

J.L., Paris, France.

This is the initial on the following lens. Further products are not known, nor is the makers name- at least in the UK.. Telec is relatively common in spite of this.

Telec f4.5 90mm This is a very compact moderate price 2+2 telephoto lens in a characteristic white metal mount apparently available in M42, Exakta and probably Paxette and at least one other. The example seen was No3,38x, and was for M39.5 or M40 thread and about 41mm register, and is for an unknown camera, but not Leica or Wrayflex.



Fig 030 002 J.L. Telec f4.5/90mm No3387. (Fit unknown!)

Julius Laack Soehne, Curlandstrasse 60, Rathenow, Germany.

A note in B.J.A. 1934, p309 says they were then completing their 50 year, so the foundation seems to be 1884. Thus they were an old established maker, initially with a series of Aplanat type lenses but seemingly unknown in the UK as one author says they were a new firm after WW1- and later they became a major interwar maker, with long lines of lenses in advertisements in the 1930's, though they are not very common in the UK. This may merely indicate their marketing policy or be due to chance. But it does seem strange to have such a big programme with so little product seen. One possibility was that a major expansion was taking place in the 1930's and never fully saw the light of day due to the war. This was true of other makers, and it would be a matter of chance whether a firm survived and reestablished itself postwar, seemingly in the Eastern zone. (Rathenow is about 70km west of Berlin.)

Rather more of their lenses appear at auction, suggesting a real interest in cameras such as the 6x6 Bayerflex, Schalie-Collee 16mm cine and Phoenix cameras which were among users.

Major adverts were in the B.J.A. 1938, p704 for the enlarging lenses Texon f4.5 and f3.5 and the Anastigmat Definon f4.5 and f6.3, and in 1939 p692 for the Dialytar, Pololyt, Texon and Definon. (Incidentally, it was Definon lenses noted in other sources. And Texon may be noted under another supplier in the UK).

The firm was still active in 1941, but does not seem to have reemerged fully after the war as there was only one noted use, or else it did not sell in the UK. One possibility was that a major expansion was taking place in the 1930's and never fully saw the light of day due to the war and damage to the plant. Postwar lenses seem to be very few but a Tegonar has been noted. Also the postwar regime combined plants in several cases and Laack may have disappeared as a result of such a combination.

Early Types

Atelier Schnell arbeiter A Petzval type lens. They incorrectly described this as an 'Anastigmat' which it

was not (see Frerk), but it may have been a redesign to reduce astigmatism.

Polynar This name was used on RR design lenses as follows.

Doppel Polynar f4.5-f6.3 This would seem to be a portrait series from the speed.

Polynar f6.8 This was given as the normal aperture- possibly a detective aplanat. It was noted on a Rollfilm Knirps as a f6.8/42mm lens.

Polyplan- Frerk gives this as f7.2 and a half aplanat or half anastigmat.

Persor Aplanat In 1926, Frerk lists an f11 Persor.

Extra Rapid Aplanat This was made in f7.7 12in, and confirms with other products that the company must date back into the early 1900's, or before.

Wide Angle Aplanat f18

Dispar

Pre-1919.

Pololyt f3.5 75mm 3-glass eg in pairs on Beyerflex 2x75mm

Pololyt Anastigmat 3.9 135mm This was noted at No122,32x on a Certotrop 9x12cm camera No1086x.

Pololyt f4.5 3cm This was used on the Kohnlein Wiko Standard in c.1935.

Pololyt f4.5 50mm on Maniga

Pololyt f4.5 135mm on Tropical 9x12. There also has been a report of a f4.5/135mm Anastigmat Polyot (sic?) Nr128,67x on a Ihagee, so Laack may have had an outlet there. Their lenses were also reported on an Ihagee Kleinbild Projector.

Cine pololyt f2.0 25mm The date of this is uncertain, but is possibly 1930's.

Cine f2.0, f2.3 This was made in 15-85mm and was a Petzval type cine lens.

Dialytar

This seems to be a group of lenses, of varying aperture and design. As with the next group, Dialytar was expanded in range in 1934-5.

Dialytar Series T This was a series available by 1926 with Q15 layout in f4.5, f3.5, and f6.3 and were well known. This was a case where Frerk did not have (get) a catalog from the firm for some reason.

Dialytar T=Series T f2.7 This was a Q15 type noted in 1934, the "T" perhaps getting rather near in suggesting the design. It was seen as a 3in f3.5 C-mount lens at No265,37x in black and chrome finish. It was made in 15- 165mm.

f3.5 20-300mm. Q15. A f3.5/50mm was listed for the K.W. Praktiflex in 1940. It may also be the f3.5/25mm lens on a Schalie-Collee 16mm cine camera. The lenses on the Bayerflex do not seem to be coded 'T' but are f3.5/75mm, noted at View 255,45x Take 255,44x; View 255,51x and Take 255,52x. (This looks like a small production run!).



Fig 021 035 Laack Cine Lenses (r) T-Dialytar f3.5/3in No265,372 for 16mm.(front) Polyxentar f1.3/12.5mm No272,458 for 8mm;

A B.J.A, 1936 p318 note describes an f3.5 'telephoto' of 4 separate components, ie a doppel?, focusing from infinity to 4ft, for 9.5 or 16mm with a deep hood, at only £6.30- a very modest price then.

f4.5 25-400mm This was another Q15 type. An 12cm example was noted at No65,83x on a 9x12cm Phoenix camera and a f4.5/165mm at No55,85x was on a Merkel Minerva hand & stand camera.

f6.3 75-400mm This was another large format Q15 type. Some may also be dialyts, see below, but the date of the changeover is not known. A Dialytar-T f6.3/105mm pair Nos 81,64x+ 8166x was noted at auction on a 9x12cm Stereo Hand & Stand camera.

Dialytar f3.5 78mm, for cine (B.J.A. 1936, p318). Again this is Q15 type.

DialytarSeries P f3.5 300-360mm This was a triplet ie. Q14, of large size for large formats. This will be a Portrait lens and this would explain the code letter.

Dialytar f4.5 eg 135, 300mm This was a 4-glass. Some of these are Q15 type. (B.J.A. 1934, p625) but as the name suggests, they replaced an earlier series of dialyt design made in 7.5-36cm, and this is confirmed by Frerk's list for 1926, when dialyts of f4.5 to f6.8 were available and were useful if low cost items. Certainly Q15 seems to be typical of the UK imports seen, as in a 25cm f4.5 studio lens at No 269,27x. Equally a dialyt type is referred to in H&D. Probably they kept the name when the design changed. The f4.5/135mm No133,34x in dial set Compur, was noted on a Phoenix at auction.

Doppel Anastigmat Dialytar

f6.8 135mm This seems to be a dialyt type from inspection. It was seen at No34,80x in a Vario shutter. **NB Double Anastigmat** was also used for a much faster lens such as a

f3.5/180mm in a B&J list.

Dialytar (Wide) f6.3 3-8in 4-Gauss type medium wide angle, noted 1940. It was an old product listed in 1926 already.

Dialytar Wide Angle f8.7 150mm, also 75-250mm to cover up to 100°.

This Dialytar group may have been made in the range f3.6-f6.3 and some may be separable anastigmats, but it is likely not all were in this design field. The separable versions were to be used at small apertures.

Polyxentar

The Polyxentars seem to have been mainly symmetrical lenses and some were fast ones, for movie use.

Frerk in Photofreund 1936, p89 notes there was a new series of lenses on sale, especially fast small ones at f1.3, f1.5, and f2.0. This may represent their new Patent. Note that Laa001 is an unusual layout. The aperture and use of this lens is not known here but may have been used in several types. There was a German Pat.

No665,520/1934 for a Gauss type lens with a 1+1+1+/-1+2 layout where the front is an uncemented version of the normal type and the rear has a conventional solid inner glass and the outer is covered with a rather thin negative glass. It looks an innovative type for 1934 but a little tentative in the layout. (App030) They introduced a new series in 1937 for 8mm filming, and this included the f1.3/12,5mm Polyxentar, and the f2.8/12.5 Pololyt, the former in particular impressing the B.J.A. with its excellent definition.(B.J.A. 1937, p301).

Polyxentar f6.8 150mm 3+3 glass This was a symmetrical anastigmat 18-36cm in one list. Frerk says it was a conventional Dagor type. It covered 70-90°. Use 18.5cm for 13x18cm.

Polyxentar f4.5 75-300mm This was a convertible anastigmat.

It seems more likely that these used the structure Laa 001 than the f1.3 but this is a guess. The only lens seen is so small that the structure is hard to see.

Polyxentar f1.3-f2.0 These were fast lenses probably for movie use over narrow angles. The example seen was marked as a Cine Polyxentar, f1.3 12.5mm at No272,45x. for 8mm cine but with a 17.5mm thread. It may be a Q18 Gauss type.



See Fig 021 035 Laack Cine Lenses (front) Polyxentar f1.3/12.5mm No272,458 for 8mm; (r) T-Dialytar f3.5/3in No265,372 for 16mm.

A German patent was applied for. One is shown as a 6 glass symmetrical, rather like a Dynar with the centre glass split in two- or a dialyt with the outside glasses made as pairs. There may be several types. See the Patent claim above also. Many of the smaller ones were used on Cine Nizo cameras.

Repropolyxentar f9.0 135-360mm This was a process lens.

Late products. These are mainly listed in the B.J.A. in the 1930's, eg in 1937, p656. It also notes a series of asymmetrical triplet (ie ?Q15?) designs at f2.7-f4.5 as longer focus lenses. The advertisement in 1934, p625 shows a Dialytar Series T section of Q15 type, and states that more than 500,000 lenses had been made by that date: a definite hint as to serial numbers!. They offered lenses of f1.6, f2.0, f2.7, f2.9, f3.5, f3.9, f4.5, f6.3, f7.7, f8.7, f9.0. as the f1.3 came later. (B.J.A. 1937) This does not really fit with the serial number of the f1.3 above however. (It could suggest production of lenses without numbers or under another trade name.)

Polyxentar f1.3 12.5, 20, 25mm This was noted in the 1937 B.J.A. as mentioned above.

Pololyt This was a lower price series than some of the above, and seems to have been suggested for amateur use.

Pololyt f2.9 20-75mm These were cine lenses.
 f3.5 35mm This was on Altix 24x24 c.1940. It was also made in 20-165mm.
 f3.9 This was in the 1939 advert, but without details eg of use. It may be an f3.5 slowed down by a shutter.
 f4.5 75-360mm There was an 30mm version on the Wiko Standard from K.

Köhnlein, of Nürnberg, for 14x18mm on 16mm film in 1939.

Anon f4.5 75mm This may be a Pololyt at No177,45x on a K.W.Pilot reflex.
 f6.3 75-360mm

This was a long series of triplet type lenses made in f2.9 for cine, f3.5, f4.5, f6.3 for larger sizes.

Pololyt as f2.8, f3.5, f4.5 was still in production as WW2 was beginning.

Ragolyt f4.5 60mm on Karmaflex.

Regulyt f4.5/ f6.3 105mm This is also Triplet. It seems possible that confusion exists here as these seem very much alike in name. It was noted on a Matthias 6x9cm folder about 1936.

Cine Lenses f1.3 12.5, 20, 25mm. Some of these will overlap the Polyxentars above. Ariel notes a f1.3/12.5mm in his list on a 1937 Nizo.

(Texon?) f2.7 12.5, 20, 25mm. Ariel has two f2.7 lenses in his index as **Texon** and

Anastigmat- so they maybe the same product. A Texon f2.7/25mm No195,53x was noted in an auction list on a Schalie Collee 16mm camera. Or is Texon an Astro design?)

Anons (for these, see B.J.A. 1937, p656)

 f2.8 12.5, 20, 25mm

 f1.9 25mm.

 f2.7 12.5, 20, 25, 51mm. The first 3 were in the 1937 advert.

 f3.5 76mm.

 f4.5 102mm. (B.J.A. 1937, p656)

Teleanastigmat f6.3 100-270mm for 30-35° angle.

Enlarging Lenses f3.5, f4.5, f6.3 These were rather down market items made in up to 12 or 13.5cm sizes. The f4.5 and f3.5 were used on the Actina Vertex enlargers in Min Cam World 12/1937 p43.

Texon f3.5/f4.5 25-210mm These were enlarging lenses also, and these were 4-glass types.

(Anon) f3.5/f6.3 25-135mm There are no details of these.

These items are in different adverts. and may duplicate and overlap.

Projection lenses Kino I 1-9cm This was a Petzval type lens.

Kino II f1.6, f2.0, f2.3 in 1.5-8.5cm Another Petzval type.

Projection Anastigmat f2.8-f3.0 25, 50mm This is a triplet type layout.

Definar f4.5 25-135mm These were triplet type lenses.

Definar f6.3 25-135mm These were also Triplet type lenses.

Heleston f1.6/f1.8/f2.3 These were made in 3.5 and 4.5cm especially. This seems to be a new series of projection lenses in the 1937 B.J.A. and versions for 8mm were expected soon.

Vorsatz lenses for close-up, etc.

Post WW2

Laack Tegonar f3.5 35mm on a Neidig (Plankstadt) Perlux camera, about 1950.

Lachenal,

They were noted as the maker of an f3.5 60mm lens for Dubroni (Bourdin) c. 1865. It was probably of Petzval type.

Lacour, France.

Lacour was noted in FBB as a camera maker (Jumelle Lacour, Monoculaire Lacour) in 1896 and 1902 and the former has a Eurygraphe Lacour in 1896.

Lacour-Berthiot, Paris, France.

The firm was active under this name before about 1910, and still appears in B.J.A. 1922, p619. It seems to have later become merely Berthiot and then SOM-Berthiot, q.v.

Anastigmats f6.3 on a Verascope in 1922

Anastigmats f4.5 on a Verascope in 1922

Eurygraph f4.0 This was noted as a series for ¼, ½ plate and 5x4 Thornton-Pickard reflexes about 1913. No details of the design are known but it seems to be a 3+3 anastigmat.

Eurygraph Anast(igmat): Trousse This anastigmat casket is marked as indicated, *Trousse = Set, Bundle in*

Fr. and seems to use a 3+3 glass design. It was seen at Nr 32,12x as a barrel with 305, 390, and 575mm cells for 13x18cm and up. Brass with iris in mm scale. Performance is really good and it seems like a high quality item.

Perigraphe A wide angle symmetrical, certainly made as a Berthiot and possibly as a Lacour-Berthiot.

Nebular: no details

Graphor f6.0 This was used as an early movie lens on a 1909 Huet in Ariel's index

Lake Price- he is entered under Price, Lake.

C. Chadt (Lanak), Westphalia, Germany.

This camera had very limited production using a 3 glass lens from Asanuma, adapted by Docter Optic for the Lanak camera.

Lancaster and Son, Birmingham, England.

The firm was founded by J. Lancaster who was a spectacle maker also selling instruments such as telescopes and microscopes. The photographic side was begun by his son, W.J.Lancaster (1845-1926) about 1872. (C. Munro, *Photographica*, 77, 16, 1996; G. Brown, B.J.A. 1930, p182). It was a feature of the firm's methods that the cameras were made in a myriad of small workshops round the town, each worker contributing small parts which were his own speciality and then passing the item on to the next worker in another house. This procedure would have needed modification to produce quality lenses but may have been applied to the metal work and the engraving and iris parts. The results were low price and relatively affordable cameras which helped develop a new market. Certainly a very large number must have been made as these are among the commoner and cheaper Victorian lenses found in the UK. They seem to have introduced the iris to the general market as a result of a Patent of 19/03/1886 although the general idea was not new- and was soon adopted by others, notably Wray and Beck. The iris graduations can be individual on early items, such as a series marked 10, 20, 30, 40, 50, with the f on the moving ring, and there is often another scale showing the relative time as 1, 2, 4, 8, 16x in separate positions. Other markings can show the iris settings for wide angle work (f18 or less). About 1/3 of the items seen however have rotating disc stops, cut in a plate of unusually thick brass and these seem to have little information on them- no maximum f-number even, - though always the makers name and sometimes the format as "1/2plate W.A." on a brass meniscus lens. The engraving is distinctive with a flat bottomed channel and a big difference between the wide descenders and narrow risers as with a fine spring pen in m.s.

[Note that in a lecture about 1978, Mr Gandolfi explained that Birmingham merchants travelled the English camera makers with catalogues of brass components for camera making (catches, racks, straps etc.) as was shown in Lancaster's adverts. (eg in BJA 1889, p260) and they may well have listed standard lens parts, such as iris blades, barrels and so on. But this is conjecture.]

Lancaster lenses seem seldom to have serial numbers, and the mounting threads do not seem to match the usual English types, ie. were individual. Tentatively the threads used were often a 37mm (1.4375in), 42.5mm (1.66in) and 53.5mm (2.0938in) all with the same pitch. (These are diameters read off lenses and not definitive values!) What is useful is that many small ones are interchangeable on the 37mm thread flange. The firm continued well into the interwar years, but seems to have lost momentum from about 1900 or a little after, so the later items are hard to find. Some Lancaster items noted were:

Early Lenses.

Meniscus Lenses, in brass seen as f11 and f10 10in lenses and f10 6in, and all are in brass. These were made over a long period and in general are quite common. The engraving can be J. Lancaster and Sons/ Patents. Birm.m. (for Patentees Birmingham). They usually only stop down via f20 to f30, without other numbering though the iris scale is engraved with lines index lines between these. A second scale round the front shows the relative exposure as Time 1 to 8.

Landscape Lenses Essentially the same product, these were listed as such in 1901, in two styles:

(a) Plain mount No374 in the catalogue. This was a normal type. These were sold in 5, 9, 12, 16, 20 and 24in, the 16in being suggested for 10x8in.

(b) In rack and pinion mount as type No375. These seem to have differed only in the mount, as the sizes are the same and no foci are given.(1889) This seems to be less common as all the examples seen were in plain mount. Optically these seem to be of the Telescope objective type, (Q1) not aplanatics.



Fig 018 016 Lancaster Landscape meniscus lenses (l) for 1/2plate(?) and for 1/1plate and (r) one with iris diaphragm at mid front.

Wide Angle Meniscus: This is No377 in some lists, and has been seen as a 3.5-4.0in lens for 1/4plate. These do not cover 5x4 but are a very useful lens if a meniscus is wanted for trial as the coverage is at least good. The 1889 list gives them in 4, 6.5, 8.5, 10, 12in, and suggests 10in for 10x8 (compared with 16in above!)

Instantaneous Lenses No378 These were a new form and had an iris with stop and speed engraved on it—still a novelty in 1889. They were probably sold with a shutter as 5, 8.25, 11, 14, 17, 21in with 14in suggested for 10x8in.

Portrait Lenses No379 For Cartes, ie CdV with Waterhouse stops.
No380 For Cabinet size, as above.

Rapid Portrait Lenses- First Quality Very Rapid with Waterhouse stops. These were made in 4 sizes and the lens cap seems to have held the stop plates.

No381 for CdV
No382 for Cabinet
No383 for full plate
No384 for 12x10in.

Rectigraph Patent f10 a semi wide angle RR

Wide angle Rectigraph This was seen for 1/2 size, and probably others. This seems to be one of the 'new' ones in 1889, as follows: **No 376 Wide Angle Rectigraph Patent.** These were sold with iris as follows: 3.25in for 1/4plate; 5in for 1/2plate; 6.5in for 1/1plate; 8in for 10x8in; 9in for 12x10in; 11in for 12x15in.

Patent Rectigraph This seems to be a fairly normal RR of about f7-f8 maximum aperture. It was noted as a stereo pair of 1/4 plate size lenses, with iris scaled from f7-f40 as well as in relative exposure 1-32. The sharpness was not very impressive at f7 but improved to be nice closed down. At least one on a Le Merveilleux 1/4plate was engraved with both Lancaster's name and "Browning" who was probably the vendor. It was probably the same as No376 below.

These can look quite impressive when the metals are used in contrasting colours as red brass and yellow or aluminium barrel with a red brass control ring. (It is assumed both are brasses but this is not certain.) This is far in advance of many makers of the period. Today they can command a premium from sales for the appearance.

Rapid Rectigraph No 376 This was a 'new' lens in 1889, was perfectly symmetrical, and was offered with

either Waterhouse or iris stops at the same price. It was for general work, in the following sizes:
5in (1.125in dia) for 1/4 plate; 8.5in, (1.375in dia), for 1/2plate; 11.5in (1.75in dia) for 1/1plate; 14in (2.125in dia) for 10x8in; 18in (2.37in dia) for 12x10in; and 24in (2.625in) for 15x12in.

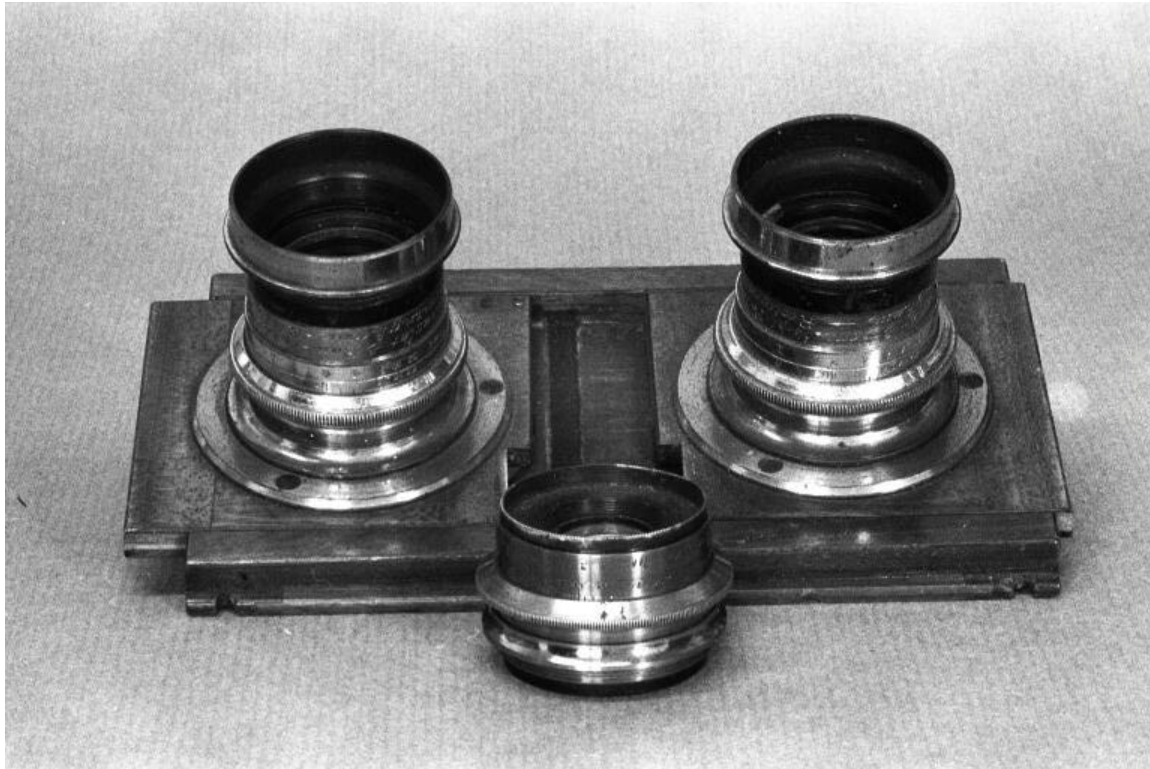


Fig 018 018 Lancaster Rectigraphic Lenses as Stereo Pair and WAR Rectigraph. (all with iris)

Lancaster's 'The Casket' The cells here are in the **Combination Rectigraphic** series, ie would make up to be a set of RR lenses of different foci. (B.J.A. 1907). They go back at least to 1889, as **No376C** when they offered 3 foci in each. Thus the 1/4plate was 4.25 with both cells, and had 5 and 9in as single cells. (Probably!) It was made for 1/4; 1/2; 1/1; 10x8 and 12x10in.

Rapid Portable No376P in 1889, this was a Portrait lens, with Patent diaphragms.

Telephoto An accessory type telephoto unit, listed in 1910 in 3 sizes, with rack and pinion focusing.

Very Rapid Cabinet D-Patent This has been seen as a Petzval f3.5 about 8in focus, in a big brass iris mount at No38x. There is no softness control and the layout seems to be normal Petzval type.



Fig 018 011 Lancaster Very Rapid Cabinet B Pat. (Petzval Type?) No382 (probably a catalog no.)



Fig 018 022 Lancaster Petzval. f5 max.

Anastigmat Rectigraph Series noted in 1910-1911.

Series 1 f6.8 5,7in sizes.

The source of this is unknown, but it may be of Dagor type layout.

Series 11 This seems to be a 2+4 glass type and be separable.

Series 111 No details.

Series 1V f5.3 4¾, 5¼, 6.0, 7.0, 8¼, 9½in

Series V f4.5 5¼, 6.0, 7.0, 8¼, 9½in

It is likely this is a series which were bought-in from continental makers as few UK makers had such an item in their lists. It does not seem to be common, as by then the firm was less active.

A 1910 list can be a useful summary.

Landscape Meniscus No374 in 5.5, 9, 12, 16, 20, 24in Use 5.5in for 1/4plate.

Superior Type No 375, in the same foci.

Narrow Angle Meniscus No376 in 8, 12, 18, 21, 24in. Use 8in for 1/4plate

A premium version of this had a silver iris control ring. This probably has been seen but the 'silver' was now very faded and seems to have been a thin layer.

Wide Angle Meniscus No377 in 4, 6½, 8½, 10, 12in Use 4.0in for 1/4plate.

Rectigraph

This was the Lancaster trade name for rapid rectilinears, and the lenses are quite common, especially the wide angles, which must have sold well.

Rectigraph This was an RR of the 'highest quality' No 376 and was probably f7.0, being made in 5½, 8½, 11½, 14, 18, 24, Q5

Extra Rapid Rectigraph No376 This was an f6.0 for 1/4, 1/2, whole plate sizes.

It was also made as a premium price product in aluminium as No376AL for lightness.

Wide Angle Rectigraph WAR type Q6, this was made in 3.5, 5.0, 6.0, 8.0, 10, 13, 17in.

This is a separable lens, the components being also for use alone.

The wide angle probably worked at f14 maximum aperture. A typical one is engraved 1/4W.A. Rectigraph. The more normal Rectigraph seems to be near f10 maximum aperture, and is scaled to use as a 'W.A.' at f18 or less, the W.A. then being engraved next the iris scale as if it were then intended as a portable RR as well. The 1/4plate W.A. has very restrictive inner anti-flare baffles to limit also the angle covered, so that the outer most parts of the glass are in fact not used. This now seems a strange arrangement but may have represented commonization of parts as a lot of the barrels seem to be the same in both sizes.

Combination Rectigraph No 376C This was made in 6 sizes, including a case eg. for 1/4plate with 3¼, 5, 9in focus.

Casket Combination No 376CC of 6 foci from a set of 3 cells as in 1905.

eg 6, 11, 18in cells for 1/4plate to give 4.0, 5.5, 7in when in pairs.

10, 18, 22in cells for 1/2plate to give 6.75, 8.5, 10in when in pairs.

14, 22, 28in cells for 1plate to give 9.0, 10.5, 12.5in when in pairs.

Rectilinear f8.0. A typical RR of Q5 type, sold in two grades A and B for 1/4, 1/2, 1 plate.

Portrait No 381A and B A was 'To give excellent definition'. This was made in 4 sizes.

B was 'To give superb definition' and was also in 4 sizes.

A small sized Petzval lens was seen and may be of this type. It seems to work at about f5.0 6.5in and is fitted with an iris. It might have covered 6x9cm approx.

Patent Instantaneous: This was a meniscus lens, made in 5.5, 8.5, 11, 14, 17in.

Sadly the catalogue numbers quoted above are *not* engraved on the lenses and it is not easy to relate the items seen to the lists, especially as they are not engraved with a serial number. Comparing a collection shows that well standardized products were being made with even details of the engraving being placed in the same point in different items.

Fig 6 Lancaster

Exposure: Watson Holos 8.25in at f22.

Back Row	Lancaster Meniscus for 1/1plate Lancaster Stereo Rectigraphic Pair. Lancaster Petzval type Portrait for 1/4plate
Front Row	Lancaster 1/4plate W/A Lancaster Rectigraph RR Lancaster W/A Rectigraph Lancaster 1/2plate Meniscus Lancaster W/A Meniscus.

Auguste Lapierre

An important maker of 19th Century magic lanterns, and possibly related to Demaria-Lapierre.

LASL, (Los Alamos Laboratories), New Mexico, USA.

The laboratory initiated computer designed lens layouts in the 1960's, where the computer was not working from a known layout but essentially from scratch: and it is interesting that the results do not seem to follow those chosen by the normal human choice of design. (Applied Optics, 5, p1019, 1966)

A. Laverne, Paris, France.

The name is used in an advert. in BJA 1889, p846, and then included Panorthoscopic, Wide angle Symmetrical, Triple Achromatic Wide Angle lens, Panoramic Lens where the No2 will cover from 1/2 plate up to 15x12in, and Quick Acting Portrait Lenses of special English flint and crown glass. This explains partly why the name is found on the engraving of a **Objective Panorthoscopique** No102,66x and this seems to say they were successors to Clement et Gilmer but later serial number lenses (eg No 103,94x) revert to C et G engraving. It may be that the firm was bought back or that the new owners reverted to the better known trade name. The Laverne lens seems to be a cheaper and less fancy item than the C et G one, but from the same basic design. The name was also noted on one with Gasc et Charconnet. A Rapid Rectilinear No101,61x has been noted at auction. This may be in keeping with the idea that CetG was an exporter or dealer, rather than a maker of their lenses, which would explain apparent questions over the variety of actual makers names. Also a lens apparently like a Berthiot Perigraphe has been noted.

In 1889, Sharp & Hitchmough in Liverpool were selling Laverne "American Star" lenses in 1/4, 1/2, 1/1 and 10x8in but with no extra details. (BJA, 1889,p750)

A WAR f10/80mm approx has been seen in brass with a rotating disc stop plate and seems a very fine small item. The disc clicks neatly when a stop is in place and the f-numbers are clearly engraved.

