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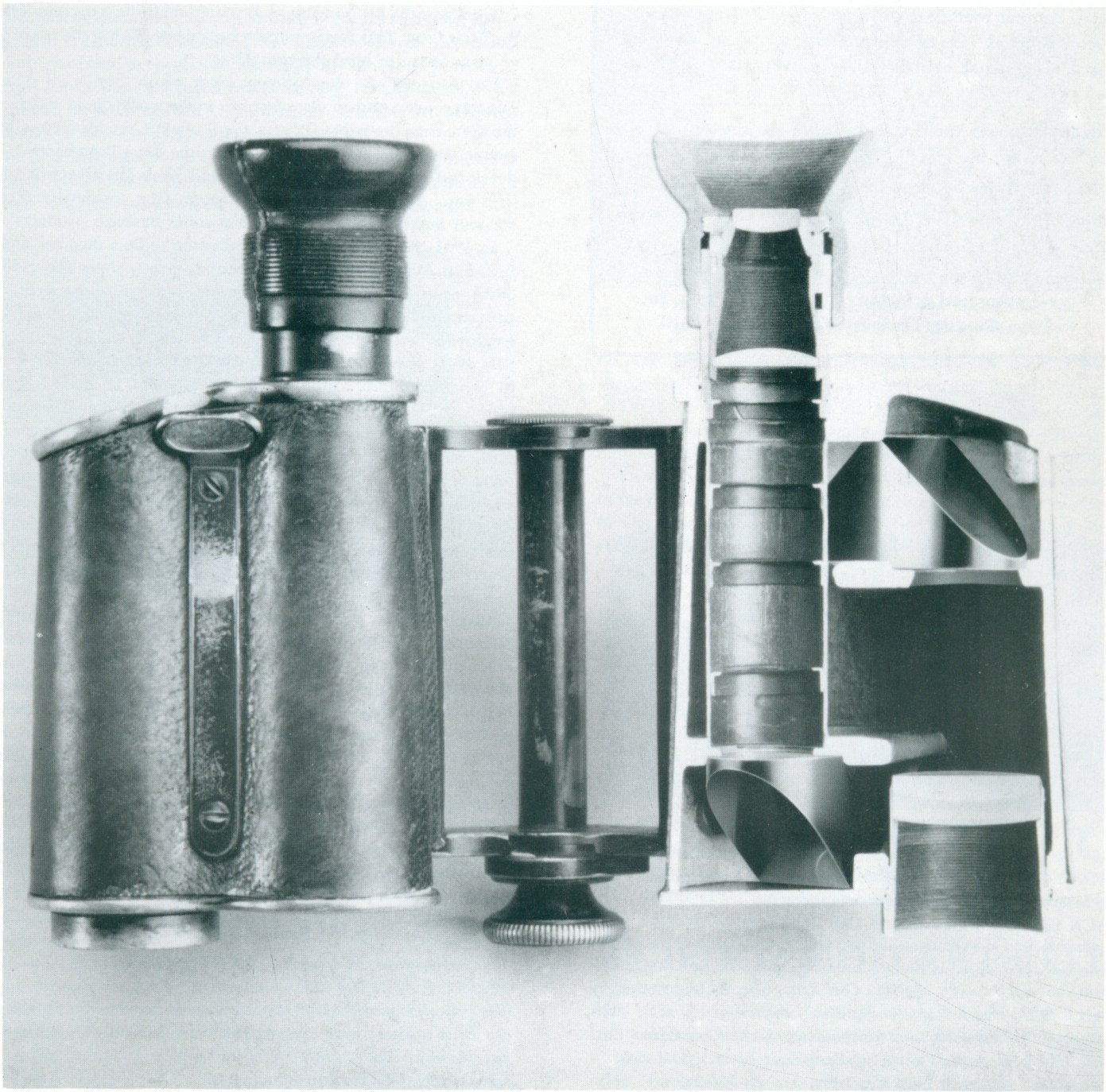

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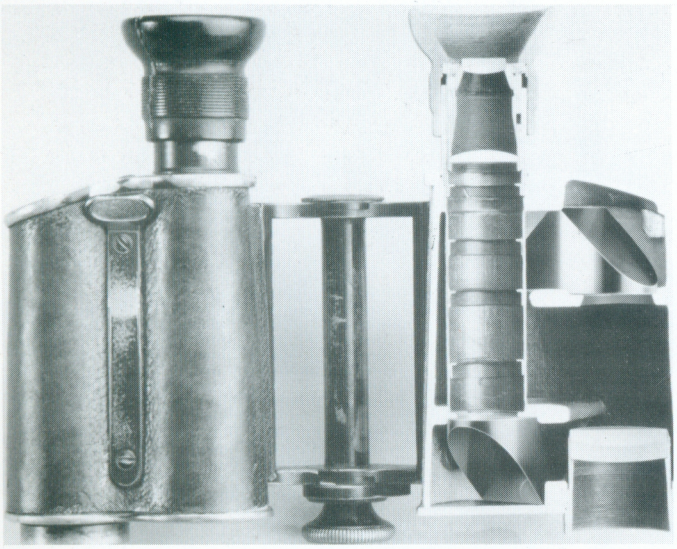


ON THE COVERS

FRONT COVER: Cutaway of the 1896 Zeiss 8 x 20 Fernglas showing internal baffling and prism arrangement.
BACK COVER: Milestones in Carl Zeiss lenses.

ILLUSTRATION SOURCES

Front and back covers, courtesy Carl Zeiss, Oberkochen. • Mystery lens photos, Samuel Sherman. • Zeiss in Hungary photos, Nick Grossman. • Zeiss binocular illustrations, Larry Gubas and Carl Zeiss, Oberkochen. • Century of Carl Zeiss Lenses, Carl Zeiss. • Lichtstrahlen photos by Nick Grossman and the Editor.

MORE ON KUEPPENBENDER

On July 4, 1989, those having anything to do with anything Zeiss were saddened to hear that Dr. Heinz Kueppenbender had died at the age of 88 in Heidenheim, West Germany.

Dr. Kueppenbender joined Zeiss immediately after receiving his Doctorate in Engineering in 1927. He had successfully worked for two years in Jena but was quickly moved to head the design department of Zeiss Ikon, a subsidiary of the firm in Dresden. Under his leadership, the golden age of Zeiss Ikon camera development occurred.

He first trimmed the catalog of the companies which were combined in 1926 from more than 200 to 50 or so cameras. He then began an investment in the design of totally new cameras such as the Contax and Contaflex TLR. He was responsible for the acquisition of technical staff, the direction of designs, and personally devised many of the technical elements of these designs.

Significantly, he found men who could carry ideas to completion for Zeiss Ikon. This was important because in 1932, at the age of 31, he was chosen to head the company.

He managed the development of a whole family of 35mm cameras that no camera manufacturer in the world could match. At the same time the Super Ikontas, the Ikoflexes, the Movikons, and simpler cameras came to market under the Zeiss Ikon banner. He developed sites at Stuttgart, Berlin and Kiel. He diversified the firm into photo accessories, darkroom, film, professional and amateur movie equipment as well as other business products.

In 1941, Kueppenbender was called on to be a member of the Board of Management of the parent company upon the sudden death of his predecessor. Under his leadership, he kept the company stable under the Nazi government and protected key employees despite their religion and beliefs.

In 1945, he was the key personality taken by the American Army to Heidenheim to continue the development of Zeiss military products for the American government. He was able to establish the firm again in the West with little capital and a reduced technical staff. He and his technicians were able to reorganize the firm regardless of total Russian appropriation of its major holdings in what became East Germany, despite a supply-poor West German economy. The technical wizardry of Kueppenbender and his scientists brought Zeiss and Schott back to life in the years after the War, and brought the firm back to the industrial prominence that it had gained under Ernst Abbe and Carl Zeiss.

Kueppenbender piloted Carl Zeiss for nearly 31 years until his retirement in 1972. A sad part of his last work for the firm was the dismantling of Zeiss Ikon as a camera manufacturer. He did this by absorbing most of the workers into other parts of the Zeiss organization. Nevertheless, he turned the firm over to well-trained new management as a major scientific and optical organization. He was always true to the spirit and the rules of Ernst Abbe's Carl Zeiss Foundation.

His designs and products are one of the major reasons that we admire the firm so much.

Larry Gubas

APOLOGIES TO JOHN MORRIS

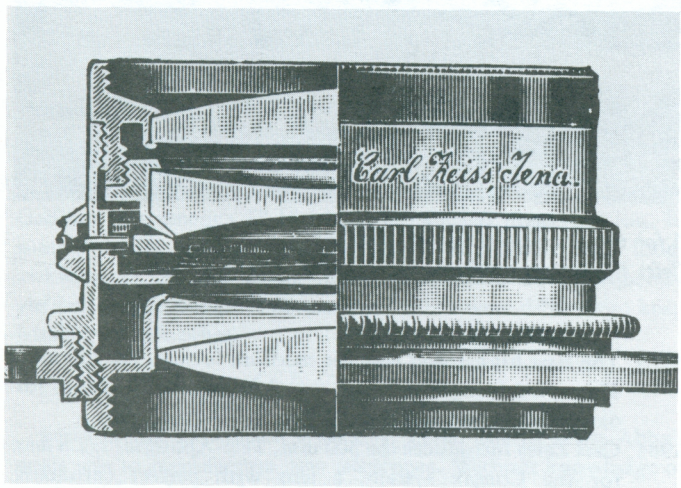
The Editor regrets the lack of proper credit for the photographs of the Zeiss military mast telescope on page three of the last issue of the Journal. They were made in London by John Morris of Springfield, Virginia.

A CENTURY OF CARL ZEISS CAMERA LENSES

Since the discovery of photography by Daguerre in 1839, lenses have always played a vital role as the link between the real world and the image. It is therefore only natural that the interest of photographers focused on improved image quality, higher speed and wider field angles or else longer focal lengths — and that these criteria have been starting points for optical designers.

Because of the limited choice of optical glasses available, it was not until Otto Schott developed new glass types with previously unknown optical properties in the 1880s that it became possible to design lenses with enhanced image quality. At Carl Zeiss, Ernst Abbe and the scientist Paul Rudolph made use of this new potential and started developing new types of lenses.

In 1889, Rudolph designed the Zeiss Anastigmat lens which was series-produced in the following year. It was the first camera lens in which spherical and chromatic aberration, astigmatism and field



Zeiss Tessar designed by Paul Rudolph in 1902.

curvature were corrected at the same time — a milestone in the history of photography. Its image quality was so superior that 100,000 lenses of this type were sold worldwide within 10 years. In 1900, the Zeiss Anastigmat was christened Protar, a name protected by a patent.

In 1896, Zeiss introduced the Planar, another lens designed by Rudolph. This lens combined almost perfect field flattening with a high correction of other image defects. Owing to its 8 glass-to-air surfaces (6 elements in 4 groups), however, contrast rendition of the Planar was unsatisfactory. The full potential of this design could not be fully exploited until anti-reflection coating was developed at Zeiss.

In the search for a lens with fewer glass-to-air surfaces but with approximately the same performance as the Planar, Rudolph came up with his masterpiece in 1902: the Zeiss Tessar lens, a triplet consisting of 4 elements in 3 groups.

The Zeiss catalogue of 1907 states, "Despite its simple design, the Tessar displays such a perfect correction of image defects that

Busts of (l. to r.) Abbe, Zeiss, and Schott stand in the lobby of the Zeiss plant in Oberkochen today.

no other lens provides the same speed along with the same image sharpness, field flattening, orthoscopy and brilliance".

The Tessar was also called "the eagle's eye from Zeiss". Camera manufacturers all over the world used the Tessar design and the number of Tessar lenses supplied by Zeiss runs into the millions.

These three designs helped Carl Zeiss achieve a leading position in the field of camera lenses in a very short time. A large number of further pioneering achievements from Carl Zeiss followed which contributed significantly to the development of photography. Only a few lenses can be mentioned here from a total of 100 years of lens design:

1929 Carl Zeiss introduces the Biotar f/1 and f/0.85, the first lenses with such a high speed. They are mainly used in X-ray photography.

