series of Carl Zeiss lenses. The Ikoflex, the newer Super Ikontas and some outside customers such as Rolleiflex were limited at first to using only the f/3.5 Tessar at 75 mm for the 6×6 cm format. The huge library of pre-war lenses was a thing of the past.

The new lenses for the Contarex could not come from Jena since that bridge was totally broken in 1954 by court cases and trademark decisions. Additionally, the famed cadre of Carl Zeiss lens designers was no longer available to the firm; Robert Richter died in 1954, Willy Merte went to the US military on contract work and died in 1948, Ernst Wandersleb was more than 70 years old and had been left behind in Jena, and Ludwig Bertele had left Zeiss Ikon in 1940 and relocated to Switzerland. In any case, just to be Carl Zeiss lenses, they would have to be as spectacular as they could be. The newer younger designers were given their opportunity and under the guidance of



The Contarex Special, September 1960. Note that what looks like a waist-level viewfinder was intended for convenient use on a microscope or copy stand.Figure 4

Hans Sauer, the results were surely successful.

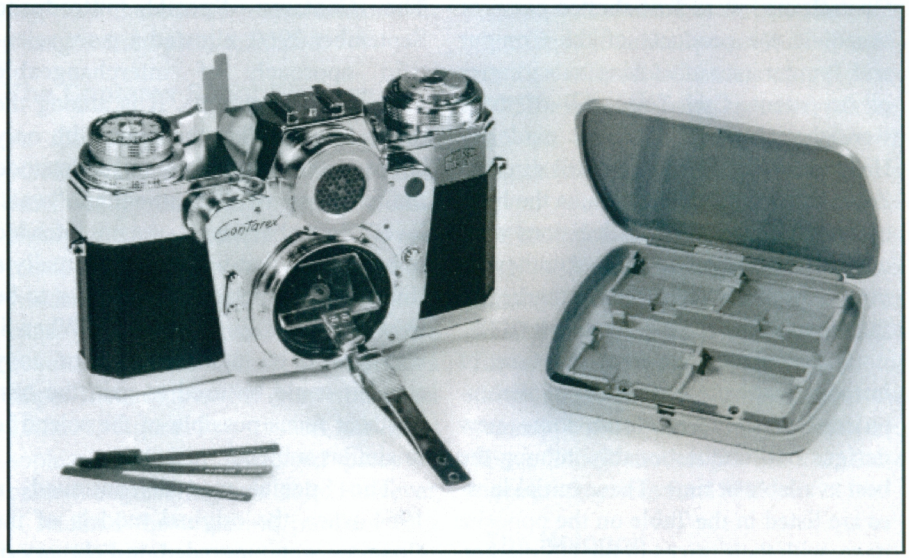
The "Bull's-eye" Contarex

The Contarex was announced with a great flourish at the 1958 Photokina, but this long expected product took more than another year (September 1959) to hit the dealer's shelves where it had Bestellnummer (catalog number) 10.2400. Based on other patent applications (figure 2), we know it took nearly nine years to go from from preliminary design to market. The camera had all of the specified new features, which were greatly admired, but it had a tremendous drawback. It weighed 910 g (2 pounds) without a lens, and you could add another 230 g (half a pound) for the new normal Planar lens. It did not sell particularly well because of the great weight and high price — due in part to the need for skilled hand assembly of all the complex parts (figure 3).

But there was also new competition from Japan. Several innovative Japanese manufacturers had seen the Zeiss prototypes under the counter at dealer's shows and had made important strides themselves. Their cameras were smaller, more compact and had fairly aggressive new lens systems as well. Yes, the Zeiss lenses were still remarkably better than those of the competition but, for the money, the Japanese combination of less expensive cameras and lenses were thought to be a better value. These new cameras were rapidly approaching the Contarex in their features, with the Nikon F of 1960 being particularly successful. The Nikon F cost a great deal less than the $449 of the Contarex, which leapt to $500 a few months later.

The new Contarex maintained some features that the other cameras never considered. For instance, Zeiss Ikon continued the use of the old Contax wheel protruding through the front top edge of the camera. But it had a new function; no longer used for rapid one-finger focusing of 50 mm lenses, it now adjusted the iris for the correct exposure. It was a wonderful feature but the cost of building it and the viewing mechanism into the camera increased the design's inherent complexity and it added to the cost. One of the biggest problems with the camera was that it contained more than a thousand individual parts that needed to be constructed, tested and assembled into the camera body. The camera technicians had to be high-level, well-compensated professionals. The Zeiss criterion for step-by-step quality control was a major contributor to the cost as well.

As the firm's profitability began to disappear, Zeiss Ikon made an aggressive decision to simplify its product line.



Second version of the Bullseye, 1964. New features included interchangeable focusing screens and strips for recording data directly onto the negative. Figure 5

The Contarex Professional (above) and **the Contarex Super** (right). The Professional is shown with the 50 mm f/2 Blitz Planar, which has built-in flash synchronization. Figure 6

In 1955, the firm quickly phased out the box cameras and most of the folders, including the older Super Ikontas. The most shocking decision is that the Contax was to be eliminated from the catalog with the introduction of the Contarex. All of the impressive Contax prototypes that we discussed in the Autumn 1999 issue of this publication were abandoned, and the high-end rangefinder market was left almost exclusively to the Leica M series. For nearly five years, the Contarex and the Contaflex would be the only SLR cameras in the Zeiss Ikon program. All of the other Zeiss products, along with the Contaflexes, were leaf-shutter cameras based on the products of the Compur and Prontor manufacturing subsidiaries of its parent, Carl Zeiss. All of these were the result of decisions made by Heinz Küppenbender, who still directed Zeiss Ikon from his position as the head of Carl Zeiss. Most of his decisions were completely counter to the recommendations of both the technical and marketing functions of the firm

The available lenses at the time of introduction were a mixture of recomputed Contax lenses and some new designs but, unquestionably, among the best available at time. These initial lenses are listed in the Table on the opposite page, with their prices in the US market. Note that the prices increased less than a year after introduction. A plastic container for each lens would have cost you an additional $3.

These lenses had some outstanding features. Note the extreme close-focusing capability available on many of the lenses. This was a feature that, at the time, was only being developed in the Zeiss line of lenses. In addition, the diaphragm had a unique ball-bearing method of stopping the aperture system down quickly and accurately. The helical focusing mechanism was uniquely smooth and precise with virtually no "play."

The "Special" and new Bullseye

The Contarex Special, introduced September 1960, allowed a more scientific approach of interchangeable viewfinders (figure 4). It is among the rarest of Zeiss Ikon cameras with only about 1,600 made. Many misunderstood the purpose of the so-called "waist level" finder because it was not intended to be used in that way; it was actually a finder with a special ground glass to be used horizontally at eyelevel. When it was placed on a microscope or copy stand it could be used to gain the best depth of focus possible of the scientific or similar subject.

The Special was discontinued in 1964 when the original models of the Contarex were upgraded, in February of that year, to use interchangeable focusing screens as well as a data strip accessory, which allowed a small message about the exposure or subject to appear on the negative (figure 5). The catalogs reflected this with a new product number, 10.2401 for the upgraded Bullseye replacing 10.2500 for the Special. In the last years of this model, some cameras were given a glossy black coat as a test for the later models. During the life of the camera, it is estimated that 32,000 Bullseyes were sold.

Contarex Professional

In April 1966 a newer version of the Contarex appeared. The new features of the Zeiss Ikon Contarex Professional (Bestellnummer 10.2700, figure 6) appeared to ensure the camera's marketability but, ultimately, it would have a very short life. It incorporated changes to make it more compact and lighter but, while awaiting the development of the planned internal CdS exposure meter, this camera had no meter at all. In late 1965, Zeiss Ikon was still selling the early 1950's Ikophot as its only hand-held exposure meter. In 1966/7, a new line of hand-held meters was introduced in part to make up for the lack of metering in Contarex Professional. There were four meters: A selenium accessory shoe slip-on selling in the US for $12.95, a hand-held selenium (Ikophot S) in a new attractive package at $17.95, a hand-held CdS (Ikophot CD) at $34.95 and a "Rolls Royce" level meter, the

Lenses for the Contarex family

Lens	Angle of view	Elements	Smallest aperture	Closest focus cm/inches	US Prices Feb. 1961	Oct.1961
Biogon, f/4.5, 21 mm	90°	8	f/22	100/36	$219	$239
Distagon, f/4, 35 mm	63°	7	f/22	19/8	$145	$159
Planar, f/2, 50 mm	45°	6	f/22	30/12	$145	$159
Tessar, f/2.8, 50 mm	45°	4	f/22	35/15	$67	$79
Planar, f/1.4, 58 mm	41°	7	f/16	45/18	N/A	$249
Sonnar, f/2, 85 mm	28°	7	f/22	80/30	$185	$199
Sonnar, f/4, 135 mm	18°	4	f/22	120/48	$149	$159
Sonnar, f/4, 250 mm	10°	4	f/22	250/96	$360	$389

Ikophot T that indicated proper exposure by using three signaling lights, at $64.95. Without these meters, the Contarex Professional sold for $554 with an f/1.4 Planar. This price was easily twice that of the competition's cameras, and they had already added built-in coupled meters. In many ways, collectors look upon this camera as a successor to the Contarex Special.

Contarex S, the Super

The Professional and Super designs were begun at the same time but, with the constantly changing world of built-in exposure meters, the design and development of the Super took longer and the camera came out nearly a year after the Professional (figure 7). It offered no major improvements other than the through-the-lens CdS meter, but it was a definite improvement over the Bullseye in both styling and handling. Shutter speeds and aperture settings were visible in the viewfinder and the meter was designed to be a match-needle system. Launched in April 1967 with Bestellnummer 10.2600, the Super initially cost $684 on the US market.

Zeiss Ikon broke one of its long-standing rules of keeping changes indiscernible to the user with this camera. The metering switch began life at the front of the camera and was later moved under the film-advance lever, the shutter-speed dial was changed from one that had to be lifted to change speeds to a later mechanism that turned without lifting, and the instant-return mirror was changed from plain to coated.