Leach, Germany.

Polynar Anastigmat noted pre-1919. It just may be a **Laack** Polynar.

Leather

This material affects lens collectors less than camera collectors, as few lenses are leather trimmed but it is worth noting that cases etc. are sensitive to long term deterioration due to drying out and bacterial action. It is best kept fairly dry to slow the latter, and treated with a good dressing. J. Schneider suggests Lexol or Kiwi or Propert's polishes, or British Museum leather dressing. The latter has: Lanolin 7oz; Beeswax 0.5oz; Cedar wood oil 1oz; and hexane 11oz. (*NB* Hexane is highly inflammable!) Dissolve beeswax in warm hexane, add the oil and warmed lanolin and mix well. Shake well before using. (J. Schneider, Modern Photography, 09/1973, p53; British Museum Quarterly, No 2, 1927, pp77-78). *Note:* Synthetics can react differently from the real thing. Some care is needed if lenses are stored with some leather as it can contain corrosive materials if ill cured. One conclusion is that small leather lens cases and outfit cases can be of mixed value. They can contribute to the sort of damp stagnant atmosphere loved by lens funguses, and acid components in the leather can accelerate corrosion.

Lebrun et Maes, France.

Noted by Eder for an enormous Portrait lens reported in 1855 with a 10in dia. glass. It was used on wet plate Collodionized glass, 60x80cm, at a 4in dia. stop. The glasses were 10.625in dia.

There is also a note that Maes of Clichy was involved with "new" glass well before Schott was developing it.

Leech Optics, Rochester, UK. The distributors were Hummel Optical Co, 67, Hatton Garden, London EC1N 8LB, UK.

The firm was active after WW2 in making photographic lenses especially fairly low price lenses for enlarging and small run items. Thus a Petzval type projection lens Series 1, 3in has been met. An example may be the 2in Leech lens seen on a Viking projector. In 04/1973, they were offering filters and close-up lenses.

It seems they were also subcontractors since a correspondent who visited the factory in the 1950's

remembers seeing lens retainer rings being fitted with "Ross" as the trade name, as if for Selfix or other cameras.

Leidolf, Feinmechanischen Fabrik Leidolf, Wetzlar, Germany.

Agent in USA: Royal Photo Distributors, New York, USA.

Agent UK Corfield, Merridale St, Wolverhampton, UK.

We thank Mr R. Halligan (Australia) and Dr R.Watson (UK) for additional information here.

Many of these name-related lenses are for Leidolf's cameras such as the Lordomat. Lordon lenses were also used on the Revue 35SL etc. where they are attributed to Will of Wetzlar. These are f2.8/45mm lenses for 24x36mm. It was noted in B.J.A. 1960 p166, with 50 (2x), 35, 135mm Schacht lenses.

Lordonar f2.8 50mm about 1953 Q15 type. This was used on the Lordomat and was noted at No106,18x, 34,19x. The BJA notes this is a 4 element(=glass) lens.

Lordon f2.8 50mm This was a triplet type, Q14. See Lordox camera in B.J.A. 1953, p235.

Lordon f1.9 50mm This was a 6glass/4component Gauss, Q18, made about 1956-1960. It was fitted to the Lordomat SE.

"Triplet" f3.8 50mm This was on the Leidox, about 1949, Q14 type.

Triplon f2.8 50mm These were about 1950, and used on Lordox II. also for Unimark Photo Inc, Unimatic 606 (1960)

Telordon f4.0 135mm (10/1955 is date noted)

[Travenar] f4 135mm

[Travenar] f4.0 90mm

[Travenar] f3.5 35mm

Telordon f5.6 90mm

Lordon f3.8 50mm This may be the triplet above.

The last seem to be a programme for the Lordomat, and the Lordomat Special was supplied with bought-in lenses from Schacht of Ulm, which would explain the Travenars, which are a typical Schacht trade name.

G. Leitmeyr, (Die Optical Anstalt von Leitmeyr), Munich, Germany.

These have been noted in USA lists, in Frerk's list for 1926, and are otherwise unknown. They do not trade in the UK as far as is known and probably had no agent here, and Frerk describes them as "unbekannt" which may merely mean he has no catalog but might just suggest they were a label for another make. The USA adverts. are mainly of wide angle lenses but this may not really be a fair picture of the output. The only example handled was a 135mm Satyr which was not numbered, but the front was well coated, the rear uncoated, in a ACG Vario chrome finish shutter. It could well be early postwar as few would worry to get a f6.3 triplet coated by a repairer.

Leitmeyr f6.8 65, 90, 108, 120mm This was noted as a 90mm in a Prontor shutter and as a lens in a plain barrel. The 108mm was said to cover 7x5in, so it is a really wide angle design.

'Leitmeyr' f6.8 65mm This was in a Prontor, and was mounted for Graphic. This may be the same or a later product. Leitmeyr wide angles come up fairly regularly in USA lists of old lenses, and one was noted at auction in a Prontor SVS shutter.

Satyr was listed in Frerk in 1926 and was a dialyt probably Q26.

Sytyr f3.5 240mm This was listed for 5x7in.

Satyr f3.2 Ariel lists a 50mm version for 35mm.

Sytyr f4.5 165, 210, 300mm The 210mm was for 5x7in, the 300mm for 10x8in. It was noted on a Uni 9x12cm, the cheapest small plate from Photo-Porst, Nürnberg, Germany in 1935. It was between the Eurynar f6.5 and Trinar f4.5 in price- ie not a very cheap item. A f4.5/165mm has been noted in a dialset Compur at auction, as has a f4.5/210mm No359x, here on a Meagher camera. It is then described as a 'Double Anastigmat'

Sytyr f6.3 135, 240, 250mm for 7x9in ie 1/1plate. A 135mm f6.3 has been also noted in a dealers list- it seems a low priced lens, possibly a triplet. See above, where one proved to be a part coated triplet

Sytar f5.4

Sytar f4.8

E. Leitz, Wetzlar, Germany

also at Midland, Ontario, Canada from 1955.

E. Leitz was established initially as a microscope maker, and only offered camera equipment many years later. This may have begun from the need to supply equipment for photography through microscopes, and for low magnification work separately from them. Thus they seem to have developed a limited programme of high quality lenses from about the early 1900's. These were regarded in the trade as normal photo lenses rather than specialized items for macro or like use. In the 1920's they expanded into making enlargers, and selling lenses, notably on Nagel cameras, so that they were well placed to develop a programme for the 35mm camera which they introduced in about 1924. This relied on a precisely made body and sharp lenses to allow substantial enlargement, the limiting factor being the film then available. One reason may also be that for microscope photography, the small format would record all the detail available without the longer exposures needed for a larger but less well illuminated negative. They would be well aware of the "empty magnification" feature this can involve.

Early Lenses

Summar f4.5 24, 35, 42, 64, 80, 100, 120mm This may be a 6-glass Gauss type, (Frerk's comment) or an air-spaced Dagor type? (Lei001). This was shown in an early pamphlet and it is unclear how long it was sold. They show 8-air-glass reflexions with little sign of extra reflexions, which rules out extra spacing or even cemented surfaces. However it does seem that by the 1920's there was a new type. Thus it is thought that the design changed to a 4g/4c dialyt of equal performance in later years. These lenses do not seem to be numbered, and may be continued later than first thought in brass finish, as some are in M39x26 adaptors suggesting a post-Leica date, but a black finish 120mm example has also been seen. It was recommended to use 120mm on 9x12cm, 64mm on 6x6cm. In 1908 they were listed as Portrait lenses, with the f5 as a lens for groups and general outdoor work. The smaller examples such as a 64mm were listed as f4.0 in a B&J list. Several f4.5 lenses have been seen. The iris graduations are unusual, the f4.5/120mm being graduated from 2 (about f4.7) to 96 (about f32), the 80mm stopping merely to '24', about f16. Early examples are in lacquered brass, later in black enamel. A 120mm lens was used on a 6x9cm camera and gave attractive negatives of good quality but fairly low contrast.

Fig 015 034 Leitz Summar lenses (l + r) Summar f4.5/120mm and (mid) Summar f4.5/80mm.

Summar Series 11 f5.0 95, 115, 135, 150, 180mm (Layout Lei002) This seems to be a less common series from the few examples seen. It was also made as:

Summar Series 11 also f6.0 150, 180, 210, 240, 270, 300mm (Layout Lei003) and this was the version Frerk knew. It was suggested to use 135mm for 9x12cm. (B.J.A. 1909, p696, 697). These are convertible to work as long focus lenses. The only example seen was a f6/135mm and was in a shutter, and no serial number could be seen. (The front cell was rather lightly engraved and the paint was badly worn.) It seemed to be a 4g/4c design, possibly a dialyt. The reflexion pattern was like the f4.5 in having 8 bright reflexions, but here two were very close together at all times on the 135mm lens seen.

Periplan f7.7 90, 120, 150, 180, 210, 240mm (Layout Lei004) This can be seen as a version of the Q7 anastigmat. Use 120mm for 9x12cm.

For all these, use a 7in lens for 1/2plate. The covering power of Periplan was nearly as big as the Summar, and it was a good deal cheaper at £3.00 compared to £4.50 for the Summar. (B.J.A. above. "We can strongly recommend the "Periplan" to anyone requiring a cheap f8 lens.") (Anon): see B.J.A. 1900, p865 for a 3+1 type lens eg as a 240mm f8.0. Production of this seems not to be known.

Writing in 1926, Frerk says these were discontinued, but high quality items and useful secondhand. He does not "know" of the Elmar though the new Leica camera just got into the book, probably at the proof stage.

Milar f4.5 25-100mm This was essentially a macro lens, using the Triplet layout. It was a very long lived product, still being produced well after 1945 for macro work. The layout is near Q13 with the front two glasses near together. The f4.5 50mm version was used on at least one Leica prototype. Note that Leitz also made or used triplets for cine use under the trade name "**Dygon**" both before and after WW2.



Fig 015 030 Leitz Milar f4.5/50mm. This seems to be a fairly modern lens with a red dot to match the 'M' series lenses.

Dygon f2.8, f3.5 20mm. This was a postwar lens, noted on Leicina 8S, also Leicina Vario. Most of them seem to be f2.0 as two Dygons f2/15mm and f2/9mm No1,794,33x on a Leicina and a possibly 'special' Leicina had a complete set of f2/9mm No1,858,86x; f2/6.25mm No1,939,68x; f2/36mm No1,981,16x and f2/15mm (incomplete).

Variogon Many Leicinas carry these and they are thought to be derived from Schneider. One Leicina 8S had Dygons 9 and 15mm. Angenieux Zooms such as Type K2 7.5-35mm at No1,079,32x are also used.

Aplanat There have been rumours of an Aplanat, =RR, possibly of projection origin. No details are available at present. Several other German firms used this layout for projection lenses until about 1920 or even slightly later.

"Studio" In the 1960's, B&J listed a single old Leitz f3.5 150mm lens in a Studio shutter: this seems to be an unknown lens otherwise.

Subsequently the Programme was dominated by the **Leica** camera. It is a very impressive experience to use an early Leica with modern film and see just how good the older lenses were. For choice this would be an Elmar on a fixed lens camera- or an early screw lens body with several Elmar lenses. Venturing outside the Elmar series prewar is a more mixed user experience and it is suggested that for users some caution is worthwhile before paying the larger costs of some of the other old lenses which are valued as collectors items rather than for use. Postwar the Leica lenses rapidly reached and indeed set a consistently high standard and can be recommended without the same reserve.

35mm lenses

The first and most famous of the original lenses for it was the 50mm f3.5 as follows. It was designed by M.Berek (1886-1949) who worked for Leitz from 1912, and while primarily a microscopist, designed the original lens line.

Elmar

The layout of this famous lens was roughly Q15 but the initial patent covers a lens with a front glass designed so that the fundamental rays cut the axis near the front lens. (D.R.P. 343,086/1920). This led to a preferred iris position nearer the front than usual, and it is between glasses 1 and 2 in most Elmar 50mm lenses, and to a less curved interface in the rear element. The detailed design seems never to have been fully realized commercially, as it featured a movable second glass to allow for correction of astigmatism in close-up, and

perhaps since the external glasses were of rather soft DBC. The next development was a 5-glass type, which would not have fallen within the patents of the Q15 type and which may have eased the glass requirements. Finally a glass from the Sendlingen plant of Goerz allowed the design of a Q15 type lens of f3.5 aperture covering the whole of the 24x36mm frame. This was a new standard in 1925, and may have used features from the above patent. It has been suggested that when Zeiss produced the f3.5 Tessar, the patent position was sufficiently balanced for the firms to act independantly but without complaining if there was a possible overlap.

The Elmar designer was Dr Berek, and the lens had to be heavily modified about 1929 as the Sendlingen plant was then converted to produce other products and all optical supplies were taken from Schott. (The change followed the unification of Zeiss Ikon in 1926.) As a result, the new type has a visibly flatter front curve, and came into use about the time when the Leica Standard was introduced. Note that the iris position was kept in the same place in the new model, except when these are mounted in blade shutters for the small number sold in Compurs essentially for the Leica, Vollenda and Pupille cameras. These show the impressive covering power of the Elmar since in the rollfilm versions it is covering 3x4cm and still works well.

Many years later, Leitz were to redesign it again with "new rare earth" glass and show the change as the new red scale version. It is worth noting that the 'old' Q15 type did involve some compromise in the colour correction, less serious in the days of ortho films than it was to become later. This lead to the use of the Hektor type of layout to replace the 135mm Elmar lens, and the choice of a (rare) 50mm Varob-Hektor version for enlarging colour material. But the Elmar was the mainstay of the Leica for many years in its various forms, especially the 50mm lens, and still is a fine lens to use in any form.

Incidentally, the '50mm' covers a range of foci shown by number codes on the early lenses but typically they were about 51-52mm focus. It is likely that one factor was that this was easier to use to get good overall sharpness on 24x36mm as wide field designs at f3.5 were then hard to design. But Barnack's experience using movie lenses with imperfect cover on the bigger format will have helped to push the choice this way. Note that a movie photographer would expect to use about a 3 or 4in lens on this format. G. Crawley in B.J.P. 24/01/1996 p23 mentions another point. That microscope lenses were in inches (=25.4mm) and Leitz will have tended to design Milar and similar lenses microscope lenses made to this focus, ie of 50.8mm. It is also true that makers do allow themselves some leeway in the choice of foci around the engraved value, though here Leitz always would measure and record the true value and tell the customer if needed, and later were to engrave the last 2 digits on the barrel.

Essentially Elmars

Leica Anastigmat f3.5 50mm Some of these are 5-glass versions and are so rare that they are seldom examined to see if they really are of this type. What is certain is that the number is very small and that they are very inaccessible to the normal lens collector.

Elmax f3.5 50mm Essentially these seem to be optically the very first set of 4-glass Elmars, but it is still not certain when the change over occurred. The change of name does not necessarily coincide. (Layout Lei012, 5-glass; Lei005, 4-glass)

Elmar f3.5 50mm This was a Q15 type lens, and the uniquely sharp lens which made the Leica reputation for sharpness. It can be used on up to 3x4cm, and as an enlarging lens 'Varob' and Leitz considered it for projection work, both as camera lenses fitted in the 1930's to slide projectors, and sold postwar in custom fitting for the job. (Layout Lei005, 006)

Elmar f3.5 35mm Layout Lei011 This is a very compact and useful semi-wide angle lens, rather less sharp perhaps than the 50mm version and with more fall off in image quality in the outer parts of the field on 35mm. But the value outweighed any shortcomings.

Elmar f4.5 35mm A prototype which was illustrated, listed but never sold.

Elmar f2.8 35mm (This was a prototype for 1/2frame use and not a commercial item.)

Elmar f4.0 90mm Lei010 This was the first medium focus lens for 35mm still photography, and has always been a favourite. The focal length is one which suits the design very well and it was not challenged till it could be replaced with a rare earth design in the 1950's. Some early lenses are in a much more bulky and heavy mount commonized with the longer lenses and and these are described as 'fat' while soon the same lens was offered in a slimmer and lighter tube and this proved to be the long lived product.

Elmar f6.3 105mm The Berg or Mountain Elmar was designed as a light item for travellers and climbers- hence the name. It needs care in use as it is slower and there is more danger of camera shake- hence the slight question that has been raised over its sharpness. (Lei009)

Elmar f4.5 135mm A longer lens in full weight mount. The earliest were not coupled to the Leica rangefinder- this also is true of some other Elmars- and the mounts do vary in detail. It should be a

sharp lens but the focus is long enough to begin to show up design limitations in the Q15 type. Prof. Berek therefore designed a new lens called the **Hektor** to overcome this limitation and it is the preferred item especially for colour work. The longer Elmars may actually be derived from designs for large format lenses for 6x9 (105mm) and 9x12 (135mm) and have been reported on Nagel cameras. (Lei008).

It is not quite clear what other Elmar lenses were made as Leitz enlargers of the period were fitted with anonymous lenses such as **VOORT f4.0/95mm** and these may include other focal lengths in this design area. One example was an enlarger for 4x6VP format with a lens of some 7.5cm. Incidentally Leitz provided for the longer lens heads to be removed for close-up work on copiers, etc. and they were and are very useful for this.

Hektor- An improved Elmar

During the early 1930's the programme of Elmars was extended by a series of more ambitious lenses with extra glasses, especially in the centre of the Triplet. Leitz were to use these in one form or another for many years, the last being as projector lenses long after WW2. It must be stressed these were designed both for greater speed, but also sometimes for wider angles or greater sharpness and that this is a design where Leitz were successful but few other designers have chosen to follow. In all cases they can be related to the triplet by compounding one or more components. This avoids extra air-glass surfaces but at the cost of rather limited design freedom.

(a) The centre glass was the only one doubled in the **135mm f4.5 Hektor**, which replaced the 135mm f4.5 Elmar. The Hektor is generally regarded as an improvement, especially for the colour correction, and without any penalty. (Lei024)

(b) Both outer glasses were compounded in the **28mm f6.3 Hektor**. Again this was a real success, offering a nice compact real wide angle lens of good sharpness and even illumination. [Most users would rate it ahead of the comparable Zeiss 28mm f8.0 Tessar of the same period. (Lei020)]

(c) The other two Hektors have all the three glasses compounded and are more controversial lenses. At small apertures they are extremely well corrected, especially for colour. But at large apertures the contrast falls off quite noticeably due to the apertures of **f2.5** for the **50mm** lens (Lei021) and **f1.9** for the **73mm** one. (Lei022) They can do good work at full aperture, but really are best only under contrasty conditions where the under corrected spherical aberrations do not reduce the image contrast too much. This is really the sort of lens where the older workers carefully advised giving a minimum exposure, although they may not have always understood why this was essential. The Hektor may have been patented under USPat 1,939,098 of 12/12/1933 which uses glasses G1= 1.624/58.2; G2+5= 1.603/38.0; G3= 1.665/35.7; G4= 1.581/40.8; G6= 1.656/51.4. But Merte quotes a version with G1+6= 1.6190; G2= 1.6100; G3= 1.6750; G4= 1.5890; G5= 1.5290. Mr Cook (Photo Jnl Oct 1949) shows curves for the 73mm Hektor's correction. The field is fairly flat with quite a lot of astigmatism at up to 2% of the focal length at 17° and the spherical aberration is rather heavy, and continues to quite small apertures, giving a perceptible fringe round details. He comments that this type of correction can give detail under contrasty lighting conditions but falls down badly in low contrast subjects- (which is why soft focus lenses are used in portraiture!) A Hektor was occasionally used other than on a Leica: it has been noted on a Mentor Dreivier at No150,691, and a few were used for color enlarging as Varob Hektors f6.3- iris opening being limited to f6.3.

There is also another "Hektor" patent which may cover the **Hektor Rapids** for cine, under USPat 1,899,934/07/03/1933 for lenses of f2.0 and f1.3 with the front glasses separated. A Hektor Rapid was noted at auction at No220,071 (about 1935) on a 16mm Bolex, and another was a 2.7cm f1.4 No417,151 (1937). Another 'fast' lens seems to be covered in USPat 2,164,028 but it is hard to say if it was put into production [although it is near the Schneider Kino Xenon f1.5 and just may have resulted in an exchange of rights for f1.5 designs.] It seems to be a narrow angle design for about 30°. It used G1= 1.603/61; G2= 1.670/47; G3= 1.689/31; G4= 1.501/57; G5= 1.670/47; G6= 1.673/32. Merte also notes a 5-glass 2+2+1 version in German Pat. 526,308/1930.

(d) Postwar the **f2.5 Hektor** series continued the design but were fully successful in this role of projection lenses as they were now coated, and the light from a projector is mainly concentrated in the centre of the lens in any case. Basically different characteristics are needed in these two uses. And it should be mentioned that the 125mm f2.5 Hektor was mounted as a short-head lens for portraiture and is now a sought after item offering just a little softness at full aperture. Sadly it is not easy to reuse ex-projector lenses in this way as portrait lenses normally, as they lack an iris and the mount would require substantial re-engineering.

(e) Finally the famous **Thambar f2.2 90mm** portrait lens (Lei023) is really one of this group of lenses, with a layout parallel to the 135mm Hektor, but with a much greater aperture and the softness is proportionately greater. This can be controlled either by stopping down, when it becomes really sharp at f9 or so, or by fitting a centre spot filter over the lens, which opaque centre cuts out all the sharply imaged light and gives an image without any core of fine detail inside the halo of light. This 'spot' is an essential feature to check on

purchase, and its use must not be overdone as excessive stop down then result in a negative with a diffuse black spot in the centre! The Thambar iris is double scaled to indicate the limit of safe stop down. This is a famous and unique lens but one which owners say takes a little getting used to like many soft focus lenses. A number of these Hektors are scarce and costly, the Thambar especially so.

Hektor	f6.3	28mm	5-glass Lei020 (B.J.A. 1937 below)
Hektor	f2.5	50mm	6-glass Lei021
Hektor	f1.9	73mm	6-glass Lei022
Hektor	f4.5	135mm	4-glass Lei024
Hektor	f2.5	125mm	4-glass Portrait lens for Viso use.
Thambar	f2.2	90mm	4-glass Portrait lens Lei023 (B.J.A. 1936, p268)
Varob Hektor	f6.3	50mm	6-glass for colour enlarging, iris limited to f6.3 max.

Summar and Gauss Types.

The issue of the TTH Opic in the 1920's must have made Leitz look again at the design of the Summar lenses they had been supplying for many years. In the 1930's it resulted in the design of a new 50mm f2.0 Summar for the Leica. This is essentially a conventional period Gauss design but with exquisite central sharpness even at full aperture. Sadly the fall off is fairly marked away from the centre unless it is stopped down, when it becomes a sound lens all over, but with the contrast penalty of the 8 air-glass surfaces present. Users were also aware of an appreciable fall off in illumination, the corner being some 1.5 or 2 stops below the centre at full aperture- again correcting itself on stopping down. In spite of these comments, the Summar sold well and is a common lens. It is suspected that this lead Prof. Berek to now consider more costly types which might have been rejected in the original design, and extra pressure was exerted by the launch of colour materials such as Agfacolor and Kodachrome.

One result was the f2.0 Summar with a compounded front glass of much greater size which was issued late in the 1930's. The second was the f1.5 50mm Xenon which was developed to meet the competition from fast lenses on other cameras. It had double exterior rear positive glasses to reduce the power and allow the extra aperture and centre sharpness was again good but with appreciable fall off away from the centre. Thus there was room for improvement and this came postwar with the application of coating and later the redesign of both lenses with new glass and techniques as the Summicron and Summarit and later Summilux. An important article is by D. Kossel, Leica Fotografie, 1978/1 p21, who stresses the need for Thorium-free glass as Leitz were keen to avoid the radioactive glasses then widely used in the industry.

The Gauss type lenses can be summarized as follows:

Summar f2.0 50mm (normally actually 52mm) Q18 Lei025.

These were initially sold in a rigid mount, but the lens was really too heavy for it and the focus threads often wear badly. Also it was bulky compared to the other lenses of the period. Very soon it was remounted in a innovative collapsible mount and this is the typical item found. Rigid examples are scarce and high value: collapsible ones are low price by Leitz standards. Initially a fine lens centrally at least, sadly Summar is now often well below standard in performance and 4 reasons can be offered and should be considered on purchase.

(1) Wear on the mount. Although rigid versions suffer most, they all can, as these were a valued and heavily used items. Repair is difficult though it might be possible to replate and lap in the threads: but heavy grade grease can often help to make worn mounts acceptable.

(2) The front glass is very soft and exposed and often badly scratched: these were repolished in the past and poor work may have damaged the curve. Alternatively they may not be correctly set for focus.

(3) The iris of Summar is unique as the blades are sprung to a curve and move over a spherical track so that the plain of the iris moves forward as it is closed down. These need to be lubricated and can sputter grease onto the glass surfaces inside, so that the front cell needs to be removed for cleaning. It may not be reset correctly.

(4) Severe general wear.

A test of some 10 used examples in trade showed only 2 were in really top form due to damage such as the above.

Summitar f2.0 50mm (Lei032) This is a 7-glass Gauss and the front glass is much bigger to give more even illumination. This required higher correction of the outer parts of the lens, and the extra glass was needed here. It was launched prewar in uncoated form, and continued postwar coated. It is thus a sort of bridge between the Summar and Summicron: it was definitely an improvement in its day but probably lacked the "no compromise" central correction of Summar in favour of the overall balance. The field is slightly concave, and the astigmatism curves separate at about 20° of axis, but this is said to be good for a 2in lens on 24x36: There is good correction of spherical aberrations, at about 0.25% of focal length compared with 0.5% for the f2 Sonnar. (Cook, in Photographic Journal, 10/1949, p222). Cook notes that his 6-glass (Amotal?)

is flatter field, but may have not noted that the film in some older Leicas does lie in a dish form in the gate, and the advantage may lie with the Summitar's concave field. The design probably was constrained by the decision not to use an extra pair of air-glass surfaces as in the Summicron. Postwar with coating this was less of a problem, but contrast may be one factor in the Summitar's performance. [It is worth reading USPat 2 171 640 of 05/09/1939 (and Brit Pat 480,643 of 1938) which refers to the problems of "spotting" of the high refractive index glasses used at the front of 6-glass Gauss designs and claims a 4 glass type with a hard front cover glass and no increase in the number of air-glass surfaces. This may explain some of the design criteria. The glasses used were G1=1.5647/55.8; G2= 1.6727/32.2; G3=1.6259/35.6; G4= 1.5955/39.2; G5+6= 1.6204/60.3. A separate feature is the simple inner component at glass G3 which echoes the contemporary design of the Zeiss Biometar. The Summitar seems to be covered under German Pat. 685,572 of 1936 which uses glass as follows: G1=1.5338/55.4; G2= 1.6727/32.2; G3=1.6700/47.2; G4=1.6645/35.9; G5= 1.5673/42.8; G6= 1.6204/60.3; G7= 1.6074/56.7.]

Summitar* A really scarce version produced during the development of the Summicron and really in that class. It is said that they were eventually slightly modified for higher micro contrast and the new rare earth glasses applied for general sale as the next item.

Summicron f2.0 50mm A 7-glass design with the front two air-spaced, and related to the Summitar by this. A key factor was the availability of LaK9 glass (R.I. 1.6940) for the 1953 launch type. Later an even more advanced glass of R.I. 1.7479 was used for the 1969 version. Finally there was a return to the 6-glass type for the sake of its simplicity and contrast. Layouts Lei033, 034 may represent different stages in the 7-glass series, and Lei035 shows the 6-glass type. For many years these were the lenses used as standards for comparison in magazine tests of new lenses by all makers as about the best available. But note Modern Photo 10/1978 p93 rated the new 6 glass as superior and with better contrast, but the older had the better ultimate resolution.

In Modern 10/1978, p183 they tried to find lenses exceeding 100l/mm, and eventually selected cameras and film and lenses: the highest values they achieved then were:

Summicron f2/50mm at 105l/mm [and Nikkor f1.8/50mm with Canon, Minolta Pentax and Minolta all over 100l/mm: the macro lenses did not do quite as well, with S-Planar f2.8/60mm at 96mm, Micro Nikkor and Minolta f3.5/55mm at 92, and Vivitar f2.8/55mm and Olympus f3.5/55mm at 90mm. It may be truest to say how little separated the top lenses and how far the results were controlled by film and contrast rather than actual aerial resolution.]

Summicron f2.0 35mm This was made in 2 major designs.

type 1 8-glass This is also a Gauss type but with 2 extra concave glasses in the centre to help correct the outer curves.

type 2 6-glass This was a later type, with simplicity improving contrast and costs and also a Gauss.

Summicron f2.0 90mm A famous fast long lens for news and portraiture, and sharp. It seems odd that there was never a similar Summar which would have been ideal for that design.

Xenon f1.5 50mm 7-glass Gauss Lei044 (B.J.A. 1938, p286) This is a Gauss with the rear positive split to reduce the spherical aberrations- which adds 2 extra air-glass surfaces and makes Xenon a difficult lens to use in uncoated form as it probably always was originally. This is shown by the enormous difference which the coated postwar Summarit shows, even though the design looks similar. Early postwar Mr C.S.Weaver interviewed Mr Dumur of Leitz about the Xenon and was told that some 2,000 were made only. On patenting, it was found to overlap a J.Schneider design and hence good relations lead to the use of a Schneider name. He made no mention of the fact that prewar examples also carried a TTH patent number, although this was dropped understandably when the war began.(F.I.A.T. Report No 781, 18/03/1946). Glasses used were: 1,2,5,6,7 R.I. 1.6202, v 60.4; 3 R.I. 1.6727, v 32.2; 4 R.I. 1.5481, v 45.9.

Summarit f1.5 50mm Lei038. Essentially a postwar coated Xenon, but probably with a slightly new design.

Summarex f1.5 85mm A fast late prewar lens, now scarce. Lei037-it is an unusual design with divided rear glass and modified third component. It is said not to be perfectly sharp at full aperture. It seems to be covered under Brit Pat 481,710/1938.