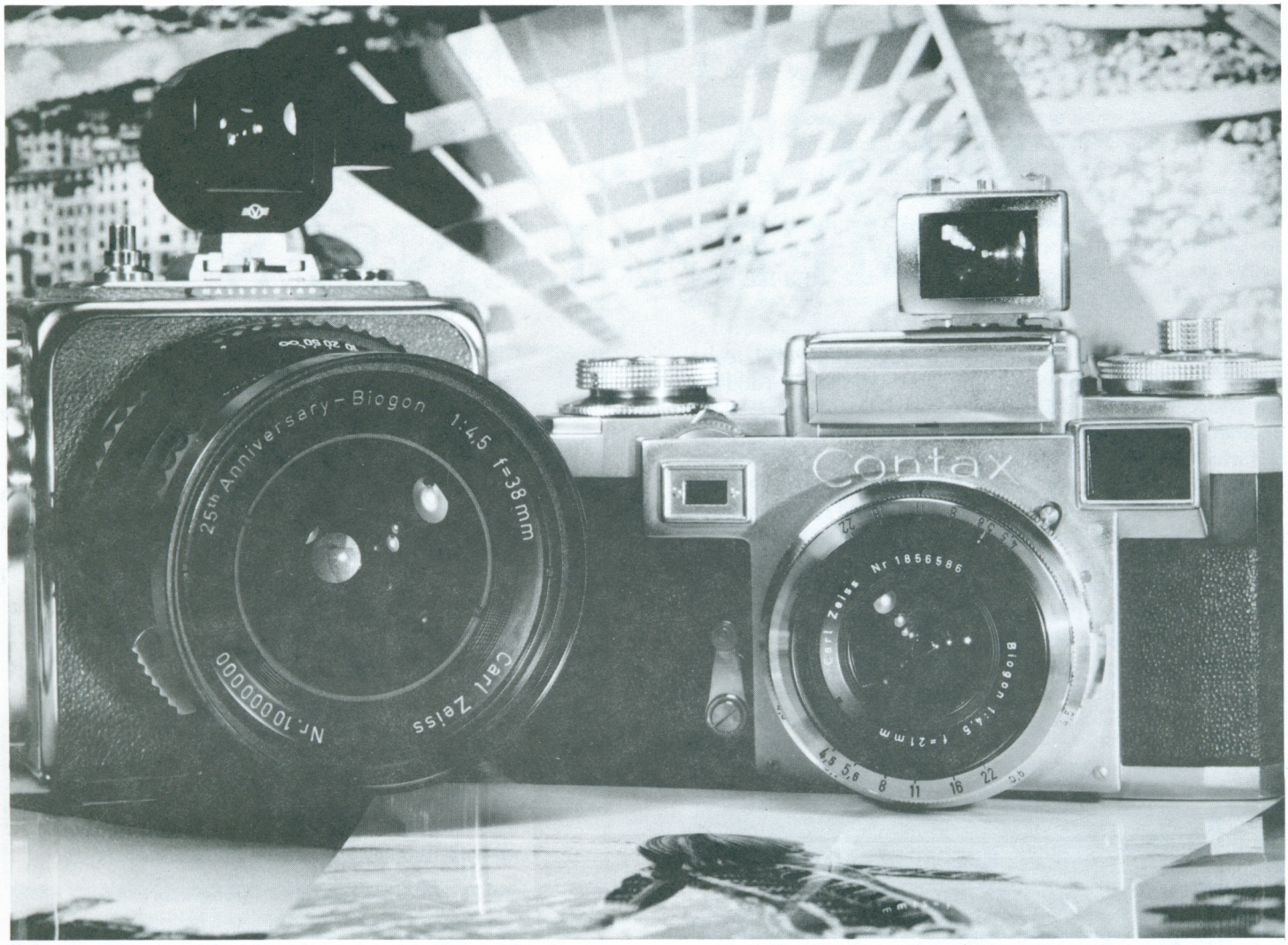
1932 The Zeiss Sonnar f/2 and f/1.5 lenses considerably extend the range of application of 35 mm. cameras. These lenses, designed by L. Bertele, provide high speed along with superb image quality.

1935 Professor Smakula at Zeiss develops a procedure to reduce the reflection of glass-to-air surfaces, a fundamental advance in the field of optics. Zeiss is granted a patent on this method of anti-reflection coating. Optical designers are no longer forced to minimize the number of glass-to-air surfaces in lenses. This provided the conditions for the design of all modern lens types.

1940 A 400 mm. lens with an initial aperture of f/1.5 is developed and built at Zeiss for military purposes. This lens is a Sonnar variant.

1954 The Zeiss Biogon f/4.5 lens designed by L. Bertele is an extreme wide-angle lens with unprecedented and as yet unsurpassed image quality. Its field angle is 90°.

1963 Twenty-one new lenses from Carl Zeiss are presented at



Two super-wides from Zeiss: 21 mm. Biogon f4.5 for Contax (right) has 90° field of view, was introduced in 1954; 38 mm. Biogon (left) is used on modern Hasselblad.

Photokina. These include the 35 mm. Distagon f/2 lens for the Contarex and the first high-speed catadioptric lenses for 35 mm. and 6x6 cameras: the 500 mm. Mirotar f/4.5 and the 1000 mm. Mirotar f/5.6 lenses.

1964 40 mm. Distagon f/4 lens from Carl Zeiss with a field angle of 88°, the first super-wide-angle lens for 6x6 reflex cameras.

1966 Premiere of a striking new type of lens: the 15 mm. Hologon f/8 from Carl Zeiss for the 24x36 mm. format. With only 3 elements, superior image quality along with a field angle of 110° is achieved. In the same year, the 50 mm. Planar f/0.7 is introduced which is still the fastest camera lens in the world.

1968 The first super-wide-angle lens with a field angle of 100° for 35 mm. reflex cameras: the 18 mm. Distagon f/4 from Carl Zeiss.

1972 The first ultra-wide-angle lens with a field angle of 110° for 35 mm. reflex cameras: the 15 mm. Distagon f/3.5, a design by E. Glatzel.

In the same year, Carl Zeiss introduces the first telephoto lens with virtually perfect chromatic correction including the secondary spectrum: the 250 mm. Superachromat f/5.6 lens for the 6x6 Hasselblad reflex camera. This was achieved by using calcium fluoride crystals for one of the lens elements.

1976 The first high-speed lens for medium format, the 110 mm. Planar f/2 from Carl Zeiss, opens up new possibilities for 6x6 reflex cameras.

1984 Carl Zeiss introduces the 300 mm. Tele-Apotessar f/2.8 lens for the Contax system, a lens with perfect chromatic correction. The 100 mm. Makro-Planar f/2.8 from Carl Zeiss is the first macro lens with a long focal length that can be continuously focused from infinity to a reproduction ratio of 1:1. A floating element ensures high image quality throughout the entire focusing range.

In 1989, the 150th year after the inception of photography, a revolutionary development is taking place: the age of electronic image recording has begun. This makes the photographic image, the most important information carrier of our time, available immediately after exposure. The image can then be transmitted worldwide via wire or radio. Amateur photography will also change dramatically. But regardless of the way in which a picture is recorded, a lens will always be needed to produce it.

Editor's note: this article is a slightly abridged version of one supplied by Carl Zeiss, Oberkochen.

ZEISS BINOCULARS

Larry Gubas, Edison, New Jersey

Before examining the Carl Zeiss Foundation's successful commercial introduction of prism binoculars in 1895, it's important to understand the state of telescopes and other observation instruments of the time. Only thus can one appreciate the tremendous optical breakthrough that prism binoculars really were. Today, viewers of western movies see prism binoculars — not field glasses — in the hands of actors without realizing what an anachronism is appearing before their eyes.

Early Telescopes

The telescope is a relatively modern invention. The first one was devised in 1608 by a Dutch spectacle-grinder named Johann Lippershey. News of this invention spread to Italy within the same year that Galileo devised a similar instrument. (This instrument appeared properly in the pirate encounters depicted in movies of the 1930s and 40s — but only if shown as a single tube instrument.)

The first evolutionary change — to twin tubes — came in 1823. However, the magnification with twin tubes was not very great. Such intruments rarely exceeded 4 or 5 power magnification. Galileo and other astronomers used these telescopes to observe the planets, satellites and other heavenly objects, where the upside down and reversed image was of little consequence. But as originally designed, this type of image was very distracting for other uses. Fortunately, with a negative lens between the objective and the eyepiece, such instruments became useful for terrestrial observation, and were very effective in the warfare of the period.

The introduction of the prism both erected and unreversed the image. It permitted this in an instrument 3-5″ long, versus the Galilean instrument's 12-15 inches for similar magnification. In summary, the Galilean instruments (field glasses) were long, awkward to use and often out of adjustment. They frequently yielded double images, because their tubes were difficult to keep parallel to each other.

Abbe's Prism

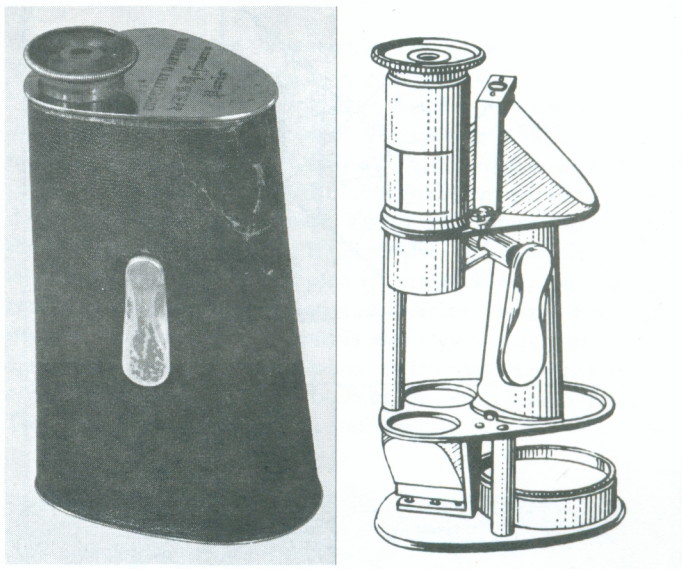
Early in his association with Carl Zeiss, one of Ernst Abbe's goals was to manufacture new telescopes. Without knowledge of the English and French prism patents granted to the Italian, Ignaz Porro in 1854, Abbe created detailed designs and prototypes of small hand telescopes as early as 1870. In 1873 one of his prototypes appeared on exhibition in Vienna. Abbe conducted all of his prism research independently. Nevertheless, production could not seriously be considered until the early 1890s since the quality of optical glass available and the manufacturing techniques of the era were inadequate.

Although dual Galilean glasses of various types had been available since 1823, the monocular form prevailed. Usually the exterior of these monoculars (and later, opera glasses) consisted of exotic materials like ivory, mother-of-pearl or fancy painted enamels and gilt. Carl Zeiss included a sample of a typical low-power opera glass in his 1851 sales program, but it is unlikely that these were manufactured by Zeiss.

Emil Busch in Rathenow, Germany manufactured a Porro-styled monocular in 1865, as did J.G. Hofmann (1862), A.A. Boulanger (1859), and C. Nachet (1875). None of these instruments found success or even publicity as evidenced by the well-read Abbe's lack of knowledge about Porro's prisms. Abbe also designed another small Galilean hand telescope (4x) for Zeiss in 1879, but it, too never reached production.