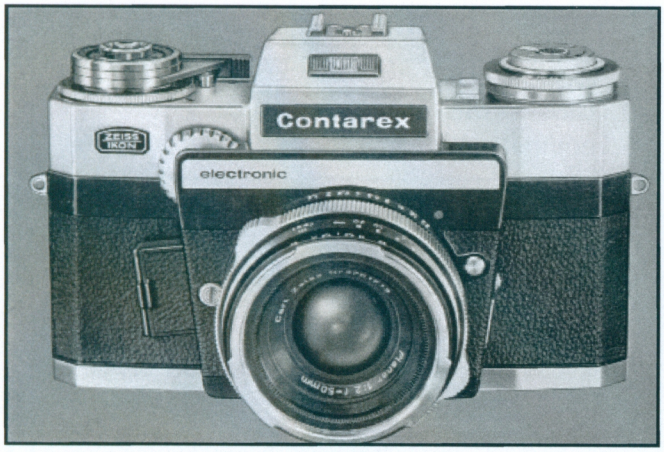
The Contarex Super Electronic

At this stage of camera design, the whole world of electronic control systems was coming into vogue, powering highly accurate shutters, metering systems, auto exposure systems, rapid winders and so on and so on. Zeiss Ikon came forward in September 1968 with a beautiful camera called the Contarex Super Electronic or SE (Bestellnummer 10.2800, figure 8). It was the most sophisticated and advanced piece of camera engineering available. However, it retained the crippling problem of a very high price. Uncharacteristically, there were design flaws. Chief among them was that the power supply for the meter and the shutter ran off the same beleaguered battery; a later version changed that to two batteries, one of them in a compartment in a difficult location under the mirror.

Accessories supporting the electronic shutter included a totally external module called the Telesensor, which turned the camera into an aperture-priority autoexposure camera, but at the same time made it far less portable. This module also offered an electric motor drive, a 450-exposure back, remote release, and an interval timer for use with sequential exposures via the motor drive. A contemporary American price list shows that the Contarex SE body listed at $810 in chrome, $840 in black finish. "Normal" lenses ranged from $110 for an f/2.8 50 mm Tessar to $324 for an f/1.4 55 mm Planar. A motor drive could be had for $420, and the remote control and timer mentioned above added another $375. Yes, these were steep prices for 1971!

The Hologon

In April 1970 Carl Zeiss produced a unique wide-angle lens, which they



The Contarex Super Electronic, 1968. This was the last of the Contarex line. The body alone listed at $810. Figure 8

The Hologon Ultrawide, made for the 15mm f/8 Hologon lens with only 4.5mm clearance between lens and film. Figure 9

named the Hologon . It was a 15 mm f/8 lens that gave a 110° field of view with an almost distortion- free image. This unique three-element lens had to be installed in its own camera (figure 9) because of optical and mechanical design constraints. Naturally, a Contarex body was selected and adapted for this single-lens camera. A special viewfinder was provided, because there was no possibility that a pentaprism and mirror system could be installed behind this lens whose rear element was only 4.5 mm from the film plane. With faster films and a fixed aperture of f/8, the 1/1000 s shutter speed was eliminated and a Time setting added. Also, a neutral-density filter was available to bring the effective aperture down to f/16 when 1/500 s was still too fast.

The complete name of this camera was the Zeiss Ikon Hologon Ultrawide, although there had been some leakage to the press of the name Holorex. The camera cost in the US was $825 with a $78 neutral density filter. While this was a sensational camera/lens product that encountered great press reaction, it was not something that even an advanced and well moneyed amateur regarded as a "must-have" item. There was also a problem with having too much image in the small 35 mm format.

The Hologon had a limited run of 1,600 cameras, many of which were still in the factory when it closed in 1971 and when the firm stopped making the other cameras out of available parts. A wise anonymous collector directly purchased the remaining stock at a special price and sold several hundred over the years at appreciable profits. Leica approached Zeiss for a special order of 400 Hologon lenses in the Leica M mount. These lenses did not sell well until Wolf Wehran put out a Zeiss press release about the lens in this mount and then they were all sold within a month. They are now very much a rare and expensive item. When Zeiss made a newer version for the Contax G cameras, they were again approached by Leica but Zeiss could not accommodate an order due to its exclusive agreement with Kyocera.

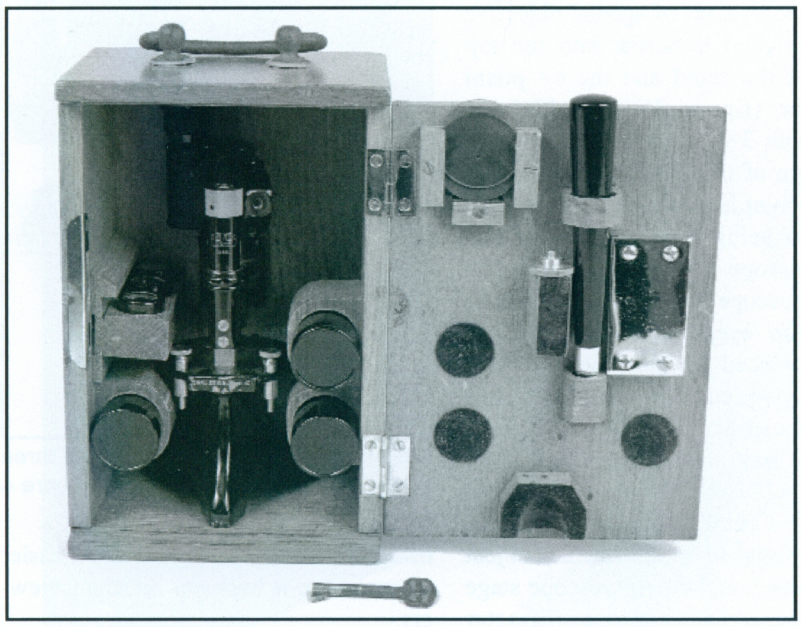
As was customary, Zeiss Ikon supplied Carl Zeiss with cameras for use with their microscopes. The first postwar one was based on the later Contina body but soon versions were available using the Contax and the Contarex. Later, when the SLR became the camera norm, Carl Zeiss was able to adapt their microscopes to accept any sophisticated camera with special adapters and cameras such as the Icarex and other brands could be used. As microscopes became more specialized, they had self-contained cameras and eventually went to computer imaging rather than photographs.

Farewell to Zeiss Ikon

Meanwhile, Zeiss Ikon had not turned a profit since 1954. It was being subsidized by Carl Zeiss and the Stiftung for 16 long years when in May 1971 the board of management went to the consulting firm of McKinsey & Co. for an independent determination of the viability of continuing the business of camera manufacture. The results were overwhelmingly in favor of shutting down the company and implementation was swift. Küppenbender accepted the decision and personally went to both Voigtländer and the Zeiss Ikon factories to announce the closings and what would be happening to the employees. He was received with anger, but nothing could change the decision. Voigtländer was closed in August and Zeiss Ikon in September 1971.

The Contarex and the Hologon survived Zeiss Ikon's closing by a few years since there were enough parts on hand to manufacture a limited stock once the decision to close was made. These two cameras and the final version of the Contaflex were made for a short time by Oberkochen with a single change. The Zeiss Ikon trademark disappeared in favor of a single word: Zeiss. There were some divisions of the firm that remained active for a time but the word Zeiss Ikon disappeared from cameras until 2006 when that trademark was revived for a new camera made in Japan by Cosina.

A final point is that the lenses, the greatest feature of the Contarex, no longer had a camera body. Many of them were developed by Erhard Glatzel, who was the first to use the computer effectively for lens design and whose Hologon, Distagon and Vario-Sonnars were magnificent creations — but that is another story. ❐



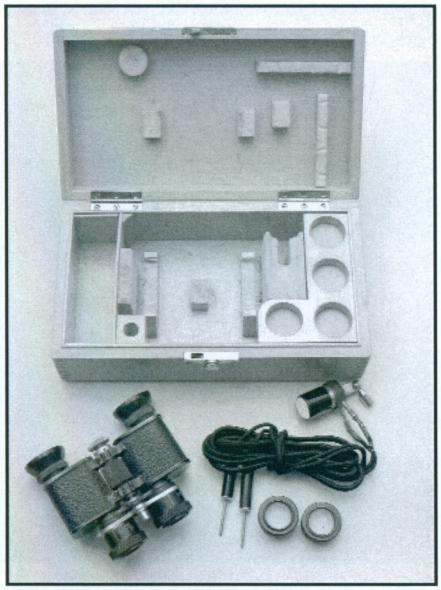
Zeiss Tele-Microscope

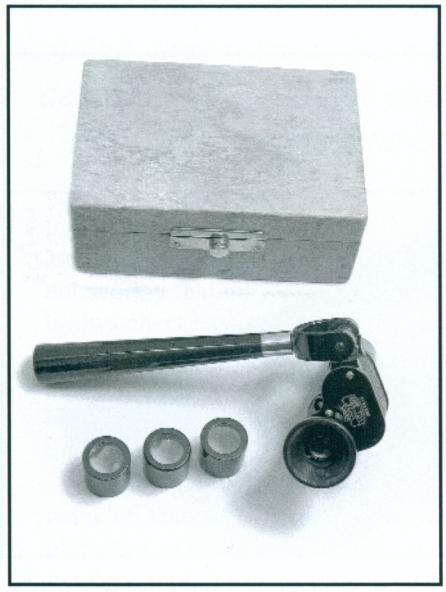
Jack Kelly,
Brush Prairie, Washington

A neat combination of low-power microscope and monocular telescope from 1937.

The A. Roth Tele-Microscope in its fitted box. See also the cover of this issue. Figure 1

I have collected cameras and binoculars since 1963, when I bought my first Zeiss Teleater (theater) binocular and an old Anthony detective camera instead of the promised engagement ring. Forty-four years later I still have the camera, the binocular and one very understanding wife. As an offshoot (one of the many) of my binocular collection, I became interested in the various adaptations and special models of binoculars that Zeiss made for use as field magnifiers and low power microscopes. (See *Zeiss Historica*, Spring 2002, page 17). Zeiss referred to this group of close focusing binoculars as "Fernrohr Loupes" or telescopic magnifiers. In this article I will discuss the "A. Roth Tele-Microscope" complete kit shown on the cover of this issue and in figure 1.





The Binocular (left) **and monocular** (right) Fernrohr loupes for the Tele-Microscope. Figure 2

The first Zeiss Teleater binoculars were offered for sale in 1907–08, and by at least 1912 both monocular and binocular Fernrohr Loupes based on this glass were available (figure 2). These field magnifiers spawned a wide range of accessories including handles, lights, various diopter lenses for close focusing, mounting stands, drawing prisms, and by 1922 a simple stand to convert the monocular loupe into a true microscope with the addition of special low power lenses. The 1924 Medical Department Catalog (Med 124) is the first record I have found for the full-fledged Tele-Microscope based on the Teleater monocular Fernrohr Loupe. It was

The microscope stand, monocular and objective lens assembled. Figure 3

designed by A. Roth and includes a cast-iron base with illuminating mirror, fine focusing mechanism and three microscope lenses. Overall height is about 18 cm (7 inches). Production of this item continued up to at least 1937, when the one shown here was produced. Throughout that time it was always referred to as the A. Roth Tele-Microscope.