Summilux f1.4 50mm Here glass of up to R.I. 1.8153 was used in the front glass and in the second version the second component was also air-spaced. (Lei039, Lei040, Lei041).

Summilux f1.4 35mm This was a very fast wide angle Gauss design for news work in particular. Again it shows the use of an extra glass in the centre of the design.

Noctilux f1.0 50mm There seems to have been a design limit on the 'Xenon' layout in the period up to 1970, since in designing this super speed type Leitz used glass of r.i. 1.9005 in glass 2, although glass 1 is of 1.6808. Coated these glasses seem to have been trouble free but it may be that there was some reason for putting the highest R.I. glass in No2 position. (Lei042)(Pop Photo 02/1976 p80). It was produced in Midland,

Ontario. It gave very high contrast, low flare, and designed by Mandler. One point noted was that Mag. fluoride (R.I. 1.38) was almost a perfect coat for the high R.I. glass so the transmission was at least 92%. One point was that it stopped down very satisfactorily and thus was better than the f1.2.

Noctilux f1.2 50mm This was the costly 6g 2x aspheric version in 1966, which seems to be replaced about 1976.

Telyt f4.5 200mm, 400mm This long lens was made for the Ploot reflex housing and as a 200mm dates from the mid-1930's. (B.J.A. 1936, p268) It is a 5-glass 4-component type and far from the normal 2+2 type of tele. In spite of this the lens is reasonably free from flare, and is sharp. It may have been a factor in starting the modern trend in 'short' lenses and is therefore something of a **Landmark**. It was simplified in the 1950's to a 4-glass design. Of these the 200mm (App029) is reasonable common, and in both plain and coated forms, but the 400mm is a really scarce item.

Focotar The prewar Varob-Elmar lens was replaced with a new programme of enlarger lenses. The standard was the Focotar f4.5 50mm on the 35mm Focomat 1. Dismantling a well used example showed a 4-component lens, with external positives outside one double concave glass, (a "dogs bone" shape) and a concavo-convex ("banana shape") which might suggest an advanced version of a Q21 type design. A f4.5/9.5cm Focotar at No1421650*, coated but probably fairly old (say 1950's) seems to be a Q15 4g/3c like the Elmar and others. (There is a detailed Table of Leitz serial numbers and dates in G. Rogliatti 'Leica and Leicaflex Lenses' which would suggest 1957 here.

Later Focotar. It seems the design may have changed.

For the Focomat 11 the two lenses were the Focotar f4.5 60mm and for 6x9cm negatives, the V-Elmar f4.5 100mm lens. These were high quality modern lenses but the structures do not seem to have been published: they may well be Q15 types. However the latest series are known to be different and were in fact J. Schneider Componon-S f5.6 100mm lenses supplied in Leica livery and were very fine lenses. (This was discovered by Dr Gwilym Hughes, and it is hoped he will be able to extend the study in future).

Slight variations in focal length did occur and were handled by numbered coding the lenses and coupling cams as follows:

Number 0	1	2	3	4	5	
60.0	61.0	61.2	61.3	61.4	61.5	etc for 60mm nominal lenses.
100.0	101.0	101.2	101.3	101.4	101.5	etc for 100mm nominal lenses.

A late 1960's list is as follows Note that Leitz went over to bayonet mount lenses for the M series cameras, and many in this list are essentially for bayonet only. This is a subject the reader is referred to specialist books on the Leica System which describe which are scarce for screw and which scarce for bayonet mount and which rarities therefore can command a premium price.

Super Angulon f4.0 21mm The initial version of the next lens.
Super Angulon f3.4 21mm A deep sunk lens with external negative elements for more even resolution and illumination.

Elmarit f2.8 28mm
Summaron f3.5 35mm 6-glass Gauss
Summaron f2.8 35mm 6-glass Gauss
Summicron f2.0 35mm 8- and then 6-glass Gauss.
Summilux f1.4 35mm 7-glass Gauss
Elmar f2.8 50mm Lei007.
Summicron f2.0 50mm 7-glass Gauss
Summilux f1.4 50mm
Noctilux f1.2 50mm aspheric 6-glass
Elmar f3.5 65mm Q15
Tele Elmarit f2.8 90mm 5-glass 5-component
Elmarit f2.8 90mm 5-glass, 5-component
Summicron f2.0 90mm 6-glass 5-component

This was noted in Modern Photo 06/1978 p125 with some other lenses such as f4/135mm TeleElmar, f1.4/35mm and f2/50mm Summicron. The review was favorable and in particular the corner results were very high.

TeleElmar f4.0 135mm 5-glass 3-component
Elmarit f2.8 135mm 5-glass 4-component
Telyt f4.0 200mm 4-glass 4-component
Telyt f4.0 280mm 4-glass 4-component
Telyt f5.6 400mm 2-glass meniscus

Telyt	f5.6	560mm	2-glass meniscus
Hologon	f8.0	15mm	A few of this select Zeiss lens were offered for M-bayonet.(about 1975)

Leica CL This compact Leica was supplied with its own set of M-bayonet lenses, though the normal ones can fit. There are slight differences in the coupling design and transfers need a little care. The differences on the Leica/Minolta 40mm are discussed in detail and can include the length of the cam, (longer on versions sold as Leitz) and filter threads, Minolta lenses being to J.I.S. standards (Popular Photo 04/1974, p63)

Summicron-C f2.0 40mm 6- glass Gauss (Lei036) A note in Modern Photo 06/1978 says there is "No flare problem" with this optic, contrary to a report in a consumer magazine. By then Leica CL was discontinued.

Elmarit-C f2.8 40mm Prototypic only!

Elmar-C f4.0 90mm 4-glass 4-component

Terminology by now was to indicate the maximum aperture of the lens by the name regardless of the structure. Thus Summicron is used on f2.0 lenses and Summilux on f1.4 lenses of varying types of design.

Leica 110 This used a **Summicron** f2/26mm lens, unnumbered, but only some 3 were completed.

Leicaflex The Leicaflex required a new series of lenses to clear the mirror and these were given the designation 'R' to distinguish them from the M-series with rangefinder coupling. These were excellent lenses but the situation became complex due to the need to add extra cams to couple the exposure meters and in general the area is a specialist one since lenses were updated from one specification to another also. The following is an early 1970's list.

Fisheye Elmarit-R f2.8 16mm 11 glass, for SL2 only. (about 1980).

Super Angulon-R f3.4 21mm ("Excellent" in Camera 35, 12/1967).

Super Angulon-R f4.0 21mm 10 glass

Elmarit-R f2.8 24mm 9-glass, floating element.

Elmarit-R f2.8 28mm 8-glass

Summicron-R f2.0 35mm 9-glass

Elmarit-R f2.8 35mm 7-glass

Summicron-R f2.0 50mm 6-glass

Summilux-R f1.4 50mm 7-glass

Macro Elmarit f2.8 60mm 6-glass

Summicron-R f2.0 90mm 5-glass

Elmarit-R f2.8 90mm 5-glass

Macro Elmar f4.0 100mm 4-glass

Elmarit-R f2.8 135mm 5-glass

Elmarit-R f2.8 180mm 5-glass

Telyt-R f4.0 250mm 6-glass

Telyt f5.6 400mm

Telyt-R f6.8 400mm 2-glass

Telyt-R f5.6 560mm

Telyt-R f6.8 560mm 2-glass

Telyt-S f6.3 800mm

Vario Elmar f4.5 80-200mm 14 glass.

also **Minolta RF Rokkor** f8.0 800mm

also **Telyt** lenses converted from the M-programme, and other lenses for close-up work using the adaptor No16863.

The collector will also find a wide and impressive range of other lenses such as **Elmaron** and **Hektor** projector lenses, cine lenses for the Leicina cine camera, and bought-in items such as the Schneider PA Curtagon mounted for the Leicaflex- but without meter coupling. This latter is a costly item, and holds its value well as there are no problems over coupling cams!

Elmaron f2.8 35, 45, 50, 85, 120, 150, f3.6, 200, f4.0, 250mm for

Pradovit Color and Pradovit Color 110 (45mm) (1970's)

Colorplan f2.5 90mm

Hektor f2.8 250, 300mm for Prado Universal.

Hektor f2.5 200mm

Also **Epis** for Episcopes as f3.6, 325mm and f3.5, f4.0 400mm, **Scriptar** f4.0 300 and 340mm for overhead

projector Diascriptor 4.

Leicina Vario f1.9 8-64mm lens is fixed in body, not removable.

Macro Cinegon f1.8 10mm 7-glass retrofocus lens for Leicina Special Super-8 M-bayonet camera. Popular Photo 10/1973, p85. It had an iris from f1.8-f22 and then closing completely for dissolves. It focused to 1.5in to cover 27x36mm.

Optivaron f1.8 6-66mm zoom This is for the same camera as the above. This also focussed close to 1.25in to cover 1x1.5in.

Movie Lenses

A Panavision rental list for 1992 shows a new aspect of Leitz with a long list of Panavision Primo Leitz optics, listed for PV mount. These are (or were) T1.9/10mm; T1.9/14.5mm; T1.9/17.5mm; T1.9/21mm; T1.9/27mm; T1.9/35mm; T1.9/40mm; T1.9/50mm; T1.9/75mm; T1.9/100mm; T1.9/150mm; T2.8/210mm.

There were also Leitz Macro lenses as T2.8/19mm; T4/21mm; T2.8/24mm; T2/35mm; T1.4/50mm; T2.8/60mm; T2.8/80mm; T2/90mm; T2.8/100mm; T2.8/135mm; T2.8/180mm.

A Zoom was a Leitz T2.3 17.5-75mm Panavision Primo. This was then the most expensive Zoom rental item at 519 per week.

LEICA

The firm went through several reorganizations and traded as Leica rather than Leitz. Products have included mainstream SLR and R/F cameras and several smaller items. Thus about 1991 they issued a Leica Mini with a Elmar f3.5 lens. This was extended in B.J.P. 10/07/1996 p6 with a Leica Mini 3 with a Summar f3.2/35mm lens. Both lenses have a 4g/3c design.

Users.

With other makes, some attempt has been made to list well known users- especially where they are rare. This is not possible with the Leica as they are so numerous. Essentially, these were the standard miniature for many years. But some names are:

J.A.Cash He was slightly controversial but his picture library covered so many scenes and travel subjects so neatly that his was the ikon for many places for a generation- and all with a Leica or perhaps a succession of them See Obituary by J.Clement, B.J.P. 21/07/1978, also correspondence, eg T.H.Jones idem, 08/09/1978, etc)

Dr P Wolff

Dr Roman Vishniac He recorded the life and plight of Jewish communities with a Leica in the years before WW2 with the foresight that they were to be destroyed. (B.J.P. 07/12/1979 p1183)

Alfred Eisenstedt

Baron His ballet outfit was Leica IIIf/SCNOO with 35+50+90mm and very successful it was.

ELCAN=E.Leitz, Canada, at Midland Canada.

This was a new postwar plant (from 1955) favoured by NATO as more distant from political problems in Europe. Midland is about 90m north of Toronto and visits were discouraged for years as many products were on the secret list. It began as a modest 8,000sq ft plant, and was 65,000sq ft. in 1976, with 280 workers. Lenses were made here for Leica cameras, but the trade name ELCAN seems to have been reserved for military items. Later the M4-2 was made there. These lenses included very fast surveillance lenses such as the f1.4 Elcans, and some f1.5 lens of triplet type and especially an f1/90mm for M leica mount. But a major effort was in lenses for 70mm film cameras such as the Vinten F95, which used Leitz lenses. (The alternative UK camera maker, AGI/Williamson, therefore used Zeiss, for strategic reasons although the Zeiss Biogon 38mm f4.5 seems to have been used on both.) The ELCAN lenses seen in the UK for Vinten have RPS threads, especially the 44mm w/a and f2.0/3in which screw straight into a 2.5in flange and the 44mm is usable on Press cameras since the thread is well forward on the mount giving a deep sunk effect. These were for the early F95 with a thicker shutter and have more rear clearance. Later the shutter was made thinner with extra rollers, and then the Biogon and 1.5in **ELCAN** were available. These are excellent but can be hard to find on the ex-WD market and are harder to reuse owing to the limited rear clearance. This limits the prices which can be obtained second hand and these are normally less costly than might be expected. (Note that these lenses often are found in a more bulky fitting with 3.5in flange thread, wrapped round the 2.5in flange lenshead. Modern Photo 07/1978 p58 reported W.Mandler, then Head of design at Leitz Canada as lecturing at Haverford in 1975 about the value of making the 6-glass Gauss very symmetrical and with G2 +3 and 4+5 identical as a means to reduce costs. This could be achieved with very little loss in performance if high R.I. glasses are used. The reported also referred to 5-glass f2 lenses without naming any. This may be reflected in

the rather symmetrical looking ELCAN lenses and have been related to their design with limited back focus.
Elcan f2.0 3in This was seen as No 060-152x, with advanced coating in black mounting with gear teeth on iris ring for auto exposure control. This was a standard lens, but with moderate rear clearance.

Elcan f2.0 50mm This was noted at No275-0256 and 276-051x about 1972, on a M-type Leitz KE7A body. A sample seen in the UK was No109-0849, which seems to be a rather symmetrical 6glass 4component Gauss in a black barrel mount with click stops to f16. The rear clearance is moderate, and the mount bulky, so it was not in M39 but the design might be used on M39 with careful mounting. Thus it may be the same as the other items here. Optically, it looks likely to be impressive.

Elcan f2.8 1½in A very complex design, probably rather after the Super Angulon series. Again this has little rear clearance.

Elcan f2.8 1¾in (44.45mm). This was an earlier version with more rear clearance. It was noted at No088-0244, 088-0182 as a double retro wide angle. It has a useful but still limited rear clearance. It covers 6x7 very well, is sharp and contrasty but does not cover the whole of 6x9 format. It is a really desirable item and the one which is easy to reuse.

Elcan f2.0 6in There seem to be two types of this.

Elcan f4.8 12in This was a telephoto type.

Elcan f2.8 150mm This was an aerial lens but no details are available. One report says No138-154x with linear iris scale in bronze finish to f22 on 8-blade iris in anodized alloy mount.

Elcan f4.0 450mm Again no details are available here.

ELCAN f1.0 90mm This was noted at No164-0008 as ex-Navy Property and was focused at 20m, also for KE7A. It was noted in A.E.Starkweather, Watertown (N.Y.) Daily News cited in Popular Photo, 02/1968, p50 and then 7 had been made.

Summar, Radiographic f0.85/75mm This was a prewar lens, for recording X-ray mass checks. The structure seems to be unknown.

Some modern references.

Summicron-M f2 35mm aspheric Well corrected, it was said to improve at f5.6 and replaced the previous f2/35mm. The aspheric element helped to keep the corrections in close-up to 70cm. Black or chrome (£1055/1144 resp.)

Elmarit-M f2.8 24mm This was new in B.J.P. 23/10/1996 p6 with aspheric component in a 7g design with 1 glass with partial anomalous dispersion and 2 of high r.i. glass £1,648 in UK.

(anon) f1.0 90mm for M mount. This was noted in N.Goldberg, Pop Photo 08/1976, p127; also 06/1975).

Chronology

An extended table of serial numbers and dates of production is given in G. Rogliatti, 'Leica and Leicaflex Lenses 1978', etc.

Lejeune and Perken

They were noted for a Optimus RR lens for 10x8in marked 'Manufactured by Lejeune and Perken for M.W.Dunscombe, Bristol' Later as Perken, Son and Rayment. Channing and Dunn mention a lens engraved as above but for J.T.Chapman, Manchester, so they probably supplied lenses engraved with the Vendor (or Users) name on request.

F. Lemardeley, France

FBB lists an objective Lemardeley f7.7/135mm on a Hanau La Handy in 1900.

Lens Use

Some idea of the lenses in use by important exhibitors can be obtained from lists of their work, eg in the American annual of Photography. Details of the equipments used are given in most cases allowing good statistical analysis. It would be a major effort to follow them in detail over a Century and more, but some notes may be of use. It should be noted that change was slow, partly as exhibitors often printed from old negatives or showed old prints, and were very loath to give up using equipment which gave successful results.

The Petzval was certainly the dominant lens in portraiture up to the 1880's, and well after in the older studios. But by then Voigtlaender and others were trying to wean portraitists over to the nearly as fast Portrait RR. And for outdoor work the RR seems to have been the major item, with the Landscape meniscus well behind. One reason was that the RR could be divided to give a long lens when needed and as a complete lens gave a brighter and crisper image to focus. Thus a analysis in 1890 would probably be a mix of Petzvals indoors and RR's outdoors.

The sheer number of anastigmats noted as made in the years 1890-1910 must have lead to a big change in lens use but no statistically useful record has been noted so far. It is thought that Dagor and Anastigmat-Protar would be major contributors but in the new Century the Tessar would have rapidly gained a position due to its speed and contrast. And note that technical qualities then may have been less valued than aesthetic ones.

1939

A late pre-WW2 statistic can be obtained from the American Annual 1939, where 94 pictures are detailed. Some **50%** were taken with Tessar lenses of one type or another made by Zeiss or the licensees. This includes Rolleiflex and other brands where the presence of a Tessar can be assumed, and is an overpowering frequency. The next were Zeiss Sonnars (grouped) at **8%** and Kodak Anastigmats (grouped) at **5%** followed by Leitz Summars, Schneider Xenars, Plaubel Anticomars and Voigtlaender Heliars all at **4%**, and Zeiss Triotars, Dallmeyer Unspecified, Rodenstock Euryrinar, TTH Cooke Series II + IV Aldis lenses, B&L Anastigmats, and Leitz Elmars at **2.5%**. Other lenses used included Hektor f2.5, Petzval, Dogmar, Cassar, Protar, Dagor and TTH Cooke Series XV, at about **1%** each. There were one use (**1%**) each of a Pinkham-Smith and a Verito soft focus lens, but this really disposes of any idea that the pictorialists of that era used either all Dagors or all soft focus lenses. They lived in a Tessar period, and there was really little use of "interesting" odd lenses.

1947/1950

The number of pictures with lens details is c.58 per year, and these years were bulked to give a bigger population. Tessar was still the outstanding favourite, with 52% in 1947 and 36% in 1950- possibly a significant change. The impression was that the majority were now on Rollei and (less so) Super Ikonta and Ikontaflex. And the number of other types was correspondingly large: 16 types in 1947 and 21 in 1950, and 27 in all (due to repeats). There was a significant increase in Kodak lenses eg. on Medallist, Ektra and others, to 12% overall. Probably postwar shortages were one factor, but it was nice to see pictures taken with Leitz Thambar, Ludwig Victar and a Berthiot lens (all 1-3% frequency) as well as a Biogon, Helomar as well as Heliar (1% and 6% respectively) and a Perscheid once (!%). There were fewer with Leitz Summars (!%) but several with Elmars (3%) and Wollensak (3%) was a 'new' name though they were not on Leica. Dagor was still there (3%) as were Dogmar and Omnar- it seems that in some cases one worker went on using negatives from the same lens for many years, hence the persistence of some types! The oldest was probably a Ross Cabinet, probably a Petzval. This was an International list, and it was interesting that few English lenses (and none were new) penetrated to it- 3% Cooke, Aldis 1%, the one old Ross and no Wray, or Dallmeyer.

Lens Setting

A new problem emerged as lenses were focused by scale or rangefinder- especially the latter as expensive optics were involved and big enlargements were expected. This was that the image of a lens is not formed perfectly at one distance from the lens but rather finding the best image is a compromise. This is due to spherical and colour aberrations bringing rays to focus at different distances from the lens and these will vary with the part of the lens involved- ie with the aperture in use and also with the colour of the light so different colours. What is important here is that the camera/lens maker will know the best compromise to use. It is likely that this will be for the lens at full aperture and any shift in focus on close down will be covered up by increased depth of focus. But the really fussy owner could well find that a modified setting was best if the camera was normally used eg. stopped down. This is a discussion mainly relating so far to lenses made before WW2 or at least 1960. As better corrections came in the uncertainty decreased, and will be minimal with slow highly corrected lenses such as some macro lenses. But with this the lens makers began to be more aware of film flatness as the limiting factor. This is more serious perhaps in rollfilm where the backing paper can lead to problems- but tension in the 35mm film can also lead to rippling effects, and in all cases film stored in a camera can take up a permanent bend leading to an unsharp area- something TLRs are said to suffer from due to the sharp bend over the lower roller before exposure in most models (other than the Minolta Autocord). In medium format work, there is some advantage in using 70mm film as here there is no backing paper and a sprocket counter feed. And in having side tension or vacuum backs for cut film pieces.

But there has been some consideration by makers to minimizing this problems, by choosing lens designs which were less sensitive to the actual setting in the camera- but also slightly less sharp. This was noted in an article in Pop. Photo 09/1977 p22 and it is not certain how far it was implemented but is certainly a factor whenever lenses are exchanged from one camera to another.

On another related subject, it may explain why some lenses are less at home when transplanted to a new body than might be expected. The very early Leicas for example seem to often hold the film in a slightly concave shape which suits the image plane of many 1930's lenses very well. These lenses may suffer if transplanted to a more modern flatter-film body such as a Leica M camera. And the photographers who fitted Contax RF lenses designed for a flatter-film to an M39 body may not have made as good a use of them as expected.

Leotax Camera Co,Tokyo, Japan.

They are a Japanese maker of 35mm rangefinder cameras, probably using bought-in lenses from Fujita, and normally ex-Tokyo Optical Co., under T.N. such as Letana f3.5,50mm

Simlar	f3.5	50mm ex Tokyo
Simlar	f1.5	50mm (?Gauss type) ex Tokyo.
Topcor	f3.5	50mm ex Tokyo
Topcor S	f2.0	50mm (?Gauss type) ex Tokyo. Noted at No210,69x.
Leonon	f2.0	50mm as Topcor but in black One was noted at No232,91x, another at No210,97x..
Topcor	f1.8	50mm (?Gauss type)
Hexar	f3.5	50mm Noted at No210,97x, this was a Kokishiroku lens.
Wester	f3.5	75mm Noted at No15,50x, this just may be a different makers lens fitted to Leotax.

Here on a Semi Leotax 120 rollfilm camera.

Lerebours et Secretan, Paris, France.

Lerebours (1807-1873) first worked with Gaudin, and then set up as a manufacurer at Place Pont Neuf, and then associated with Secretan in a studio at Rue de L'Est 23, (1845), a major achievement being the improved achromatism of the Petzval lens in 1840. (see Rohr, Theorie, etc.) Secretan was an officer in the Engineers Corps and joined Lerebours for the purpose of manufacturing the lenses.

They were one of the major early lens makers and the products are fairly easy to find in the UK when their age is considered. They are becoming recognised as one of the desirable brands, so competition for their lenses may increase. Incidentally, this suggests that they did a brisk export trade to the UK and that the products were of good value in terms of performance and price.

Their earliest lenses probably included **meniscus type lenses** rather like the Chevalier products, and they often fitted a rotating disk stop even quite early on, possibly by 1845, and Lothrop dates one as 1841 for an 80mm focus lens stopped to f4.0, f8.0, f24. The disk was fitted well in front of the lens, and some remained in use for a very long time, Mr S. Blackett, F.R.P.S. using one into the period 1924-1952. FBB also list two from 1841 on a Gaudin camera for 7.2cm dia and on a Lerebours camera for 7x8cm.

Lerebours learned of the problems with the colour correction of the Petzval design noted by Townson, and by Claudet, who operated in London and Paris, early on. The difficulty was that correction of the colours to a visual focus did not coincide with the actinic or photographic focus. He designed **Petzval Portrait Lenses** with improved colour correction in 1840. Finely made, they were seen at No6,40x for a 3in dia and No10,90x for a 2in dia., both of which have Waterhouse type slots. On both these the engraved name is upside down when the slot is at the top of the barrel and this just may suggest the slot was cut later than the engraving ie. a retrofit. These Petzvals are the Lerebours lenses most often traded in the UK. These have been noted as single lenses and as stereo pairs. Both have flare rings, and brass front caps. Both are in full brass finish, probably originally with lacquer which has been removed from one of them. A lens at auction at No5,769 for 9x12cm wet plate may have also been of this type. Another was also probably No3,80x in a mount with a rack & pinion focus.



Fig 027 002 Lerebours et Secretan a Paris, engraving detail lens No10,190.



Fig 027 004 Lerebours et Secretan, Paris Petzval Portrait, No10,190.

Stereo Lens Pair A pair of 4.5in lenses were used on a Dancer Stereo camera, and have prominent wheel stop plates on the front for f9, f12, f14, f18, f28. (MCM 7/1957) (This set of apertures is interesting in view of Mr Dallmeyer's standardization of a 2x factor about 1860). Such lenses have been seen in trade today. Later they made at least one version of variable focus lens rather like the **'Photograph a Verres Combinee'**. Today they are probably a notable collectable but so far their lenses do not seem to be very usable. (Note their pupil M. L.F.Colas also).

No chronology can be suggested but No11,88x was on an T.Ottewille wet plate of 1854-1863 period. Incidentally among the lenses given by the Fox Talbot estate (Miss M. Talbot) to the R.P.S. in 1921 were lenses by both Giroux and Lerebours on Daguerrotype cameras.

Levi and Co, Farringdon Rd., London EC.

This was a complex group of companies making cameras and acting as wholesale opticians- but not so far noted as a source of camera lenses as such.

Levy-Roth

The Minnigraph 35mm at No286 was fitted with a f3.0 lens No185x of unknown source. (Note that McKeown dates these as c.1915 and as using movie lenses and lists a Minnigraph f3.5/54mm (anon) and an f3.0/? as options, so a wide choice was available.)

Lichtenknekar, Hasselt, Belgium.

These are reported to us as makers of mirror systems such as f3.5 500mm; f4.0 760mm; f3.4 1000mm. They are also specialist makers of long focus lenses.

Ed. Liesegang, Dusseldorf, Germany.

An old firm, founded in 1854, and well known for their Rajah enlargers. A few of their lenses occur on the collector market in the UK but there is little information on the firm. It was an old one and may have been related to several Liesegang relations who authored books referred to in Eder's study, often on projection

related topics.

Leukoskop This was a much older lens, of RR type, Q5.

Tachyskop This was essentially the same as the above.

'Petzval' The date of this lens is unknown but it may be 'old' although the serial number 15,266 seems from the anastigmat era. It is f4.5/130mm and has the unusual quality that the rear glasses are larger than the front. It may be a projection lens which might explain this.

Parastigmat S11 f4.5 135mm This was seen at No17,67x. It seems to be a nice uncoated dialyt lens(Q26) in a very solid black and nickel mount, with a click iris.

Peplostar Q14 This is a triplet, and a much lower price item with a simple sliding stop plate. This will be an enlarger lens.

W.A.Lyon Co of Toronto Ltd, Toronto, Canada.

They are noted for a Imperial 3a lens of 14in f4.0 with iris to f256. It is probably a Portrait RR bought in by the company.

Lightning

This name was noted on a rather worn brass lens which may be a meniscus or an RR which has lost one cell. It has a characteristic bronze coloured finish to the barrel suggesting the original lacquer was rather thinly applied.

Linhof= Nikolaus Karpf KG, Praezisions Camera Werk, Munchen 25, Germany.

Linhof are camera makers not lens makers but many large format German lenses from the 1945 period onwards carry their name as well as the makers since they were tested and sold with Linhof cameras. This assured their quality and it is thought to have allowed Linhof to set new standards in the field.

They have given their name to a few lenses bought in and fitted to their cameras, one being the:

Technikar f3.5 95mm on the Linhof 220 (issued in 1966), which was noted at No5,358,63x, 5,896,77x, 5,897,28x. This was officially described as a Rodenstock lens, of 4g/3c Q15 type.

and the:

Technikon lenses bought in from leading German makers.

Technikon f2.8 95mm No4,760,62x noted on a Technika Press No808x (This seems to be an anomalous body number, and may be 80.8xx.)

A cine lens seems to be the **Helan** f3.0/40mm and **Colan** f4.5/30mm from the early 1920's mentioned by Ariel's in his Index.

Lizars,J., Buchanan Street, Glasgow UK.

Lizars were working opticians and instrument makers who at least in 1906 (B.J.A.) offered several own brand lenses and this could be of their own make but were more likely bought in and engraved with their name. Their products are often known as 'Lizards' with affection. In the 1950's their shop was a good size upstairs photo section with the opthalmic business downstairs. And there were often secondhand items in a roadside case to look at- interesting ones as it was then a long established business. There was also a good shop in Edinburgh with a wider stock range.

The items advertised in 1906 were:

(a) Kram Convertible lens. f8.0 5½, 6½, 9in. It was suggested to use 6½in for 5x4.

This was an RR of Q5 type, and the cells were of 1.5 and 2.25x the focus of the whole. These were still on sale in the B.J.A. 1916, so they would seem to be either UK or France in origin. In price, Kram was above the Beck Neostigmat f7.7, and below the Aldis f6, and would seem a bargain, possibly from a French maker.

(b)Kram Wide Angle It was made in 3 sizes for 1/4 and 1/2 plates and for 5x4. Type Q6.

(c) An RR marked 'Challenge' of f7.0 and about 5in was probably bought in but sold by Lizars. In fact Challenge may be the camera brand, and this was a Lizars trade name.



Fig 008 055 Scottish Lenses engraved by (front) a Lizars' Challenge RR f8/5in and (rear) Hume (l) RR for 8x6in with Wh stops and (r) a Petzval for enlarging.

Andrew J. Lloyd, 323, Washington St., Boston, USA.

They were dealers active in the 1890's mainly selling Bausch and Lomb lenses but apparently putting their own name to some other items.

Extra Rapid Rectilinear f6.0 6.5-22in

Lloyd Special Rapid Rectilinear f8.0 6.0-31in. This was noted at auction with a 1894 date stamped on it or the Rochester View camera fitted with it.

Lloyd Special Wide angle 3.5-22in

Achromatic Meniscus 5.125-13in

'Andrew J. Lloyd and Co, Lloyd Special Extra Rapid Rectilinear' was noted on a Rochester View Camera.