Breakthroughs in Glass

The production of hand-held prism glasses became possible in the late 1880s. As with every Zeiss breakthrough and success of this period, new glass formulas from Otto Schott, striae-free and with low dispersion effected the change. Light transmission remained about the same. The result was a dramatically new instrument,

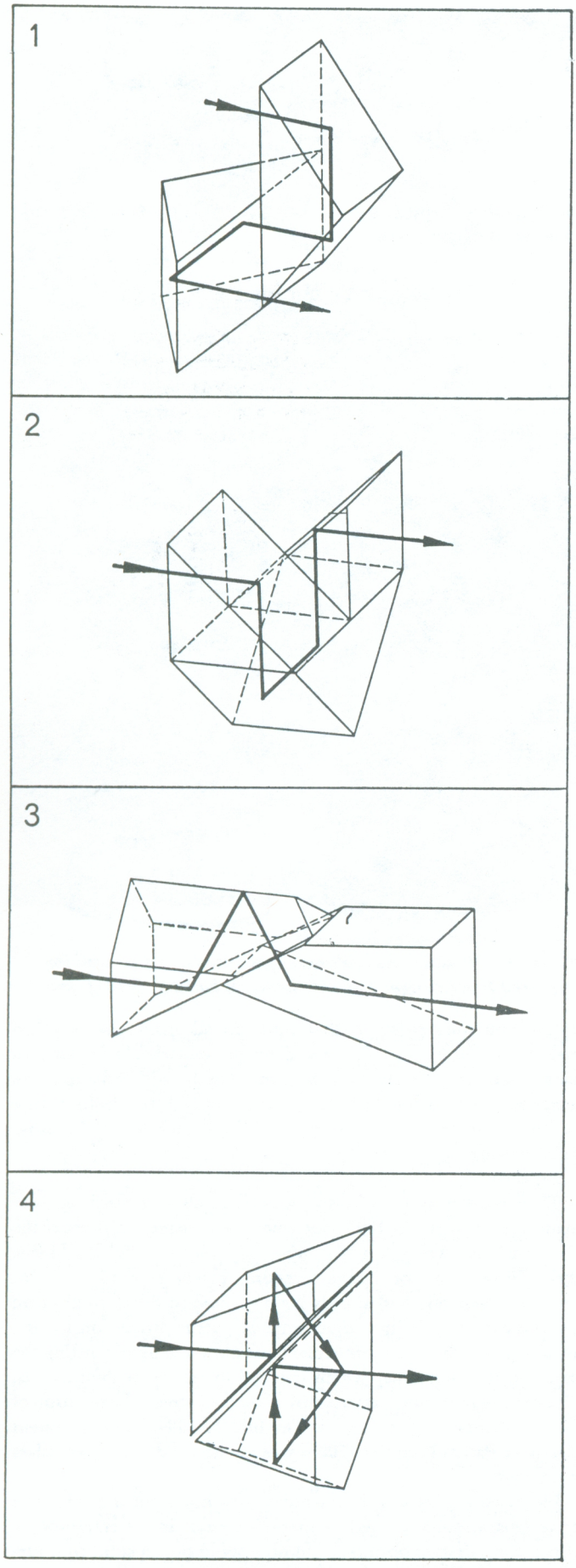


Hofmann's 1862 monocular was produced in Paris; used improved Porro design. 15 x 24 instrument had 2.3° field of view.

unlike any used prior to that time. In addition, the practical manufacturing experience gained by the remarkable increase in Zeiss microscope production (beginning in the mid-1880s) and the temporary association with Voigtlaender in 1890 for the first stage of Zeiss photographic lens production, strengthened the Zeiss Foundation's capabilities for superior manufacturing design and technique.

The first serious plans for staff and materials for prism binocular manufacture began in 1892. But when Zeiss made inquiries of the German Patent Office on November 17, 1893, they were told that their "invention" of image-reversing prism systems was not unique. The patent had already been granted to Porro in England and France. Zeiss's immediate goal of patent protection for the advantages of their new binoculars was obtained by rewording the patent text in a manner which reduced the scope of their claims. The revised text concentrated mostly on the increased separation of the objectives in their device. On July 5, 1894, the new patent (German Patent Number 77086) was granted and Zeiss binoculars were born.

Increased separation of objectives was not a small point. The wide separation permitted dramatic increases in the stereoscopic effect. Even distant objects could now stand out in solid contours against the background. In their advertisements from 1895 through the 1930s, Zeiss termed this remarkable new contrast the "plastic effect".



Prism systems for image reversal. (1) Porro, first type. (2) Porro, second type. (3) Abbe/Koenig. (4) Hans Schmidt, 1899.

The two triangular prisms actually acted as four reflecting mirrors, with each prism reflecting the light beam twice. The prisms folded up the optical system into a much shortened and more compact instrument. They also turned the image right side up, eliminating a space-wasting and image-darkening erecting lens.

True, there was some loss of light transmitted due to the increased number of prism and objective glass surfaces. But Zeiss's new glasses demonstrated an incredible improvement over contemporary Galilean glasses. Additionally, the new Zeiss binoculars overwhelmingly succeeded in increasing the field of view, making it easier to locate the object of interest via the glass. Also, the new product allowed a more even distribution of light as it passed through the instrument.

The 1894 Catalog

In 1894, Zeiss's first catalog was published and the delivery of production binoculars began. Each was delivered with a stiff leather case with a shoulder strap. Their success was immediate. Three models were produced:

Size	Field of View	Price
1. 4 x 11	9	120 Marks
2. 6 x 15	6	140 Marks
3. 8 x 20	4.7	160 Marks

Size = magnification x objective diameter

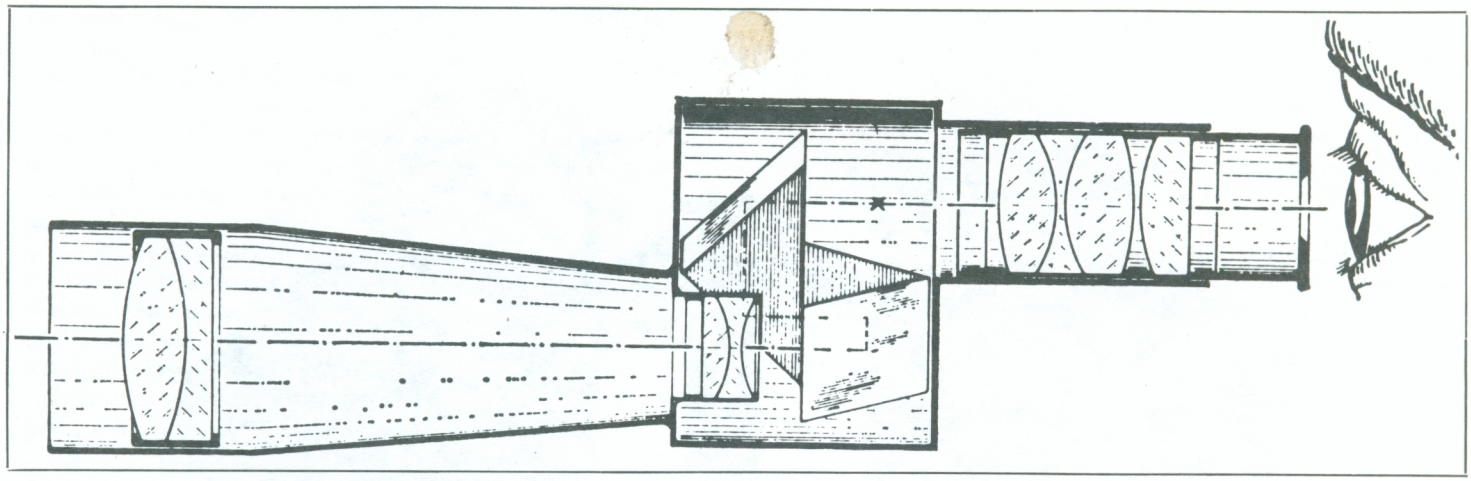
These glasses displayed such novelty in construction and design that Zeiss offered for sale a special demonstration model of the prism and lens combinations. For showcases as well as for teaching models for universities, these models provided instruction in the new properties of these optics. Famed Zeiss scientist/manager and Abbe's personal assistant, Siegfried Czapski went on an extended lecture tour to illustrate these developments. The original 1873 prototype of the prism telescope that Abbe had taken to Vienna for exhibition was repaired in 1894 and used for demonstrations on this tour.

Of course, there were difficulties in the manufacturing process as with any new product. Hand-polishing of the prisms was a Zeiss requirement that insured the quality of the image. Another difficulty lay in the exacting manufacturing tolerances for the individual mechanical and optical components. Czapski credited Jakob Heckel, the foreman of the binocular assembly workshop, with the development of many useful production adjustment processes which later spilled over into the fast-growing number of other Zeiss products. The first production prototypes were ready in the summer of 1893 (before the initial patent application). In the first year of manufacture (1894-5), sales of the binoculars grossed an impressive 187,000 Marks.

Czapski published the entire theory behind these binoculars as well as another family of "binocular stereo telescopes". Six consecutive issues of the "Central Zeitung fuer Optik and Mechanik" (a Berlin-based bimonthly optical industry technical newspaper) from January through March of 1896 carried his articles. For those interested in binoculars and who read technical German, no better exposition of the knowledge gained as part of Abbe's exercise in this design effort with Czapski exists.

All of these original binoculars were marked "Feldstecher" regardless of the country for which they were destined. All of those manufactured before 1902 were embossed (that is, a raised design, not an engraved one) in script letters. On the left bezel of the prism housing "Carl Zeiss, Jena" was on the top and "D.R.P." underneath. On the right bezel, "Feldstecher" appeared on the top. On the bottom was "Vergr. =", followed by the number 4, 6 or 8.

After 1902 all of the versions of these designs were also embossed with the now familiar "Carl Zeiss" and "Jena" in joined lens cells



Abbe's prism telescope of 1873. A prototype was exhibited in Vienna in that year. It was later repaired and used during Siegfried Czapski's lectures on the principles of prism binoculars.

(the famed achromat). With this new trademark, "Fach" and the magnification power replaced "Vergr. =" plus the number 4, 6 or 8. "Feldstecher" appeared in the upper half of the second twin lens cell, and the number followed by "Fach" appeared in the lower cell on the right bezel.

1899: New Models

Prism binocular catalogs were issued annually at first by the Telescope Department of Carl Zeiss. (These catalogs were prefixed by a T and the catalog number). In a copy of the 1899 catalog (listed as the 5th Edition) new models were offered. I have found nothing in any documents with regard to the special flat folding models which had been patented by Zeiss in 1897, nor any traces of samples. These may never have made it to market.

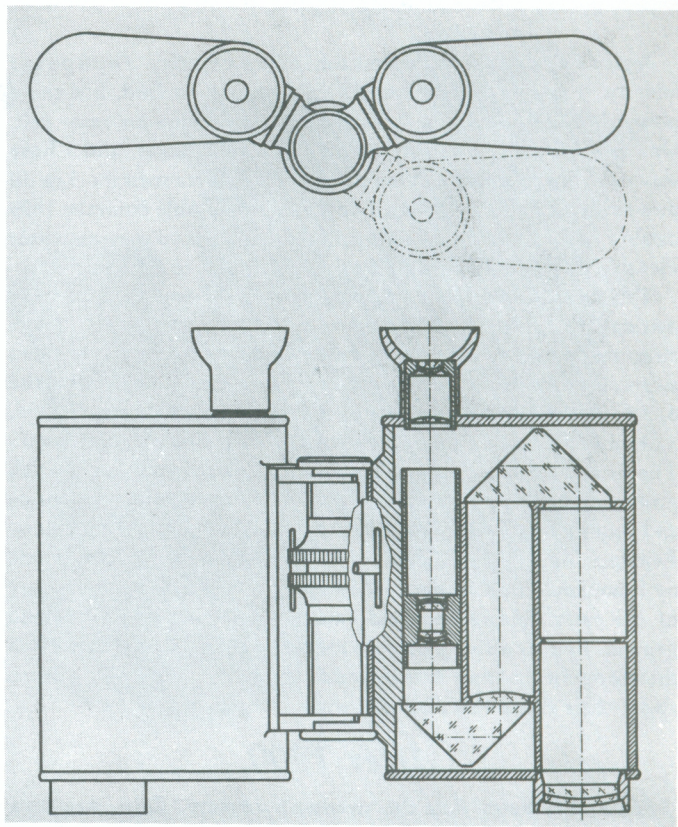
These newer models were significant advances over the original 4, 6 and 8 power offerings, although the names and basic construction did not change. Additional models included a 7.5 power binocular, called a Night Marine Glass in the English language catalog, but noted as a Jagdglas (Hunting Glass) on the body of the instrument. There was also a 12 power model named a Day Marine Glass in the catalog but, again, the actual samples used "Feldstecher" as their trademark. I have not seen samples of the 7.5 Jagdglas nor the 12x Feldstecher with the lens cell trademark, so I suspect they were not manufactured after the first years of the twentieth century. No indication is available to me as to what replaced these binoculars in the catalog available from Zeiss.

Another unique item I have seen pictured a few times but of which I have personally seen only three samples (one in the Zeiss Optical Museum in Oberkochen) is an attractive binocular marked "Marine Glas" on the top of the right bezel and "mit Revolver" underneath. On the lower side of the oculars on the same bezel is "Vergr = 5 & 10". The left bezel has "Carl Zeiss" on top and "Jena" underneath. On the other side of the left oculars, "D.R.P." is embossed. This glass is built in the same style as the original Feldstechers but on a much wider base.