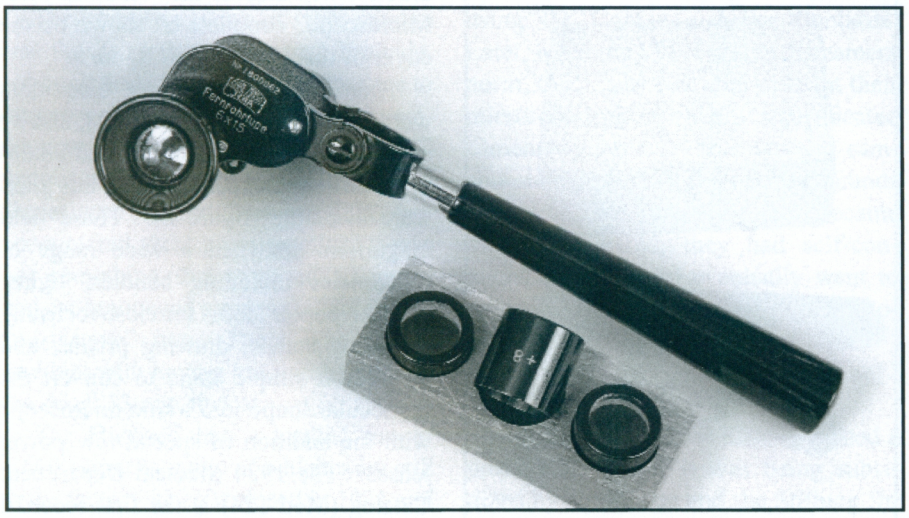
The three basic components of the A.Roth Tele-Microscope are a special cast iron base, a set of special objective lenses designed to screw into the top bracket of the stand and the 6× prism monocular (figure 3). The kit was offered with 3×, 6× or 8× monoculars. In the case of the Tele-Microscope kit, the monocular is a fully functional glass capable of being used on its own as a small telescope. When used with the Tele-Microscope base and lens it functions as an eyepiece, magnifying the image produced by the objective lens. The objective lenses provided with this kit (figure 4) are marked 20×, 8× and 3×, providing total magnifications of 180×, 84× and 42× when used with the 6× monocular. The cast iron base includes a small mirror to illuminate the object being viewed, and the microscope stage will accommodate various diameter plates or filters to adjust the amount of light reaching the specimen from the mirror.

Also included in the box is a set of three diopter lenses (+6, +8, +10) that can be fitted to the objective end of the monocular, allowing close examination of various subjects at magnifications of 9×, 12× and 15× (figure 5). The monocular can be used without the handle by fitting a ring finger through the loop and grasping the body of the telescope. Alternatively, the handle can be screwed into the loop to allow closer examination

Set of three objective lenses and three additional diopter lenses. Figure 4

of smaller subjects and to make it easier to exchange it between different viewers.

An interesting sidebar to this particular Tele-Microscope is the marking that was applied to the inside of the case. It can be made out as a slight purple smudge in the middle of the case, straddling the door and body of the wooden box between the hinges (figure 6). It is a typical acceptance stamp used by various departments of the Third Reich. Unfortunately, the mark is too smudged to see anything other than the Reichsadler Eagle and a blur of words. The mark is, however, consistent with the 1937 date of manufacture of the kit. ❐

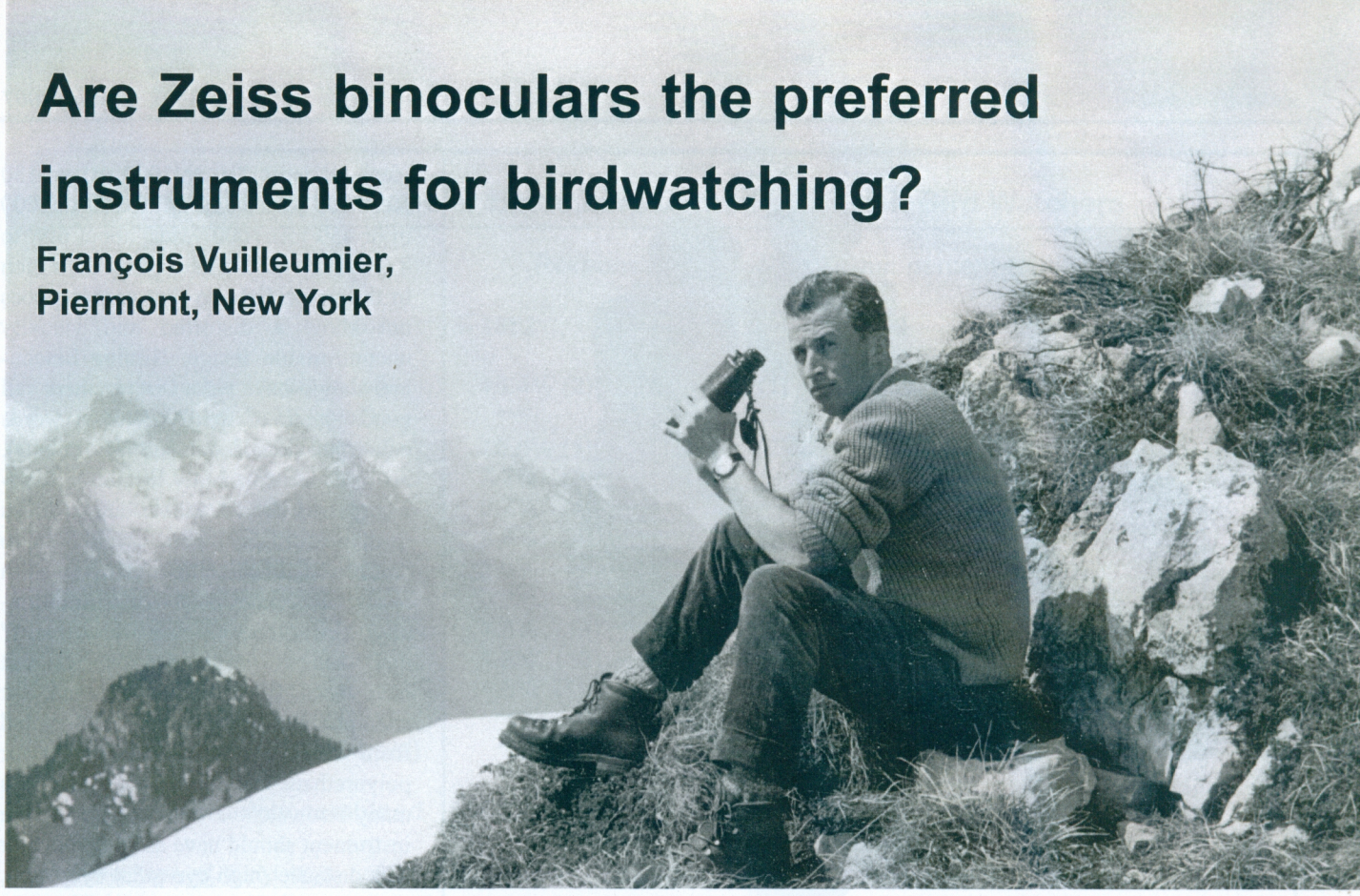


The three diopter lenses (+6, +8, +10) that can be screwed onto the monocular, shown here with its handle. As shown the combination can be used in the hand for close examination of small objects. Figure 5

The Third Reich acceptance mark, with the Reichsadler eagle just visible, near the hinges of the case door. Figure 6

Are Zeiss binoculars the preferred instruments for birdwatching?

François Vuilleumier,
Piermont, New York



About thirty years ago, many ornithologists, birdwatchers, and birders thought that the roof prism Zeiss Dialyt 10×40B was the best binocular for their needs. For example, a 1978 survey of 1,211 British birdwatchers[1] revealed that the "Zeiss 10×40B Dialyt came out very strongly as the most popular" binocular. Twenty-three years ago, a 1984 survey of 1,338 birdwatchers[2] showed that the "Zeiss West Dialyt 10×40B [was] far and away the top model." Finally, a 1994 survey[3] of "over 750 … top birders" indicated that the "most popular binoculars [were] still the Zeiss West 10×40." But by 1994 this sixteen-year dominance (1978–94) of the birdwatching binocular market by Zeiss was diminishing. Thus, Sharrock and Forrest (ref. 3, page 448) pointed out that the "Leica 10×42BA [has] risen to take third place, and two other Leica models, the 8×42BA and the 8×32BA, have appeared … for the first time, as have the Swarovski 10×42SLC and Opticron HR8×42."

In 2007, thirteen years after the 1994 survey reported upon by Sharrock and Forrest,[3] the "classic" Zeiss 10×40B glass that was once the binocular of choice is rarely seen hanging around the necks of birdwatchers. Why is that? One reason may be simply that Zeiss no longer manufactures this model, but it is noteworthy that only a small number of birdwatchers have replaced it by newer Zeiss instruments. In fact, in the early 2000s most birders have switched to binoculars made by companies other than Zeiss.

Whereas Zeiss binoculars were at one time the instruments of choice, they seem to have been dethroned recently by glasses from other manufacturers.

I will analyze this trend from the point of view of a binocular collector interested in older instruments, including Zeiss, and of a professional ornithologist who has used and compared a wide variety of field glasses over many years.[4] Some definitions are in order before I develop my theme, however.

Ornithologists and others

At least three groups of people use binoculars to study birds: ornithologists, birdwatchers, and birders. An *ornithologist* can be defined as a professional zoologist who makes a "scientific study of birds, consisting in the effort to solve problems about birds and to find out new facts about them."[5] A *birdwatcher* usually does not earn a living studying birds but observes them for pleasure. I would define a *birder* as a person who aggressively and competitively identifies birds and obsessively searches for species to add to his or her "life list," an activity called listing in the USA and twitching in the UK. Birders travel "widely and frequently to view new species or gain greater bird-finding or identification skills."[6]

Illustration at top of page:

The author in the Swiss Alps, April 1961, studying snow finches above the timberline. Figure 1

The three basic types of prismatic binoculars. Left and front, two binoculars with the same specifications, 8×30, but different prism systems. The one on the left is a Porro-I Carl Zeiss Jena Deltrinem 8×30 with uncoated lenses, serial number 1330466. In the foreground is a "Dachprisma" (roof-prism) Hensoldt Wetzlar D.R.P. Sport-Dialyt 8×30, uncoated lenses, serial number 251068. At the right rear is a Porro-II Ross London Mk. IV, 5×40, with coated lenses but without the large rubber eyeshield; serial number 6682. (All from the author's collection.) Figure 2

A "top birder" is a birder with superior identification skills. Ludlow Griscom (1890–1959), whose definition of an ornithologist I quoted above in ref. 5, and Roger Tory Peterson (1908–96) were top birders in America. James Fisher (1912–70) and Sir Peter Scott (1909–89) were top birders in the UK. In today's birding world, top birders attract other birders who are trying to improve their identification skills by delivering lectures and organizing workshops about bird identification.

Please note that a professional ornithologist can also be a birdwatcher (this is my case; figure 1) or a birder (I know several). As all persons interested in birds need "birding binoculars" I will use the terms ornithologist, birdwatcher, and birder more or less interchangeably in this piece, except in a section in which I discuss specifically the binocular preferences of professional ornithologists.