Loman, Amsterdam, Nederland.

This firm seems to be related to Loman and Co., Old Broad St, London about 1890-1895.

Aplanat f8.0 140mm c.1900.

This is said to be 'rare' and sought after in the Netherlands. The example seen had no number and was apparently in a nickel finished mount with a black ring at the front, and Waterhouse stops, and was a 140mm f8.0 but different from that above. Was there only one focus made?

London Stereoscopic Co Ltd., Regent St, London.

They were one of the major importers and dealers of the late Victorian era, and not confined to stereo cameras by any means. They often added their own name to the items they sold and it is hard to say who made them now: their standard of equipment was high and normally the items are well worth having today. In 1889 and 1901 they used the trade name "Black Band" (here abbreviated as BB) on much of the equipment they sold including lenses, as follows:

BB Euryscope f6.3 This was made as: 4.75, 6.0, 8.25, 9.0, 10.5, 12.25, 16, 20in.

In 1889, this was f6, and f6.3 in 1901.

BB RR f8.0 This was made as: 5.0, 6.0, 7.5, 9.0, 10.25, 13.75, 15.8, 21.75, 25.5in in 1889, 1901.

BB RR Wide Angle f11 This was made as: 2.75, 4.3, 6.0, 6.25, 7.0, 8.0, 10.25, 13.75in

This was listed 1889 and 1901.

BB Mid Angle Rectilinear This "Will serve almost any purpose". It may be a portable except in name.

BB Portable Symmetrical f16 This was made as: 3.0, 4.0, 5.0, 6.0, 8.0, 9.0, 12, 15in. in 1901.

BB Rapid Landscape in conical mounts in 1889.

BB Single Landscape f8 This was made as: 5.0, 5.5, 8.25, 10.5, 14, 18in. in 1910

BB Extra Rapid Portrait f3 This was made as: 4.75, 6.75, 10.25in. in 1901.

BB Portrait Lenses f4.0 This was made as: 4.5, 6.5, 8.0in. in 1901.

The "**Black Band**" is a prominent feature round the front of the barrel on a lens for an Army and Navy 1/2 plate camera. One was noted at No17,14x with an 'odd' knob on the side of the barrel- possibly an iris control. But there is no such knob on the iris of 'Black Band' No17966, an RR for 7x5. It does have a very prominent raised iris for f8 to f64. It just could be from Beck.



Fig 022 006 London Stereo Coy Black band RR for 7x5in No17,966.

Black Band "Twin Carlton" No20,16x This was noted on a Twin Carlton 1/4plate camera at auction. They also sold **Planastigmat** lenses such as an f6.8/4.75in lens in Koilos shutter for 1/4plate.

Lousy Lenses

Photographers have been fascinated by the lenses most users tended to dislike, but it is hard to find a definitive list. And probably legally dangerous to publish one! But suggestions do contain a rather high proportion of the faster triplet type lenses, with several owners suggesting L- V- and M-, and lenses on

postwar 35mm cameras with D- and I- lenses, as well as similar lenses. All these and many cheaper 35mm American lenses have something in common- a rather fast aperture for the design. [And it should be added, most were fully acceptable to the original owners, so it is hard to say they were defective in any real sense.] In fact the doubts have come when they are exposed to uses and standards which the maker never envisaged when they were made, and which the original sale did not intend. It as if the buyer of a secondhand family saloon then complained when it did not cross moorlands like a 4 wheel drive or corner like a racing car. In this way, the f1.9 Primoplan is cheaper and less sharp at the corners than the other f2 lenses for the Exakta- but it is doubtful if it was a disappointment to the original owner. Some extreme speed lenses now seem poor- such as the f1.5 Xenon and f1.9 Prolinear, but were much admired when new. One curious example is the f2.8 Tessar, liked in 50mm form but much less so in the 80mm version- unless for the Hasselblad where it was admired! And perhaps the 85mm Triotar for Contax, which was a cheaper lens than the rest of the series and may have suffered in comparison.

But rather than try to list them and perpetuate prejudices, a suggestion is for the collector/user to try lenses before purchase and make up his own mind from real experience. This showed that a Ludwig Victar f4.5 could be extremely sharp (and excellent shots from a f2.9 version have been seen), as was a Contax Triotar! Many of the others are still untried but a 3-glass 50mm f2.9 Cassarit gave very nice 10x8 prints when stopped down. Often it is the setting of the lens for focus which is to blame in folding cameras with floppy fronts and cheap assembly work. In this case one idea is to transfer the lens and shutter to a plate camera such as a Linhof where it can be focused on the ground glass screen. However at least one English 3-glass f6.3 was poor on the original camera- and still mediocre whatever else was tried! And note that this class might contain many cheap other-brand Japanese wide angle lenses and older Zooms. Antique lenses to distrust are Victorian brass ones with no makers name, often of cheap glass poorly mounted- the quality of the threads can be a warning here. And remember there are acute national prejudices which do show up, especially when discussing French lenses with Englishmen, and English lenses with Germans. But this says more about history and photographers than it does about lenses! *So this is really a situation where the advice is "to try before you buy, with a warning that you may find much better lenses than you expect."*

Fritz L. Lucht, Berlin, Germany.

This was a prewar maker of a Nikette camera fitted with a Luxar f3.5/50mm lens for 16 on 127 film. The maker is not given. (Modern Photo 07/1978, p74).

Ludwig, Lausa, later absorbed into: Weixdorf bei Dresden, Germany.

Hummel in his book says the firm was founded in 1924 by Ernst Ludwig (1897-1975) by buying a small works owned by Karl Ulrich which had been founded in 1919 at Zeiss-Abbe Strasse, Lausa-bei-Dresden with some 35 workers. Initially anonymous lenses were made for the trade, and the address may have lead collectors to think the lens was a Lausa. (This village was later absorbed into Weixdorf, hence the apparent move!) This changed in 1932, when Victar lenses were fitted to some Korelles 6x9 and 6x6 cameras.

Victar	f6.3	105mm for 6x9cm.
Victar	f4.5	105mm same
Victar	f3.5	75mm on 6x6cm.
Victar	f4.5	75mm same

Ludwig lenses seem all to be triplets in the lower price range, but at least the original ones were good performers and nice to use. Like many in the German industry they extended their 3-glass designs to faster versions at apertures of up to f2.9 and these can never be as good, but were probably well liked by their original purchasers who wanted a fast lens, perhaps to take colour transparencies on holidays and could use the slow films then available with greater ease as a result. It was in 1932 that lenses for the 3x4 and 4x6.5cm sizes called Vidar were launched.

Vidar eg f4.5 60mm on Karmaflex (1937), Korelle 3x4 as 50 and 75mm (Triplet.) On the Korelle it was the low price option. It was also on the Kenngott (Stuttgart) Vinci cameras.

Vidar f3.5 25mm on a MiniFex.

Victar f3.5 25mm This was used on a Mini-fex from Fotofex (Berlin) in 1936

By 1936 Hummel states the workforce was about 70 and a wider range was possible to make. Thus Ihagee lists Anastigmats separately as Ihagee (?ex Ludwig?) and Anastigmat Trioplan (ie ex Meyer) and the Czech camera makers of the Bellar suggest another- and then you might speculate on Dresden lenses such as Certar, Enoldar and Weltar, with the Pilotar as a proven case- some are marked Ludwig.

Victar f2.9 This had front cell focusing and was the second option on the Beierflex in Min. Cam. World 08/1939, p689, above an f3.5 Victor but below the price of an f3.5 Radionar and others.

Enoldar f2.9 75mm This was noted on a Korelle P for V.P. size and carries the Ludwig name.

Bellar f3.9 75mm on Kamerad 1 (1936)

E. Ludwig "**Lausa**" This may be confusion with the address on an early lens, not a lens name at all. But we have seen what seems to be "Lausa Doppel" on a mount.

Victar f4.5 105mm in Prontor 11 1-1/150sec, for a folder.

This was seen at No506,34x. Experience shows this is a perfectly sound lens on Poleroid. It was originally used on the Beirax 6x9cm, and others. On 5x4 today, the contrast seemed low but the sharpness was excellent when stopped down. This is important as later faster Victars have been much less well noted in published reviews where versions to f2.9 were seen.

Victar f4.5 60 (or 80?)mm on Stereo Altiscop (1937)

Pilotar f4.5 75mm supplied on Pilot 6x6 reflex Seen at No449,92x. They are engraved as Ludwig make.

A collection of Ludwig lenses for Exakta shows Victars up to a serial number of about Nr620,000 when the production changes suddenly to Meritar, from about No755,000, definitely after the War, and possibly due to changes in the glasses. But a correspondent notes that the front curvature on Victor and Meritar of the same specification is the same or nearly so- so it may just be a change of name. Pre-war Victars were for both VP Exakta in f2.9 75mm and 35mm Kine Exakta in 50mm f2.9, while postwar they seem only to be in 50mm often for Exakta.

Postwar

It is likely that as Lausa is some 7 miles from Dresden it escaped much of the blitz, but the name changed as it was included in Weixdorf. Production seems to have restarted quickly as a Meritar f2.9 or f3.5/ 50mm was offered for the Altissa "O" at the 1945 Leipzig Fair, and f3.5/75mm Meritars were listed for Weltax cameras in 1946 and on the Reflecta TLR in 1948, and as a f2.9/50mm Victor on the Mimosa camera in 1948. The last may be for Baldina cameras in 1948. Postwar, the Ludwig family kept control of the business, perhaps due to popularity with the employees or just due to the small size of the firm. The state took a 16% interest in 1959. Later in 1972, it was converted to a VEB with the employees in control.

Pelar f2.9 50mm on 35mm camera, 1947.

Peronar f2.9 50mm on Exakta 35mm, this seems to be a scarce version made fairly early in the Meritar production. It is not known how it differed, but one suggestion is that it was for sales in USA or possibly South Africa. The example seen was No865,37x in white alloy for Exa, and was V coated. It has very noticeable diamond knurling on 3 rings, and 5-bladed manual iris. Thus the mount was very distinct from the Meritar but measuring the external curves shows they are the same.



Fig 029 023 Ludwig Peronar f2.8/50mm No865,378, and Meritar f2.8/50mm No1,581,938.

Meritar f4.5 105mm? It was fitted on 6x9cm Belfoca, about 1956, as alternative to the Feinmess Bonotar f4.5.

Meritar f2.9 50mm This was a low cost Triplet often supplied on Exa and Exakta cameras. Two types of mount exist for the Meritar, the early is all white, and the later is with black enamel filling to the reliefs. It was also fitted to Prakticas till the early 1960's. Meritar continued on Beier and Certo cameras, often sold in East European markets though some sales to the West occurred. Total production has been suggested as 840,000 or more. As pointed out above, the surface curves are the same as the Peronar but the examples seen were in quite different mounts. The trade name is thought to have needed change in some countries, and Meritar seems to be unknown in the USA as a result.

Meritar f2.8 45mm on Beroquick KB 135 about 1960??

Meritar f3.5 75mm on Altuca for 6x6cm from Altissa, Dresden about 1949, also Weltax 6x6 in 1954..and Weltaflex, about 1954.

(**Rectan** also was used on Weltaflex, maker unknown)

Altissa also used a Periscop f8 for 6x6, source unknown.

Meritar f3.5 50mm on Feca for 24x36mm about 1955.

Auxanar f4.5 6cm This was an enlarging lens for 35mm and is of uncertain date.

After 1972, further amalgamations occurred. These were

1973, Weixdorf absorbed Optischer Betrieb Angermann, Lieberstadt.

1975, Weixdorf absorbed VEB Seilwerk Dresden; BT Langebruck (formerly Fa Jurgens

1975, Weixdorf absorbed VEB Optica Dresden (formerly Geissler)

1977, Weixdorf absorbed VEB Feingeratebau (formerly W. Mautner

Then in 1980, the whole was absorbed into Kombinat VEB Pentacon Dresden and then into Kombinat VEB

Carl Zeiss Jena in 1985. Finally the whole was thrown into Pentacon Dresden in 1990, and then liquidated.

One comment may be that some of these firms would have been more viable in the new world in their original state than after amalgamation and absorption. But that is hindsight.

An anonymous list in the archive quotes Ludwig serial numbers as 1935, c400,00; 1939, c.600,000; and postwar: 1951, c.800,000; 1954, 1.1m; 1957, 1.4m; 1960, 2.0m. This would make the Peronar about 1952 which is reasonable.

Lueen and Co., Phila., USA.

This name was noted on a 4x5 Pantagraph RR lens on a Blair Lucidograph with 1884/7 pats. It will probably

be the vendors name.

Lumiere and Co, Lyons, France.

Lumiere are or were primarily emulsion makers supplying lenses on cameras to complete their line, but they also had a camera plant at Joinville-le-Pont, formerly of Jougla. They seem to have been especially active from about 1936. They continued in camera and film production during the WW2 though with some difficulty as the film plant at Lyons-Montplaisir was in the zone libre and the camera plant was in the zone-occupee. It is unknown whether they made or assembled lenses or just bought-in lenses to use under their own names- these were the cheap option where Berthiot lenses were a choice. Some of these cameras such as the Elgy's took individual sizes and are hard to use now. For details see B. Vial's book.

Stereo 6x13.

Lumiere made a stereo camera called the Sterelux from about 1920 onwards, the last being finished up about 1946. These were fitted with pairs of **Lumiere Spector** f4.5/80mm lenses so the vendor was plain even if they were bought-in.

For folders 6.5x11cm.

Topaz (Boyer) f4.5 125mm This was a three glass triplet. The Lumiere 6.5x11cm may be pre-war parts finished up postwar.

For folders 6x9cm

Lumix This camera had a meniscus lens.

Fidor f6.3 105mm This was on a Ludax folder.

Spector f4.5 105mm This was the premium lens of the set.

For 6x6

Spector f4.5 80mm This was used on the Lumiflex and Lumireflex. The finder lens is an f3.5/80mm lens.

(Berthiot Flor f3.5 75mm on Lumiclub)

Spector f4.5 80mm This was the low cost version on LumiClub. It was made about 1951.

For 16 on

Berthiot Flor f3.5/5cm was used on the Elax II for 3x4cm on 6x4,5 films in this pull-out front camera for rollfilm. Coated, these are about 1946, and were a high quality premium item.

Elgy film

The Elgys took 8 exposures 24x36mm on unsprocketed paper backed film and can give excellent results in careful hands.

Lypar f3.5 40mm on Elgy (1937-1948) This was the normal lens and probably was a 3 glass triplet. It can be really good. There are reports of both 50mm versions on early models, and 40mm definitely present on updated postwar versions- as well as the 45mm below.

Lypar f3.5 45mm This was used on the Elgy Club in the last bodies. It may have been changed to conform with the other 35mm cameras then in production.

35mm Film

Postwar, aout 1948, a series of 35mm cameras was sold, with new lenses.

Lypar f3.5 50mm This was on the first Optax in 1948, and may be one of the Lypars used on the Elgys.

Altar f3.5 40mm This name is only for the Optax, from soon after 1949. It may be mainly individual in name rather than design. It was earlier used on the Elgy I in 1949.

Lypar f3.5 45mm This was used on a late 35mm camera, Le Starter in 1955, in an everset shutter- a low cost starter camera.

Other lenses noted:

Fidor f6.3 105mm This was on Lumirex 6x9cm(1946) but was used as early as 1934 on the Dialux 6x9cm folders.

Spector f4.5 105mm This was on Lumirex 6x9cm

Spector f4.5 80mm This was on Sterelux (1920-1935) stereo for 6x13 on 116 film. It was later on the Lumiflex and Lumireflex in 1950/1951, and on the Lumiere 6x6cm (1954).

f4.5 105mm This was on Ludax 6x9cm in 4 speed shutter

Nacor f6.3 105mm This was on Sincox 6x9. This was a 1931 lens on a Nada 6x9cm.

Lumika, Japan.

A moderately common early postwar Japanese lens is the TriLausar and there is a suggestion in one book that the source was a firm called Lumika. Anyway there is a:

TriLausar f3.5 45mm on a Lumika 35.

Luttke and Arndt, Hamburg, Germany.

see also I.C.A.?

Luttke Periscop

Luttke Periplanat

Aplanat f8.0 165mm This lens was noted as dated about 1898.

Lykemar

This was a rather anonymous USA lens coded **Wide Angle Lykemar** f3.5 35mm in chrome mount with snail r/f cam, ie one shaped to allow for the smaller extension needed for a 35mm lens compared to 50mm. It is numbered EO516 and this might suggest it was a Kodak-style dated lens (from 1946), possible prototypic for Kardan. It is in an M39x26 mount, and coated, probably Q15 type layout. A possibly related **Lykomar** has also been noted: see an item under Anon.



Mackenstein, Paris.

Known for the Stereo camera and also for a small number of monocameras. It is noted for a **Mackenstein Series 6** f6.0/135mm on a 9x12cm camera and this just may be a Krauss lens under renaming.

H.Mader, Ismy, Wurtemberg.

A Mader **Invincibel Aplanat** has been noted on an Invincibel camera, (c.1889) where the lens is not certainly of Mader's own make. (Note UK Patent of 05/01/1888 to Mader and Oertal).

Macro-Skope

The UK agent was Kirsch Instruments, 54, Merrion St, Leeds, LS2-8JH

This was a multi purpose device for up to 800mm as a tele and for extreme close-up. It included a viewfinder for use as a telescope, and all at £28 inc post and insurance.

Maksutov, USSR.

Maksutov was the designer of one of the first good catadioptric systems (Brit. Pat., 1944). They reached the West after the war, especially from about 1963. They were made in several styles and mounts over the years and there perhaps were also variations in the nominal foci of the smaller size. The initial product was for M39x26 thread to suit Russian Fed equipment (and later with Zenith register), and this version was awarded a "Grand Prix Bruxelles" when exhibited there in 1958. Later it was the combination of good quality, moderate price, and the growth of the SLR which made them have such an impact on the long lens market. They are an undoubted **Landmark** as a result. They were originally in a nice plywood case with a set of filter and the Bruxelles marking, and this should be the most collectable and not unduly costly. Note that there is no iris as with most "cats" and that the neutral density filter can be valuable as a result. Out of focus areas tend to show up as doughnuts due to the centre stop by the second mirror, and the unit is about f10 rather than the marked f8.0 due to the same factor. They sold well in the USA from 1/1964 and it seems that the importer there was instrumental in getting supplies with standard SLR mounts available- too many are found with the Zenith thread and register or with one-off adaptors. (See Prof. Wynne in Prog. in Phys, 19, p321, 1956; also Maksutov, in J. Opt. Soc. Amer. 34, p270, 1944).

MTO 500 f8.0 Mak001; Basic Cat Mak002.

MTO 1000 f10 same Makers Code "MC MTO-11CA"

The 1000mm is less common but was and is also still normally available. It is sufficiently long to be rather hard to use well. Even in 1987 it was still "for Zenith type cameras."

Makina Optical, Tokyo, Japan.

The UK agent for these was Polysales Photographic, Ltd, Polysales House, Meadrow, Godalming, Surrey, UK; Tel 04 868 7998. (1980). They seem to be appointed in 1980 (B.J.P. 07/03/1980 p215). An important source here is Makinon Lens Photography by Stephen Bayley, Dorkstar Ltd, Harley St, London W1 1983 98pp. It states that the Makina Optical Company Ltd was first established in 03/1967 to design and manufacture interchangeable lenses for 35mm SLR cameras, and initially made these for independant suppliers and for camera makers. Then in 1974, they extended into selling lenses under their own name as the Makina Trading Company and by 1983 employed some 400 persons at 9 locations in Japan and exported to some 55 countries with a wholly owned subsidiary in the USA. The company was organised as 5 departments, viz. Research and Development; Production; Quality Control; Marketing; and shipping.

In the UK they sold:

f2.8/24mm, 9g/7c;

f2.8/28mm, 8g/7c;

f2.8/135mm, 5g/5c;

?also as a 4g/4c in the 1983 book

f3.3/200mm 5g/4c; not in the 1983 list

f4, 300mm, 5g/5c;

this is ?replaced by a 8g/6c f5.6 mirror in 1983

f8/500mm mirror of 8g/6c in 1983 list

f11/1000 mirror 7g/6c in 1983 list

24-80mm 9g/8c (1983)

f3.5 28-80mm, 14g/12c; or 14g/14c in 1983

f3.5/28-105mm 14g in 1983

f3.5/35-70mm 8g/8c in 1983

f3.5/35-105mm 15g/4c? in 1983

f4.5 80-200mm 13g/9c.

75-150mm 14g/10c in 1983.

Camera mounts supported included Olympus, Canon (FD?), Minolta, Nikon, Pentax K mount, M42 screw, Fujica, Konica, Contax/Yashica, Rollei, etc.

Note that the list did change from 1980 to 1983 though the book just may have items not sold. There was a supporting range of teleconverters, slide copier, extension tubes, etc which may suggest Makina were also a trade supplier of these in the 1970's. But this may have been an awkward time to expand as auto focus cameras were to emerge and these were not friendly to independant lens makers.

This seems to be in use as a brand name in Modern Photo 08/1980 p121 for a lens series from Cost Plus, 3855, W.Oakto, Skokie, Ill 60076, USA for lenses:

f2.8/24mm; f2.8/28mm; f2.8.135mm; f3.3/200mm; f6.3/400mm; f3.5 35-105mm; f3.8 75-150mm; f3.5 28-80mm; f3.5 80-200mm; the last two were macro focus designs. [Any relation with the Plaubel Makina is obscure.]

A f8/500mm mirror lens was noted in B.J.P. 13/03/1981 p281 which had the unusual close focus ability of 1:4 image scale at closest.

Malik,

This was a prototype lens listed, especially for Exakta, (1963) and these include a **Zoomalik** 35-75mm f2.8. In France, FBB list the prototype Zoom on the Malik SLR prototype in 1960 and this may suggest a product planned to parallel the Zoomar and not continued.

Mamiya Camera Co Ltd., Tokyo, Japan.

Agent for UK Rank Audio Visual, POBox 70, Great West Rd, Brentford, Middlesex.

See B.J.P. 21/09/1979 where it indicates that Mamiya were jointly owned by Bell & Howell and J. Osawa up to about 1979 when Osawa took complete control.

Mamiya have long supplied lenses to match cameras, especially in the medium format sizes. One major success was the twin lens reflex for interchangeable lenses which was a real novelty in this field. They have also made 35mm SLR's and the Mamiya Press camera. Thus this is only a first approach to the product range.

For TLR Mamiya Sekor lenses in pairs on panels.

f4.5 55mm this was noted in a 1975 list (B.J.P. 26/12/1975)

f3.5 65mm retrofocus type. (Modern Photo., 7/1965, p85)

f2.8 80mm

f3.5 105mm

f4.5 135mm

f4.5 180mm

f6.3 250mm This was noted in the 1975 list which also had all the others above.

For a contemporary review, see Modern Photo. 2/1963. The review was favourable but not startling.

Performance in actual use seems to be better than the review suggests. This was a favoured professional system with long term popularity. The actual details of the finish did change somewhat over the years but most items are fully interchangeable. Some updates were available from the Agents, Rank Audio Visual such as automatic click stops to the older lenses. (B.J.P. 14/04/1978, p311)

RB67 This was the big reflex camera. The lens list in 12/1975 was already:

Sekor f4.5 50mm

f4.5 65mm

f3.8 90mm

f3.8	127mm
f4.5	180mm
f4.5	250mm

35mm SLR's

Mamiya Auto SLR (1/1963.) This may be related to the next item also although the mounts may differ.

It was offered with;

Terragon	f3.5	35mm
Mamiya Auto	f2.8	35mm
Mamiya Auto	f2.8	135mm
ColigonPS	f2.8	135mm
Quinar PS	f4.5	200mm from Steinheil.
Piesker PS	f5.5	400mm

Some of these have nothing to do with Mamiya, but were packaged by the vendor.

Mamiya Reflecta (c.1963) This camera had an Exakta bayonet but with the auto iris mechanism working differently and this prevents any compatibility with original Auto Exakta lenses. Note the standard lens was a Canon f1.9 50mm.

Mamiya	f2.8	35mm
Mamiya	f3.5	135mm

Mamiya Press lenses

	f6.3	65mm
	f3.5	90mm
	f3.5	100mm This was a later and 'much to be preferred' lens.
	f5.6	150mm.

Soft focus There was a reputed soft focus f4.0 lens for medium format but no details are available.

J.Bethell in B.J.P. 11/06/1997 p21 refers to a f6.3/50mm lens of a Press as a very useful item after transfer to a Sinar panel for use on 6x9cm.

Other

Mamiya	f3.5	14mm full frame fisheye 10g/7c (c.1980)
Mamiya	f4.0	24mm 180° fisheye for Mamiya 645 (1980)
Mamiya	f4.5	37mm 180° full frame fisheye (c.1980)
Mamiya	f1.7	58mm in M42 mount for Mamiya-Sekor camera type PB/CWP (7/1965)

A new **Mamiya ZE system** camera was reviewed by L.A.Mannheim in B.J.P. 29/02/1980 p192 with a bayonet mount but able to use older lenses from the Mamiya NC series. The new series were:

f3.5	28mm 5g/5c
f1.7	50mm 6g/5c
f2.0	50mm 6g/4c
f3.5	50mm 5g/4c
f3.5	135mm 4g/4c
f4	200mm 5g/5c
f3.8	80-200mm 14g/10c.

Mamiya 7II Dual Format

This is a rigid rangefinder camera with interchangeable lenses for 6x7 normally with 35mm adapter. Lenses are:

Mamiya	f4.5	43mm
	f4.0	50mm
	also 65, 80, 150mm at f4 or f4.5. (Popular Photo 11/1999 p4).	

Millenium Lists for Mamiya were:

Mamiya MYA series

f2.8	45mm	9g/7c
f2.8	55mm	7g/6c
f2.8	80mm	6g/5c
f3.5	150mm	5g/5c

f4.0	210mm	7g/5c
f4.5	300mm	8g/8c

MYM series for Mamiya G45 AF

f4.0	24mm	10g/8c fisheye
f3.5	35mm	9g/7c
f2.8	45mm	9g/7c
f4.0	50mm	10g/8c shift lens
f2.8	55mm	8g/6c
f2.8	55mm	8g/6c in leaf shutter
f4.5	55-110mm	11g/10c
f2.8	80mm	6g/5c
f1.9	80mm	7g/6c
f4.0	80mm	6g/4c Macro lens
f4.0	105-210mm	13g/11c
f4.0	120mm	9g/8c
f3.5	150mm	5g/5c
f2.8	150mm	6g/4c
f3.8	150mm	5g/5c
f2.8	200mm	7g/5c Apo colour correction
f4.0	210mm	5g/4c
f5.6	300mm	6g/5c
f2.8	300mm	9g/8c Apo colour correction
f5.6	500mm	6g/5c
f4.5	500mm	11g/9c Apo colour correction

MRB series for Mamiya RB67:

f4.5	50mm	11g/8c
f4.0	65mm	9g/8c
f4.5	75mm	11g/9c shift design
f3.5	90mm	8g/7c
f5.2	100-200mm	14g/12c
f3.5	127mm	6g/4c
f4.5	140mm	6g/4c macro
f4.0	150mm	5g/3c soft focus type
f4.5	180mm	4g/3c
f4.5	210mm	7g/5c
f4.5	250mm	5g/5c
f4.5	250mm	7g/5c APO colour correction
f5.6	350mm	7g/6c APO colour correction
f8.0	500mm	6g/6c
f6.0	500mm	7g/7c

MRZ series for the Mamiya RZ:

f4.5	37mm	9g/6c
f4.5	50mm	11g/9c
f4.5	50mm	15g/11c
f4.0	65mm	9g/8c
f4.5	75mm	11g/9c shift lens
f4.5	75mm	11g/9c
f3.5	90mm	6g/6c
f5.2	100-200mm	14g/12c
f2.8	110mm	6g/5c
f4.5	140mm	6g/4c
f3.5	150mm	6g/4c
f4.0	180mm	6g/4c
f4.5	180mm	4g/3c
f4.5	180mm	4g.3c
f4.5	210mm	7g/5c
f4.5	250mm	5g/4c
f4.5	250mm	7g/5c APO colour correction

f5.6	350mm	7g/6c
f6.0	500mm	7g/7c

Manhattan Optical Co., New York, USA.,

The Manhattan Optical Co merged with Gundlach Optical Co in 1902. Their products do not trade regularly in the UK. A No2 Daisy lens for 5x4 with wheel stops was noted at auction.

Societe Manufrance, France.

They seem to be associated with Sito-Royer, to make a 6x9cm folder in 1953, with a Luminor f4.5/105mm lens.

Marep

This was a series of T mount lenses for SLR cameras which was sold by R.F.Hunter, Celfix Ho, 51 Gray's Inn Rd, London WC1 in and after June 1967. They were all in T-mounts, and seem only to have been with preset iris.

f2.8/35mm; f3.5/135mm; f4.5/200mm; f5.6/300mm; f6.3/400mm; f8.0/500mm.

Marion and Co, Ltd, 22, Soho Square, London, UK.

Marion were camera dealers from about 1850, and became one of the key players in the APEM business, hence the SOHO reflex. But it is unlikely they ever made lenses, rather acting as selling agents for other makers. The name Marion has been noted on these, and their actual manufacturing capacity for cameras may have been slight also. They were sole agents for UK and the Colonies for Voigtlaender of Braunschweig in 1889. A distinctive early **Meniscus** lens of some 12in focus with washer type stops has been reported, an example of a 1850's type item. In a later list they seem to be mainly advertising RRs (Q5) in the 1880's and the one seen was a f8.0 7in lens in the old 1.5in fine thread mount. It was in a unusual brownish, non-lacquered finish and had 2 other points to note.

(1) The barrel was normal but the end mounts for the glasses were made integrally with the flare ring at the front and integral with the mounting thread to the flange at the rear- nice but not the usual design.

(2) The flange has no screw holes to fix to a panel- suggesting that this was the *camera maker or customers'* job to drill to suit his camera. *Was this a normal 19C convention?*



See Fig 007 025 Marion RR c.f8/7in in 1.5in fine screw flange with no holes drilled; [also a Shew RR in early shutter.]