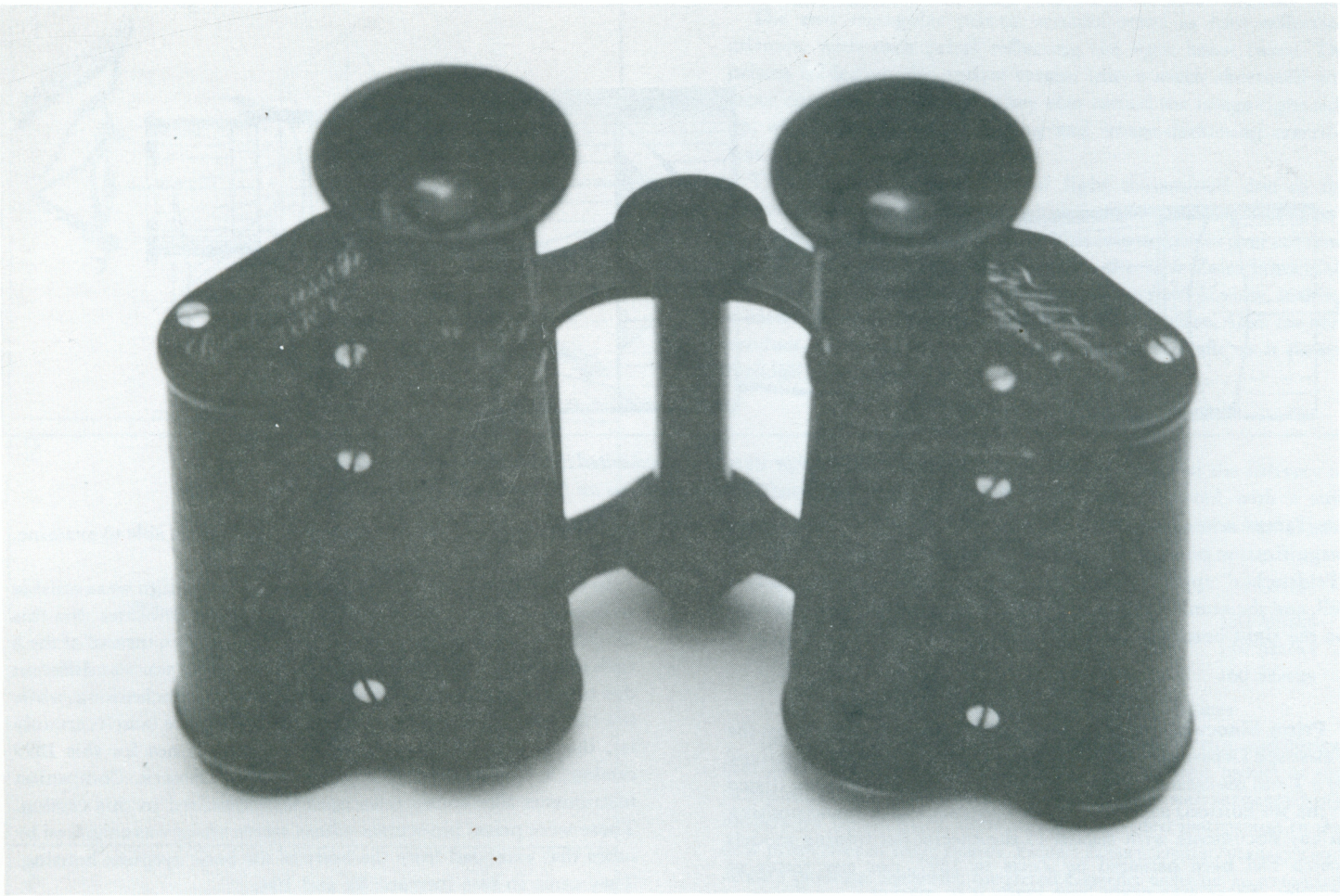
The unique property of these glasses is the dual-revolving eyepieces for both objectives. One eyepiece is a five power magnifier for night use. The other is a 10 power for day use. The wider base is necessary due to the revolver's size since neither eyepiece projects beyond the circumference of the bezel. The prism housing is oval rather than the typical prism shape — a result of the shape of the revolving bezel.

These glasses are heavy at 42 ounces (2 pounds and 10 ounces) but fit comfortably into one's hands. While these binoculars might seem to be restricted to naval or military use, they were sold commercially in the United States. Minor differences also occur in the construction of the three samples I have been able to examine. The highest serial number I have seen is 341.

In addition, the 1899 catalog states that this design was available with only a 5x or a 10x eyepiece. The catalog indicates that this model was not as wide, with only a 6.75 inch span instead of the 8 inch of the revolver. The length of the instrument was also different due to the length of the eyepiece. The 5x was 5.5 inches long, while the 10x was 4.75 inches long. If the revolver is rare (and it certainly is), the 5x and the 10x are each ultra rare. If not for this 1899 catalog, I would not even know of their existence. Companion instruments like stereo telescopes also appeared in this catalog. These were prism binoculars whose stereo effect was enhanced by tubes that extended from the body of the basic eyepiece housing. They came in two formats: 8x and 10x.



The original proposal for folding binoculars, German patent No. 96517 of 1897.



Typical early 8x Zeiss model dating from the 1895 introduction. In pristine condition, it shows the original black paint and raised trademark lettering. Most of these binoculars had bakelite eyepieces, but some had brass.

Again I would like to address the subject of rarity. The 6 power and the 8 power models are difficult enough to find, but the 4 power is much rarer. The 7.5 and 12 power models are rarer still. One may consider the rarity of the revolver greater, and I have found no one who can tell me that they have ever seen the 5 or 10 non-revolver models. Included here is another table from the 1899 catalog noting sizes and weights of these models so you can better identify them should you be fortunate enough to see them.

The initial intention of Abbe and Czapski was to create and maintain instruments of small size and handiness. Nevertheless, after the products were introduced, enhancements made them larger, heavier and less manageable. This can be seen and felt in the 5, 7.5, 10 and 12 power additions to the 4, 6 and 8 powers of 1894.

At this point no competition for the Zeiss binoculars existed . The professional military of all countries preferred them. British professional officers, responsible for supplying their own uniforms and equipment, were particularly fond of Zeiss binoculars. Evidence for this can be found in the Zeiss Historica Journal article by John Gould in Autumn 1986 issue (pp 3-6) which pictures many of the early Feldstechers and catalogs their improvements and growth. British officers captured some of these Zeiss glasses from the enemy in the Boer War in South Africa. They spread the word about their capabilities far and wide.

After 1900

Some five years into the twentieth century, Zeiss was now manufacturing their binoculars not only in Germany but also in limited numbers in Austria (Vienna), Russia (St. Petersburg, now Leningrad) and England (London). In each of these locations, the famous Zeiss lens cell trademark and name were translated into the local language and alphabet. Some years later this also applied to binoculars that Zeiss manufactured in Hungary (Gyor) and the Netherlands (Venlo). In addition, Zeiss had licensing agreements with Bausch and Lomb in the United States, as well as a substantial importing relationship with several American optical retailers: Andrew Lloyd and Co. of Boston and E.B. Meyrowitz in New York. On the examples of Feldstechers sold by these two firms that I have seen, the same embossing style of their own American trademark appears on the housing that joins the two tubes. This seems to be similar, stylistically and texturally, to the Zeiss embossing. I believe it was done at the Zeiss factory. Samples of the Bausch and Lomb Zeiss-licensed products of this era were illustrated by Paul Neupert in the Zeiss Historica Journal, Autumn 1987, pp. 8 & 9. All of the Bausch and Lomb examples I have seen bear the words "Zeiss Stereo" on the bezel.

At some point, in accordance with his charter for the Carl Zeiss Foundation to support the German optical industry, Ernst Abbe agreed to waive the proprietary nature of the patents so that other German optical firms could manufacture their own versions of prism binoculars.

Summary of Major Improvements

In 1900, newly designed eyepieces were manufactured which increased the subjective field of view from 36 to 40 degrees on the basic glasses. In 1907, this was increased further to 50 degrees. In 1920, newer eyepieces based on a design patented in 1917 by Zeiss scientist Dr. H. Erfle gave a 60 degree field of view. These Erfle

types were noted by the codeword or trademark prefix "Delt" as in "Deltrintem."

Zeiss did not manufacture their first center-focusing binoculars until 1910. Nevertheless, samples of Bausch and Lomb-licensed Zeiss binocular products did seem to offer such center-focusing glasses. This shows a strong Zeiss commitment at that time to what they considered the best design. This was the specific language they used in product literature: "separate diopter controls of each eyepiece" were "separately adjustable for the user's eyesight to allow for the frequently existing dissimilarity of the eyes". Once they announced center-focusing models, they took great pains to state that this was done with only a 2-ounce addition to the weight of the entire instrument. As a matter of practice, they continued the dual-focusing instruments as well as the center-focus models through World War II.

With regard to other major advances, most of the metal orginally used for construction of the housings for these prism glasses was brass and zinc. But in 1933, Zeiss began to use some light-metal alloys. This was due to two factors: for many years, the new alloys like aluminum were less rigid and 2 to 3 times more expensive than brass. (From time to time, however, Zeiss did use early forms of plastic and aluminum-based alloys. External parts and military glasses had different specifications which required lighter alloys).

In 1935 anti-reflection coatings developed by Zeiss staff scientist Alexander Smakula began to be used on interior surfaces of military products in the Zeiss line. This process (T coating) was kept a state secret during the war years. T coating permitted the use of more lens surfaces in designing the models which became prevalent after the war.

In addition to many of the glasses noted, several earlier binocular designs which Zeiss had considered were produced only as prototypes. Examples can be found through a thorough review of patent information.

On May 27, 1896, for example, Zeiss filed a patent application for a special flat folding binocular (German patent 96,517) which was never produced for sale. These models also offered a magnification change by shifting an image-reversing lens system. Another later flat 8x model was named Teleplast.

I have some indications that two smaller models of the 3x and 5x Teleplast design were also marketed. (The original model had enlarged objective distances and an 8 power magnification). These reached the market in a very limited way in 1905, but with limited production, and were abandoned within a few years.

Samples of these binoculars are so rare that even the Zeiss Museum in Oberkochen shows only a sample of the 3x version. This version had small prism housings that folded flat, but the objective tube was much larger compared with contemporary models. Since I have no primary documentation on these glasses, I must rely on secondary materials. This Teleplast design was the first Zeiss binocular to use roof prism image-erecting systems.

More modern models replacing the Feldstechers appeared between 1902 and the beginning of World War I. These larger-sized models with larger and brighter prisms became available due to the continuing glass improvements by Schott and Genossen. If possible, look into the pictures in the book, "The Zeissworks" by Felix Auerbach. You'll see many pictures of Zeiss scientists of the period demonstrating optical, sighting and rangefinder products to various German military and governmental officials. I believe that the catalogs issued during these years were either not detailed or, for military reasons, restricted in their publication.

These revolving-eyepiece binoculars are examples of the rare Marineglas shown in the 1899 "Zeiss Prism Binoculars and Stereo Telescopes" catalog. One eyepiece gave 5-power magnification; the other, 10-power.