What are "birding binoculars"?

Top birder Pete Dunne (page 44 in ref.6) called binoculars "The Defining Tool of Birding." Interestingly, and in spite of hundreds of published pages about binoculars in the birding literature, there is no consensus about what the "ideal" birding glass should be, even though most birders agree upon the characteristics these instruments should have—or shouldn't have. Good birdwatching instruments must be light in weight (significantly less than 1000 g or about 36 oz), feel comfortable in one's hand, have a smoothly working central focusing mechanism, and be mechanically robust. Their optical qualities should include true color rendition and large field of view (at least 110 m/1000 m, or 330 feet/1000 yards, and up to 150 m/1000 m or 450 feet/1000 yards; about 6.3° to 8.5°). They should have sharp definition in the entire field so that panning does not show a distorted and visually uncomfortable image. Birding binoculars should have what birdwatchers call good "depth of field" (in other words enhanced stereoscopic or 3-D effects). As birds are constantly in motion, birding glasses should enable one to focus from near to far (from about 3 m to "infinity") in about one turn, or even less, of the center focus wheel. Additionally, birdwatchers prefer "waterproof" and "fungus proof" instruments that have been filled with some gas, for example nitrogen, and that are protected from hard knocks by a rubber or polyurethane covering. And finally, as many birdwatchers wear eyeglasses, the instrument should have an eye-to-ocular lens distance (high eye-point eyepieces, or "eye relief") that permits them to enjoy the full field of view with their glasses on.

Although a range of magnifications from 7× to 10× are selected by birders, relatively few of them use 7× and many (most?) clearly favor 10×. This seemingly contradicts Gregory's oft-repeated statement[7] in his book, *The Finest Optics for Birdwatching—a Critical Appraisal*: "Author's Health Warning: Ten is not a suitable power for all-round hand-held use." Very few birdwatchers indeed use 6× instruments, in spite of advantages such as lighter weight, greater 3-D effect, clearer definition at the periphery of the field of view, and greater handling stability. Birdwatchers do not consider glasses with individual eyepiece focusing, such as military models or so-called marine glasses (usually 7×50) to be valid birdwatching instruments. Dunne stated flatly (page 51 in ref. 6) that the "cumbersome [single eyepiece focusing] system has no place in birding." As for compact binoculars, Dunne, on page 50 of the same book, had this to say: "The light, pocket-sized **mini-binoculars** [bold type his] favored by back-packers offer little to grasp, and so hand shake is exacerbated. For this reason, and because mini-binoculars

Table 1. The Most Popular Binoculars Owned by British Bird Watchers

Make and model (prism)	Responses by year of survey: percent (rank)			
	1982	1984	1990	1994
Zeiss Dialyt 10x40 (roof)	**15.4% (2)**	**20.7% (1)**	**28.4% (1)**	**23.1% (1)**
Zeiss Dialyt 7x42 (roof)	***	***	**8.8% (2)**	**9.6% (2)**
Zeiss Jena 10x50 (porro)	**15.8% (1)**	**14.6% (2)**	**3.7% (7)**	**3.2% (8)**
Swift 8.5x44 (porro)	7.7% (3)	7.0% (3)	5.5% (4)	4.0% (4)
Leitz Trinovid 10x40 (roof)	5.7% (4)	4.8% (4)	6.0% (3)	3.3% (7)
Mirador 10x40 (porro)	3.6% (5)	3.2% (6)	***	***
Zeiss Jena 8x30 (porro)	**3.0% (6)**	**3.0% (7)**	**1.3% (13)**	**1.4% (15)**
Leica Ultra10x42 (roof)	***	***	1.3% (13)	5.5% (3)
Optolyth Alpin 10x40 (porro)	1.8% (10)	2.6% (9)	4.9% (5)	2.0% (11)
Optolyth Alpin10x50(porro)	1.8% (10)	3.5% (5)	4.2% (6)	3.6% (5)
Swarovski 10x40 (porro)	1.5% (12)	2.3% (11)	2.4% (9)	1.3% (16)
Swarovski 10x42 (roof)	***	***	***	1.7% (12)
Bausch & Lomb 10x42 (roof)	***	***	1.7% (11)	1.7% (12)
All Zeiss models combined	**34.2%**	**38.3%**	**42.2%**	**37.3%**

Data from ref. 2 and ref. 3

Zeiss binoculars are indicated in bold type.

*** These particular binocular models were not listed for these years.

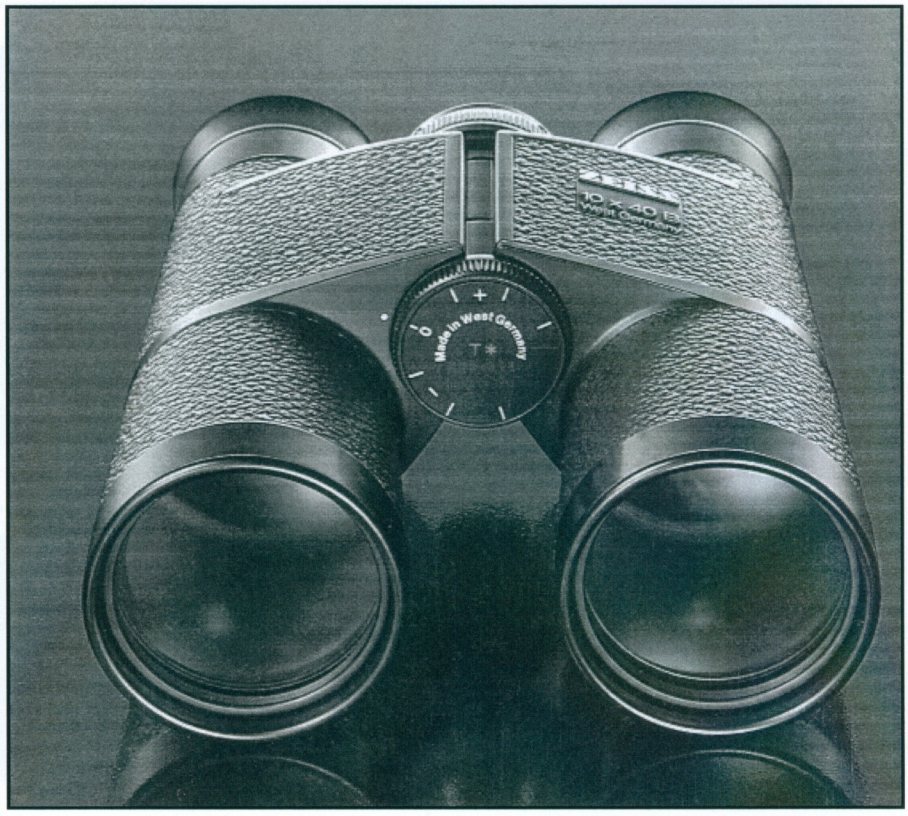
trade off optical performance for size, birders should avoid them."

Very few birdwatchers use stabilized binoculars. The major maker of these instruments is Canon, but they are not popular. One reason is that their shape is ungainly when compared with either porro or roof glasses. Another reason is that they are more fragile than conventional binoculars and especially not waterproof. Zeiss makes a 20×60 stabilized instrument. Its optical quality is outstanding, but two attributes make this binocular unpopular with birdwatchers, its weight (58 oz) and its cost (over twice the price of even the most expensive roof-prism binoculars now on the market). Gregory's comments (on pages 78–79 of ref. 7) are apt and echo my own: "I find this glass just that bit too bulky, awkward and heavy, to try to carry about all day. … I regard it as an addition to the basic [birdwatcher's] 'outfit' … rather than a replacement."

The birding literature contains dozens of pieces about the "porro versus roof prism" dichotomy, a subject I have discussed earlier,[4] but it is still a hot topic. The preference for one kind of prism over the other depends probably more on what birding gurus say or on the persuasiveness of advertisements than upon the actual knowledge of potential users. In a section entitled "Attributes of the Birding Binocular" of his widely read book[6] *Pete Dunne on Bird Watching,* birding guru Pete Dunne wrote: "The sleeker design [of porro glasses] fits most people's hands and frames better, making them easier to hold steady. A stable platform allows better overall **image quality** [bold type his], particularly from higher (10×) magnifications. The roof prism system is better anchored to take rough handling." As an example of advertising, a Zeiss brochure from the mid-1980s stated that the 10×40 Dialyt was the "*ideal model for bird-watching* [italics mine] and racing [because of] steady free-hand viewing owing to small dimensions and light weight." Probably between half and two-thirds of the population of birders nowadays sports roof-prism binoculars. This is not necessarily because roofs are better than porros, but because of the following syllogism-like reasoning: (a) top manufacturers, Zeiss included, no longer make porro glasses, (b) top birders use roof-prism binoculars, hence (c) if you want to look like a top birder you will use roof. To carry such an instrument is to demonstrate to other birders that you are up-to-date and trendy.

Irrespective of whether they use roof or porro-prism glasses, I have found that many (most?) ornithologists, birdwatchers, and birders have little (or no) knowledge of the actual differences between these two optical systems or of the history of development of their design. To me, as both a binocular enthusiast and as a birdwatcher, I find it sad that birders don't really seem to care about these design differences and their evolution. Although some texts, for example those of Robinson,[8] Armstrong,[9] and Hale,[10] do a fair job of explaining roof versus

porro, they are either out of print or out of fashion and birdwatchers don't read them any more. Other texts, for instance Seyfried's *Choosing, Using & Repairing Binoculars,*[11] do not discuss the "roof versus porro" dichotomy, and recent books for birders by birders, like the one by Dunne,[6] do not explain how roof prisms are designed, even though they illustrate the two basic shapes. I am certain that few birdwatchers know who Ignazio Porro was, and even fewer who Ernst Abbe was and what he did. In addition, I have not seen any indication that modern birdwatchers know that there are two basic porro-prism systems (with variations in the arrangement of prisms) and several roof-prism systems (Hensoldt, Abbe, Uppendahl, Schmidt, Leman, Möller; see Seeger[12] and Schmitz.[13] Porro-II Ross binoculars like the 10×50 Stepmur and 12×50 Stepsun used to be popular in the UK but are no longer seen. Figure 2 shows examples of binoculars with the three basic prism designs, Porro-I, roof, and Porro-II.



The most popular birdwatching binocular in the 1980s and 1990s: the Zeiss Dialyt 10×40B. (From a 1980s Zeiss brochure.) Figure 3

A period of Zeiss dominance

Between 1978 and 1995, the influential journal *British Birds* published six reports[1,2,3,14,15,16], on the use of binoculars and telescopes by its readers. In order to find out what kinds of binoculars British birdwatchers used, these authors analyzed the returns to questionnaires they had included in the journal. Although the number of readers of *British Birds*, hence of questionnaires, is in the thousands, the birdwatchers who responded are not a random sample of the total readership. The number of returns has varied over the years, from about 750 (1995 survey, based on 1994 data), to well over 1300 (1985 survey, based on 1984 data). Table 1 shows the most relevant results for the purposes of this analysis, extracted from the surveys of 1982, 1984, 1990, and 1994.