They were noted in B.J.P. 24/05/1878 cited 24/05/1918 p466 for introducing a pneumatic shutter release for studio work, apparently from a UK source.

There was probably a complete series of lenses of the period. Thus in **1889**, they listed (BJA p872):

The "**Soho Rapid Lens**" in sizes for 1/4plate; 5x4; 1/2plate; 1/1plate; 10x8in; 12x10in; 15x12in.

Marions **Rectilinear Form of Lenses** with nickle mounts. At that time they had been on sale for 10 years, ie 1878-1888 (but perhaps not always with nickel?) and were for 1/4plate, 1/2plate, 1/1plate and 10x8in. These may be old glass lenses while the above are new Jena glass.

Wide Angle Rectilinear Form. These were sold in 1889 to cover 1/4, 1/2, 1/1 plate and 10x8 12x10 and 15x12in plates.

Portrait Lenses.

These were sold in 1889 as Marion's **Excelsior**, for CdV and Cabinet; Marion's **Extra rapid Cabinet**, and Marion's 1x1plate or **Quick Cabinet**.

In 1895 they listed 2 series of RRs as follows:

- (a) **United Rectilinear Series:** This was a double combination of good quality for 1/4, 1/2, 1 plate;
- (b) **Marion's Soho series** for 1/4, 1/2, 1 plate; also 10x8, 12x10, 15x12in. This was the 'recommended' series but at nearly 3x the price of the cheaper one.
- (c) Marion sold a miniature in 1898 for 3.25x2.375in with a unknown lens to suit.
- (d) Marion's metal miniature, a smaller camera, with lenses to suit.

Marion is a desirable 'name' on a lens but mainly for the camera association.

Martyn's Stores

They seem to be the source of a lens engraved "Plutar Extra Rapid f8 The Douglas. Martyn's Stores". It is probably a vendors label.

Marum

This was a trade name noted on TV accessory lenses.

George Mason and Co, Glasgow, UK.

This seems to be a shop carrying a range of bought in lenses and they may have engraved their name on them. About 1900, they included French Portrait lenses (Petzval?), Euryscop (Jena glass), RR and WAR, and their own brands of snapshot lenses. These latter may be meniscus or RR. No example has been seen with this name on it.

Matsushita Electronic see Panasonic as a trade name

They introduced a video camera noted in B.J.P. 16/05/1980 p479. Lens was a Fujinon 6x zoom.

Mattey, (Etablissements A. Mattey), Paris, France.

They were noted in B.J.A. 1951, p120 for a prismatic beam splitter called the 'Stereofocal'.

F. Matthias, Dresden, Germany.

Matthias made a series of 6x9cm folders mostly with normal lenses of the period 1934, but with two unnamed Anastigmats, f6.3 and f4.5, of unknown source.

Maugey aine, Paris

He is listed in a Kodak Museum list as making a Petzval f5/5in lens about 1850. No other products have been noted.

Mayfair Photographic Suppliers, 166 West End Lane, London NW 6.

Mayfair were agents in the 1960's (?) for Komura Soligor and Sun and supplied their own **Crystar** line as: f3.5, 35mm; f2.8, 35mm; f4.0, 200mm; also Chelico, f2.8, 135mm; f3.5, 200mm. Another line may be the Mayfair Sankor f3.5/135mm lens with preset iris for Exakta. These were all preset lenses.

William McIntosh, Ltd., Change Alley, Sheffield, UK.

This business seems to have been previously (from 1839), been associated with Watsons and Wallace Heaton, and was sold to Mr McIntosh who had been their manager for 14 years. This may be how he came to give his own name to a series of **Wilmac** lenses used on cameras he probably imported, possibly through the normal channels, but with his own labels. [This might be rather as Heatons also did.] Thus in 1928, he sold a normal range of cameras especially cine, but also the Wilmac de Luxe folding plate for 3.5x2.5in with a **f4.5/4.25 Wilmac** lens at £7.35, and a Wilmac Junior for 2.5x3.5in and 1/4plate, with an **f6.8 Wilmac** from £2.50 as well as Wilmac enlargers, tripods and so on. These cameras seem to be fairly normal small black plate cameras, but the thick body walls suggest they were still built of wood. (B.J.A. 1928, 636, 1929, p632). [Note there was a separate company Sheffield Photo Co. at Norfolk Row, then 40 yrs established and with a series of Norfolk cameras which possibly proved a longer lived series.

J. C. McKechnie, Optician, 81a Castle St, Edinburgh, UK.

This was noted on a wide angle f4.5 5in No29,004 on a 1/4plate camera, but without further details.

Meade Instrument Corp, Irvine, Cal., USA. Tel +1 949 451 1450, or Uk try Broadhurst Clarkson and Fuller 020-7405-7211.

also 1675 Toronto Way, Costa Mesa, Calif 92626, USA.

They are a maker of mirror and refractive systems, including an Apo refractor of f9.0, in 900 and 1600mm, and also of Schmidt mirror systems, including an f3.0. A very impressive product range was still available in 1998. There was a 1,000mm Cat in Modern Photo 06/1980, p27 at \$285 ppd. In Ad2001 there was an 8in reflector LX-2000 at L2549, with cheaper items from a Meade 230 at L130 and prices ranged up to at least L17,000.

Meijlink, Nederlands.

This seems to be a Dutch product but it is not known if Meijlink was a maker or agent. It is a rather solid, brass cased triplet, of f6.3 and about 200mm focus.



Fig 007 021 Two anastigmats, probably branded by the vendors, as (l) a Sichel (UK) Fulmenar f6.8/6in and (r) a Meijlink's anastigmat (Nederland) f6.3/180mm (Nono).

Mentor (Golz and Breutmann), Berlin and Dresden, Germany.

They were noted makers of large SLR cameras and noted for only two lens points.

(a) One is that they were the users of the Rietzschel f1.9 **Prolinear** in two versions of their Mentor Reflex, and the prices may be of interest- at least for their relative cost. In 6x9cm format (the smallest!) these were with Tessar f4.5, 600RM; with Triotar f3.5, 645RM; with Tessar f3.5, 675RM; with Tessar f2.7, 750RM; with Prolinear f1.9, 960RM. In addition, a TeleTessar f6.3 added 205RM. Since the Prolinear was a 4-glass lens (as a Tessar was) it obviously commanded a premium price, but there may also have been a premium on glass blanks big enough to make it! Incidentally the Prolinear normally protruded from the front in the Nachtreflex model, but a 1926 advert. shows one with a Granny-annexe on the front to surround and secure the lens, and this was an option presumeably.

Also for the following;

(b) Mentor Spezial Optik on the Mentorette as an f3.5/75mm about 1935. This camera was a scarce 6x6cm TLR.

Meniscus

The very earliest lenses were just single components: very soon Chevalier found that the Wollaston (1812) type with a concave towards the subject was best and that the stop should be well forward of the lens. This could be improved by using an achromat- two lenses cemented together to bring at least 2 colours to focus at one point. Kingslake notes that the optical gain was dubious: however a user might say that the real point was the gain to the photographer in focusing which was more positive with a colour corrected lens where the visual and photographic focus points now coincided. Such a lens was usually made like a telescope objective as in Layout Q1, but almost from the beginning a second type, Q2 was available and may be better but more costly to make and in practice is rare. A third was proposed as a telescope objective by Gauss, as in Q16 (right half only) but never used in photography. The first two were staples in the Victorian era, probably made from Crown glass, 1.5407 and Flint glass 1.6225, and later Q1 continued on a myriad of cheap box cameras, often just as a single glass, prefocused in the factory so the the achromat added little. The term "new

achromat" may be used to describe Q2 but better is used for a new glass design, after the sale of the Jena glasses, and Conrady suggests then to use $G1 = 1.6118$ (Chance 4873) and $G2 = 1.5472$ (Chance 458) though other choices must be available. And in modern times, achromats were often used as very long focus lenses for miniature cameras, for the sake of lightness and simplicity, since they covered small angles very well.

Such simple lenses are a compromise in design, often limited to f11 or so soft as to qualify as soft focus portrait lenses where they were used up to f4 in some cases. But they do show distortion and all the optical aberrations, and the development of photography needed better lenses. One route was to set pairs of meniscus lenses about a centre stop- which almost automatically corrected for coma and distortion, as well as colour if they were achromats. Such pairs cover the Periscop of Steinheil and the Aplanat/RR (Q5) of Steinheil and Dallmeyer respectively, and some of the Portrait lenses, such as the Nicola Perscheid. Thus these can today be used temporarily as a source of meniscus cells by removing the front cell and the 4-glass Gauss might provide an example of the Gauss type. Such symmetrical doublet lenses were further developed with 3 glasses in each cell (Q9, Q10, Q11 and these were the earliest symmetrical anastigmats. Again these can provide single cells with some degree of improved astigmatism correction, but only over a limited angle as they were not designed for wide angle use alone. The simple construction means there is very little flare from a meniscus lens, and stopped down perhaps to f22 the results are very good if the angle covered is not too big. Often the originals used a 6in lens to just cover 5x4 or a 5in if it was rated as a wide angle meniscus which had the iris nearer to the glass to allow a wider field before the mount cut off the light. Some of the later complex types from Wide angle RR and symmetrical anastigmats do cover a really wide field and this is worth checking before use. The Gauss lenses were not usually intended to be used as single cells and this use may be "unfair".

Van Monckhoven says the English meniscus lenses usually had a glass of diameter 20% of the focus, and covered a diagonal 66% of the focus while the French version was respectively 14% and 50%. (P120). The radius of the concave side was about 33-50% of the focal length, the diameter being 16% of the focal length but the working aperture was only f16, f30 or less. He notes that in 1867 (publication!) the Grubb Aplanat was "new" and to be preferred. He notes that in the usual French form the concave face of the flint was to the subject, with the crown glass nearer the ground glass screen, and a larger size glass requires a greater distance from lens to stop and this can only be corrected by making the concave surface deeper which in turn introduces more distortion. The "Grubb" form has the crown glass toward the subject and the flint making the divergent glass nearer the ground glass (p118). He says the advantage obtained was a very flat focal plain, wider cover, reduced spherical aberration and thence greater speed and (incorrectly? that other English and American makers were then often using it. (Collecting experience seems to be of the cheaper old type with few of the 'Grubb' type.) He then describes the improved 3-glass type from Dallmeyer where a flint glass is sandwiched between two crowns to combine the advantages of both type.

Lake Price refers only to the original achromat landscape, and comments on the image quality as less vigorous than the Petzval Portrait but giving much more 'depth of focus' and prefers the Triplet or the Orthoscopic for 'rotundity of architectural form' and 'finish and delicacy' but says it works better into green foliage and landscape owing to it having 'only two reflexive surfaces', so he recognises the low flare quality of the simple lens. The Dallmeyer 3-glass S.C.Landscape is noted as having the diaphragm stop nearer the glass than the usual meniscus and covering some 90° and can be used at larger stops than the usual meniscus as the 3 glasses including 2 kinds of crown glass give better correction especially for colour. Both are more prone to distortion than the Orthoscopic' however.

Traill Taylor lists and discusses the Grubb Aplanatic, Dallmeyer 3- glass, the American Globe and what seems to be half a WAR (Da 016) with the edges ground flat to save glass, etc.(p43, etc). Later he mentions the value of adjusting the depth from the stop to the glass, as an increase in this can improve the edge sharpness. One case is the use of single cells of RR lenses which are normally much too near the stop if used alone. He mentions an extension ring placed between mount and cell of 0.75in thickness for a 1.625in dia. lens.

Meniscus lenses were often used as soft focus lenses eg. in portraiture and actually still are to some extent. A original article was by S. Black in British Journal 14/08/1924, pp486-7, B.J.A. 1926, p231. He says to open one of the old meniscus lenses up to f5.6 for diffused portraits with more glitter or shimmer than normal techniques. He prefers lenses with a convex set towards the plate and a rather long focal length for the plate. For even illumination, the glass must still be large compared to the stop.

Traill Taylor refers to the great depth of focus of the uncorrected single glass meniscus and to the possibility of having a sliding mount to correct for the difference between visual and photographic focus. One method proposed by Mr R.H.Bow of Edinburgh was to add a very weak extra lens while focusing and then remove it to expose. This is what Busch did in some of the Vademecum sets. The correction was judged to need a 2% reduction in focus. Example Lens focus 50in, subsidiary needed 245in. (p30)

Meopta, Prerov, Czechoslovakia/Czech Republic.

UK Agent W.F.Dormer, of Hendon.

A major maker of optical equipments, important for enlargers today, but supplying other instruments at least in the past. Their trade name **Belar** is one to look for on many of these. One source also lists **Benar** but this may be a printers error.

Benar 5.5-21cm This was listed in the B.J.A. 1938, p699 (Advert.) 1939, 671. This was an enlarger lens of unsymmetrical construction, and interchanged on a round panel. The firm then advertised as Ceskoslovenska Zbrojovka A.S., Opatikotechna, Brno, Czechoslovakia, and Meopta seems to be a later trade name.

Belar f3.5 75mm

Belar f3.5 80mm This was on the Flexaret. This is a Q15 4-glass lens listed in 1949 on a Flexaret 66

Belar f6.3 210mm This is a coated PIM large format lens with a plain iris (no clicks) to f45, and seems to be a Q15 type design.

Mirar f3.5 75mm This was fitted to Photina reflex c 1954.

Mirar f3.5 20mm It was noted on a Mikroma II camera but may not be numbered. It is 1950-1960's period. (See MCM July 1958). There was also a Mikroma 1 so the lens was not new then.

Mirar f3.5 25mm Note that this focal length was noted for Mirars on StereoMikroma cameras at No9,42x/947x and 496x/496x.

Mirar f4.5 80mm This was on a Milono folding bed camera.

Mirar f3.5 20mm on Stereo 35.

Stereo Mikroma f3.5 These were 25mm Mirars at Nos436x and 430x on a Stereo Mikroma.

Opema 35mm Camera

A major collector interest is the Opema camera, which is rated as a 'Leica lookalike' but has a smaller thread size at 38mm and smaller register, and a skirt round the edge of the lens flange. Therefore it has really no possible compatibility with Leica items in either direction. It is just possible to get the smaller thread to engage in M39 however especially if a little thread tape is wrapped round the lens threads, and the lens can then focus at infinity if the lens is pushed in 1mm on the collapsible tube, possibly after wrapping tape round the tube to set the amount of movement. Or in close up using a ground glass screen. Opema takes a nominal format of 24x32mm and the lenses are rather shorter focus for that reason as on some of the other cameras for this size. It was a novelty when noted in MCM 6/1951, with f3.5/45mm lens. It is worth noting that few Opema exchange lenses were offered at the auctions where most of these cameras were sold- long and wide angle lenses seem to be really scarce.

Largor f6.8 30mm this was noted at No110,12x and 110,18x.

Belar f3.5 45mm This was in a collapsible mount. It seems to be a Q15, 4-glass type, with a fine coating in several colours, seen at Nos 497x (2x) (one on body No350x), 43,64x, 45,30x, 45,42x, 45,52x and 046,89x; and then 105,70x and 439,90x, with the iris after glass 2. There seems to be a discontinuity in the numbering here, and the lens No105,70x was at auction in an outfit with 30 and 135mm lenses of near the same serial number, as if the 45mm lenses had been brought into line with the general production.



Fig 012 025 Meopta Belar f3.5/45mm No046,898 on Opema 32x24mm for M38.

Belar f2.8 45mm This seems to be equally or more common at auction (compared to the f3.5) and was noted at No 53,94x, 851,79x, 1,051,80x (2x), 1051,98x, 1,056,30x.



Fig 007 023 Meopta Belar enlarging f4.5/75mm Nos 326,603 and 306,232; and Cine 8mm with 2x Opemir f1.9 12.5mm No2698 and 25mm No2310, with geared focus.

Opemir f2.0 45mm This was noted at No106,29x on body 037,47x.

TeleMirar f4.5 90mm

TeleMirar f4.5 135mm This was noted at Nos 108,49x, 108,565 and 108,95x. It is a slim lens head at the end of a finely chromed barrel, using push-rod type coupling. The head seems slim for the barrel. The reflexions suggest a3g triplet with 1+1+1 layout but the head is fixed in the barrel and the rear reflexions are hard to see.

Telex f6.0 180mm

There were matching view finders and other accessories. Supplies of the usual items in the Czech Republic seem to be fair, with a TeleMirar available in a shop window in Praha. (10/2000) Repairers say 'no spares available' for Opemir.

Cine lenses, for Admirar 8mm camera, etc.

The C8IIa seen had two lenses on a turret, with the focussing gear coupled so that either could set both. The lenses were:

Opemir f1.9/12.5mm No2,69x and f1.9/25mm long focus, No2,31x. The apertures were set separately.



Fig 007 023 Meopta Belar enlarging f4.5/75mm Nos 326,603 and 306,232; and Cine 8mm with 2x Openar f1.9 12.5mm No2698 and 25mm No2310, with geared focus.

Polar Ariel lists this as a f1.6/25mm lens: it may be for projection.
Largor f1.8 12.5mm for Meopta about 1963, ie. possibly a little later.

Mergenthaler Lenses of this name are probably off a Linocomp phototypesetting unit and are not normal photographic items. The influx of new printing machines including Mergenthaler is mentioned in B.J.P. 24/08/1979, p822.



Fig 007 034 Mergenthaler lens, ? ex LinoComp photo typesetter NoA 1907.

Metra

B&J lists several Metra lenses, apparently for process work.

Scienar f11 600mm
Apochromat Scienar f11 480, 600mm

Carl Meyer

This was a trade name devised by George Drucker about 1927 and used by his firm on a series of lenses offered by Burke and James. Thus there was a set sold about 1961-1966 from a maker unknown, but described as "Made in the USA", custom built and top performance. They were listed secondhand as follows: f2.7, 150mm; f4.5, 250, 300mm; f5.6, 360, 380mm; for a range of SLR fittings.

Carl Meyer f4.5 105mm Reprostigmat advertised in Compur MX shutter.

A 1960's list has:

35mm Movie

Moviar:	f2.3	25, 35, 40, 50 60, 75, 100 125mm
	f2.0	50mm
	f2.7	150mm,
	f4.5	150, 210, 250, 300mm;
	f5.6	500mm
Videostigmat	f2.9	200mm

	f4.5	300mm
	f5.6	350, 400mm
"Gauss"	f5.6	210mm This just may be a wide angle large format lens.
16mm		
Videox	f1.5	12.5mm
Moviar Speed	f1.9	16mm
or Speed	f1.5	25, 60, 75, 140mm, also f2.9 100mm, f2.0, 125mm.
Moviar	f2.3	25, 35, 40, 50, 75, 100, 125mm
Speed	f2.0	50, 60, 125mm, also f3.0, 300mm.
Speed	f0.95	25mm
Videostigmat	f4.5	150mm
	f2.9	200mm
Speed	f1.0	37.5mm
Speed	f0.85	150mm in special sleeve.
Speed	f2.5	175mm, 319mm.
Speed	f2.8 or f3.0	at 300mm.
Speed	f2.8	105mm
Speed	f1.1	90mm
Recording: Reprostigmats. These are for special data recording and copy work		
Reprostigmat	f1.4	90mm
	f3.5	12.5, 20, 35, 40, 50, 60, 75, 80, 85, 90mm
Reprostigmat	f4.5	72mm, 105, 150mm.
Reprostigmat	f8.0	25, 150mm.
Reprostigmat	f9.0	50, 75, 180, 210, 240, mm
Reprostigmat	f6.8	300mm
Apochromat	f6.8	`270mm this may be the same series. A process lens.
Telephoto	f5.6/f4.5	250, 300, 360, 380, 400, 420, 500, 600mm
Triplet	f5.0	700mm.
Series "D"	f3.5	180mm
"Precision"	f8.5	135mm
Convertible	f6.5	190mm
Chromox	f3.5	180mm a Portrait lens for 5x7 for colour workers.
Pictorial	f4.5	250mm.

F.F.Meyer, Blasewitz/Dresden, Germany.

Ferdinand Franz Meyer was listed by Frerk for several lenses including RR's so it was probably quite an old firm.

B&J list two lenses as by F.Meyer.

LysioStar f8.0 450mm for 10x8in.

LysioStar f7.8 450mm for 10x8in.

A guess is that these are older, RR type lenses.

Lysioscope f7.2 This was an RR type in Frerk's list.

Lysioskope f7.7 same

LysioStigmat f6.8 This was a Dagor type symmetrical lens.

LysioStigmat f5.8-f6.8 This version was a Gauss "rather like the Simon Tetranar."

Hugo Meyer and Co, Gorlitz, Germany.

UK Agents included (1906) O. Sichel, London.

The firm was founded in the 1880's by Hugo Meyer and by 1896 was described as the Optical and Mechanical Institute in Loebauer Str, Goerlitz. Initial production was of Aplanats, ie. RR's and this was expanded to include the f7.7 Aristostigmat quite soon. Later came the f6.8 Aristostigmat and by 1901 this was extended to the f5.5 Aristostigmat. The firm moved to a new building at 22, Biesnitzer Str., and began to produce the 3-focus Aristostigmat sets. In 1904 they introduced the Atelier Schnell Arbeiter Portrait lens (Studio Rapid Worker), a Petzval portrait lens. These older lenses are in brass finish and are fairly common in the UK as Sichel seems to have been an active import agency and the lenses were competitively priced. They sell at normal prices for the period today. Some of the larger professional anastigmats are impressive if possibly not

very original in design.

Meyer joined Schulze and Billerbeck-(Frerk says Unternehmen= took over) in 1914 and continued some products such as the Euryplan. Between the wars they made several items of especial interest to collectors, and these require attention. Several come from the relation with Dr Rudolph, and others from attempts to supply the new miniature camera market that was growing up. Meyer also made or possibly just sold!- some cameras, though this seems to have been a subsidiary part of the business. The machining and design of the mounts of classic Meyer lenses can be especially impressive in view of their date.

After WW2 the firm was a favoured maker under the Communist regime but found it hard to maintain the same standards of finish and material, and the programme became a budget priced one, largely supplying the Exakta and Pentacon SLR market and the products were eventually sold as Pentacon, though in some cases they seem to have been Meyer designs continued with little optical change. Most of these sold well and are not costly on the secondhand market, but some of the longer ones actually have risen in value as the supply has ceased and their real quality has become more apparent. Examples are the f4.0 300mm Pentacon and the 400mm f5.6 TeleMegor. Incidentally, they are said to have supplied some rangefinders for MkIII Linhof cameras as well as Kalart- these just may have been USA fitments early postwar. (Popular Photography, 11/1999, p127.

Early Lenses from c.1896.

Landscape Aplanat f15 5.5, 8.25, 11in in 1908 This was a low cost lens, and almost certainly a meniscus. It was still available in the 1920's.

Aristoplan f7.2 2.375-22in RR, Q5, to cover 80°. This trade name was continued to describe a triplet, and it is worth checking which is seen. In 1908 this was as 3.375, 3.5, 4.75, 5.25, 6.0, 6.75, 7.75, 8.25, 9.5, 10.625, 12.5, 18, 22in focus. Aristoplan used Jena glass, the **Aristoskop** (below) probably did not.

Aristoplan Sets as above, with up to 5 cells in double sets. RR, Q5.

Rapid Wide Angle 3½-12.625in This was for up to 100°. See Sichel's advert. in B.J.A. 1906, p1139. It does not quote the aperture.

Rapid Wide Angle Aristoskop f15 3.5-12.625in to cover 100° This may be just the same as the above wide angle.

Aristoplanat f8.0 no data.

Aristoplanat f7.7 4.125-17.75in in 1911, this was a Q5 type, an RR. This may be a naming of an older product to meet then fashion, but the change in aperture suggests a redesign. (There is a later lens Aristoplan- it is a Triplet so Care!)

In 1908, this was as 4.125, 5.375, 6.0, 6.5, 7.5, 8.25, 10.625, 12.625, 17.75in and 70° angle was covered.

Aristoskop=

Rapid Group Aristoskop f5.5 4¾, 5½, 6¼, 7.125, 8¼, 9½, 10¾, 12, 14, 18, 22, 24in.

These give less coverage at about 60° and 14in is suggested for 10x8in. It was available at least to 1930. It was also sold as casket sets with up to 6 cells for 9x12, 13x18, 18x24cm. It was suggested for taking groups and instantaneous work outdoors. It was also supplied as a casket set with 6 lenses in 3 sizes, for 1/4, 1/2 and 10x8in approximately. Frerk lists it as the **Series B**

Rapid Wide Angle Aristoskop f15 3.5-12.625in to cover 100° This is a true wide angle RR type, in 3.5, 5.125, 6.0, 6.75, 8.25, 9.5, 10.625, 12.625in. A 5.125in lens covers 5x7in.

(Anon): A simple periscop lens was sold as a set, with 4 lenses but seems not to have had a trade name.

It may have been the *Universal Casket set* in the 1908 list in Model 1, 4.75-8.0in as pairs, and Model 2, for 5.0-14in as pairs, both working with 1/4plate upwards.

Tele-Negative Assembly This was sold in 4 sizes of negative focal length and format.

No 1 for 3.625in prime lens, No2 for 4.75-6.0 prime lenses, No3 for 6.0 or 7.0in prime lenses and No 4 for 7.0-9.5in primes.

Atelier Schnell Arbeiter=Rapid Studio Lens=

(Studio Rapid Worker) f3.0 7.0, 8.25, 10.75, 12.25, 14.125, 16in This was a Petzval, Q3 type, Layout Mey001. This has been seen as a large brass barrel lens: Later it was in a plain black barrel mount.

None of these early lenses seems to be common on the UK secondhand market. None has been noted in the metal, so no information can be given as to serial numbers. The next group have been easier to find.

Anastigmats

Meyer did not initiate one of the now classic anastigmat designs and only offered anastigmats later than others, but at least from 1898. They seem to have favoured symmetrical types for many years. It seems that

Aristostigmat was used as a trade name for several types of design. See German Pat. 125,560). One reason may have been problems over patent rights which may have limited access to some designs, such as Q9 before about 1905. Initially it seems to have just been referred to as the "Double" and may only be named from 1905. It was continued for many years after WW1. A designer at that time was Dr Servus.

Double Anastigmat f7.7 2.375-19in in 1898, when it seems to be 'new'. Q9 type.
 f6.8 1.625-30in in 1901, when the aperture was increased.

The actual range was 1.625, 2.375, 3.5, 4.75, 5.25, 6.0, 6.5, 7.0, 8.25, 9.5, 10.75, 12, 14.25, 16.5, 19, 24, 30in. 5.25in covers 5x4 normally and 8.5x6.5in when closed down. In 1926, longer lenses over 30cm were at f7.7. It can cover 85° and there was an f4.5 version at one time. The designer was Dr Servus, "now dead" in 1926. a f7.7/14.5in example seen was No382,66x in brass.

It was still made in 1936, (B.J.A. p567) in 1.625in, etc. and then 6.5in for 6.5x4.75in; 8.5in for 8.5x6.5in; 10.75in for 10.75x8.5in; 12in for 12x10in; 14in for 14x12in; 16.5in for 16x12in; 19in for 17.5x 16in; 24in for 24x20in; and 30in for 28x22in. Being a Dagor type design, it would have been a viable lens to sell to professional large format users into the 1950's, and certainly until WW2. The advert. stresses it was free from flare.



Fig 032 010 Meyer Double Anastigmat f7.7 14.25in No382,662 in black enamel (worn)

Double Anastigmat f4.5 Here use 18cm for 13x18 or up to 18x24cm if closed down.

After WW1

When supplies returned to the UK after WW1, the lenses offered in the B.J.A. advert. in 1924 were:

Aristostigmat f4, f5.5, f6.8

Wide angle Aristostigmat f9

Euryplan Series II f6

Double Anastigmat Silesar f6.8

Aristoplan f7.2

Aristoplanat f7.7

Telephoto Lenses (Not specified)

Meyer Portrait Trioplan f3.2, f3.8

Schnell Arbeiter f3.0

Group Aristoscope f5.5

Trioplan f3 for movie.

Double Plasmagat f4

Plasmagat f2 for movie was "ready shortly".

Aristostigmat

Aristostigmat became one of the most valued Meyer trade names, normally used for 4-glass Gauss lenses with good covering power. But note that the layout did vary though it is usually safe to expect a 4-glass Gauss design in later years. The classic 4-g Gauss Aristostigmat was designed by Kollmorgen, while he was with S&B and was covered under D.R.P.125,560 and the original Gauss version is said to date from 1901 as an f5.5 for a moderate angle of cover. [A later lens was the Busch Omnar of H.Kollmorgen (Frerk)].

Double Aristostigmat This seems to be the same lens as the Double Anastigmat above, later when Trade names were in use. These lenses were Q9 or more like Q16 type, possibly made under licence or after the patents expired. They have been seen as an f7.7 14.25in lens in a painted brass mount at No382,66x, which is a very impressive lens: white, sharp, and covering a good angle. The internal glass may be soft as it seems to have sweated over the years and on purchase needed a lot of cleaning. (Mey002) Later items are in black barrels.

a. Anastigmat Sets These were as Sets 1, 11, 111 for 9x12, 13x18, 18x24cm. and had 4-components in them. Some were sold as Aristostigmat sets, but by the 1920's they were simply 'Double Anastigmat' sets. (Mey002) f6.8 6.5, 8.5, 10.75, 12, 14, 16.5, 19, 24, 30in.

b. Aristostigmat Casket Sets: By 1903 there was also a series of 4-glass component anastigmats sold as Aristostigmats, as 3 sets, for 9x12, 13x18, 18x24in. These had 4 components in each and were sold for 1/4, 1/2, and 1plate and for 10x8in. Since the names seem to overlap it really would be necessary to examine lenses of this type individually for type. In 1908 there was also a Universal Anastigmat Set as No 1 with 4 cells and No2 with 7 cells.