Carl Zeiss Optical Works, Jena
Zeiss Prism Binoculars
Size and Weight Table 1899

Magnification	Weight	Weight In Case	Extreme Length	Extreme Width
4	13 oz	24 oz	3 inches	5.5 inches
6	14.5 oz	26.5 oz	3.75 inches	5.75 inches
8	15.5 oz	27.5 oz	4 inches	5.75 inches
5	28.5 oz	46 oz	5.5 inches	6.75 inches
7.5	28 oz	45 oz	5 inches	6.75 inches
10	27 oz	44 oz	4.75 inches	6.75 inches
12	26.8 oz	43 oz	4.5 inches	6.75 inches
5 & 10	42.8 oz	67 oz	5.5 inches	8 inches

Carl Zeiss Optical Works, Jena
Zeiss Prism Binoculars
Price and Specifications List 1899

Linear Magnification	Specified Stereo Effect	Transmitting Power	Object Glass Diameter	Objective Field of View		Cost In Marks	Codewords
				Angular Degrees	Linear yards at 1000 yds		
4 Field Glass	1 3/4	12	14 mm	9.3	162	130	Telier
6 Field Glass	1 3/4	9	18 mm	6.2	108	140	Telex
8 Field Glass	1 3/4	6	20 mm	4.6	81	160	Telact
5 Night Marine	2	25	25 mm	6.9	121	200	Telefive
7.5 Night Marine	2	11	25 mm	5.3	93	200	Teleseven
10 Day Marine	2	6	25 mm	3.4	60	220	Teleten
12 Day Marine	2	4	25 mm	2.7	47	220	Teletwelve
5 & 10 Combined Day/Night Marine	2 & 2	25 & 6	25 mm & 25 mm	6.9 & 3.4	121 & 60	275	Telemarine

Carl Zeiss 1895-1939 Prism Theater Glasses Catalog References

Teleater	3x13.5	10			23		27	28						
Theatris	3.5x15							28	29	31	33	35	37	39
Teaba	3x13.5				23			28		31				
Teleperl	3x13.5				23			28	29					

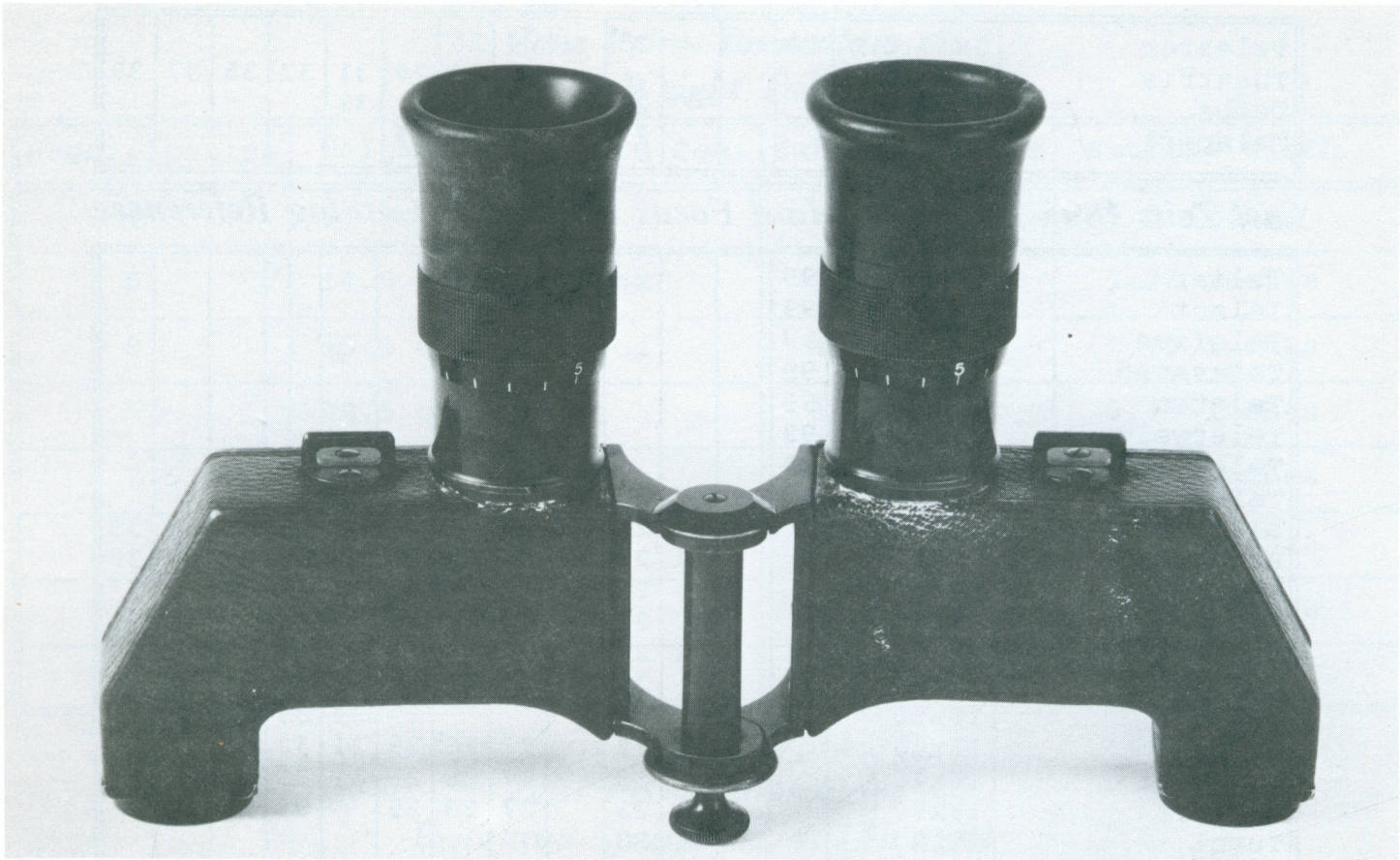
Carl Zeiss 1895-1939 Individual Focus Binoculars Catalog References

Telier	4x	99												
Telact	8x	99												
Telefive	5x	99												
Teleseven	7.5x	99												
Teleten	10x	99												
Teletwelve	12x	99												
Telemarine	5&10x	99												
Telex	6x24	99			23	25	27	28	29	31	33	35		
Silvamar	6x30		16	21	23	25	27	28	29	31	33	35	37	39
Binoctar	7x50			21	23	25	27	28	29	31	33	35	37	39
Turact	8x24				23		27	28	29	31	33	35		
Delturis	8x24				23		27	28	29					
Deltrentis	8x30			21	23	25	27	28	29	31	33	35	37	39
Delactis	8x40				23	25	27	28	29	31	33	35		
Dekaris	10x50								29	31	33	35	37	39
Telonar	16x40				23		27	28	29	31	33			
Telsexor	16x40				23		27	28	29	31	33	35		
Delfort	18x50				23		27	28	29		33			
Turol	4x20		16	21	23									
Stenor	5x12				23		27							
Turex	6x				23									
Dekar	10x50				23		27	28						
Telar	18x50									31	33	35		
Deltar	8x40												37	39
Sportur	6x24												37	39
Stenotar	5x12						27							
Telumact	8x		16											

Carl Zeiss 1895-1939 Center Focus Binoculars Catalog References

Turolem	4x20		16	21	23		27	28	29	31	33	35	37	
Telexem	6x24	10			23		27	28	29	31	33	35		
Silvarem	6x30	10	16	21	23	25	27	28	29	31	33	35	37	39
Turactem	8x24				23		27	28	29	31	33	35		
Delturinsem	8x24				23		27	28	29					
Deltrintem	8x30			21	23	25	27	28	29	31	33	35	37	39
Teletur	6x15	10			23		27							
Turexem	6x21				23	25								
Binoctem	7x50									31	33	35		39
Delactem	8x40									31	33	35	37	39
Dekarem	10x50									31	33	35	37	39
Deltarem	8x40												37	39
Septarem	7x50													39
Delfortem	15x60													39
Telarem	7x50												37	39
Telactem	8x	10												
Telumactem	8x40		16											
Telita	6x18						27	28	29	31	33	35	37	39
Turita	8x24							28	29	31	33	35	37	39

These tables indicate the printing dates of the catalogs in which the codeword/trademark of each binocular appeared.



Rare Teleplast binoculars. It was the first Zeiss instrument to make use of roof prisms, and was sold in small numbers from 1907 to 1909. Hinges permitted extremely flat folding.

Catalog Codewords

A further review of the 1899 catalog codewords shows a strange mixture of naming conventions. The original 4, 6, and 8 power glasses are simply named "Tel", to which is then added a shortened form of the German word for the numerical power. These are "ier" for vier (4); "ex" for sechs (6); and "act" for acht (8). The subsequent models' codewords follow English because of the large export market that developed in the British Empire and the United States. Thus, we see "Telefive", "Teleseven", "Teleten" and "Teletwelve". The revolver is "Telemarine". The other change is that the second "E" in "Tele" now is added.

One of the most popular prewar models, the Teleact, obviously went through many of the typical design improvements which took place prior to the World War I period. These included modifications of the body of the binocular. It became larger, more rounded and was made of thicker, firmer materials. The objectives were of greater diameter and now began to extend further outside the body of the binocular prism housing. The strap or binocular carrying mechanism was no longer a metal attachment to the housing. Rather, strong strap loops were incorporated into the casting of the prism housing portion of the binocular body. This particular modification made the prism holding braces more secure and collimation points more precise. The bodies of Zeiss binoculars were now made of one piece of cast metal. The use of screws was avoided wherever possible to eliminate points of entry for dust and moisture. Most of these progressive changes occurred between 1902 and 1910 as Zeiss redefined the form of modern prism binoculars.

Not long after the 1902 adoption of the lens cell trademarks, codewords became the actual model name and trademark of the various instruments.

As models grew in number a trademark was devised for each design and purpose and was used as the marketing or ordering name. The number and types of glasses grew tremendously. There were separate codewords for opera glasses, bird-watching glasses, touring glasses, marine glasses, terrestial observation binoculars, military, special-purpose glasses and so on.

There are some rationales for the codewords to differentiate these glasses. Wide-angle eyepieces all began with "Delt". "Tele" was a generic prefix; "Dek" was short for "ten" in Latin ("Dekar"); "Silva" is Latin for "forest". But as with serial numbers, there was inconsistency. The primary purpose of codewords was to facilitate cable orders.

Zeiss's longstanding desire for a commercially successful compact flat binocular finally hit paydirt in 1912. A new and very tiny binocular was marketed under the trademark "Stenor" (5x12). These glasses were based on a technical suggestion by A. Gullstrand, a Zeiss affiliate and advisor who was a full-time professor at the University of Upsala in Sweden.

This portion of the product line expanded to some standard-sized products, but there is a peculiar twist that one will not note at first. These designs reversed the perspective of the original Zeiss patent. The objectives were moved very close together and were smaller than the span of the eyepieces. This could first be seen in the Teleater model, a small 3x opera glass. It was available in standard black-painted brass and leather, or as an exotic outfit with a mother-of-pearl (Teleperl) or a lizard-skin covering, with all of the metal surfaces gilded.

The obvious intention was to compete with the ultra-stylish Galilean equivalent, yet continue to produce a Zeiss-quality small prism binocular. This was quite successful. By 1925 the product

line included these samples to appeal to the folding "pocketable" market.

The 1927 and 1928 catalogs show two additional models: the Telita (6x) and the Turita (8x). These compact binoculars had center focus and although lighter than the other Zeiss binoculars, they were still substantially constructed. The hinge joint was specially designed to undergo much hard use.

From the beginning, Zeiss produced monocular versions of almost all of its binoculars. Monoculars appealed to the lower end of the market because they cost about 60% less than binoculars. I can identify 14 different monocular models which were sold during the pre-WWII years. Naturally, all had different codewords. In addition, an interesting monocular, the Turmon, small and flat enough to fit into a shirt pocket, became available in 1923.

In the 1931 catalog, the last version of this attention to flat compact models was shown: the Theatris. It replaced the Teleater since it was more compact. I understand that until recently, this model, in the gilt and leather style, was manufactured in East Germany in limited quantities. All other flat models disappeared during WWII.

After the war, many of the old standard models continued to be manufactured in Jena. But the Oberkochen factory did not sell binoculars directly to the American commercial market until 1954. Then it showed an entirely different and less diversified product line with an entirely new modern silhouette. From this point forward, all designs seem to be center-focus.

Serial Numbers

As with many Zeiss products, serial numbers do not always represent a chronological list of production. They challenge the imagination of the collector seeking rational order. All of the Feldstechers have very low serial numbers which are stamped faintly on the joining units of the binoculars. In fact, I have never seen any samples with numbers over five digits. They are wholly numerical without the alpha prefixes like those found on Zeiss Ikon cameras. I strongly suspect that each model in the early product line may have had its own serial number series. As each improvement to the product line occurred, it was viewed as a new instrument and the serial numbers were restarted, because in the eyes of the factory, changes represented new products.

It seems that beginning with the first trademark models after the Feldstechers, the first use of six digit numbers occurred. This can be seen in the Telact: a transitional glass (8x20) replacing an earlier model but reusing an older codeword which does not appear in the contemporary catalogs available to me. However, I have not been able to pin down any ranges of serial numbers to specific time periods, nor to engraving or embossing practices.

At some point, serial numbers seem to have become chronological. But the mixture of commercial and military glasses and the assimilation of civilian glasses into the military when necessary, makes these serial numbers confusing at best. For instance, they seem to become more chronological in the late 1920s, when Zeiss introduced a new Galilean opera glass, the Galan. Its serial numbers seem to be part of a totally different series of numbers. My sample is marked 24679. Certainly, this is too low for the period so it is either an opera glass (which may make it a separate series) or it is a Galilean glass and may be numbered outside of the prism glass series. Clearly, serial numbers are often not a reliable means to identify the glass's date of manufacture.