It is clear that Zeiss dominated the field in the fifteen-year period from 1980 to 1995 and that the 10×40 Dialyt was the binocular of choice (figure 3). In 1990 and 1994 the Zeiss Dialyt 7×42B was choice number two. Table 1 also shows that the two Zeiss Dialyt glasses combined, 10×40 and 7×42, were used by around 37% (in 1990) and 32% (in 1994) of British birders. Adding the two other Zeiss glasses listed in Table 1, the 10×50 Dekarem and 8×30 Deltrintem, we see that 42% of British birders in 1990 and 37% in 1994 preferred Zeiss to other makes! In other words, in the mid-1990s four birders out of ten used Zeiss binoculars. As none of these models are manufactured by Zeiss any longer, one may ask whether birdwatchers have shifted to the newest Zeiss glasses. It seems that very few of them have done so. For example, in the 1994 survey,[3] Sharrock and Forrest reported that only three respondents (out of over 750) mentioned the Zeiss Night Owl (= DesignSelection) 7×45. And in my own informal surveys in the late 1990s and early 2000s I have found only one ornithologist (from Switzerland) who used a Zeiss DesignSelection.

Recent Zeiss binoculars

Glasses manufactured by Zeiss, post 10×40 Dialyt and 7×42 Dialyt models, include several series, named, respectively, "DesignSelection" (7×45, 8×56, 10×56), "Victory" (8×40, 8×56, 10×40, 10×56), "Victory FL" (7×42, 8×32, 8×42, 10×42), "Conquest BT*" (8×30, 10×30, 12×45, 15×45), "Conquest ABKT*" (8×40, 10×40), and "Diafun" (8×30, 10×30). The 8×30 Diafun was described and illustrated in *Zeiss Historica,* vol. 20 no.1 (Spring 1998), page 23. Even though the Diafuns were light (450 g), neither the 8×30 (with a field of view of 120 m/1000m) nor the 10×30 (only 96 m/1000m) "took" among ornithologists. The Diafuns were manufactured in Hungary. I believe, and my binocular-savvy colleagues agree, that the Diafuns were not optically or mechanically up to the standards of earlier Zeiss binoculars. This is not the case, however, of the Conquest models, which are also produced in Hungary.

As pointed out by Gregory[7] the DesignSelection glasses (7×45, 8×56, 10×56) are too heavy for field use. They weigh, respectively, 1200, 1459, and 1426 grams. Also, their very large size makes it difficult for average hands to

Table 2. Some Characteristics of Zeiss Binoculars used for Birdwatching

Model	magnification	porro or roof	field of view meters (deg.)	weight (g)	minimum focus (m)	subjective experience[1]: viewing; 3D
Dialyt BGA	(7x42)	R	150/1000 (8.5°)	800	3.8	O;VG
Deltrintem[2]	(8x30)	P	150/1000 (8.5°)	670	3.0	O;O
Conquest B	(8x30)	R	120/1000 (6.9°)	500	3.2	VG;A
Victory FL	(8x32)	R	420/1000 (8.0°)	570	2.2	VG;A
Conquest ABK	(8x40)	R	120/1000 (6.9°)	850	3.2	VG;A
Victory B	(8x40)	R	135/1000 (7.5°)	710	3.2	VG;A
Dialyt BGA	(10x40)	R	110/1000 (6.3°)	770	5.4	VG;G
Conquest ABK	(10x40)	R	105/1000 (6.0°)	830	3.2	G;A
Victory B	(10x40)	R	110/1000 (6.3°)	740	2.8	G;A
Dekarem[3]	(10x50)	P	120/1000 (7.3°)	1,350	7.0	O;O
Victory B	(10x56)	R	110/1000 (6.3°)	1,220	5.4	VG;G
DesignSel[4]	(10x56)	R	110/1000 (6.3°)	1,430	5.4	VG;G

Notes:
1. Subjective quality of viewing and 3D experience:
   O = outstanding; VG = very good; G = good; A = average.
2. Deltrintem 8x30 includes "Jenoptem 8x30," which was produced in East Germany.
3. Dekarem 10x50 includes "Jenoptem 10x50," which was produced in East Germany.
4. "DesignSel" is an abbreviation for the DesignSelection series.

reach the center focus wheel comfortably. I agree with Gregory about the 10×56: "The focus wheel is close in to the binocular body and this design and its stiffness may be intended to prevent accidental movement. It will certainly do that, but it slows intentional movements too, to such an extent as to make it impractical for birdwatching, in my opinion, when so many other glasses are easy to use." Gregory, in the same book[7] illustrated and discussed critically four Victory models, the 8×40BGAT*P (pages 37–38), the 8×56 BGAT*P (pages 53–54), the 10×40 BGAT*P (page 62), and the 10×56 BGAT*P (pages 66–67). [Meaning of the various letters: "B" stands for *Brillen*, German for eyeglasses; "GA" for *Gummi Armierung*, rubber armoring; T* for the Zeiss T multicoating; and "P" or "P*" for the Zeiss phase-contrast coating correction for roof prisms.] Gregory thought that the Victory 8×56 and 10×56 were too heavy for field use and found that the 10×40 was less good than 10×42 models manufactured by Leica and Swarovski. However, he stated that the Victory 8×40 "is close to an ideal birdwatching glass" because it focuses down to 3 m, has a field of view of 135 m/1000m, and weighs 710 grams. These attributes thus compare favorably with the older 7×42 Dialyt (respectively 3.5 m, 150 m/1000 m, and 800 g).

At the 23rd International Ornithological Congress in Hamburg in August 2006, Hans Seeger and I examined the Victory and Conquest models at the Zeiss exhibition booth. We did not find that these newer glasses were really better than the two older and now defunct Dialyt models, the 10×40 and 7×42, especially the latter. We also felt that the modern Zeiss binoculars did not have the kind of astonishing viewing experience provided by glasses with truly wide-field oculars, such as the Porro-I Zeiss 8×40 Deltarem or the Porro-II Zeiss 8×60H. In this connection it is interesting to quote what Gregory stated (page 37 in ref. 7) when writing about the 135 m/1000 m field of the Victory 8×40, which he liked. "The [Zeiss] Deltarem [8×40] had a very wide field of 198[m] at 1000[m], but the advances [*sic!*] of modern science do not seem to provide us with more than 135 at 1000, although the [8×40 Victory] is still designated as wideangle." Table 2 illustrates some of the features of older (and now discontinued) and more recent binoculars produced by Zeiss. These characteristics include whether the instrument is of porro or roof design, its field of view, its weight, shortest focusing distance, its feel as for the overall viewing experience, and relative 3-D effect (what birdwatchers call "depth of field"). The older glasses are indicated in bold face.

Older Zeiss binoculars

I believe that many ornithologists from the mid-1940s (post World War II) to the mid-1960s preferred Zeiss instruments. My view is based on subjective evidence, as, to the best of my knowledge, there are no numerical analyses of the preferences of ornithologists for optical instruments during these two decades comparable to the surveys published between 1978 and 1995 in *British Birds*. Before reaching this conclusion I

Two other popular Zeiss birdwatching binoculars of the 1980s and 1990s. At the front is the Carl Zeiss Jena Deltrintem 8×30 (shown also in figure 2). The same glass, but with coated lenses, manufactured in the DDR was called either "Carl Zeiss Jena" or "aus Jena," and was labeled either as the Deltrintem or the Jenoptem 8×30W. At the rear is the DDR equivalent of the earlier Carl Zeiss Jena Deltrintem 10×50, with coated lenses, labeled "aus Jena" and "Jenoptem 10×50W"; the serial number is 6605892. Both binoculars are in the author's collection. Figure 4

searched for illustrations in books showing ornithologists carrying binoculars (for example those by Scott and Fisher[17], Nowak[18] and Carbonnaux,[19] and examined advertisements placed in ornithological journals. Since 1954, I have also always spent much time studying the binoculars carried by other ornithologists or birdwatchers I know or have known.

As I judge from all the qualitative evidence that I gathered, Zeiss glasses were indeed the number-one choice from the mid-1940s to the mid-1960s. Two models were especially favored (figure 4), the 8×30 Deltrintem and the 10×50 Dekarem, and I know of several ornithologists who used the 15×60 Delfortem. In his book, *A Guide to Bird Watching,* the noted American ornithologist and conservation biologist Joseph Hickey (1943, page 15 of the 1963 edition) stated[20]: "Some years ago, Zeiss 8-power Deltrintems were considered the last word in superb workmanship and general all-round usage. I think they still are." Interestingly, I found that neither the 7×50 Binoctem nor the wide-angle and wide-field 8×40 Delactem were used by ornithologists. I also found that several confirmed Deltrintem aficionados,[12,13] especially in Europe, switched to the new wide-angle 8×30 Carl Zeiss glass with teleobjective lenses after it was produced at Oberkochen in 1954.

Zeiss dominance: ornithologists

To provide another bit of evidence about the dominance of Zeiss binoculars from the mid-1960s to the 1980s, I show in Table 3 the results of an informal survey I carried out in that period among 50 ornithologists from 12 countries. The individuals from this non-random sample are (or were) all established professional scientists whom I know (or knew) personally. These ornithologists are (were) conservative in their use of binoculars, in other words they did not jump on the bandwagons of the period. This means that the binoculars they used were not the most recently developed models. The Zeiss glasses these ornithologists carried were classic models, either porros like Deltrintem or Dekarem, or roofs like the 7x42 Dialyt. Few of them had switched to the Dialyt 10x40, which was then popular with birdwatchers and birders (as opposed to professional ornithologists). Irrespective of design, however, this informal survey, once again, indicates that Zeiss were the preferred binoculars.

Personal preference: Dialyt 7×42

About 15 years ago I used the then popular Zeiss Dialyt 10×40B glass extensively, but found that I lost a substantial portion of the already relatively small field of view (110 m/1000 m) when wearing my eyeglasses with the rubber eyecups rolled down. So, when I look at birds in the field, either to study them professionally or to watch them for fun, I return again and again to the time-honored Hensoldt roof prism and Hensoldt-designed but Zeiss-labeled 7×42 Dialyt BGAT*P*.

Indeed, after testing a wide variety of instruments[4] from several manufacturers, and after much additional research and thought since I wrote that paper, I would consider the Hensoldt-Zeiss 7×42 Dialyt glass to be the best birding binocular in existence. Please note that I said best, not ideal birdwatching glass, as I do not think that there is such a thing as an ideal glass, a binocular that would fit

all birdwatching needs. Gregory stated,[7] in agreement with this view: "Unfortunately there is no one binocular ideal for all circumstances of use...." But as the "overall" bird watching binocular, an instrument that can be used under a wide range of conditions, I find the Hensoldt-Zeiss Dialy 7x42 second to none.