Aristostigmat f5.4-f6.0 These were made in apertures varying with the focus, and may be dialyt type designs. It was made as f5.4, 2.625-6.5in; f5.5, 7.0-9.5in; f5.7, 10.75-12in; f6.0, 14.5, 16.5, 19in. All the double anastigmats were separable and the f6.8 covered 90°; f5.4, 85°; and the f4.2, 80°. Another list says 70° perhaps at full aperture. Later the f4.5, f5.5 and f6.3 were listed as separate products. (see below) It was another Q9 type to parallel the f6.8 above. Again the 5.25in covers 5x4 but only 7x5 at small apertures. (1908 approx.) See above: initially from 1901 as an f5.5 for use of 18cm on 13x18cm or 16x21cm stopped down. The early ones were usable stopped down as single cells and then the front was an f12.5 and the rear an f10, so they were not very different in focus. App036 is the layout of an f5.5 for 70°.

Double Aristostigmat f4.0 (?f4.6?) This was a Dr Servus design mentioned by Frerk and covering 70° and the speed made it something of an achievement, as it was well corrected as well. It was suggested to use 21cm for 13x18cm at f4.0. (There just may be a misprint of f4.0 in place of f4.6 here.)

Double Aristostigmat f4.2/f4.61.625-14.125in Mey003, roughly Dagor type. There also seems to be a 4-glass Gauss version which may be more usual. Here a 6in lens is needed for 5x4 and this covers only 7x5 closed down.

Wide Angle Aristostigmat

This trade name was used for many years and probably represents a series of related designs, all of them Gauss 4-glass and all wide angles but varying in aperture and angle covered as the years went by.

Wide Angle Aristostigmat f6.0 In 1909, this was a Gauss design. It was also made as an f6.3. It was rated for 105° with stops to f36. It is a slight puzzle why it seems to have been replaced first by an f9 version, and much later by an f6.3- possibly the f9 gave better correction initially and then new glass and design allowed a return to near the original aperture.

Wide Angle Aristostigmat f9.0 3.125-10.75in A Gauss design, Mey018. It covers 100°; and it is suggested to use 7.0in for 10x8in. This was quite an old design being 'new' in B.J.A. 1926, p315 in 3.125-10.75in, where 4.75in was used for 7x5in and 5.25in for 8.5x6.5in, and gave really wide coverage, possibly wider than the f6.3. It was seen at Nos 209,58x, 226,66x, 484,17x, 484,17x, 484,73x, so it was made over a long period from perhaps 1925 to 1950 (below). (in line with this, it was not noted in a 1914 BJA advert.) It must have been used on many cameras, but one example noted at auction was a f9/80mm lens on a 1/4plate Sanderson. These coverages are from B.J.A. 1935, p576 (and longest ones 1928, p667) and it must have been being phased out in favour of the f6.3 version about 1935. Applications were:

3.5in	4.75x3.5in at full aperture.
4in	6x4in
4.75in	7x5in
5.25in	8.5x6.5in
6.25in	9x7in

7in	10x8in
7.875in	12x10in
9.5in	12x10in
10.75in	15x12in.

Most are in barrel mounts as for indoors this was no great problem with slow plates in the 1920's. One noted was No377,72x in a very early dialset Compur at No381401, from about 1918.



Fig 032 006 Meyer Aristostigmats f9 3.1in No377,72x and 135mm No2,266,66x both in brass



Fig 032 024 Meyer Aristostigmat f9/9.5in No484,176. (A really big format lens where it may have sold to allow

the use of movements on a big plate camera).

Aristostigmat f6.3 2.5, 3.25, 4.0, 4.75, 5.25, 6.25, 7.0, to 19in. It was suggested to use 7.0in for 10x8in. A Gauss dialyt design, Mey018, 019, under D.R.P. 125,560 to cover 100° This was noted for 1937 (B.J.A. 1934, p294; 1936, p299) for 3.125-10.25in, when it was initially 'new' and replacing the f9 at the same price as the f9, possibly the new lens being made as new glass was available and competitors lenses were faster so that an upgrade was needed. Even so the 1935 B.J.A. still carried a full page advert. of the f9 Wide Angle, with the f6.3 in small print at the bottom as "only in standard mount" and not in shutters- prices same as f9 standard mount." The f9 was then in choice of barrel, or Vario, Ibsor or Compur shutters.

The 1936 lens was also a 4-glass Gauss design for up to 105°, said to be excellently corrected for sphericals and colour, and may have been an update of an older 1920's lens known for its good correction of astigmatism to Frerk in 1926, and which was almost symmetrical. The first series were not in Compur shutters. A feature of the 1936 lens at least was that it was often in Compur rather than in PIM as a more compact lens which was sold in cells threaded for Compur shutters and could be screwed in in place of the normal lens. It was seen at No877,168, and the screen image seemed to match a f9 version well but an owner says the f6.3 is not as wide field. Also as a f6.3/4in lens No901,60x in a barrel mount. Perhaps a lens to focus at f6.3 and use at f11 or f16, which is normal for the layout. Layout was Mey019. It is possible that both f6.3 normal and wide lenses existed and have not been distinguished here, but App035 is a true wide angle layout.

The f9 version is the usual item found labelled as the Wide Angle Aristostigmat, and it is too easy in collecting to get only these rather than a selection. The f9 was the only type listed by H&D in 1939 for example. Thus they must have sold well to advanced users with a 1/2plate camera (usually) fitted with a standard English lens and now buying a new wider one. It has been seen from No 208,58x on a brass finish 120mm lens. These are a fairly common type, though some are later at serial numbers such as No485,xxx and up to about 500,000. The gap may represent poorer sales in and after WW1. It was listed into the later 1930's, to 1935 at least. And see postwar also. The range in about 1908 was 3.125, 4.0, 4.75, 5.25, 6.25, 7.75, 9.5, 10.75in. (German Pat. 125 560.)

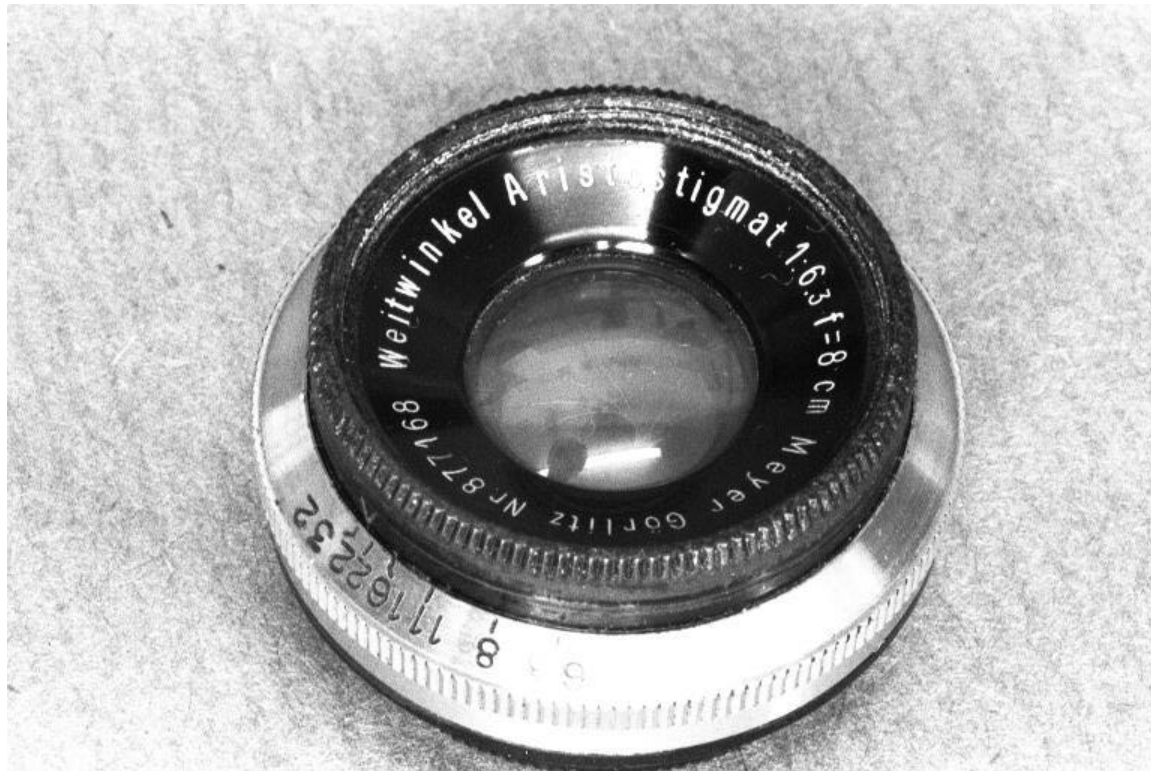


Fig 032 026 Meyer Aristostigmat f6.3/8cm No877,168 with bright finish iris ring.

Aristostigmat f7.0 This was noted as a 240mm (about 9.5in) No166,69x lens and may be the f6.3 in a slower version in longer focus versions. It was on a 1/2plate camera at auction.

Helioplan f4.5 This was made as 2.25in for 24x36mm up to 10in focus for 1/1plate. The

formats covered were 2.25 for 35mm or 3x4cm; 3in for 6x6cm; 3.5in for 6x6cm; 4.25in for 6x9cm; 4.75in for 9x12cm; 5.25in for 9x12cm; 6in for 6x4in; 6.5in for 6x4in; 7in for 7x5in; 8.25in for 7x5in; 10in for 8.5x6.5in. (B.J.A. 1936, p568, etc).

It was seen as 7 and 8.25in lenses in brass, at serial numbers about No295-305,000 so they probably sold best for large format work. These seem to be Dialyt types for large format work. They will overlap some of the above, possibly replacing the Dagor-types. They do not seem to cover a very wide angle. It may be a S&B trade name (below). They may have been renamed or replaced by the following: (Mey010). A fast Q26 dialyt type, it covers about 65°-75°. See also entry below. They were fitted to Meyer's own cameras in 1931, an example being the rollfilm 4x6.5 and 5x8cm, and the plate camera for 6x9, 9x12 and 10x15cm. It was more expensive than the Trioplan but less than the Euryplan and Plasmal options. One example Nr484,58x was f4.5/4.25in on a Mentor 6x9 reflex.



Fig 032 008 Meyer Helioplan f4.5 7in No295,70x and 8.5in No306,17x for enlarging, etc, in brass.

Helioplan f6.8 This was noted at No252,43x as a 135mm on an Orionwerke Tropical camera for 9x12cm.

Aristostigmat f4.5 This was also a 4-glass Gauss design (Mey020, App040) and H&D quotes these as 1.5-20in, for up to 75°.

Aristostigmat f6.3 2.5, 3.25, 4.0, 4.75, 5.25, 6.25, 7.0, to 19in. It was suggested to use 7.0in for 10x8in. This was a Gauss design, Mey018, Mey019, to cover 90-100° It was noted for 1937 when it was probably 'new' and replacing the f9, possibly as new glass was available and competitors lenses were faster. It is also a 4-glass Gauss design, and was often in Compur or PIM as a more compact lens. It was seen at No877,168, and the screen image seemed to match a f9 verion well. Perhaps a lens to focus at f6.3 and use at f11 or f16, which is normal for the layout. Layout was Mey019.

Silesar: This seems to have been an early 3+3 anastigmat. It may be a scarce type as it has not been seen.

The relation of all these seems complex now but may partly reflect redesigns possibly to make separable Gauss types. By the 1920's the range was mainly Gauss 4-glass types under the Aristostigmat name, with a few Dagor types continuing. The dating of the 4+4 type is obscure, apart from the 1903 advert.

Newer Anastigmats

Trioplan This was a triplet type lens and was 'new' in the Amateur Photo. 16/03/1914. (Q13, Mey012). It was made for cine and portraiture in the larger sizes. Coverage was 40° or up to 65° stopped down. This was a long lived Meyer trade name. [There was a tradition alive in Germany that Roeschlein was one of the

designers involved and he then moved to J. Schneider before setting up on his own.]

Trioplan f6.3 35mm This was used on the Amourette, at No358,45x, for 24x30mm, although it may really be a cine design. It is a scarce camera from about 1926.

Trioplan f4.5 for rollfilm and Klapp cameras, also in longer foci, for portraiture. It may not always be named, eg as in B.J.A. 1928, p331 where it is just Meyer f4.5 but Trioplan is likely.

Trioplan (cine) f3.0 This was also a portrait lens in larger sizes, and sold on some reflexes. Two were noted at auction as 75mm lenses on VP size Clarissa Tropical cameras at No 11,18x, 11,68x, and 13,35x.

Portrait Trioplan f3.0-f3.8 These were made in 10.25in for 7x5in, 12in for 8.5x6.5in, 14in for 8.5x6.5in, 16.5in for 10x8in and 19in for 10x8in. In the B.J.A. 1934 p567 these are listed as Portrait Trioplan, but they were a sharp lens and were actually also used as a fast lens on many press and reflex cameras as was then normal.

These were big lenses to fit into a shutter, but were offered with a 'silent' before lens shutter for short exposures- probably one of the TBI shutters made to fit in front for studio work. Thus the f3 was used for several years in Meyer or Roth Super Speed Press and Reflex cameras (B.J.A. 1926, p348; 1928, p659 advert., 1929, p319). This was an London made camera with a Meyer Trioplan lens and was actually often sold with English lenses. Thus an early 1926 4.5x6cm model might be had with :

f3 Trioplan, £32; f4.5 Xpres, £25.75; Dallmeyer Pentac, £33.50; Plasmatic f4, £32. Different sizes were made for:

4.75in for 2.5x3.5in

6in for 1/4plate or 9x12cm

7in for 3.5x5.5in

8.25in for 6.5x4.75in

Roth also was considering a camera with 3 lenses on a turret on the front panel for quick changing eg 6, 10, 13in but it possibly never was produced.

Most Trioplans are later items, as budget lenses on folders and as slower large format lenses. These will be listed below.

Nettar (Meyer, Gorlitz) f6.8 75mm No209,90x This was noted on a Contessa-Nettel V.P. Klapp at auction, and will indicate where some at least of the Nettars originated although there just could be another firm in Gorlitz.

Aristoplan f7.7 This was a triplet for budget large format fitment. (Mey011, App031)

Meyer Euryplans were listed as f6.0 (two focus) where one was noted as Series VI 7.75in for 5x7in, and as f6.3 as a 3-focus type.

Euryplan Sets These were listed for 9x12cm and 10x15cm and as 3 or 4 cell sets in each size.

Optical Institute Schulze and Billerbeck approached Meyer with a view to a merger or amalgamation about this time- possible 1914-1920. This resulted in a programme with S&B lens names mixed with Meyer's older ones. Thus we have seen a **Euryplan Satz** at No326,38x marked Meyer Gorlitz, and the **Helioplan** name was also one used by them. And one list has Euryplan f4.5, and f6.0 (2.0-24in) to cover up to 85°. Since S&B were the holders of the rights to E. Arbeit's air-spaced dagor designs this may have been an important factor in allowing the combination of Rudolph's ideas, Arbeit's patents and Meyer's production to produce the Plasmatic series, and hence several valuable collectibles. The S&B items are covered in the list elsewhere but continued for some time. From 1923, the factory was at Goerlitz Fichtenstrasse 2.

The new Meyer items for the 1920's list will included:

Plasmatic

This important new trade name seems to be first mentioned for a 4-glass 3-component Plasmatic "of increased depth of field" (Brit. Pat. 161,091/1920; Brit. Jnl., 1921, p342-3) which seems to be an 'anastigmat' with an air-gap (Layout Mey005, patent to P.Rudolph) ie it was not really a Meyer item then. It was claimed to have increased depth of field, which can only be due to a degree of softness to the area in focus. Zschokke suggested that this was due to residual colour aberration. (Photo. Ind. 1921, pp257-259). It does not seem to have been sold in the UK but probably was in Germany provoking Zschokke's comment, but no normal Plasmatic seems to be of this type. It has been said that Rudolph first approached his old firm of Zeiss to make the Plasmatic design and that some were actually made and sold, but that the arrangement was shortlived. Meyer's account was that he approached them soon after WW1 with the usual Plasmatic design. It is noted that he had patented it (DRP 310,615, c.09/07/1919) and that it was sold as Rudolph's Plasmatic design from 1922. The brochure claims that the main feature was the new correction as 'spherachromats' ie all colours were equally corrected for spherical aberrations rather than just one. The lenses appear to be engraved with

his name and a special catalogue seems to have been used to offer them to the public. One possibility is that he retained the patents rights and licensed them to Meyer and that this was a relation that Zeiss had not wished to adopt. It is known that Plasmats were also made by Suter of Basle under the same trade name and also with Dr Rudolph's name on them, so the license to Meyer must initially been shared. Incidentally, it seems true that all Plasmats were Rudolph designs. The Plasmats products were noted in B.J.A. 1939 p264. Plasmats are easier to understand if they are listed first as single components, which can then be combined as symmetrical lenses. Frerk in 1926 notes that it was a big heavy lens and required a suitable camera- and discusses it at length. Plasmats was often sold with the Universal Silar camera, and it was sometimes listed as the Plasmats camera. This seems to have had a relation with the 1920's Linhof of Munich, with parts in common, though McKeown in his Guide credits them to Perka of Munich. In the advert. in the B.J.A. 1934 p569 the lenses are Plasmats f4, f4.5 and Euryplan f6, and Aristostigmat f4.5, so they were not just Plasmats carriers.

Silar* was listed then in 4.5x6cm, 6.5x9cm, 9x12cm, 10x15cm, and 13x18cm, with inch conversions. Prices in 9x12cm with 6in lenses were: Plasmats f4, £35.00; Plasmats f4.5, £34.50; Euryplan f6, £28.50, Aristostigmat f4.5, £31.00.

**The trade name Silesar possibly may relate to the camera name Silar though this is conjecture.*

Plasmats single components

Series A These were f8.0 maximum aperture. In pairs they gave an overall f4.0 lens.

Series B These were f11 maximum aperture. In pairs they gave an overall f5.5 lens.

They were sold either singly or in pairs, or in sets with several cells. Normally pairs were of different focus so that three foci were obtainable. A further version was obtained by combining one cell from each series, normally with the Series B cell in front and a shorter Series A cell as the back cell. Thus a 12.6in f11 front and an 8.6in back gives a combination of 6.0in f4.5 covering 1/4plate. The cells were also sold as sets of 3 different foci for different formats, so that a wide range of products were listed:

f4.0 Plasmats (Layout Mey004, App037 is f4.0) Patent Nr 310615, 9/12/1919.

Pairs of **Series A** to give 2.1, 3.0, 3.5, 4.25, 4.75, 5.25, 6.0, 6.5, 7.0, 7.8, 8.2, 9.5, 12, 14.2, 16.5, 19in

It was suggested to use 14in for 10x8 at f4.0, or 8.2in closed well down.

Sets of A components were sold with 3 foci to allow 6 different useful foci by combining them or singly, at f4.8 max. aperture.

Set 1 10.6, 8.75, 6.0 in singles, giving 4.4, 5.0, 5.7in pairs, for 1/4plate.

Set 11 12.6, 10.6, 8.75in singles, giving 6.0, 6.5, 7.0in pairs, for 1/2plate.

Set 111 13.5, 12.0, 9.6in singles, giving 6.5, 7.0, 7.5in pairs, for 7x5in.

Set 1V 12.6, 16.0, 19.75in singles, giving 8.7, 9.8, 10.6in pairs for 9.5x7in.

One application was to the Bermpohl color camera as a f4.0/21cm No960,70x for 9x12cm: also as a f4.0/30cm No583,442 for 13x18cm. Another of 7.75in was fitted to a T-P Reflex at No292,22x. A 'special' feature was the 'Silar' camera for 3.5x2.5in, 9x12cm, 10x15cm, and 13x18cm sizes, which was a square field camera rather like an older 'Linhof' model and using Linhof type components. It had a good range of front movements and would suit the Plasmats f4.0 well, and Meyer sold it in 1937 with these lenses. Aristostigmats were also used.

f5.5 Plasmats

Pairs of **Series B** to give the same as above plus 10.6, 7.2, 2.4in but less 7.0, 7.8in.

It was suggested to use 12in for 10x8 at f5.5, 8.2in closed well down.

The f5.5 sets were rather shorter focus than for the f4.0 sets, and set 4 was 12.6 +16.1+20.5 cells to give 8.2, 9.5, 10.6in pairs, for 9.5x7in plates. These were smaller and more suitable to mount in shutters and on folding cameras.

A rare version of the **Plasmats** was offered for **Leica**, to give 3 foci with different tubes. One is described in B.J.A. 1930, p335, 637 (Advert + picture) for:

Set I; 3.5in whole at f4.5, 4.75in rear cell at f8, and 6in front cell at f6.5, where the single cells provided the longer foci, and the whole was the 3.5in lens. price was £28.00.

Set 2; 2.5in whole at f4.5, 3.5in rear cell at f8, 4.75in front cell at f6.5 £22.00.

There was a fine focusing mount and tubes to give the correct extensions. They could also be used on 16mm cine cameras.(Idem, ibid, p353) Such sets were normally for VP cameras, as the 4.5x6cm Silar.

The f4.5 Plasmats sets were sold in 3.1-12.5in in 25 versions in all.

These were sharp even by modern professional standards, but the difference from the Euryplans may have been as much speed as performance. The Catalogue seen "Meyer Plasmats Lenses", stamped 18/06/1930 does not list the f2.0, f2.7 or f1.0 versions.

Rapid Plasmal **f1.0** This design was said to be unfinished at the time of Dr Rudolph's death in 1935, and no example has been noted, but Kaprelian shows a design for a Rudolph f1.0 lens so good progress must have been made. (USPat. 1,833,593/1931)

Kino Plasmal

This was a sensational lens when it was issued, but Meyer may well have had the same problem as others in finding a suitable camera to sell it on. Hence the efforts by Roth to mount on some smaller Press and reflex cameras and on the Leica. There certainly was a full page advert of Plasmal f1.5 for Leica and Contax in B.J.A. 1935, p563 with a set of Makro Plasmal, Kino Plasmal, Trioplan and TeleMegor lenses to suit. The mounts then had a good deal of plating but did not have the prominent knurling of some later types.

KinoPlasmal f1.5 1.375-3.5in or 15-50mm in 1937. In 1930 it was made as 0.375, 0.75, 0.875 (1929), 1.0, 1.375, 1.625, 2.0, 3.0, 3.5, where 3.5in was for 1.6x2.4in format.

The short ones will be cine only, and date from about 1928 (B.J.A. 1928, p328, 1929, p337). The longer sold initially as small still lenses as well as for movie, and are among the sought-after M39 lenses. Meyer would convert the customers Motocamera to take their f2.8 Trioplan or probably KinoPlasmal (B.J.A. 1933, p561-2). The 1in was a 'special Kodacolor' version in 1933, and the 15mm was a special wide angle version for 16mm (?) and B&H Filmo. Pictures of several mountings are in B.J.A. 1932, p580). [The lenticular Kodacolor process is now forgotten but was a big incentive to fast lenses in the 1920-1935 period roughly, as a fast lens was needed for the ?3 colour screen to work it.]

Later 12.5mm was added in 1938 for 8mm cine (B.J.A. 1939, p308), and a 15mm was noted in one list, with the barrel marked 'Doctor Rudolph Hugo Meyer New York.' The UK launch of the Kino Plasmal may be about 1927.

4.0 and 5.0cm were sold for the Leica camera for 24x36mm. (A late example in M39x26 is No503,28x, apparently in a coupled mount.) This was a 1924 design, but not all sizes were made for some time. (B.J.A. 1930, p645) The versions as 5cm and 75mm in coupled mount for Leica and Contax were noted in B.J.A. 1935, p296, with an f4.5/108mm (4.25in) Plasmal and f2.8/108mm ?Plasmal (Possibly a Trioplan?) and TeleMegor f5.6 in 6, 7, and 10in. The f2.8 has been seen (See Trioplan) but the TeleMegors are 'uncertain', as are all the Contax fit lenses.



Fig 011 035 Meyer KinoPlasmat f1.5/50mm No503,289; KinoPlasmat f2.7/50mm No582,739; Trioplan f4.5/105mm No653,877.

A rare version was for the Primar focal camera, as **3.5in f1.5** Plasmat but as the camera used 6x9cm, coverage must have been marginal. (Layout Mey008 B.J.A. 1927, p343, ad.691, 1931, p604) It was also noted on a V.P.Exakta at auction. A f1.5/9cm No500,11x was noted at auction at Christies in the 1990's on a Ernemann HEAG XI Press camera. Roth seems to have bought-in cameras and mounted lenses on them, the cameras probably coming from several sources over the years. The BJA author seems to have liked it, saying the brilliant image of the crispest quality, while admitting it fell away towards the corners. It was claimed to show unusually great depth of field when stopped down.

The UK agent, A.O.Roth applied them to several cameras, including Leica, and a Roth Mentor Speed Special Reflex for VP was noted at auction with a f1.5/3.5in No432,84x. A f1.5/9cm version Nr501,959 was noted on a Special 6x9 camera, and Nr502,74x was on a Ihagee reflex in VP size. The possibility of larger versions such as 135mm has been mentioned.

It was a world record aperture when it was launched. The f1.5 Plasmat can be regarded as developed from the spherically corrected doublet type such as the Nicola Perscheid, but it must be added that the image quality of this lens is really distinctive, negatives from it being easily distinguished on a roll from a mixed set of lenses. But not really for their sharpness! See Brit. Pat. 401,630 for another version with compounded inner elements.

It was also sold as a projector lens in 8 foci from 0.625-3.5in for cine and movie theatre use.

It was noted that the Ariel list has 12.5, 16, 20, 25, and ?6mm f1.5 Kino Plasmats. (The 6mm version may

just be a misprint for 16mm, but note the 0.375in above).

[Meyer mounted a small series of lenses including the 1.5 Kino Plasmal for M39 Leica use in the 1930's but the project was shortlived, and Meyer moved over to selling lenses for the miniature reflexes coming into use such as the Exakta and Primareflex. There may well also have been a discussion with Leitz over the Patent position as the original patents for the Leica covered coupling very thoroughly. The Meyer lenses were coupled but with some detailed differences. Look for Kino Plasmal, Macro Plasmal and Trioplans in medium focus. The mounts are distinctive and really high quality. Some are chrome, the early ones nickel. These aliens are now rare and sought after items by Leica enthusiasts as the very first of the flood of non-Wetzlar lenses for the cameras. Though note also Dallmeyer and Fed may have some position in this priority in such marketing although the Roth fittings for the Leica A probably were a true first.]

Plasmal f1.8 noted in 6.5in for 9x12cm. It may be a slowed down version of another type.

Plasmal f2.0 for Lunar camera (1925) Layout of this is Mey007, and it is a 1922 design. It seems to be made in 20-120mm, and may have sold mainly for cine. It probably is the same as:

Kino Plasmal f2.0 0.875-5.0in It was made essentially for cine use.(B.J.A. 1926, p722 Advert., 1929, p337) (Layout Mey007) A 75mm f2 was noted in a B&J list, and a 3.5in was sold by Roth on a VP Speed camera in B.J.A. 1925, p331, 749advert., 1926, p720. This was little more than a box with an enormous lens on the front and he may have been a little in advance of supplies in offering it as the advert. also says "f2 for Cinema work, ready shortly". Possibly the focusing mounts held up the movie versions. In 1926, Frerk says it was really only for movie, and the 1929 reference is to a lens for Pathe Motocamera. But it was extended to still formats in the smaller sizes, but he illustrates one on a Clarissa Night camera. Probably the f2 was overshadowed by the f1.5 KinoPlasmal [and the f2 Ernostar] and certainly the f2 seems to be rarer, and the f1.5 is itself not an easy lens to find.

Miniature Plasmal f2.7 (1927) a mixed symmetrical design-½ Gauss, ½ Plasmal. The relation of this to the Makro Plasmal is a little unclear- they may be the same, but layout App039 for an f2.7 Miniature Plasmal differs from the next item, (which is App038.).

Makro Plasmal f2.7

This was made in several foci including 35 and 50mm for Leica and 4.25in which was normally large format but has been reported for M39, and it is also a mixed symmetrical. These seem to be rather uncommon. Reflections are in line with the published structure but the contrast is surprisingly good considering the complexity. (Layout Mey006) It is likely that the lenses differ in the intended use.

The first noted was a f2.7/5cm at No580,35x for **movie**.

It was used on the Krauss Peggy probably in 50mm in 1932 for 1933 (B.J.A. 1933, p261). Here it was the fast option at £29.75, compared to the f3.5 Tessar version at £22.00. Another user was Curt Bentzin on the Primarette 6.5x4cm on 127 film camera with a f2.7/3in MakroPlasmal in Compur shutter. Here the vendor noted it was 'rare' meaning the lens.

1in focus, for	16mm film	1x1in format closed down;
1.375mm	35mm movie	1.375x1.375in
2in	1.55x1.55in	2x2.25in
3in	1.75x2.5in	3.5x2.5in
4in	2.5x3.5in	3.5x4.75in
4.75in	3.5x3.5in	4x6in
5.25in	3.5x4.75in	4.75x6.375in
6in	4x5.25in	5x7in
7.25in	4x6in	6.375x8.25in
8.25in	5x7in	8.25x9.75in
10in	8x8in	9.75x12in
12in	11.75x11.75in	12x14.5in

50mm The 50mm M39 Leica version was shortlived at No580,72x, 581,95x, 582,73x, and is now scarce. The front bezel is recognisable by two raised studs fitted to give a grip in setting the iris.

42,5mm also for M39?

35mm One has been noted in 35mm, for M39 in slip ring coupling with a flat cam, at No582,43x. It seems to be the really rare one of a scarce group, as it was the last to be added.

105mm There were a few 105mm ones for Primareflex, eg in 1937. Two of these were reported at No780,67x

and 964,04x for Primaflex and 785,79x for Exakta 6x6. An earlier example was at Nr584,30x but the use was not noted. It has been reported for Leica in a M39 coupled mount to complete the set 35, 50 105mm but is a really scarce item.