Embossing vs. Engraving

More confusion exists in the marking of Zeiss binoculars. In my experience, all other Zeiss products — microscopes, telescopes, scientific instruments, photo lenses and cameras — are all engraved with their trademark and manufacturer's logo. None are machine stamped. With binoculars, however, all of the early specimens are embossed (decorated with an applied or raised design). Starting with WWI military specimens and contemporary commercial models, some are embossed and others are engraved. Many World War II models are stamped to prevent manufacturer identification. Again, there is no discernable pattern to the method used during the period between the wars.

Beginning with WWII, a special identification scheme was devised by the German government. All wartime materials were stamped not with manufacturers' trademarks or names but rather with a series of alpha-coded digits. Here is the most accurate compilation of these codes with respect to Zeiss that I can produce. It corrects some errors of prior optical magazines and military publications.

blc	Zeiss Military Department, Jena.
bek	Hensoldt Works for Optics and Mechanics, Herborn.
bmj	Hensoldt & Sohne, Mechanics and Optics, Wetzlar.
dpv	Zeiss Ikon, Dresden.
dpw	Zeiss Ikon, Goerzworks in Zehelendorf and Berlin.
dpx.	Zeiss Ikon, Contessaworks in Stuttgart.
dzl	Optische Anstalt Oigee, Berlin (a Zeiss low-cost lens-making affiliate).
eug	Optical Precision Work (a Zeiss affiliate in Warsaw).
lmq	Carl Zeiss, Jena.
rln	Carl Zeiss, Jena.

Note: The period after "dpx." is intentional since the mark might be interpreted as "xdp" if viewed upside down.

Counterfeit Products

Unfortunately, over the past few years more and more counterfeit pre-WWII Zeiss binocular specimens have appeared. Some seem to have been manufactured for sale in the past, but others have been created for the current collectors' market. Carefully examine any prospective purchase. Know the Zeiss items that you wish to purchase. In at least two instances, I have seen Zeiss codeword trademarks placed on glasses of the wrong size! Along with this article, you will find a summary list of known Zeiss trademarks, their catalog appearances, dates, and their magnifications and objective sizes for your reference.

Military Products

During World War I, the German army required their optical industry to provide an 8 power Galilean binocular in large quantities. Zeiss was one of several manufacturers (including Goerz, Leitz, etc.) who had contracts for these glasses. They were made of heavy aluminum, had a textured surface applied to the body, and painted a military grey/green. These had a special serial number for contract purposes which bore no relationship to company serial numbers.

Other WWI wartime products seem to have been standard commercial items but are marked with government contract data and have no special coloring. Many of these were marked with "Dienstglas" (Service Glass) plus the magnification power. Some were brass, but others were aluminum — even at a time when Zeiss did not use this metal commercially.

As Zeiss was the most innovative optical firm of the day, many military applications were standard but secret fare in Jena. Zeiss was very much responsible for innovations in trench and bunker binoculars, periscopes and periscope aiming devices, special artillery and rangefinder products, and other breakthrough products during both world wars.

1938 - 1945

During the late 1930s and throughout the war, Zeiss worked

almost exclusively on government projects. Their new products saw no commercial market. Military products were specialty items and far too specialized and expensive for general commerce.

Back issues of the Zeiss Historica Journal show examples in articles by Gene Zartarian and Nick Grossman. These include huge naval glasses which were mounted to decks or weapons systems; special products designed for polar or desert climates, for air or naval use with special lubricants and seals; and specially designed glasses for military purposes (25 x 100, 8 x 60, 10 x 60, etc.,).

Some evidence exists of 200 mm. and 300 mm. observation binocular telescopes. Little concrete data is available to me on these products.

Other Zeiss Companies

When Abbe developed the charter of the Zeiss Foundation, he required that the goals of the Foundation's management must support the German optical industry. Thus, the Foundation lent financial support to other companies during the terrible financial period between the Wars. As a result, Zeiss acquired a controlling financial interest in many other optical firms such as Hensoldt, Goerz, Winkel and Busch. Some of these firms also made binoculars.

These companies operated as independent entities under the general direction of the Zeiss Foundation's board of management. Zeiss's involvement was not publicly well known. Hensoldt, in particular, made a totally different line of binoculars. The most noteworthy were their roof prism binoculars (Dialyt). Although these were exceptional products, Zeiss seemingly made no effort to copy their designs. Since Hensoldt was located in Wetzlar in what would become the Western Zone of occupation, they experienced less war damage. They continued to produce their line of optical products through and after the war.

About 1965 Zeiss decided to absorb Hensoldt into Zeiss itself. Today, all Zeiss binoculars are manufactured in the former Hensoldt plant in Wetzlar. Busch's binocular plant, located in Rathenow, was absorbed into the East German communist optical collective after the war. Goerz and Ernemann binocular efforts ceased when Zeiss absorbed them into the Zeiss Ikon camera organization in 1926-27.

The purpose of this article is not to give a complete summation of Zeiss prism binocular history. Its thrust is to bring some perspective to collectors about the period from 1893 to 1939. Some later data is included for reference and general knowledge only.

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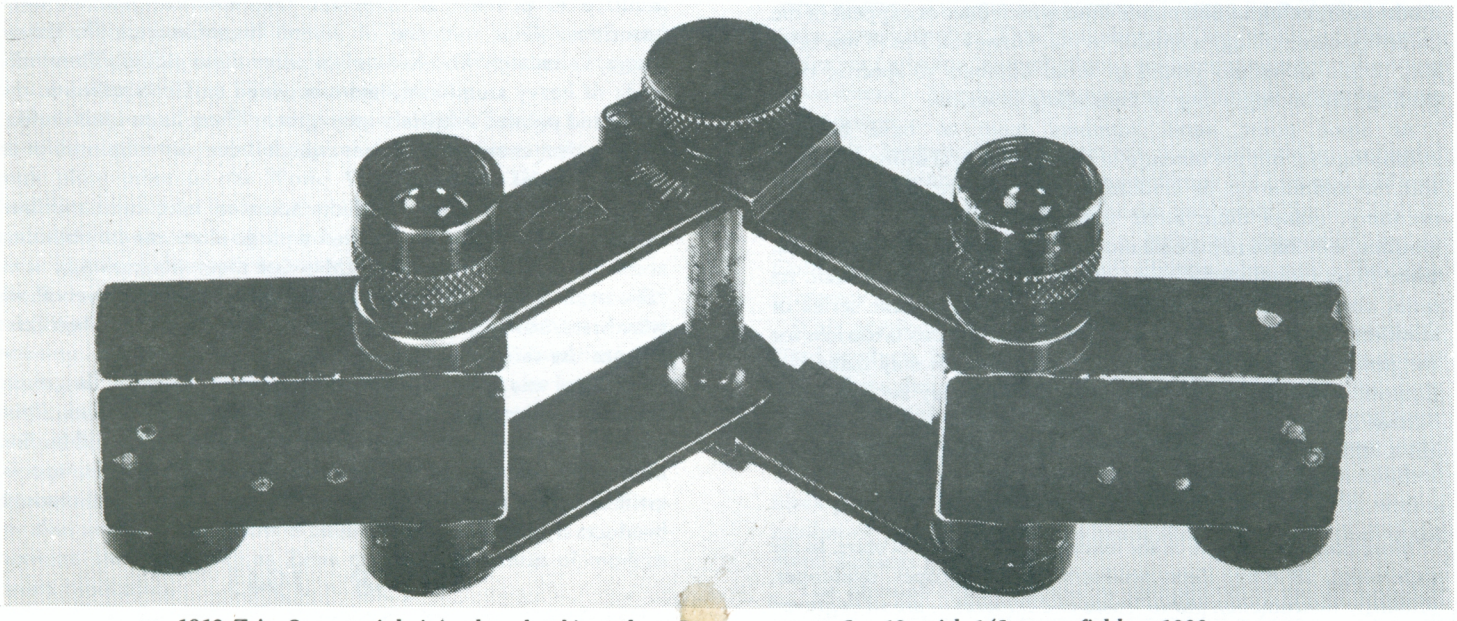


1912 Zeiss Stenor triple-joined pocket binoculars. Instrument was 5 x 12, with 145 meter field at 1000 meters.

ZEISS IN HUNGARY

Nicholas Grossman, Rockville, Maryland

The Concept of Branch Works

Prior to World War I, the Austro-Hungarian monarchy was an important market for Carl Zeiss products. In the Austrian capital of Vienna, Zeiss first established a sales and distribution office and then a plant to assemble Zeiss instruments. In 1911, the Zeiss Vienna branch opened an assembly plant in Hungary, in the city of Gyor (Raab in German). Gyor, located some 85 miles east of Vienna, has been an important transportation and industrial center.

The concept of, and economic reasons for establishing manufacturing and assembly plants outside of Germany, called Zeiss Branch Works, were briefly described in an article by this author titled "Products from Zeiss, Vienna" in the Volume 7, Number 2, Autumn 1985 issue of the Zeiss Historica Journal. That information was based on publications by Friedrich Schomerus, which were identified as such in the article.

A Visit to Gyor

To obtain some factual information about the Hungarian activities of Zeiss, the author visited Gyor in the summer of 1988. The director of the county archives was most helpful and accommodating and made all the documents stored in the archives pertaining to Zeiss available for research. The result was a bit disappointing. In brief, all the records are legal documents. There was no technical or production information in the files, much less a hoped-for catalog or illustrated product listings. Thus the author — tentatively at least — concluded that the Gyor factory was established to fabricate and assemble Zeiss binoculars primarily for the military market.

The author has seen and examined a number of Zeiss prism binoculars bearing the familiar Zeiss trademark logo, inscribed ZEISS KAROLY-GYOR. The original Zeiss plant is still in place, located near the junction point of the rivers Raba and the Lesser Danube.

Copies of the following original Hungarian documents and my English translations have been deposited in the archives of the Zeiss Historica Society. The translations follow.

Summary of the Documents

ESTABLISHMENT PLANS

(ALAPITASI TERVEZET)

The undersigned are planning to establish a corporation in the city of Gyor under the following stipulations:

1. The name of the corporation is ZEISS KAROLY R.T. (in Hungarian) and CARL ZEISS A.G. (in German).

2. The Corporation's headquarters is to be located in Gyor.

3. The objective of the enterprise is to fabricate, procure, and sell mechanical, optical, and physical devices. To this end it is intended to aquire the (existing) Zeiss Karoly optical factory located in Gyor ,[1] to manage the subject facility, to acquire similar factories, and to establish additional factories in Gyor or at other locations.

The Corporation may participate in other undertakings as well.

4. The duration of the Corporation is indeterminate.

5. The capitalization is 300,000 crowns, that is, three hundred thousands crowns [2] in the form of 300 shares each with a face value of 1000 crowns.

6. Carl Zeiss, Jena, the founding company, will transfer to the new Corporation its existing plant in Gyor, identified in the city's plat, series 3532, including the furnishing, machinery and the existing inventory in their present condition. Furthermore it will transfer all the rights that the company has already acquired, as well as all the outstanding credits and debits as listed in the current audit.

According to the audit the net worth of the (existing) Zeiss Karoly plant in Gyor is 293,000 crowns.

Based on 293,000 crowns of net worth, Carl Zeiss, Jena will receive 293 shares, each with a face value of 1000 crowns, a total share value of 293,000 crowns.

Carl Zeiss, Jena, the founder, permits the planned Corporation to assume the name of "Zeiss Karoly".

The Carl Zeiss (Jena) firm will transfer, without charge, to the (new) corporation all the privileges stipulated in document number 82963/VI.C. 1911, issued by the Royal Hungarian Minister of Commerce, as well as the other benefits granted by the city of Gyor.

7. Share subscribers are required to deposit 1000 crowns for each share, at the time of the share registration, to the General Savings Bank of Gyor.

8. In case of oversubscription, the founders reserve the right to allocate the shares according to their judgement.

9. The founders reserve the right to appoint the Board of Directors for the first three years.

Carl Zeiss, Jena, the founder, will retain 50% of the future profits earned by the (new) Corporation, in return for transferring all its current assets (in the Gyor plant) and for continuing scientific and technical support.

10. Closing date for the registration of the shares is set for May 1, 1914, but the founders have the right to terminate the registration prior to that date.

Gyor, March 15, 1914.