The reasons for my choice? The Zeiss 7×42 Dialyt is relatively light (800 g, but see below). It feels good in the hand. The full field of view of 150 m at 1000 m is maintained while wearing eyeglasses when the eyecups are rolled down. (Please note, however, that this is a personal opinion, not shared by all users. Thus, Gregory wrote[7] that "For me the optically unsurpassed 7x42 BGAT* Zeiss is so spoilt by the rubber eyecups that I have four times parted with one...."). The butter-smooth central focus wheel of the 7×42 is easy to reach. One can shift the focus swiftly from about 3 m to long distance. The 3-D effect is outstanding for a roof prism glass. The 6-mm exit pupil is ideal in any light, something that I found especially true in the strange light of the Arctic and Antarctic. The wide-angle ocular, large field, and excellent 3-D effect of the 7×42 Dialyt amply compensate for its low 7× power and contribute to the steadiness of the glass. As a result, definition and contrast are better in the 7×42 than in the Zeiss Dialyt 10×40. To me, this means that the 7×42 Dialyt is not only useful in a greater range of bird watching conditions than the 10×40 but also, and this is very important, that it is a pleasure to hold and look through, even for prolonged periods of time.

The 7×42 instrument is also extremely robust. I have used it from the tropics to the North Pole and from salt-sprayed shipboard to dusty and windy Patagonia. The Zeiss 7×42 has never fogged internally in the humid tropics, and its focus mechanism has not become frozen in the cold of the Arctic or Antarctic or become hard and gritty because of desert dust (something that did happen to a Leica 8×42). In order to reduce the weight of the 7×42 glass I have stripped it of the original rubber armoring and replaced it with a leather-like vinyl covering. My

The author's favorite birdwatching binocular, the Zeiss Dialyt 7×42B. At the rear is the "classic" 7×42 BGAT*P* with the rubber eyecups extended and with its original ribbed black rubber armoring. The weight is 800 g and the serial number 2526625. In front of it is the author's personalized model, 10% lighter because the rubber armoring has been replaced with black leatherette to bring the weight down to 720 g. The serial number is 2334347. Figure 5

personalized 7×42 weighs 720 g, 10% less than the 800 g armored instrument (figure 5). I am sorry that Zeiss no longer makes this remarkable glass.

Today, as in the past, the choice of binocular depends on the financial ability of the birdwatcher. Adequate to good or even very good bird watching glasses (both porro and roof prism in design) manufactured by such companies as Optolyth, Swift, Bushnell, Leupold, Pentax, or Nikon can be purchased for $200 to $500. This is not cheap, but reasonable. Ornithologists with modest means will generally purchase these models, whether roof or porro. But in 2007 many birdwatchers, irrespective of their means, select and buy roof prism designs, whatever the manufacturer and often whatever the price. Recent catalogs from various stores that I have consulted show that top-of-the-line Zeiss, Swarovski, Bushnell, Nikon, and Leica roof prism glasses cost from $1000 to over $2100. This is four to five times more than the others and yet many birders buy them. For those birders who buy roof "whatever the cost," the roof prism Leica Trinovid Ultra models, especially 8×42 and 10×42, and the Bausch & Lomb Elite series, especially the 8×42 and 10×42, became very popular when they appeared on the market a couple of decades or so ago. Eighteen years ago Robinson noted[8] that "The latest entry into the 'super binocular' category is the Bauch & Lomb 10×42 Elite."

In the early years of the 21st century, many birdwatchers buy Swarovski roof prism glasses of the EL series (8.5×42 or 10×42, more rarely 8×32 or 10×32). To cite Gregory[7] about the 8.5×42: "The ergonomics of this binocular are first-rate. There is an immediate user-friendly

Table 3. Results of a survey of 50 professional ornithologists from 12 countries

Make	Number and percentage of ornithologists using a given binocular make	
Zeiss	18	(36%)
Leitz/Leica	7	(14%)
Swarovski	5	(10%)
Hensoldt	5	(10%)
Ross	5	(10%)
Kern	3	(6%)
Optolyth	2	(4%)
Bausch & Lomb	2	(4%)
Nikon	2	(4%)
Swift	1	(2%)

Notes:

This survey was carried out informally by the author, who personally knows (or knew) the 50 professional colleagues.

The twelve countries (and number of ornithologists from each) are: Australia (4), Canada (1), Chile (3), France (4), Germany (4), Japan (2), Kenya (1), Malaysia (1), United Kingdom (5), Switzerland (11), United States (13), and Venezuela (1).

feel to it. By dispensing with a centre-bar this most-recent of Swarovski's designs allows a full and easy grasp of either or both barrels." About the Swarovski EL 10×42, Gregory wrote[7]: "Because of the wide-field this model has what I call the 'Wow!' factor i.e. immediately impressive on first looking through." I can only agree with Gregory about this "Wow!" factor. This is perhaps why I have seen birders from many countries carry the EL models, including the USA, Canada, the UK, Holland, Switzerland, Germany, and Sweden.

I believe that Swarovski-Optik, based in Absam, Austria, has become the premier manufacturer and seller of high-end, hand-held optics for birdwatchers worldwide. Seventeen years ago, Armstrong[9] had written prophetically: "it is probably only a matter of time before [Swarovski] penetrates the birding arena." Not only has Swarovski "penetrated" the general birding arena but it has come to dominate the "top birding" market. The outstanding ergonomic, optical, and mechanical qualities of Swarovski instruments, especially the EL series, have clearly played a role in this invasion.

In his book, *The Finest Optics for Birdwatching*,[7] Gregory described and illustrated 27 full-sized binoculars, of which 20 (74%) were roof prism and 7 (26%) were porro instruments. Of these 27 binoculars, 11 (41%) are manufactured by Swarovski, 6 by Leica (22%), 5 by Zeiss (18.5%), and 5 by Nikon (18.5%). Between 1982 and 1994, according to the surveys published in *British Birds*, 34.2% to 42.2% of birdwatchers chose Zeiss. If Gregory's selection of the "finest optics for birdwatching" is used as a point of comparison, four years ago 41% of the best birding binoculars were Swarovski. This survey of what Gregory considered to be top birdwatching glasses shows that in the early 2000s Swarovski had dethroned Zeiss.

Swarovski has launched very effective publicity campaigns to promote their binoculars (and telescopes, but this is outside the theme of this article) among birdwatchers. For instance, the cover photo of his book[6] on birdwatching shows grinning top birder Pete Dunne prominently carrying a Swarovski EL instrument, and the photographs (pages 45 and 48) he used to illustrate the two basic prism designs are of Swarovski glasses. Dunne has authored a book,[21] *Optics for Birding*, published by Swarovski-Optik in the USA. Wayne R. Petersen, a top birder from Massachusetts is "a community leader for the Swarovski Birding Community in North America" according to the information in his book.[22] Swarovski's strategy of using prominent birdwatchers as vehicles for their advertisements is not new, of course. In the 1960s and 1970s, for instance, Zeiss used British ornithological celebrities to advertise their binoculars in *British Birds*. Thus famous ornithologist and wildlife photographer Eric Hosking in a 1966 ad: "Eric Hosking F.R.P.S. ... writes [that] ... 'after testing various types [of binoculars] I have changed to the new 8×50B Zeiss binocular which I find to be a marvellous production'." And in the same journal, Ross published photographs of Sir Peter Scott to advertise their Porro-II binoculars: "Mr. Peter Scott, Director of the Wildfowl Trust, is seldom without his Ross Binoculars."

Swarovski-Optik sponsors a wide variety of birding activities and regularly sends exhibitors to ornithological and bird-watching conferences around the world. Of course, neither Zeiss nor Leica remain inactive in the PR domain, however. Both advertise their goods widely in the birding world, for example by supporting photo and book contests in the UK (Zeiss) and underwriting meetings and events in Europe and the USA (Leica). Full-page color ads from Zeiss, Leica, and Swarovski appear in each issue of the Swiss bimonthly magazine *Ornis*, the journal of BirdLife Switzerland (the Swiss Bird Protection Society), which reaches at least 30,000 persons in Switzerland alone. At first sight therefore, it would seem that "the big three" expend about the same amount of creative energy, ingenuity, and money to capture the vast birdwatching market. And yet, somehow, Swarovski binoculars seem to be more popular than those of the other two makes.

Binoculars and the birding market

I share Gregory's view[7] that Zeiss, Leica, and Swarovski are the leading manufacturers of high-end binoculars for birders on the market today. This market is huge. According to Dunne[6] there are perhaps as many as 60–70 million birdwatchers and birders in the USA alone! Countries like the UK, Holland, and Sweden also have large numbers of birders (tens of thousands each). To corner this market means important profits. Perhaps significantly, Swarovski organized a workshop in the United States between their engineers (sent over from Austria) and top birders (including Pete Dunne) and professional ornithologists (I was one of the latter). The goal of the workshop was to discover what binocular design and attributes we, the users, needed or wanted in terms of optical and mechanical qualities. It is as a direct result of this workshop that Swarovski came up with the roof-prism EL series that became the status binocular among birders.

The roof-prism bandwagon was started inadvertently back in the early 1900s by the firm Moritz Hensoldt in Wetzlar with their Dialyt series.[12,23] Thus, the

Hensoldt roof-prism patent of 14 April 1905 was the beginning of an important trend. As I have tried to show, roof-prism binoculars, first from Zeiss, and now from Swarovski, have become the norm and even a status symbol among birders. Some companies like Nikon (Superior E Series), Minox (BD BP Series), and Swift (Audubon Series) still manufacture excellent bird-watching binoculars with a Porro-I design. I regret that the three top binocular makers, including especially Zeiss, no longer produce any porro glasses. I think with nostalgia of the time, years ago, when I used or looked through the beautiful Zeiss porro-prism 7×50, 8×30, 8×50, 10×50, or 15×60 binoculars…

As far as the strategy of manufacturing porro versus roof-prism instruments goes, a very interesting statement can be found in a 1952 document, *100 Jahre M. Hensoldt & Söhne Optische Werke A.G.*, published on the occasion of the 100th anniversary of the foundation of M. Hensoldt and Sons in Wetzlar. This document was reprinted in 2001 for the members of The Zeiss Historica Society. I quote the statement from the English translation (the italics are mine):

"At no time in its history was the firm of Moritz Hensoldt & Sons … misguided enough to artificially narrow the scope of its product lines. Just because the application of the various roof-prism designs [the Dialyts] achieved such extraordinary success, *the firm did not abandon in the least its continuing improvement work on prism-telescopes and binoculars that were based on the older porro-system, and thus were able to increase their manysided performance capabilities.* Products such as the Diagon [porro] models, which, especially in their latest execution, generated enthusiastic acceptance among customers, prove the accuracy of this chosen strategic direction."