The most famous application was probably the **Roland** camera from Plasmag GmbH/Dr Winkler/ Rudolph and Co of Berlin. These seem to be a 6-glass 5 component design and differ from the 5 component types in detail and they just may be made by Rudolph or Roland elsewhere. One was noted at No1734. (App038 is the layout of a f2.7 MakroPlasmag). It was also used on the **Planovista**.

Makro-Plasmagf2.9 This was made in 1.0, 1.375, 2.0, 3.0, 4.0, 4.75, 5.25, 6.0, 7.25, 8.25, 10, 12in. For 4.5x6cm, use 2in; for 3.5x2.5in use 3in and for 9x12cm use 4.75in, for 5x4, use 6.0in at f2.9, 4.8in at small apertures. This was 'new' in the B.J.A. 1928, p350 and in the 1930 catalogue, and was said to cover a surprisingly wide angle of over 75° and was in fact also referred to as the '**Wide Angle**' **Plasmag**. This is confusing as the 1928 account says it is '*a lens of a somewhat narrow angle*' and a 6in lens is needed to just cover a 1/4plate. The B.J.A. also mentions the use of a rather complex design as justified by the wish to use truly colourless and hard wearing glass in the design. Note that it was advertised opposite the f2.7 so both were in simultaneous production or at least sale. It was expensive and may therefore have sold in limited numbers. One possibility is that three actual designs were in use

(a) the f2.9 Makro of 1928.

(b) the wide angle of a little later.

(c) the distinct f2.7 again of a little later.

They all seem to have rather similar designs (Mey 009) and came out in a rather short period. This is the only one in H&D in 1939.

Process Plasmag f8.0 14, 18, 26, 34in, in the 1930 catalogue. The 14in covers 10.2x7.8in at full aperture, 12x9.5in closed down.

Process Plasmag f9.0 14-34in This was possibly an older or different lens. It was 'new' in the B.J.A. 1926, p315. It does not seem to be well known.

Other items:

Megoflex Reflex Focuser: This is not a lens but a focus aid which couples the camera lens to a top unit and results in a small TLR. These were for Leica, Contax and Peggy. A rather similar unit was made by an unknown firm for the Zeiss Biotar f1.4, probably for movie use and just may be from the same sub-contractor. (B.J.A. 1933, p273)

Enlarging Lenses

Anon An f3.5 enlarging lens in 2 sizes was noted on a Praxidos enlargers for up to 4x4cm and 6x6cm from agents Thorsch of London. (B.J.A. 1933, p264)

Helioplan f4.5 2.25, 3.0, 3.5, 4.25, 4.75, 5.25, 6.0, 6.5, 7.0, 8.5, 10in. These were sold for enlarging, and this seems to explain some of the brass f4.5 Helioplan lenses but it may be a new use for an old product. Helioplan 75mm lenses at Nos 247,09x and 323,97x were sold on VP Clarissa cameras. Meyer seem to be a little unusual in offering a specialist enlarging lens at that time. Layout Mey010. Noted at c. No 295-305,xxx. Frerk knows these in 1926 as Dialyt type lenses.

Veraplan f4.5/f6.8 This was noted as a 120 and 135mm lens, and it later seems to be the taking version of the above. The f4.5 seems the better known and was noted as a 15cm No351,26x on a Ihagee Klapp reflex for 9x12cm. Frerk says in 1926 that it was a 4glass dialyt, and a f4.5/135mm lens No403,50x in dialset Compur shutter No67,25x does seem to be a dialyt. It has a very fine natural purple coating on the front surface and was cleaned with care. Access to the air-spaces would involve unscrewing the retainer rings and these were not attempted. The design may vary as note H&D quotes it as a 6 element double anastigmat, ie ? Plasmag type? in 1939.

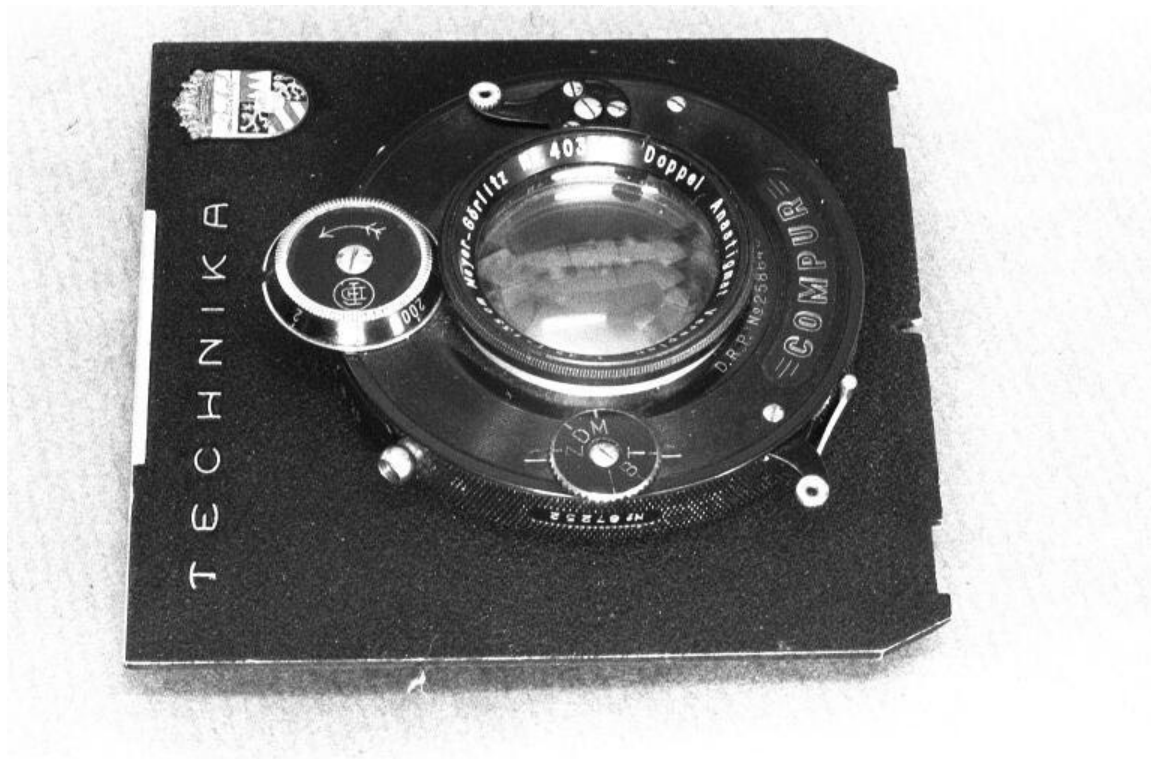


Fig 032 022 Meyer Veraplan f4.5/135mm No403,50x on panel.

Projection Lenses

Plasmat Wide Angle Projection f1.5 20mm This was noted in the advert. in B.J.A. 1933, p562. It gave a 40% larger picture than the normal projection lens.

Kinon This was originally a pre-1919 projection lens made in 1.625-7.0in. It seems to have been replaced by two items:

Kinon Superior f1.5 or f1.6 This was a later type cine projection lens. ?also f1.8/50mm about 1935. (B.J.A. 1929, p337;1933, p562) It seems to have been made in 1.375in to 7in sizes with various barrel sizes for different projectors.

Kinon Superior f3.5 3.5-29cm This was a cine projection lens. It seems to be that offered at auction on a 3-format Bolex projector at No100,818.

Several types of projection lens are listed by Ariel, including many Kinon Superiors, and f4.5/3in and f1.9/30mm for Cinephon.

Omin A slide projection lens, for still pictures. It was made in 12-80cm focus.

Epidon(e) This was a projection lens for episcopes projectors. Two spellings were noted, and the B.J.A. 1929, p337 prefers the shorter, noting the lens in two grades, where:

The Series A, the cheaper, and is excellent for schools in foci of 12-24in.

The Series B is better corrected for scientific work, and came in 5 foci over the same range.

Trioplan and other Triplets

Meyer made a large number of triplets, mainly under the trade name Trioplan, the last being after WW2. These were used for movie and portrait work initially, but were increasingly sold for still use, and the apertures increased as well. The performance of the faster versions can be rather mundane as a result, but this is true of most popular makers of the period. It is an opportunity to compare the layouts drawn for 4 types of triplet (App031-034) from the same maker and period and see how they vary with speed- and in fact, they seem rather alike to an untutored eye.

Atistoplan f7.7 This was described as a high performance triplet. (Mey011)

Trioplan f6.3 Triplet. ?Q14. 2-14in Trioplan for 65° (App032)

f4.5 Mey012 It was a triplet, made in 3.0-14in to cover 65° (App033)

These were possibly a large format lens for groups and landscapes, as the lens in the picture:



Fig 032 027 Meyer Trioplan f4.5/105mm No705,738 front cell focusing in shutter which seems to be from a 6x9cm folder. But some 105mm versions were offered for Leica in 1935, at about No653,87x. The number is small possibly as a result of discussions about patent individuality with Leitz.

Trioplan f3.5 75mm (3in) This was noted at No559,72x on a Primarette 1.625x2.5in at auction. Otherwise f3.5 seems a rather unusual aperture for Trioplan.

Trioplan f3.0 This was still for cine in the 1920's, eg 1924 as Mey013 but by 1926 Frerk seems to discuss it as a well designed large format lens, to cover some 65° albeit with some plasticity of image. Another list says "to Expose or project." (App034) It was used on the Roth Super Speed Press camera (B.J.A. 1928, p661) as:

4.75in for 2.5x3.5in

6in for 3.25x4.25in or 9x12cm.

7in for 3.5x5.5in

8.25in or 4.75x6.5in



Fig 032 018 Meyer Trioplan f3.0/6in No425,73x in sfim.

TeleTrioplan f3 These were made in: 1.375, 2.0, 3in These were for 16 and 9.5mm cine and just may be Trioplans mounted as long focus lenses, not true teles.

Trioplan f3.8 same These were made in: 10.25, 12, 14, 16.25in, use 16.25in for 10x8in. This is probably mainly used as a portrait lens slower than the f3.0 below. It was used on the Roth Super Speed Press in 1933 (B.J.A. 1933, p271).

Trioplan f2.9 same. This is possibly rather fast for a still lens. But note the even faster f2.8 was sold on several prestige cameras as shown below.

Trioplan f2.8 These were noted as: 10, 15, 20mm, and 100, 120mm This was an important version. These were remembered from C-mount lenses for a Siemens und Halske 16mm cine camera of about 1939. Probably it was one of these at No979,819 which was seen remounted to Exakta, probably about 1946. Ariel lists many types of Trioplan, mainly in f2.8 as 10, 15, 20mm for small formats, but in f3.0 and f3.5 in 17-50mm but has not seen the longer types remembered up to 3, or 4in. The 10mm version was used on the Warsawie Ring camera as f2.8/10mm: this is a modern item though it just may reuse older glasses from cine cameras.

A f2.8/100mm at No722,45x, 767,65x, 853,70x, and No1,100,09x was noted for Primareflex. These were in a very compact focusing mount.

Portrait Trioplan f3.0 3.0-19in for portraiture, an old lens continued well into the 1930's as in 1937. (B.J.A. 1937, p563) It covers 40° and for portraiture the foci of interest were 10.25, 12, 14, 16.5, 19in. It was seen as a 6in f3.0 at No425,73x, possibly about 1925-1928 in a focusing iris mount. The screen image seemed a perfectly useable fast lens.

Trioplan f2.5 for 8mm cine. (B.J.A. 1939, p309). This aperture actually goes back to Frerk's 1926 list, and was one of the really fast lenses then, and may have antedated the Plasmats or been Meyer's own design to complement them. It was in the 8mm standard mount so it would fit most cameras.

Primotar

This was Meyer's 4glass Q15 series and sold above the Trioplans in price. It was noted pre-war on RoBoT and Primareflex as a quality item. But curiously does not seem to be a very common lens in small sizes, possibly due to the extra price.

Primotar f4.5

Primotar f3.5

These are Q15 lenses or Mey023, 024. They were good performers and note the 30mm f3.5 for Robot, noted at No692,31x on RoBoT No16,99x, and No631,83x on RoBoT No3,96x. The f3.5 had a smaller angle of

coverage and was mainly for miniature work. It was noted on the rollfilm 'Megor' camera in 1932 in B.J.A. 1932 p571 as:

Megor with f4.5 Trioplan £5.50 in Compur; with f3.5 Primotar, £6.75; with f2.7 MakroPlasmat, £10.50.

An impressive example of the f3.5 18cm was seen at No977,06x and may have begun life mounted for

Primaflex and is in a very solid focussing mount. A 135mm f3.5 No887,74x was certainly for Primaflex.

Others at No844,07x and 976,46x. The lens head unscrews from the barrel. The version for Kine Exakta was 5.4cm f3.5 reported at No803,65x. A 85mm version may have been a 'special' for the Primaflex.



Fig 032 020 Meyer Primotar f3.5/180mm No947,06x (unctxd) ? ex-Primaflex use.

Primagon f4.5 35mm The name was used postwar for a budget retrofocus type as used on the Altix to match the Telefogar.

Telefogar f3.5 90mm A budget long focus for Altix. It was also in Exakta bayonet. It may be a postwar item misplaced.

Primoplan

The design of this 5-glass lens must have been a real achievement at the time, and perforce involved some compromises with corrections, especially at the corners though it was said to have excellent definition over 40°. Thus it was probably more suited to cine than some other uses but sold well as a fast budget lens for 35mm still cameras. One point is looking back through the old magazines is that it was actually a really expensive one when issued first- the Reflex Korelle Model 2A cost with f2.8 Tessar £25.75 and with f1.9 Primoplan £47.50, nearly doubling the cost even though the f2.8 Tessar was a premium lens itself. (B.J.A.

1939, p527). It seems to have been first sold in f1.5/25mm for cine and f1.9/80mm for VP Exakta.

Primoplan f1.5 25mm, 50mm This lens was for cine use only. 5-glass Mey021. (B.J.A. 1936, p316) It was only listed as 1in by 1938. (B.J.A. 1938, p568)

Primoplan f1.9 This was made as: 30, 50, 58, 75, 80, 100mm and apparently 180mm. Mey022. This 5-glass design is controversial, and the problem seems to be that while the centre sharpness is good, the edge and corner is less nice. It was noted for Exakta at No810,72x. This may have suited the original purchasers, but has disappointed secondhand buyers.

In 1934-1935 it was supplied for VP Exakta, example serial numbers being Nr699,26x, and 792,66x. The postwar lens seems to have the same exterior curves but an alloy version of the mount. Merte includes details from D.R.G.M. No 1,387,593/ 1936 with glasses: G1=1.6570/51.1; G2= 1.6480/33.8; G3= 1.6230/57.1; G4= 1.6870/31.3; G5= 1.6210/53.2. The longer 58mm was needed to clear the mirror of a SLR such as the Exakta (Brochman, Exakta Times, 31, p17, 1998). The rear node of this type is well forward, eg at the same distance from the film as the focal length, and inside the positive glass in front of the iris.

The 75mm version for Exakta 35mm may therefore have actually been a better product, but is now quite scarce although it has been seen in a full chrome mount with manual iris from this period. Heavy but compact considering the specification. It must be a rather nice thing to find.

The 100mm was for Primareflex, and seems to have come only in 1938 or 1939- it is not in the 1937 adverts, though an f2.8/105mm Trioplan was sold.

[**Exaktar** It is uncertain who made what Ihagee lenses but a VP Exakta was at auction with both Exaktar f3.5/75mm No657,46x and Primoplan f1.9/8cm at No657,46x: the numbers are just near enough to be worthy of note.]

TeleMegor

This was the Meyer telephoto lens series, often for big format but later increasingly for miniature work. It was usually in barrel mount but could be in shutters. The series was revised in 1939, the changes being partly to the mounts, with wider knurled finger grips, and partly optical. This was due to moving the iris to help give even illumination and so that the definition would improve more as the lens is stopped down. (B.J.A. 1939, p264). This is an important example of a maker discussing the effect of the iris position on the performance of the lens. A small number of f4.0 lenses were made but typically it was an f5.5 series.

TeleMegor f5.5} 150-400mm This was a telephoto of 2+2 glasses. The shorter lenses were for cine or 35mm use. Longer examples of the f5.5 were in shutters or barrel mounts for big format. It was suggested to use 12in for 5x4in, and an 'old' layout is shown in Mey016. Coverage was given in the B.J.A. 1935, p578 as:

7.125in	3.5x2.5in
10in	9x12cm or 3.25x4.25in
12in	10x15cm
16in	13x18cm



Fig 032 033 Meyer TeleMegors f5.5/150mm complete and lens head and 250mm complete. These are uncoated and either prewar or very early postwar lenses.

TeleMegor f4.0} 3.0, 4.0, 6.0, 9.0in, for cine. In 1932, it was 3, 4, 6, 8.25, 12in. (B.J.A. 1932, p578) These were probably also 2+2 tele design. In 1938, the 6in of a set was going to be an f5.5.

f5.5 The cine series was said to be optically and mechanically improved in B.J.A. 1939, p308 when it was seen with two other new Meyer cine lenses.

Euryplan

Euryplans were an old S&B product and still on sale in 1935 in apertures of f4.5-f7.5. Frerk seems to say the initial version was a 6g Gauss [rather like a Zeiss Planar] but that a change in available glasses made for a redesign. It seems that the amalgamation (Take over) resulted in initially a joint sales plan, and may have taken some years to complete, especially in a recession when stock was moving slowly. The Meyer catalogue listed them and the example seen was a Meyer engraved item at No326,38x, and it seems that they kept this line running in parallel to the Rudolph lenses which sold at a premium price.

Euryplan f6.0/f6.3/f6.8 This was all one series with varying apertures and was an air-spaced Plasmata-Dagor type. This was the only one listed by Frerk in 1926. The others were older types. It covered 90° with good coverage, and was sharp and well corrected for sphericals and colour and the cells are fully corrected for use at f11. This was one of the best corrected lenses of the period. It probably had its own clientele as smaller and less costly than the Plasmata. Thus an 8.25in Plasmata cost in f4.0, £19.20; 8.25in Euryplan, £12.25. Euryplan was also made in larger sizes, to 24in than Plasmata (where sizes were to 9.5in. max.). [One of the examples seen had had plenty of hard professional use and was once someones favorite lens. But the lens cells are alloy and were rather soft and became damaged in use.] It was also as a Casket set, below.

7in	12.375in	7x5in at f6	9.5x7in stopped down
8.5in	14.375in	8.5x6.5in at f6.3	10.75x8.5in
9.5in	16.5in	9.5x7in at f6.3	12x9in
10.75in	18.625in	9.9x8.5in at f6.5	14x12in
12in	20.5in	10.25x9.5in at f6.5	16x12in
14in	25in	12x10.25in at f6.5	17x13in
16.5in	29in	14x12in at f6.5	20x16in
19in	33.25in	17x13in at f6.8	22x17in
24in	41.25in	22x16in at f6.8	28x24in

Euryplan Sets These were offered by Meyer in 1930 in several sizes for 1/4plate, 5x4, 1/2plate and 10x8in, with 3 or 4 components in the set. The one seen is probably one of these and is marked Satz V1, with cells of 262 and 366mm only- the others may be mislaid. They were probably for f6.3 if the same components were used or f7.0 if they were different, and offered 105-300mm. That seen gave about 180mm. In use it was sharp and contrasty, and seemed to offer everything the buyer of a Plasmat might want except the extra speed. The cells were in a Compound 111 and both shutter and lens had the threads modified to interrupted thread for a quick change. This is a really nice item to use, with a touch of interest but the iris is in mm of diameter and really needs the original tables to interpret the stops for the different combinations.

Euryplan Older version.

These may have been sold by Meyer but were essentially S&B lenses.

Euryplan f5.6 Am. Photo. 22, 25/01/1907 shows a 6-glass Gauss. [This will be an old S&B version.]

Euryplan f4.5, f5.6, f6.8 These were in various series. (Gauss also)



Fig 032 012 Schulze and Billerbeck Euryplan f4.5/8.25in Ser I No203x, sold by Staley and Co.

Euryplan f7.5 This also seems to be an older series.

Optimat f1.5 20mm, this was for cine or perhaps projection. Possibly a 4-glass Ernostar type but the layout is unknown. Ariel's list has an example for 16mm on a 1938 Siemens & Halske camera.

Siemax f1.5 20mm A slightly earlier 16mm lens also for S&H. It was noted at No 758,18x and 758,51x on Siemens cameras. (It seems to be a 1920's lens?: but the B.J.A. advert in 1939 lists a **Siemax Meyer f1.5** for 16mm on the Model B)

Megon f2.0 A lens issued during WW2 for the Primareflex camera, so it is likely to be a 10cm Gauss 6-glass type. One noted at auction was f2.0/10cm Nr910,196 on a Primareflex with a TeleMegor f5.5/30cm Nr927,66x. It probably was made only in small numbers due to the war. (Photofreund 1941.)

Apo Megor f6.3 32cm This was noted as a (probably) process lens at No995,94x which will be late prewar, which may explain why it seems little known in the UK.

One question must be when they stopped being S&B and when they began to be Meyer. Certainly some of these are engraved Meyer, while others may not be.

By 1936 Meyer could claim some 40 years of production, of some 100 types in 380 foci, and 1,500,000 lenses. But note that the serial numbers were actually about No700,000. Thus they may have also counted in S&B production in another series. Another factory was built and in use for 1939. And the sheer quality of some of the old items is very impressive. They produced high quality collectibles in the Plasmal series, and in the M39x26 fit lenses though many of the others are now rather overlooked. One reason will be explained in the next section.

Meyer Lenses for M39

These were about the rarest and now most valued of the prewar lens series and seem to have been made in 2 or 3 groups.

(a) The earliest were mounted or at least advocated by A.O.Roth of 85, Ringstead Rd, Catford, London SE6, in the 1920's for Leica A bodies adapted to take KinoPlasmal, at least by removal of the normal lenses. These were made in very small numbers and are very rare.

(b) Later, they probably sold in uncoupled form for the standard Leica body.

(c) But about 1933 Meyer offered a set of lenses in coupled form, possibly made before the patents on the Leica coupling were published, and these were sold for only a very short period. As a result they are also scarce. The series included 35mm f2.7 MakroPlasmal, 50mm f2.7 and 105mm MakroPlasmal and 50mm and 75mm f1.5 KinoPlasmal as well as a series of Trioplans, eg 4.25in f f4.5, and possibly an f2.8/100mm. Some longer TeleMegor lenses were also made but the latter may be after mounted by customers. A lens shown in the American Annual 1939 seems to be a f2.8/100mm in M39 coupled mount- possibly an old block reused? Optically the MakroPlasmas may be the most critically corrected but Trioplan can be a surprisingly good lens. Small also illustrates a 4cm f4.5 uncoupled "Doppel" (it just might be a version of the Aristostigmat? for Exakta), and an uncoupled 58mm f1.9 Primoplan. The uncoupled lenses probably would not have infringed the same coupling patents and the M39x26TPI mount was in use by other makers before the Leica was produced. A.O.Roth went on to agent other products until WW2 and then made accessories for 35mm cameras, such as versions of the Fudly copier and filter holders and shades for Elmar and Summitar during WW2, and these are often sprayed in RAF blue grey colour suggesting they were initially sold to the MoD and released postwar. 85, Ringstead Rd. has been described as a tall town house, with the family flat at the top, the office below it and a workshop in the basement, but accounts tell of outside workers bringing in parts for the business as a result of outwork. But attempts to add meat to these bare bones have not been rewarding.

Cine Lenses

For **16mm**, there was a series of KinoPlasmal f1.5, Primoplan f1.5 in 25mm, MakroPlasmal f2.7, Trioplan f2.8 in 15, 20, 25, 50, 75, 100mm; and TeleMegor f4 and f5.5 to 150mm lenses in standard mounts by the late 1930's. The KinoPlasmal set is the most looked for today.

A new series for **8mm** cameras was launched in 1938 (B.J.A. p308) as f1.5/12.5mm KinoPlasmal, f2.5 Trioplan, and Kinon Superior f1.6 projection in 1.375, 1.625, 2, 2.5, 3in and for wide angle, W/A Plasmal f1.5/0.75in.

World War 11: Items for the war were coded: ccx.

The Meyer list in the B.J.A. 1939, p568 was a long one, and A.O.Roth of Catford (who was still the Agent) must have invested a lot of money in it. It ran to 8 pages and listed some 10 types of product, as follows:

Kino Plasmal f1.5 12.5*, 15, 20, 25, 35*, 42, 50mm with special mounts and applications for 8mm camera (first 4) and larger cameras (rest). (* these were later versions absent in a 1936 list.)

TeleMegor f4.0 in 3, 4, 6in, f5.5 6in. These were for various cine cameras.

Trioplan f2.8 in 15, 20, 25, 36, 50, 75, 100mm again for cine cameras such as Siemens and other.

Kinon Superior Projection lens in f1.6 in 1.375, 1.625, 2, 2.5, 3, 4in also for 8mm 20mm and 18mm.

Interchangeable Miniature Lenses for Kine Exakta, VP Exakta, Korelle, Primareflex:

35mm: Wide angle Anastigmat f4.5 40mm, Primoplan, f1.9 58mm, Trioplan f2.8 4.25in; f4.5 4.75in; TeleMegor f5.5 6, 7.1, 10in

VP Exakta: Wide Angle Anastigmat f6.8, 2.25in; Primoplan f1.9 80mm, TeleMegor f5.5 6, 7.1, 10in.

Reflex Korelle Primoplan f1.9, 4in; MakroPlasmat f2.7, 4.25in; TeleMegor f5.5, 7.1, 12in.

Primareflex: Trioplan f2.8, 4in; MakroPlasmat, f2.7, 4.25in; Primotar, f3.5, 5.25, 7.1in; TeleMegor, f5.5, 12, 16in.

Double Anastigmat 'Commercial': 1.625, to 6.5, 8.5, 10.75, 12, 14, 16.5, 19, 24, 30in This was a professional large format lens, at £10.63 for a 6in. The shorter sizes were abbreviated.

Wide Angle Aristostigmat f6.3 for 105°: 3.125in for 4.75x3.75in £6.75; 4in for 6x4in £7.2; 4.75in for 7x5in £7.50; 5.25in for 8.5x6.5in £8.25; 6.25in for 9x7in £9.75; 7in for 10x8in £12.00. (Gauss design)

Helioplan Enlarging: 2.25 for 35mm or 3x4cm; 3in for 6x6cm; 3.5in for 6x6cm; 4.25in for 6x9cm; 4.75in for 9x12cm; 5.25in for 9x12cm; 6in for 6x4in; 6.5in for 6x4in; 7in for 7x5in; 8.25in for 7x5in; 10in for 8.5x6.5in.

Double Plasmat f4.0: 3.5in (6in) 6x9cm; 4.25in (6.75in) 6x9cm; 4.75in (7.87in) 4.25x3.25in; 5.25in (8.75in) 4.4x3.3in; 6in (9.8in) 4.4x3.3in; 6.5in (10.6in) 5.5x4in; 7in (12in) 6x4in. Here the second focus is the single cell of the convertible. Also 3 focus mix and f5.5 Plasmats available.

Trioplan Portrait Anastigmat f3-f3.8 in 6-19in.

Post WW2

After WW2 Gorlitz came under Communist control in the Eastern sector of Germany, and shortage of materials and lower selling prices meant that the products were more in alloy with a plainer finish and looked as if they were intended to offer a budget alternative to the Zeiss/Jena products. When a long list of Meyer lenses is considered, there seems to be a sharp change to aluminium at No991,xxx (brass)-1,072,3xx (aluminium). This was probably during WW2, perhaps in 1942. (See Zeiss Jena section to compare.) It is true however that they kept up a standard of performance and there was a continuity of designs, although these were not always of premium quality. Thus Meyer went on with the manufacture of the Primoplan even though most firms were making Gauss f2 lenses of better corner sharpness. One problem for all the makers in East Germany may have been in obtaining the latest optical glass for newer types of lens. Newly made lenses with coating were marked with a red V and this was applied to some large format lenses such as a f5.5/400mm TeleMegor and to f6.3 100mm Aristostigmats, a late batch of which were sold off by Sterling-Howard in USA in 02/1960 as discontinued.

More typical postwa items were:

Lydith f3.5 30mm a budget wide angle for 24x36 of 5-glass in 1964, and rather nice for the price, which was modest. Seen at No3,595,00x in black finish.



Fig 032 031 Meyer Wide Angles for SLR's Primagon f4.5/35mm No1,866,71x and Lydith f3.5/30mm No

3,595,005.

Primagon f4.5 35mm A low price 4-glass retrofocus, noted 1957 at \$59.50. It was seen in white metal at No1,866,71x. with preset iris.

Trioplan f2.9,f3.5/50mm These were early postwar 3-glass eg on Practica in 1960 (Mey014) the f2.8/50mm was used on the Altix N with interchangeable Primagon f4.5/35mm and **Telefogar** f3.5/90mm lenses. It was illustrated on the Altix at Nr1,206,812 and Nr 1,109,57x on a Mimosa in 1951.

Trioplan f2.8 100, 120mm as prewar. Q14 type triplet.
Postwar these were noted in 100mm for Exa at \$59.50 but were a less common product than formerly. It was seen at No3,176,15x in white metal with preset iris for Exakta.



Fig 032 038 Meyer Trioplan f2.8/100mm No3,176,153.

Telefogar f3.5 90mm see on Altix above.

Trioplan f3.5 30mm on Penti 11 ½ frame. This is late 1950's.

Domiplan f3.5 30mm also on Penti I about 1959.

Trioplan f3.5 75mm on Weltaflex about 1954.

(Rectan f3.5 75mm This was an alternative to the above Trioplan but the maker is unknown- was it also Meyer?)

Primotar f3.5 50mm This was noted in July 1961 for Exakta at £80 complete on Exakta VXIIa, or £14 below the f2.8/50mm Tessar package. At this time the Exakta came into UK through the Corfield

organization and a Tele-Lumax was in the advert as well. A f3.5/50mm No2,043,22x was sold on a Contax F SLR No403,95x.

Primotar f2.8 50mm This was noted on a Pentacon F at lens No2,194,47x.