The founders:

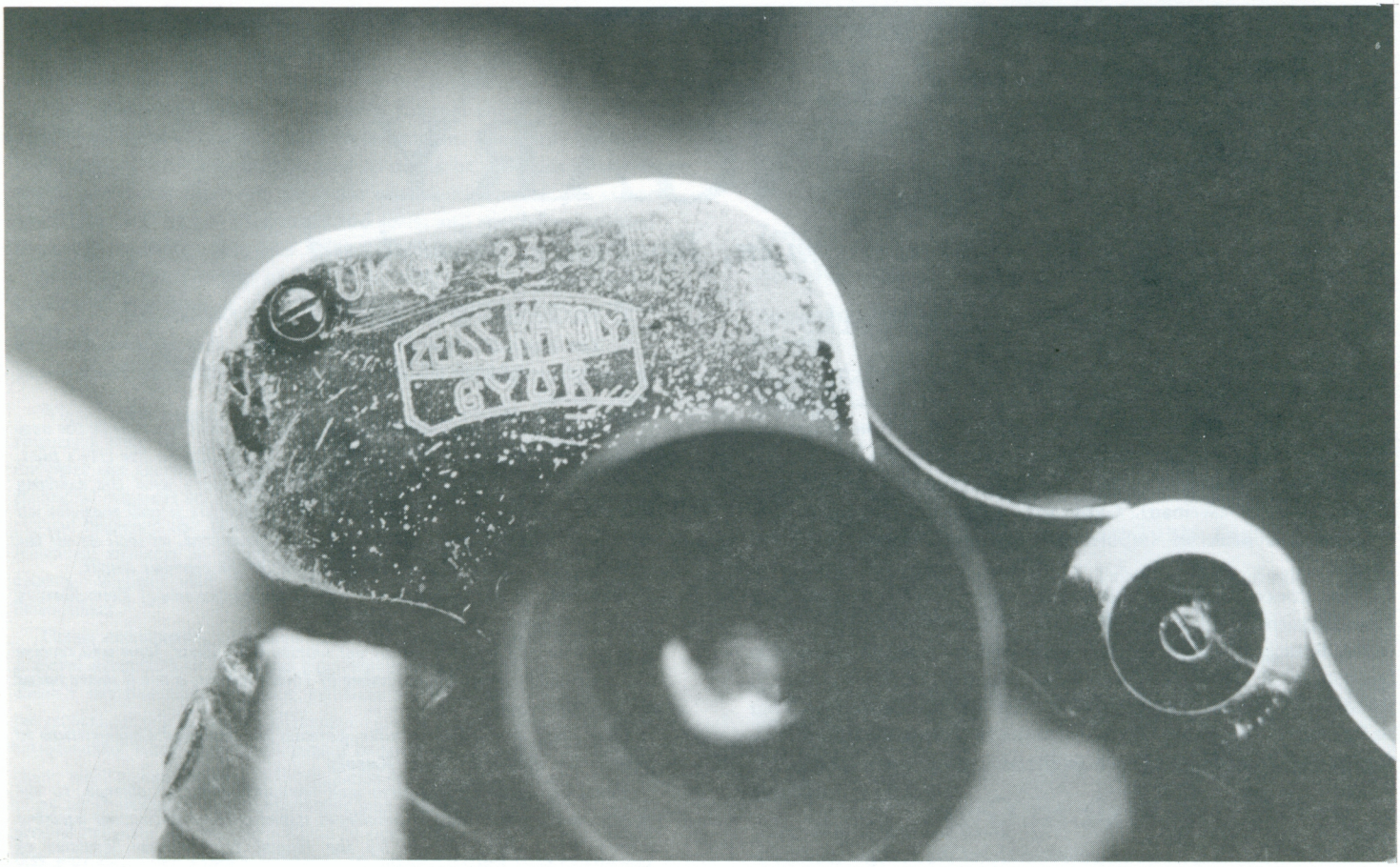
Name:	*Residence:*	*Occupation:*
Carl Zeiss	*Jena*	*Optical Factory*
Felix Neuffer	*Vienna*	*Director*
Ferencz Loewen	*Vienna*	*Chief Engineer*

Registered Shareholders:

Name:	*Residence:*	*No. of shares:*	*Amount paid:*
Felix Neuffer	*Vienna*	*One (1)*	*1000 crowns*
Andras Winkler	*Vienna*	*One (1)*	*1000 crowns*
(Illegible)	*Gyor*	*One (1)*	*1000 crowns*
Ferencz Loewen	*Vienna*	*One (1)*	*1000 crowns*
Oszkar Lachmanszky	*Vienna*	*One (1)*	*1000 crowns*
Dr. Gyula Horvath	*Gyor*	*One (1)*	*1000 crowns*
Gyorgy Otto	*Vienna*	*One (1)*	*1000 crowns*
Carl Zeiss	*Jena*		*293000 crowns withdrawal deposit*

[1] A plant was established in 1911 in the City of Gyor.

[2] A Hungarian crown was worth about 20 U.S. cents.



"Zeiss Karoly Gyor" trademark on a pair of prism binoculars.

AUTHORIZATION

(MEGHATALMAZAS)

This document signed by the three Directors of ZEISS KAROLY, R.T., and countersigned by two witnesses, appoints and authorizes Dr. Joseph Haan, attorney-at-law in the city of Gyor, to represent and act on behalf of the Corporation in all financial and legal matters as deemed necessary. Dr. Gyula Horvath, attorney-at-law, is authorized to act as a substitute (for Dr. Haan) as required. He also affixed his signature to this document. Prior to the signing by the Directors, this document was translated into the mother tongue of the Directors.

Executed at Gyor on March 22, 1914.

Witnesses: (signatures)

SIGNATURE AUTHORITY

(CZIMPELDANY)

The Zeiss Karoly Corporation requires the signatures of two of its directors, or one director and a designated person authorized "per procura", with his signature witnessed at a court, on all printed matter, reproduction, and correspondence released by the corporation.

The signatures of the directors follow:

Name:	*In Hungarian:*	*In German:*
Neuffer, Felix	*signature*	*signature*
Loewen, Ferencz	*signature*	*signature*
Otto, Gyorgy	*signature*	*signature*
Lachmansky, Oszkar	*signature*	*signature*

(The court document then listed the legal residences of the directors in Vienna, Austria. Felix Neuffer and Ferencz Loewen at III. Paulus Gasse 13, and Gyorgy Otto and Oszkar Lachmansky at IX. Ferstellegasse 1. Were these addresses the Zeiss business address in Vienna? The signatures were recorded both in Hungarian and in German before a Notary Public on March 27, 1914. Then the document was submitted for the record to the courthouse in Gyor, May 1, 1914.)

MEETING RECORD

(JEGYZOKONYV)

Recorded at Gyor on December 27, 1940 at the twenty-seventh regular annual meeting of the Zeiss Karoly Corporation.

1. Max Petermann, a Director, greeted the assembled stockholders and opened the meeting. He requested Dr. Jozsef Haan to take the meeting notes; Karoly Muller and Dr. Janos Kemeny, stockholders, to verify the notes.

The presiding officer announced that 600 shares were recorded for this annual meeting; the announcement for the meeting, consistent with the bylaws, was published in the "Dunatuli Hirlap" December (blank) issue, instead of the now defunct "Gyori Hirlap".

The presiding officer then proceeded to verify that the required quorum was present for the meeting. The following shareholders were present:

1. Max Petermann - representing Carl Zeiss, Jena	*596 shares*	*596 votes*
Max Petermann - his own share	*1 share*	*1 vote*
2. Dr. Jozsef Haan	*1 share*	*1 vote*
3. Dr. Janos Kemeny	*1 share*	*1 vote*
4. Karoly Muller (name misspelled)	*1 share*	*1 vote*
	600 shares	*600 votes*

Thus the meeting had valid decision-making authority in accordance with the bylaws.

Building which once housed the Zeiss plant still stands in Gyor.

2. The presiding officer announced that retired General Kalman Klempa, a longtime member of the Board of Directors, passed away in October of this year. He requested that the meeting should recognize the lasting contributions made by Kalman Klempa, and that it should be part of the meeting record.

The participants concurred.

3. Proceeding with the meeting agenda, the presiding officer read the Directors' reports and the controller's audit for 1939/40. It showed a net loss of 44,852 pengos.

The Chair then explained that the actual loss for the current year was 4,154 pengos and the carry-over loss from the previous year was 55,698 pengos, a cummulative total loss of 59,852 pengos ($11,970). Because the amount of the loss was approaching the Corporation's capitalized assets of 60,000 pengos, the Carl Zeiss, Jena firm assumed 15,000 pengos of the debt. To do so, they provided that amount of cash to help with the payment for current expenses and to insure the continued existence of the Corporation. Therefore the net loss was reduced to 44,852 pengos.

The meeting participants took due note of the loss of 44,852 pengos. At the same time they expressed their gratitude to the Carl Zeiss firm, the creditor, who by this action made possible the continued existence of the Corporation. At the same time, (Zeiss, Jena) instructed the management to take the necessary steps at the Royal Hungarian Treasury to obtain tax credits for the payment of the 15,000 pengos in accordance with the applicable (referenced by number) tax provisions.

4. The presiding officer moved that in view of the fact the real value of the Corporation was higher than the book value, the annual meeting should decide to continue with the functioning of the Corporation, and that in accordance with the applicable legal provisions (cited) the Corporation should carry foward the accrued losses.

The shareholders accepted this motion and decided to continue with the operation of the company and to carry forward the loss of 44,852 pengos.

5. The presiding officer requested that the shareholders should grant exemption to the directors and the supervisory management. (Meaning not clear).

The shareholders unanimously approved the request.

6. Then the presiding officer moved to elect Ferencz Meszaros, the chief controller of the city of Gyor, certified accountant, as a member of the Board of Directors for (Klempa's) unexpired term of two years.

The shareholders elected the nominee for the two year term.

7. As there were no other motions or new business, the presiding officer thanked the participating shareholders and adjourned the meeting.

Petermann, Max — *Presiding Officer*

Dr. Haan, Jozsef — *Recording Officer*

Witnesses:

Muller, Karoly
Dr. Kemeny, Janos

From the Gyor City Tax Office
3889/1942

CERTIFICATE

(BIZONYITVANY)

The undersigned certifies that as of this date that ZEISS KAROLY, R.T., now in the process of dissolution, has no outstanding public indebetedness.

This certificate is issued by the Court of the City of Gyor acting in its capacity as corporation tribunal in connection with the legal dissolution process of the subject corporation.

Gyor, December 11, 1942.

City of Gyor
TAX OFFICE

(signature)

Chief Accountant
Office Director

ZEISS/LEICA MYSTERY LENS

Samuel Sherman, Old Bridge, New Jersey

The mystery lens in its Leica screw mount. Next to knurled aperture ring can be seen f2 aperture marking.

Throughout the 1930s, 1940s, and into the early 1960s, competition was generally the rule between Zeiss and Leitz. Zeiss in the 1920s and 1930s was the undisputed king of both camera and lens production. But the introduction of the early Leica models must have shaken up Zeiss. The Contax I was designed as an answer to the Leica. Its design showed the problems Zeiss engineers were having in getting around Leica patents, especially in the shutter area.

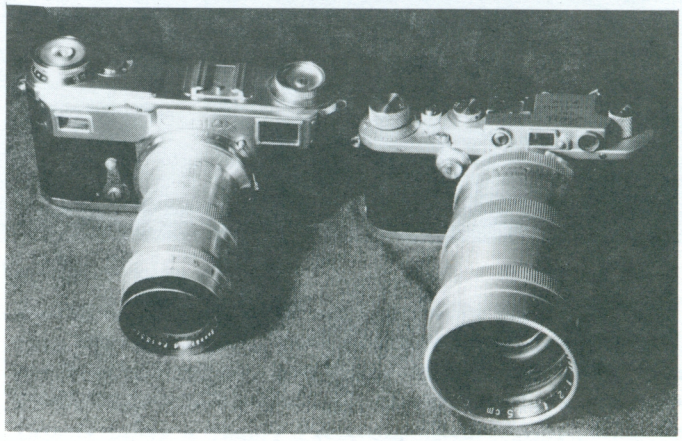
The early Leica is certainly a user's camera, while the Contax I, II and III are mechanism lovers' delights. We all know that the Contax II and III have a better rangefinder-viewfinder than contemporary Leicas. And that Leica bottom-loading is a nightmare. Nevertheless, the smooth curved body of the smaller, simpler Leica sang its seductive siren song to countless owners.