I have never met an ornithologist, birdwatcher, or birder anywhere who used porro-prism glasses made by Hensoldt, like the Diagons. However, about forty years ago, I have known many ornithologists in Europe (especially in Germany and Switzerland) and several in the United States who preferred 6×30, 7×42, 8×56, 10×50, and even 16×56 Hensoldt Dialyt glasses to Zeiss porro instruments like the 8×30 Deltrintem or 10×50 Dekarem. They liked the Dialyt's excellent optical properties, its lightweight, and, yes, like modern birdwatchers, they enjoyed its sleek design. Given the Hensoldt statement quoted above, one can only wonder what would have happened to binocular design, and to the kinds of glasses birders would come to prefer, if Hensoldt had not been absorbed by the Zeiss Stiftung.

Acknowledgments

I gratefully acknowledge the many ornithologists and bird watchers, friends and colleagues, unfortunately far too numerous to name here, who, over the years, have patiently let me borrow and study the binoculars they were using. My warm thanks go to premier binocular connoisseur, collector, and author Hans Seeger, who very kindly shared his vast experience with me during my trip to Hamburg in August 2006, and whose critical comments helped to improve this article. My heartfelt thanks go also to my colleague Craig Chesek, of the American Museum of Natural History's Photo Studio, who took the pictures for figures 2–5.

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A 25mm Topogon finder?

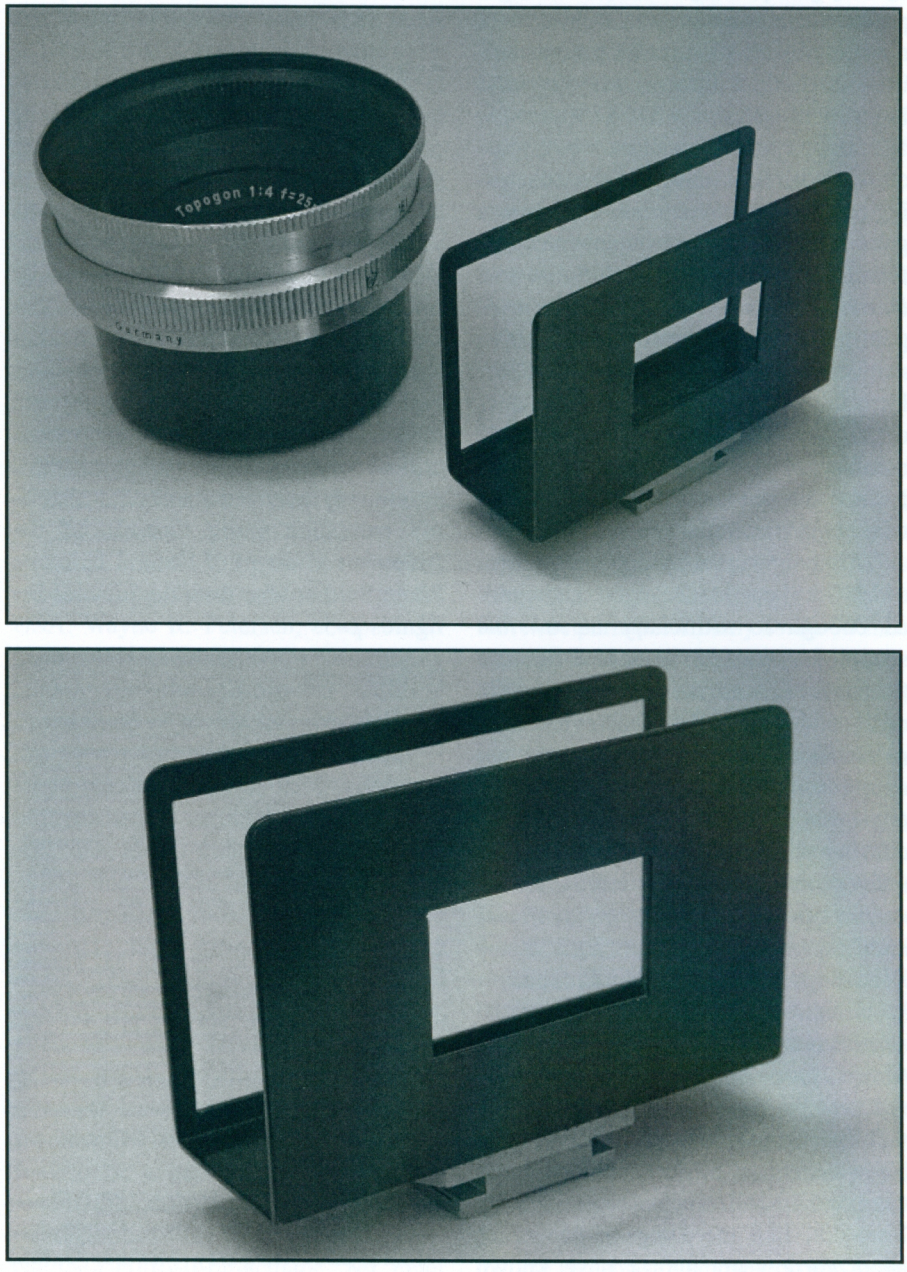
Stefan Baumgartner, Lund, Sweden

Who made this strange direct-vision viewfinder, and why?

When I recently acquired one of the rare 25 mm Topogon lenses made for the Contax, I received not only the lens but also a strange looking viewfinder to go with it (figure 1). At first I was skeptical as to its origin, because I knew of no reports in the literature about a special finder for the Topogon and for the 25 mm range. Rather, the literature told me that there were two well-established turret finders offered within the Contax system, one originating from Carl Zeiss Jena in East Germany (figure 2, left) and one from Stuttgart in West Germany (figure 2, right).

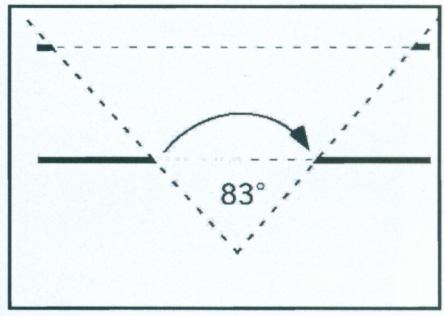
At first sight this odd viewer looks like the frame sport-finder from a collection of Contax D accessory parts, but what definitely does not match are the dimensions. In particular, the front frame has a very much larger cutout and narrower surround than that of the back frame, suggesting a wide-angle view. In order to investigate the angle of view, I measured the dimensions of the diagonals of the viewer and made a scale drawing of it (figure 3). The drawing revealed an angle of 83 degrees. However, taking into account that the viewing eye could be placed some millimeters in front or behind the point where the dashed lines in my drawing intersect, there is some uncertainty in that angle measurement. But the measured 83 degrees comes very close to the reported angle of view of 82 degrees for the Topogon, suggesting that indeed this viewer could have been designed for that lens.

The bottom plate of the viewer (figure 4) shows the "Zeiss Ikon" logo and "Made in Germany," which might indicate that the bottom part of the viewer



The 25mm Topogon kit, as it was acquired. The top view shows the lens and an unknown frame viewer, and the viewer alone appears below. Figure 1

Two turret finders with 25mm viewing field. On the left, an Eastern version produced at Carl Zeiss Jena in the fifties. On the right, the Western version (cat. # 440), produced in Stuttgart, with special adaptation for the 25mm viewing field. Figure 2



Scale drawing of the viewer. The measured angle across the diagonal is 83°, in good agreement to the reported angular field of 82° for the Topogon. Figure 3

Bottom view of the viewer. Note the "Zeiss Ikon" logo and the English text "Made in Germany". Figure 4

was made before the war, as has been suggested to me by Charles Barringer. While the "S" and its sharp corners in "Zeiss" point towards prewar origin, it is unclear from which Zeiss item this part was taken.

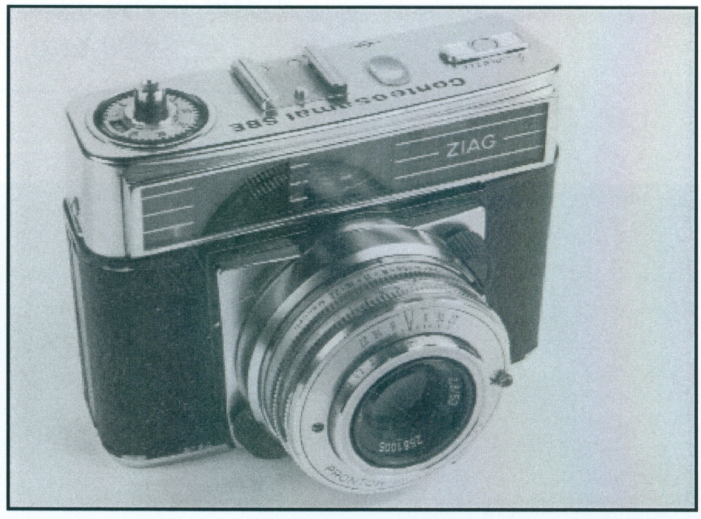
The majority of Jena-produced items carry the logo "Carl Zeiss Jena" as seen in figure 2, left, while some others show the logo "Zeiss Ikon" but with VEB (*Volkseigener Betrieb*, "people's own company") added below the "Zeiss Ikon." Zeiss Stuttgart items, on the other hand, primarily show the "Zeiss Ikon" engraving, as seen in figure 2, right. Moreover, it was only the Eastern company that offered a 25 mm lens, so there seems no need for Zeiss in the West to have developed a special viewer for the competing Eastern products. We should, however, note that Stuttgart offered a version of their turret finder (cat.no.440) with a 25 mm viewing option (figure 2), instead of the normal 21 mm viewing option. These arguments taken together leave me unclear as to whether the Eastern or the Western side designed this viewer.

It could well be that this finder was made as a prototype by Zeiss. In this case, it seems more likely that this finder was assembled in the East after the war, and the bottom part was taken from the large supply of items that survived the war. Finally, we cannot exclude the possibility that it was made by a handy mechanic with no relation to Zeiss.

I would very much like to hear from other Zeiss collectors of the existence of similar looking viewers and/or suggestions as to their origins. I can easily be reached at baumgarts@yahoo.com. ❐

Two interesting ZIAG cameras

Pierpaolo Ghisetti, Modena, Italy



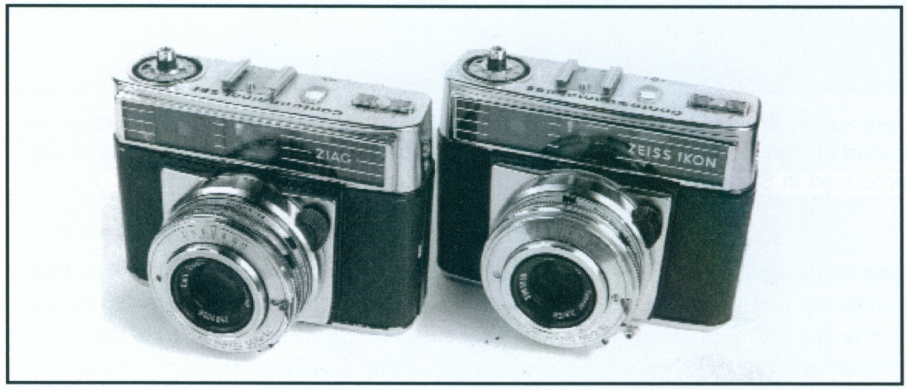
Two ZIAG cameras from Stuttgart. On the left is a Colora, and on the right is a Contessamat SBE. Both were made in 1963.

Recently I found two Zeiss Ikon cameras, both made in Stuttgart in 1963, bearing the "ZIAG" nameplate rather than the familiar Zeiss Ikon logo of the period.

One is a simple Colora with a Novicar lens; the other is a Contessamat SBE with a Carl Zeiss Tessar. In each case the ZIAG cameras are otherwise undistinguishable from their Zeiss Ikon counterparts, as my illustrations show.

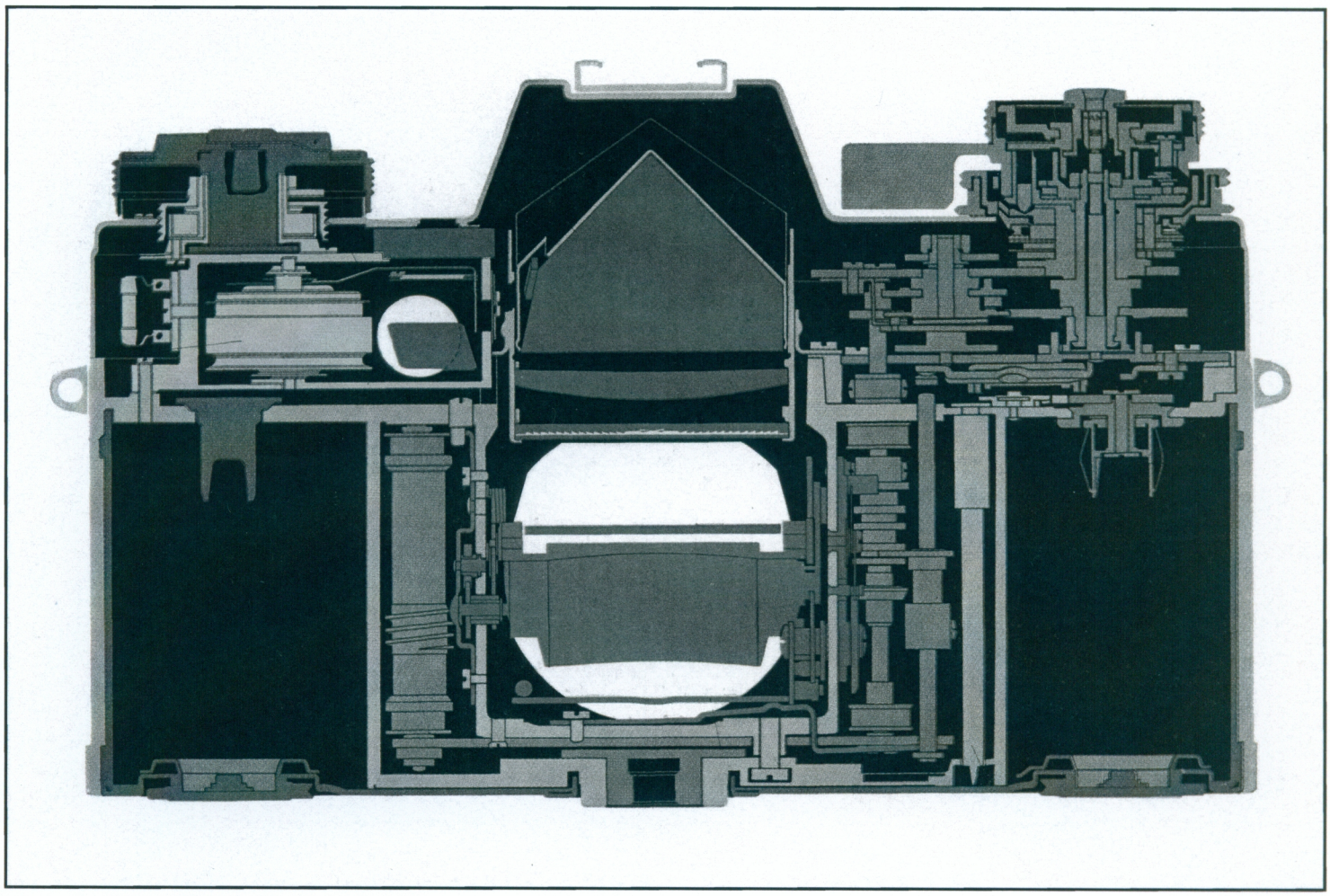
"ZIAG" is an acronym for "Zeiss Ikon Aktien Gesellschaft," — that is, ".... Limited Company." It is well known that western Zeiss had trademark problems with distribution in eastern Europe at that time (as did VEB Zeiss Ikon, Dresden, in western markets), and several alternative designations were used by both sides, especially when trying to sell into specific areas. Perhaps "ZIAG" was intended for products to be distributed in northern Europe or Austria.

Cameras with the ZIAG mark are of many kinds; I remember the inexpensive Ikomatic and the very expensive Contarex. But the two shown here are the first of their kind I have seen in thirty years of Zeiss collecting. I welcome further information on this topic from readers. ❐



The ZIAG Contessamat compared with the usual Zeiss-Ikon-branded version.

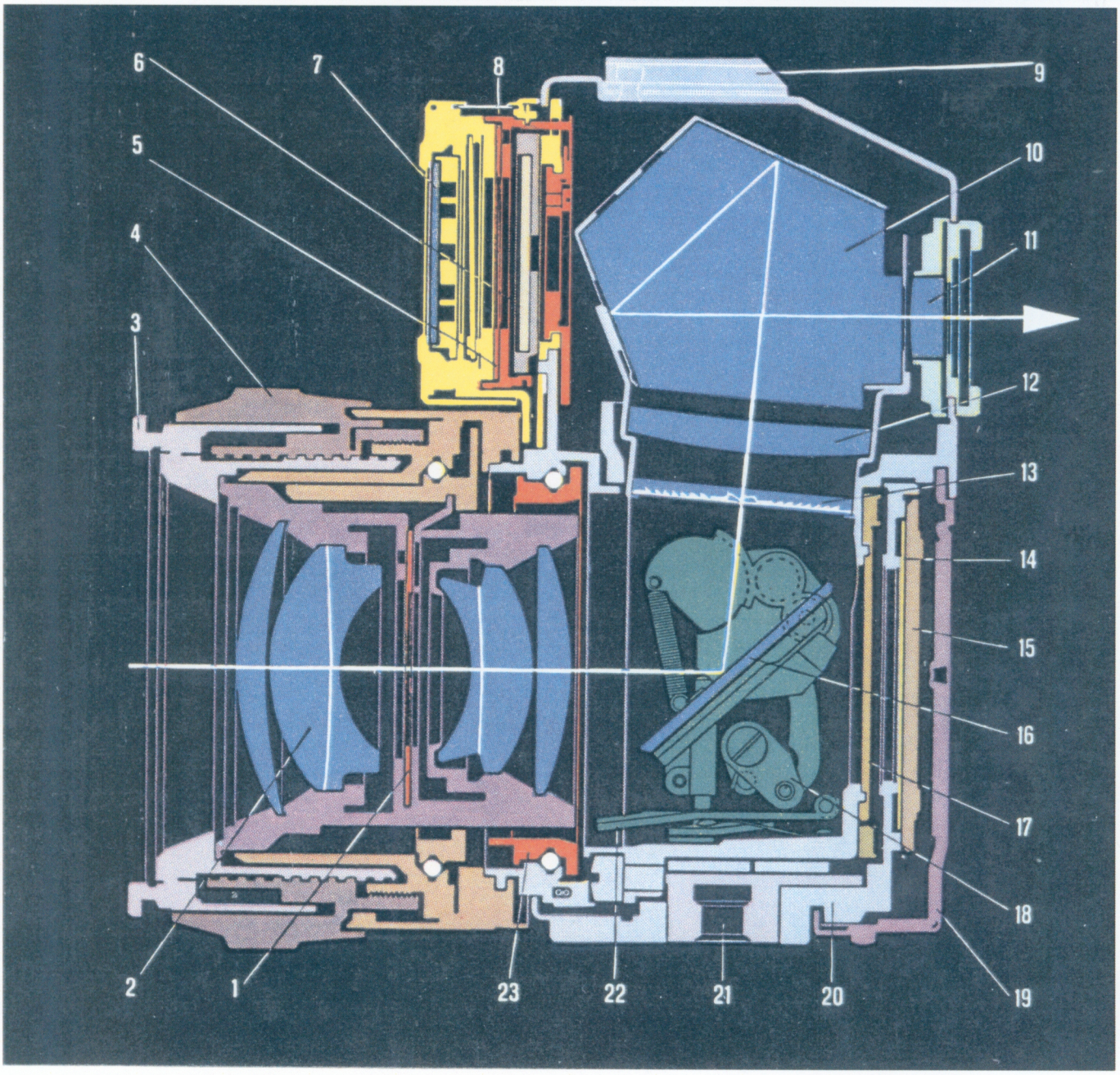
The ZIAG Colora compared with the Zeiss-Ikon version. Note that, although they both have Novicar lenses, the lens on the ZIAG camera is marked "ZIAG," while the other carries the Zeiss-Ikon designation.



The Back Cover illustration is a cross-sectional view, from the side, of the internal parts of a Contarex. Above is a black-and-white version of a similar cross section of the camera, seen from the back. The list below is the key to the numbered call-outs on the colored back-cover illustration.

1. Spring-loaded pre-selector aperture
2. 2 inch (50 mm) Zeiss Planar f/2
3. Bayonet mount for filters and lens hood
4. Milled focusing ring
5. Iris diaphragm of exposure meter
6. Selenium barrier-layer cell
7. Light baffle
8. Aperture window
9. Accessory shoe
10. Pentaprism
11. Eyepiece
12. Field lens
13. Fresnel lens with split-image rangefinder and fine-grain screen ring
14. Film
15. Pressure plate
16. Mirror
17. Focal-plane shutter
18. Gears for operating mirror
19. Camera back
20. Camera body
21. Tripod bush
22. Mirror release
23. Coupling of pre-selector iris.

Both illustrations are from the collection of Larry Gubas, whose article on the Contarex appears on pp. 5 – 10.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