The one definite advantage that Zeiss possessed in the 1930s was the superiority of their lenses...something which they closely guarded. Leitz apparently went to Schneider in the 1930s to improve their optical range with lenses like the fast Leitz-Xenon f1.5. But Zeiss was not about to lose the battle of the "system cameras" by making their lenses available to Leica, or so it seems.

Both Leica and Zeiss collectors have come across Carl Zeiss Jena lenses in Leica screw mounts, rangefinder-coupled. But why should Zeiss make these lenses? Would they make lenses for their competition? Apparently only under the duress of World War II.

The German military had uses for both Leica and Contax cameras. The easier use of the Leica probably made it more of a favorite for military purposes. But when the military wanted special lenses for their Leicas...they called on Zeiss to make them.

The Carl Zeiss Jena lenses made for Leica screw mounts that are in the hands of collectors seem to share certain characteristics. Generally, they are "T" coated, and have serial numbers in the



Side by side: Contax with 135 mm. Sonnar (left), and 105 mm. Biotar mounted on a Leica.

2,7xx,xxx or 2,8xx,xxx range. If recent research into Zeiss Jena serial numbers is correct, these would be wartime lenses, explaining why Zeiss made Leica lenses at that time.

A Zeiss-Leica "Mystery Lens" has recently surfaced. It is a 105mm f2 Biotar lens in Leica screw mount, rangefinder-coupled, made by Carl Zeiss Jena. The serial number is 2961188, indicating that it was made during the wartime period. The lens is not coated, and the diaphragm mechanism has been removed, although scale markings are present on the lens mount.

The lens is a very fast (for its time) moderate telephoto, possibly designed for some kind of night surveillance work. Other fast lenses were used by the German military without diaphragms, and that may also be the case here. With non-single lens reflex cameras, a diaphragm may accidently become stopped down, ruining night photos. Removing the diaphragm eliminates this possibility.

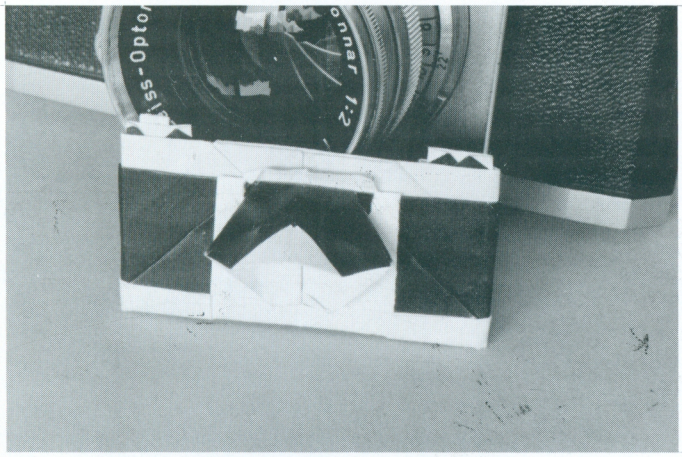
Why is the lens not coated when Zeiss was already "T" coating lenses of lower serial numbers? Recent experiments have proven that uncoated fast lenses take better night pictures than modern coated lenses. They are lower in contrast, scatter light and thus add light into the dark areas on night photos, which coated lenses generally don't do. This may provide an explanation.

This 105 mm. f2 Biotar shares similar construction features (aluminum barrel, for example) with the early postwar Carl Zeiss Jena f4 135 mm. Sonnar for Contax rangefinder cameras. Has anyone ever heard of this 105 mm. Biotar lens in any other mount? Was it made for Contax or any other camera?

LICHTSTRAHLEN

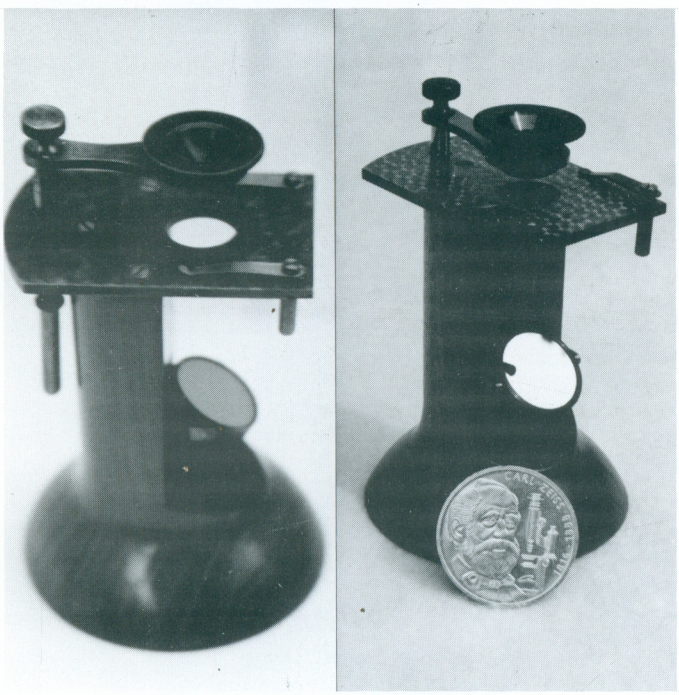
Light Rays: Notes of Interest to Those Interested in Zeiss and Its History

PAPER CONTAX



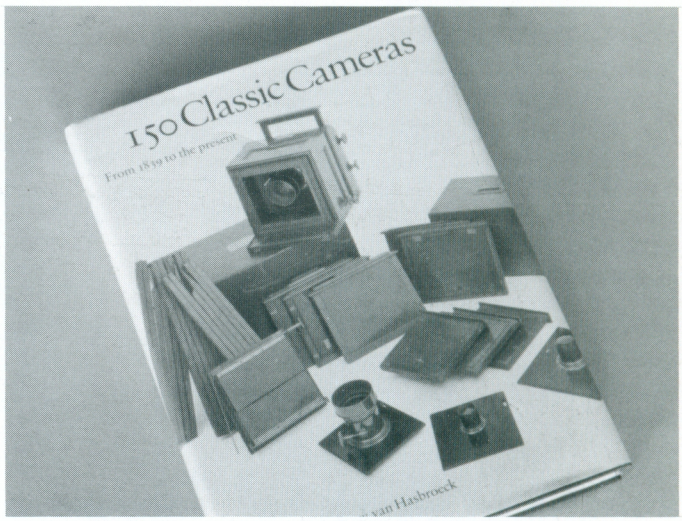
Tiny origami versions of the Contax are produced by member Allen Numano of Tokyo. These and other paper miniatures (including dachshunds only 2″ long) are folded together by Numano to help him while away long international flights.

SOUVENIR FROM OBERKOCHEN



In the tradition of European craftsmanship, the Carl Zeiss Foundation in Oberkochen sponsors a school for apprentices and trains them to become skilled craftspeople. In connection with the centennial of the death of Carl Zeiss in 1988, the apprentices produced commemorative replicas of the earliest simple (dissecting) microscopes which were fabricated at the Zeiss works in the early 1850s. On the left is an original microscope now in the museum at Oberkochen. On the right, the replica with a 10 Deutschemark commemorative coin which was issued in 1988.

NEW BOOK FROM VAN HASBROECK



Member Paul-Henry van Hasbroeck, author of the classic history "The Leica", has added another volume on important and historic cameras.

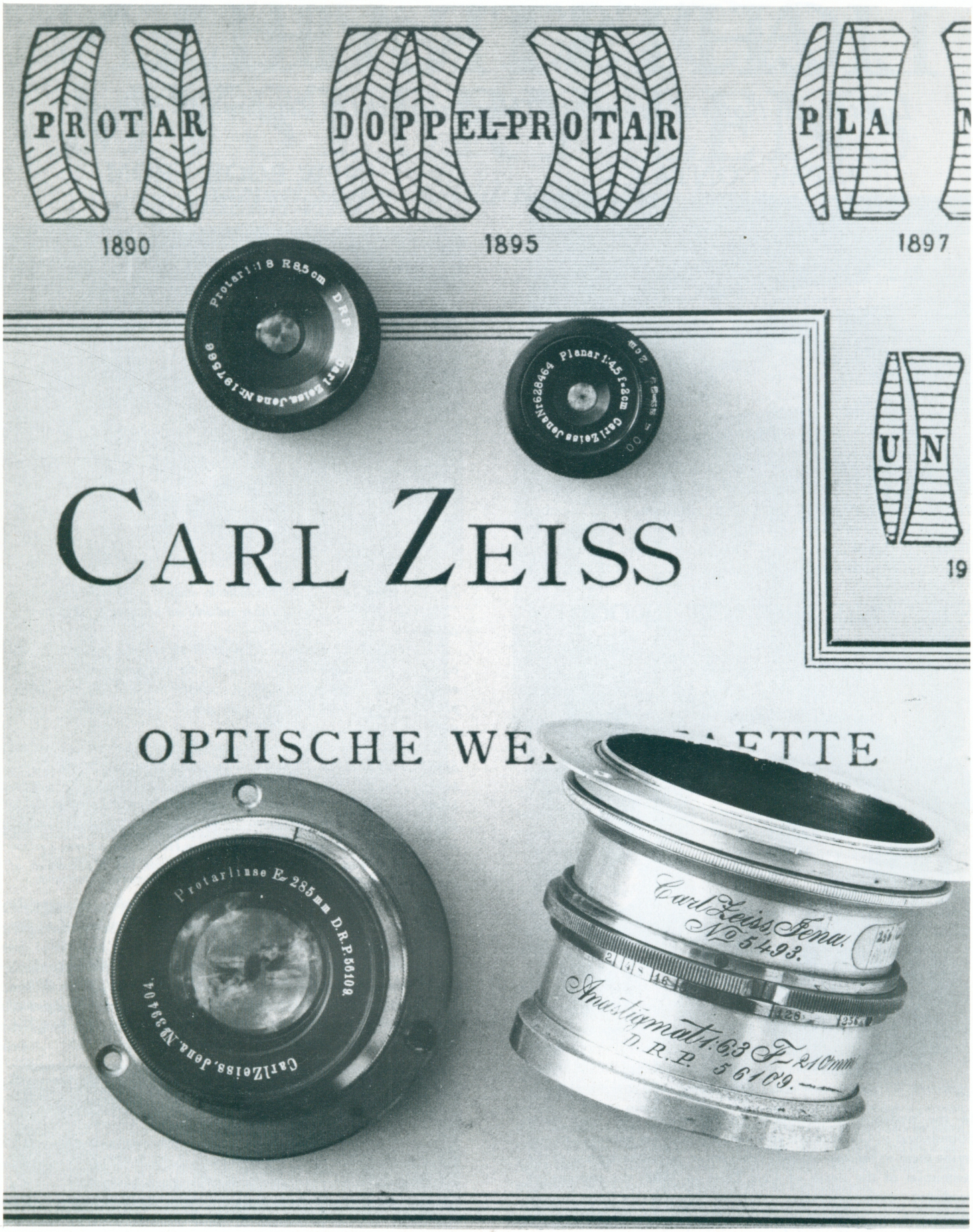
"150 Classic Cameras — from 1839 to the present" covers 150 cameras which have been chosen by the author to illustrate the evolution of photography. All are illustrated in large, handsome photographs (some in color) and described in considerable and authoritative detail.

While the choice of cameras is somewhat idiosyncratic (neither the Speed Graphic nor the Ermanox is included, for example), the author himself says, "It is not the aim of this book to cover all aspects of the history of camera development, but only to highlight the most interesting of them." And surely, many of his selections are interesting indeed: the Mikut color camera, the Robin Hill cloud camera, and the Hare sliding-box camera made expressly for the Maharajah of Punnah, to name but three.

This is a book which, perhaps better than any other, illustrates the beauty of historic cameras, and shows why so many of us are attracted to these remarkable objects.

"150 Classic Cameras" contains 232 pages and 200 photographs. It is published in London by Sotheby's Publications, Philip Wilson Publishers Limited. In this country, the book is available by mail from, among other sources: A Photographers Place, PO Box 274, Prince Street, New York, N.Y. 10012. Their price: $59.95.

Street sign in Oberkochen appears to indicate that two longtime rivals exist side by side. The Leitz firm shown here, however, has no connection with the Leitz optical firm.



From Zeiss: four optical milestones in the history of photography. Clockwise from top left 8.5 cm. f18 Protar, 2 cm. f4.5 Planar, 210 mm. f6.3 Anastigmat, and 285 mm. Protar.