Primotar f3.5 135, 180mm 4-glass Mey025, Mey024. The 135mm seems to be the most common in black with a preset iris for Exakta, at No2,831,66x, 3,280,31x from the 1950-60 period. It sold best in the 135mm size, and the lenshead usually unscrews from the barrel and can be used for larger formats such as 6x9 and probably 5x4in as it is a wider field lens than 35mm.



Fig 033 001 Meyer Primotar f3.5/135mm lenses Nos 3,280,310 and 3,363,907.

Domiplan f2.8 50mm Mey015. These are probably a redesign of the Trioplan and offer decent performance, especially if stopped down a bit, and are in auto iris mounts for Exakta and M42. They were made from about 1962, and noted in black at No2,733,72x, on Exa 11a. It was made only in 50mm. Later types are numbered at the back of the barrel eg at No4,354,18x on a Exa 11b.

Domigor f4.0 135mm for Pentina.

Primoplan f1.9 58mm noted postwar at No1,132,32x in preset iris, white metal mount. This is much lighter than prewar but the external curves match. Used in 1998, it was a modest performer with loss of sharpness at the edge but fine for family use, and better than it is often said to be.

Optik Primo=OP This was a Marketing name for Primoplan in USA while Meyer was under Communist control of production.

Domiron f2.0 50mm This was a Gauss type to replace the Primoplan. This came in 1960 in auto

iris in a rather striking white mount.

TeleMegor f5.5 105, 150, 180, 250, 300, 400mm This was a long lived product, from the early 1930's for Exakta at least and continued to the postwar black paint era at least. Prewar lenses are normally nickel plated brass, eg No861,06x. Early postwar they are in white metal and early ones are still not coated eg at No1,292,56x, where the V is white filled. Later they were in black finish and coated at No1,292,56x, but by then the V is totally omitted. A lateish 400mm version was noted at No2,919,43x and 2,919,53x is the same. These have a triangle with a 1 inside as a quality control mark. (This is normal on all lenses of that period). These are nice items and the long ones are rising in price at present. The shorter are easy to find. A typical layout is Mey017.



Fig 032 035 Meyer TeleMegors f5.5 150mm, 240mm and 400mm (postwar ctd).

TeleMegor f5.5/250mm for M39 Leica A small batch including Nos1,001,804, and 1,001,884 was mounted for the Leica 1f (engraved 3 crowns) for use by the Swedish Navy in 1955 using a Leitz 200mm finder. They seem to have been uncoupled and blind focussed or more likely always used at infinity.

The lens programme was **updated in 1963** approx with a new series of **Orest-** lenses in black but still with preset iris. It is likely that these were continued as the Pentacon series without further change except that they were then multiple coated. The highest Meyer serial noted was about 7.6million, with Pentacons from 8.6million, though Domiplan lenses continued after the launch of the Pentacons- ie. it seems to have been a progressive changeover.

Orestegon	f2.8	29mm (Mey028)
Oreston	f1.8	50mm This was with multi coating on some good single layer coat. It was noted in 04/1972 adverts. as (probably)
Orestor	f2.8	100mm
Orestor	f2.8	135mm This was seen at Nos 4,050,97x : spots, and Q1 marking for quality control. A Pentacon f2.8/135mm engraved 'Handmade Bohemia in Czechoslovakia' which may give

Orestor f2.8 135mm This was seen at Nos 4,050,97x and 5,575,59x in black with white high spots, and Q1 marking for quality control. A Pentacon f2.8/135mm No5,688,55x was noted at auction engraved 'Handmade Bohemia in Czechoslovakia' which may give a hint.



Orestegor	f4.0	200mm
Orestegor	f4.0	300mm Mey031
Orestegor	f5.6	500mmMey 032.

Orestegor f5.6 500mmMey 032.

f2.5 35mm

f2.8	135mm
f3.5	200mm

All these were available then in auto iris or auto with Electric coupling for the LLC Praktica, at a slight increase in price(about 12%).

A note in Modern Photo 04/1976 p40 says Pentacon lenses would then begin to be supplied with multicoated lenses as with the Pentacon f1.8/50mm on the Praktica VLC 2

For Meister Korable ex VEB, Dresden

These are fairly early postwar, about 1950/1951 or 2.

Primotar	f3.5	85mm
Primotar	f3.5	180mm
(Tessar)	f3.5	9cm from Zeiss.

For Praktisix and Pentacon Six:

Telemegor	f4.5	300mm	This seems an unusual aperture and may be an error.
Orestegor	f5.6	500mm	and possibly some other focal lengths- see CZJ E. German list. Accounts have mentioned lenses of up to 1,000mm from Meyer/Pentacon.

From the collector point of view, the most desired Meyer lenses are probably the **M39x26 lenses**, the **Plasmats**-Makro and -Kino and certainly the big format Plasmal lenses, especially the sets. The Euryplan can be an interesting substitute, and the wide angle Aristostigmat in shorter foci is a still nice item to use.

Chronology

An anonymous serial number/date list has been published for part of their production run.

An Aristostigmat N37772x seems to date from about 1918 from the shutter number. Then for the collector the important points may be:

1930, 500,000; 1935, 675,000; 1949, 1 000,000; 1095, 1,200,000; 1955, 1,600,000; 1957, 2,000,000;1960, 3,000,000.

An advert. in American Annual 1939 shows Primoplan No798, 894 on an Exakta.

A more detailed list by M.P.-H. Pont in "**Chiffres Cles**" covers the same years, but in more detail but also indicates the pre-war numbers are approximate. His are a little different and in part are also given to compare:

1930	500,000	1934	700,000
1938	900,000	1939	1,000,000

Sadly few are met in Compur shutters,(and one of these had an anomalous number of **A065,967** on a Trioplan f2.9/75mm at No870,510). Thus the **Euryplan** NoVI No326,38x in Dialset Compur ?size 2, No782,283 (about 1926-7?) is of real interest, especially as this has an interrupted thread mount and mm iris so it is unlikely to have been exchanged.

Another noted was No37772x in a d/s Compur from about 1918.

Note the above comment that the change to alloy mounts may be 1941-2 at about 991,000 to 1,071,000 and this is roughly compatible.

Postwar production restarted at No1,068,113.

1951	1,200,000	1954	1,500,000	1957	2,000,000	1960	2,500,000
1965	3,500,000	1971	5,000,000				

Mr Brochmann asked Herr Peter Olbricht the Master of Engineering at Meyer about the numbers and was told: "No written evidence (ie records?) exists today, I can only tell you that up to numbers slightly over 10,000,000 the numbering was consecutive and independent of lens type. Thereafter different lens types were allocated specific number blocks, mostly with 7-digit numbers, but one will also find 5- and 6- digit numbers on certain lenses, those specimens having been repaired at the factory where a defective original front ring has been replaced. Still later, there were also 4-digit numbers and these were codes for the production year and month. It is impossible to date a lens by looking at its number alone. Thus a Nr300,000 could be either on a Domiplan 2.8/50 from about 1960 or on a Pentacon f1.8/50 from about 1985 or a Pentacon electric f4.0/200mm (incidentally made in Romania!) from about the same latter year. One could also find lenses of the same sort with adjacent numbers that are from quite different years, eg a Pentacon electric auto f1.8/50mm with a number around 5,600,000 could either have been made in 1972 or in 1984." One deduction is that Meyer were drawing lens supplies from a number of sources in the Comecon area with Romania and Bohemia mentioned and others possibly existing: this makes the use of the less specific Trade Name 'Pentacon' more understandable.

Fig 35 Meyer Lenses (Larger Sizes).

Exposure: Zeiss Planar f3.5/135mm.

Back Row	Meyer Primotar f3.5/180mm.
	Meyer Helioplan f4.5/8.25in.
	Meyer Double Anastigmat f7.7/14.25in.
Middle Row	Meyer Euryplan Satz NoV1.
	Meyer Helioplan f4.5/7in.
	Meyer Trioplan f3.0/6in.
	Meyer Trioplan f4.5/180mm.
Front Row	Meyer W/A Arististigmat f6.3/80mm
	Meyer W/A Aristostigmat f9.0/3.25in.
	Meyer Aristostigmat f9.0/9.25in.

Fig 36 Schultze and Billerbeck.

Left	Euryplan f6.0/8.25in.
Right	Aeroplan f5.6/10.25in.
Front	Meyer Euryplan Satz.

Fig 37 Meyer Lenses in M39x26.

Exposure: Wray 8.25in

Meyer MakroPlasmat f2.7/5cm.
Meyer Trioplan f4.5/105mm.
Meyer KinoPlasmat f1.5/5cm.

Fig 38 Meyer Lenses for SLR's.

Exposure: Docter ApoGerminar 150mm.

Back row	Meyer TeleMegor f5.5/180mm.
	Meyer TeleMegor f5.5/250mm.
	Meyer Primotar f3.5/135mm
Middle Row	Meyer TeleMegor f5.5/150mm older type.
	Meyer TeleMegor f5.5/150mm newer type.
	Meyer Lydith f3.5/30mm.
	Meyer Trioplan f2.8/100mm.
	Meyer Orestor f2.8/135mm.
Front Row	Meyer Primagon f4.5/35mm

Micro Precision Products, Kingston-on-Thames, UK.

MPP normally used bought-in lenses on large format 5x4in cameras especially from Schneider: and Ross Xpres lenses on the TLR Microcord, but the latest, Microflex, used 77.5mm f3.5 **MPP Micronars** which were made for MPP by TTH of Leicester. This was seen at No 14,79x, in Prontor SVS. They are exceptional lenses of Q15 type. They are slightly but significantly different from the Ross in detailed design. They were noted in B.J.A. 1960, p214 but this may be after the product had been discontinued as it was rather shortlived.

In the 5x4 size, two Wray lenses were dedicated to the S92 Microtechnical sold to the MoD. They were:

(a) **184mm f4.5 Lustrar** (Q15), and the

(b) **89mm f6.3 Wideangle Wray** (Q17), although they were probably also on general sale, and Wray's publicity states that the

(c) **135mm f4.8 Lustrar** was designed for the Microtechnical for Press use. (This suggests it was designed before the sale of the MPP Micropress about 1951, as this would be the obvious mounting for a Press lens.) The 135mm is not a very common lens.

Dr Adolf Miethe (1860 -05/05/1927, aged 66)

The B.J.A. 1928 p361 credits him as one of the inventors of the telephoto lens as well as of isocyanine colour sensitization. He was head of the Charlottenburg Tech. School and an editor of several journals. Eder gives a 1.5p biographical note, saying he worked with Hartnack in 1891, and then with Schulze and Bartels at Rathenow and then became the scientific director of Voigtlaender in Brunswick. He introduced a teleobjective

some months after Dallmeyer and Dubosq and in 1899 went to Berlin-Charlottenberg as replacement to Vogel. Later he worked with Goerz and Bermpohl on a three colour system. He wrote several books on photographic optics.

Mikut, Oskar, Dresden, Germany.

Mikut made a tricolor camera about 1937, using a Mikutar f3.5/130mm lens and Hasbroeck illustrates this at No43,691in Rimset Compur No3,366,297. It was rather compact using 3 4x4cm negatives on one plate. The actual lens maker seems to be unknown but this camera was optically complex and Mikut just may have been an optical worker.

Milikin and Lawley

This was noted on a brass lens with rotating stops marked 'Made in France' and it is likely they were Victorian photographic dealers, and Channing and Dunn list them (M&L) as represented by a Stereo camera with Ross Symmetrical lenses with their name and address at 67/68 Chandos St, Strand, London WC. It tends to suggest they were a shop engraving or labelling bought-in equipment and not makers of equipment.

Military Optical Ordinance

This is the US term for the mass of lenses and other optics used in a modern combat. Much is not relevant to this list- binoculars, head-up displays and fly-by-wire stuff for example. But it does parallel the firms making camera lenses. As far as possible, the older camera lenses are listed under the makers, and some related items as well. Interest in the lenses can be sporadic. Thus much of it is very large and heavy aerial lenses, and here astronomers can find valuable optics which are otherwise unaffordable. And modern forces have used conventional cameras extensively- UK sales include Hasselblad spares in quantity which sell on the normal market. But after WW2 especially, a lot was looked at to see if it could be remounted for civilian use, both for miniature cameras and for larger formats. Success was mixed, but excellent mounts of the f2.5/7in Aero-Ektar for Hasselblad 1000F were made by Cook & Perkins for example. Also seek the Schneider f2.0/5in Xenon in remounts for 6x6cm. But really the largest part was too big and heavy to reuse easily.

A frequent question is the mounting of ex-WD lenses for 5x4in cameras such as Graphic, MPP and Linhof, and this section originated as a reply to one. But sadly the first point must be that there are real problems and limitations. Basically, they present two problems in civilian reuse. One is the size and weight of most air survey lenses. The other is that they seldom have shutters, and if so, they are probably powered electrically off a 24V supply, which is uncommon in civilian use. This is sad, as most represent outstanding quality and performance in their field.

A careful survey of sales of old equipment at sales in the 1990's has shown up few WW1 items. One 'probable' is the Ross f4.5/6in Mill Hill Tessar Patent, a nice Tessar lens in an iris mount, but with no shutter and rather heavy for its focus. It is thought they are ex- WD but they do not have government markings. They could still be useful on a 5x4in 'Press camera, but are seldom in good condition. The other was a Ross AIRO f4.5/10in which is certainly ex-WD, but here the problem is that it never had an iris, always apparently being used at full aperture. At least it was cheap. Traditionally, WW1 was the birth of the TTH Aviar f4.5 but so far this does not seem to turn up today. On the other side of the trench, Zeiss were supplying a series of triplets as "black barrels" in 30cm and up for survey work. These were remarkably light and are classics for astronomy work as the centration and correction is extremely fine- sadly they do not turn up very often but they can be cheap as there is almost no engraving to allow recognition. There is some indication that the first of these were made under licence from TTH well before the War. There were also designs for a telephoto lens but it may not have been put into production. One general point is that many WW1 lenses were used from balloons rather than from aeroplanes, though both were used. Incidentally, in 1918 the postwar sales of military equipment were resented by the makers as likely to deprive them of normal sales and disturb the market. Little did they know what would occur in 1945 when the amounts sold off were to be very much bigger and against a market severely controlled by the postwar austerity programme.

The interwar years have thrown up interesting items, but they are mainly ones such as f18 Series V Protar which are ordinary civilian lenses, possibly with some adaption for a special use. Two nice items were f2.0/4in TTH OPIC lenses from about 1930, but their original use is now obscure. They are fine lenses and still

possibly usable on a 'Press camera, but note- again no shutters and they are big enough to seem fairly heavy.

In WW2, the UK used two series of cameras for aerial survey. The 5x5in approx. used a 3in f5.6 Ross Wide angle survey, the famous f4/5in Wide Angle Xpres, a f2.9/8in Dallmeyer Pentac and 20in/f6.3 Tele by Ross or Dallmeyer. Of these, the 3in would be very desirable, but is really rare, and designed to be used in a camera with a glass pressure plate which may mean that it is not flat field in an ordinary camera. Certainly a 6in was best at f16 for 10x8in. The f4/5in was a special version, and a quality lens, but is now seldom in really good order, and notoriously was designed for use at infinity. Having said all this, it is one of the more usable and worth trying if cheap but note: there is no shutter, so it is best for a camera with a focal plane shutter. The f2.9/8in is a 'possible' as it was often used on big reflexes postwar: it is less heavy than might be expected and has quite a big rear focus. Sadly, it is usually not coated, like most of the items so far, and again, it often has had a hard life, so they are notoriously variable in quality. (One suggestion is that this was due to extensive sub-contracting during WW2 and lowered standards as the civilian Pentac can be a pretty good lens.) The 20in lenses seen were heavy at 2.5Kg (5lb), and have a 74mm rear protrusion, and take a 3.5in flange.

A postwar 5x5in aerial camera used very nice Ross f4.5/6in lenses, coated and of high quality in an enormous bladed shutter, but sadly these used an oversize rear cell with the same thread size as the front cell, and as a result they cannot be transplanted to a Compur 1 shutter.

This 5x5in format in the USAAF led to the famous Kodak AeroEktar f2.5/7in, which probably represented a new stage in lens development with coating and new era glass- and also weight since it uses heavy element glass in two components. It certainly was mounted for many cameras as an ex-WD lens, but fared best on 6x6cm such as Hasselblad as it was only marginally sharp enough on 35mm and the back focus was rather limited for use 6x9cm reflexes, which often worked only for portraits (very sharp and contrasty) when it was fitted. Now this heavy glass is coloured and the lenses work at about f3.1 so the size and weight seems no longer to be worth it. (There is a rare f2.5/6in but it seems to be found only in USA.)

The Big Size was near 9x9in, so the lenses can be used on 10x8in. The wide angle was the Ross f5.6/6in, which looks like a glass ball, and is mounted in a massive rather flat brass mount, sometimes with part of a shutter in place. As above, it can be disappointing transplanted to civilian use. It is related to the f6.3/20cm Zeiss Topogon which also occurs occasionally from German survey planes, which failed to return, and to the Bausch & Lomb Metrogon. (In fact the Topogon was so impressive that several other makers also made versions.) There are also comments these are not quite free from distortion and do show fall off in illumination at the edges. A scarce lens was the AeroEktar f2.5/12in which was mounted with a blade shutter with a real guillotine action- it is a genuine hazard to the fingers and sadly many of these have 'failed' with balsam faults. This format also used 20in lenses, but more as standard lenses. There are big Kodak Anastigmats, uncoated and in a bulky mount, and Ross Xpres f6.3/20in lenses in two series, one a Tessar type with 3-glasses in the rear cell, and the other a version of the Wide angle Xpres, ie a Plasmag related design. The former is extremely heavy but good. The latter is rated as excellent by astronomers, but has very soft coating internally and is rather scarce. And the Big Betha, the Dallmeyer f6.3/36in tele, which was made and labelled by many makers. It tends to be excellent stopped down to about f10, but has been accused of limited colour correction, as it was originally often used with heavy yellow filters for improved contrast. At 14lb, it needs a substantial box as a mount, and it is big as expected. The weight is given for the late, coated, 'lightweight' version incidentally. Here there are big variations in sharpness from one lens to another, depending perhaps on the makers' care or on the number of crash landings it has experienced- it is a product where lenses do show real accident damage. This was also especially noted with the monster f4.0/36in Wray, which was made in moderate numbers, often without an iris for use at full aperture. This is a item where two men may be needed to carry it. Early postwar, Wray made a set of f4.5/12in, f5.6/24in and f6.3/36in lenses of reversed Tessar type, and these are superb coated lenses but again are really too big physically for most cameras.

A problem with big aerial lenses is the balsaming, as temperature changes are inevitable and tend to lead to failure. The balsam was often deliberately left soft and in the long term the soft layer allows bubbles to form. Another endemic problem for aerial lenses is vibration, and the makers would take great care to lock the lenses in position to withstand it. This makes them especially hard to dismantle for repair, and even experienced firms have a high failure rate in such work.

In Germany, the firm of Fritz Voelk of Berlin made a real novelty. It was a 'Handkammer' (though also used fitted to the plane) which seems to have used 70mm film and a set of Schneider lenses including a Xenon f2.0/125mm (5in) and probably less often a 20cm Xenar and 30cm f5.6 TeleXenar. Only the f2 seems to be regularly reported, perhaps as dismantling lead to the long lenses being anonymous today. The f2 was later sought after for 6x6cm and was sold for this eg on Hasselblad, in the postwar years. It was often coated and could still be interesting on a 'Press especially with a 6x9 rollfilm back. Sadly, Mr Volk's factory in Berlin disappeared in the bombing and little is known of the camera. But it may have lead to the postwar concentration on smaller formats including 70mm film. There was also a Hasselblad Handcamera for the Swedish airforce- it just might be related to other designs.

Most of the later lenses noted in the UK are from 3 sources based on 70mm cameras.

(1) The simplest is the Komlosy 70mm camera (? APF5/8960), used for recording fishery protection work. This often involved off Russian trawlers in the North sea and the controls are designed for gloved hands. The lens is a coated Xpres f3.5/75mm in a Compur Rapid and gives excellent quality results. It is near the MPP Microcord lens in size but different in detail.

(2) AGI of Croydon produced the long lived Agiflite based on a Williamson design, using TTH f2.0/4in and f1.8/4in lenses with a TTH f4.0/12in (300mm) long lens. The 4in lenses can be fitted to plate cameras, but lack a shutter and really are better on 6x6cm. Sadly, many of the f1.8 version were sold off only after they were sand blasted by use over the desert and are little value today. And the 12in is very bulky and heavy and has limited rear focus, so although it is a premium product, it is hard to adapt to anything, so that prices can be trivial at sales. There may be other AGI fit lenses as they mentioned fitting Carl Zeiss (Oberkochen) lenses when the subject was raised in discussion.

(3)The other major UK source of aerial cameras was Vinten who produced the F95, again for 70mm film. They used ELCAN lenses from Leitz Canada especially in 1.5, 1.75 and 3in sizes. The later F95's were modified in design so that the shutter ran nearer the film, hence the two wide angle specifications, and a warning to the reader: these are deep sunk lenses with little clearance between film and rear component. But it did prove possible to use the 1.75in ELCAN on a 5x4in Press camera as it has a deep sunk mount and runs back of the panel rather as the Zeiss f4.5/21mm Biogon sunk into the Contarex or Contax body. This sadly does not apply to the 1.5 or 3in lenses which look nice but are really hard to bring into use.

This has been the writers experience with many lenses from this group. So far only three have actually taken many pictures after purchase ex-MoD. The best was the next.

This exception was the Zeiss f4.5/38mm Biogon, which was used by both AGI and Vinten and is really the same glass as the Hasselblad Super Wide lens but in very different mounts. AGI used a version as pairs at considerable expense in an enormous double, bladed shutter on a stereo camera shooting 6x6cm frames side by side on 5in film, and these cells can be remounted in a Compur 1, but only with real difficulty and skill. Otherwise they will be 'hard to use'. Vinten used the same lens but in a rigid barrel mount and this can be used- but there is no shutter and little rear clearance. One was successfully mounted on a Linhof backplate by fitting a plate across the front and a focusing movement, and has proved a nice unit for wide angle close-up work as it is small, sharp, contrasty, and covers 6x7cm in close-up if not at infinity, or gives a panorama across the middle of 6x9cm.

Personally, of the many of these lenses owned, the f4.5/38mm Biogon has proved to be the only regularly used one. But then it is exceptional even in this company. The 1.75in ELCAN might join it however. And a f6.3/36 was used on a 1/4plate T-P reflex for bird work in the 1970's- it was mounted on a box and board with the camera sliding on the end of the board to focus. Otherwise, it might be a case of going back to the earliest, such as the Tessar Patent Mill Hill as these were nearer the civilian norm. This is a real pity, as many of these lenses are of extremely high quality and very attractive specification, perhaps especially the TTH 300mm tele, which was a real disappointment as it is known to cover 5x4in. Repeatedly the problem has been weight plus size. Possibly some day a rigid flat camera with a focal plane shutter will be assembled to put some of them to use. Here a Graphic, Linhof or MPP focal plane shutter unit with a rigid plate just in front of it might suit some of the F95 lenses. Otherwise, it may be that the real customer for these lenses should be an amateur astronomer, for whom the absence of a focus action is unimportant, and where no shutter is needed, and just think: compared with many telescopes, even a f4.0/36in Wray is a lightweight. There is another factor. Supplies of good civilian secondhand lenses are more available today than ever, and the flow of ex-MoD items are tending to dry up. It may be that the ex-MoD items will move more into the collector orbit and cease to be attractive for use.

Other ex-MoD items noted in England have been movie lenses from Sinclair and Cameflex cameras, and many recording lenses from CRT units by Dallmeyer and Wray, and modern CCTV lenses from security cameras- which are rather shortlived things! And note the f3.5/50mm Dallmeyer lenses from the G45 camera. Much less is found from abroad for obvious reasons, though the USAAF left items from WW2.

Miller Cine Co Ltd, 106, Barton St., Gloucester, UK.

These cine cameras were made from 1933 (B.J.A. 1943, p333Advert.) and seem to have normally used Dallmeyer lenses (B.J.A. 1941, p201). Prewar, they could come with f3.5 'Anon', £7.75; f2.5 TTH £8.63; f1.9 Dallmeyer, £11.87; f1.5 Dallmeyer £15.50; or f1.9 Ross lenses £12.60. (Prices for camera + lens. They still supplied the Miller 8mm cine camera in the 1950's with interchangeable f2.5 fixed focus or f1.9/13mm uncoated focusing Dallmeyer lenses, but no other details are available. (B.J.A. 1949, p215;1951, p41, etc.)

Milwaukee

Milwaukee Portrait f4.0 400mm for 11x14in. This may be a vendors label used in the USA. The lens was noted in an old B&J list.

Minerva.

This was really a camera name, carrying a **Metharis** f4.5/135mm anastigmat in a dialset Compur shutter.

Minicord, (C.P.Goerz) Vienna, Austria.

Helgor f2.0 This was made by C.P.Goerz for their camera.

Minolta, Osaka, Japan.

Initially Chiyoda Kogaku Seiko KK of Osaka, Japan.

Agents Japanese Cameras, Ltd, 50 Piccadilly, Tunstall, Stoke-on Trent, UK.

F. Barrett and Co, Ltd, 34 St Anne's Lane, Dublin.

We thank Mr B.Petticrew of Minolta UK for additional information here.

Minolta are long established makers of optics and cameras, and unusually make their own glass. Only the very first cameras, made under the founder Mr K.Tashima, used imported German lens/shutter units, and these were on cameras made from 1932 initially with eg. Schneider Xenar lenses in Compur shutters (Am. Photo. Advert. 19/04/1972) and there was a rapid introduction of their own lenses and other components in the 1930's. Another point is that in 1975, Minolta revealed that to them multiple layer coating was nothing new as they had been using Multi Achromatic Coating (MAC) since the 1960's to control colour balance of their lenses and felt that it was not really new. (Am. Photo. 07/05/1975 Advert. p165).

Early Lens Names were:

Nifca (Nippon Foto Camera) This was also a camera, and could be fitted with a Xenar f4.5/7.9cm, probably on a VP size at body No1370.

Wekar

Helostar

Promar

Coronar There was a Friedrich Coronar and this may be bought in. A f4.5/75mm was used on a Semi Minolta for 16-on.

Actiplan

Minolta eg f4.5 on an aerial camera, 1939 on.

Rokkor f3.5 35mm on Konan 16 Automat sub-miniature. Also this spec. on the Minolta 16 in 1961 (B.J.A. p201).

The above lenses were built into cameras and are not likely to trade separately. Much more accessible and attractive as lenses to a collector are those designed early postwar, especially for the **Minolta 35 with**

M39x26 thread. These were early postwar and initially had a 32x24mm format, so that there was a tendency for the focal lengths to be a little shorter than for 36x24mm. These are lenses with a very favoured reputation of the sort makers must value highly. They were named as:
Super Rokkor in all focal lengths.



Fig 012 020 Minolta 35 with TeleRokkor f4/135mm No1,200,182; Super Rokkor f2.8/45mm No4997 in M39.
Those noted have been:

f2.8 45mm from 1947 This was a superb period lens. (Said to be a Helier type layout). It has been noted at various serial numbers from No2,43x, 4,847, 4911, 499x, 9281, 9456, 12,205, 12,29x, 1,404,282, 1,500,83x and 1,502,14x reflecting a long successful production life. There is an obvious discontinuity in the serial number run here probably due to a new system coming into use.

f2.0 50mm about 1952, This was excellent and mainly on model 11. Modern Photo 09/1978, p19 quotes it as 7 glass 9oz weight in brass mount, 10bladed iris, and high quality of centration and correction, though some colour error was reported. It was an impressive item.

f1.8 50mm about 1958, And this was again a very impressive lens. Gauss type.

f3.5 35mm These are now rather hard to find.

f2.8 85mm

f3.8 100mm

f5.6 110mm TeleRokkor This was noted at No23,82x.

f4.5 135mm

f4.0 135mm These were coded TeleRokkor in fact and are an f4.0. It is a very nice item in a heavy brass mount. It uses two thread coupling [rather as the Leitz Elmar 9cm f4.0], not the push-rod type usual in 135mm lenses.

These lenses tend to include later lenses from fixed lens cameras:

f1.8 50mm M-bayonet, for Sky camera, ultra rare prototype lens.

f2.8 35mm, on Minolta Autowide (1958), in fixed mount (Min001)

f2.8 45mm (4g/3c) on Uniomat (1960), Minolta A3, (B.J.A. 1960, 590), A5 (1966), ER.

f2.0 45mm (6g/5c) on Himatic (1960), Minolta V2, (1960).

f1.8 45mm on Himatic 7S (1974)

f8.0 34mm on Himatic F (1974).

f1.7 40mm on Himatic E.

Rokkor f3.5/75mm on Autocord in 1961 4-glass design. (B.J.A. 1961, 220)

However the major items are likely to be from the SLR programmes as they have evolved over the years.

These date from about 1958. In the name the letter code indicates the structure, the number of components being indicated by the first letter using a latin numbering, as U=1; D=2; T=3; Q=4; P=6. Similarly the second letter indicates the number of glasses, as: A=1; B=2; C=3, etc. This system continued into the 1970's but is now long discontinued. Early lenses can show the iris sticking that occurred with so many of the first SLR lenses from Japan, and this is due to lubricant moving from the focusing helix to the iris blades, and the only answer is to clean the blades. Sadly the result is only temporary unless the focus helix is also relubricated with a grade of grease which is without volatiles in it. This was a common problem with Japanese lenses until about 1965 when the grade of lubricant may have been changed but may also be why so many went over to plastic lens mounts with relief.

SLR Lenses

The Minolta SR 1 was noted in the B.J.A. 1961 p211 (Beautifully designed, desirable, looks and feels precision, etc.) with f2/55mm Rokkor and the advert. p578 also lists the SR 3 with f1.8/55mm and accessory lenses AutoRokkor f2.8/35mm, f2.8/135mm and f5.6/600mm, etc the last being non-auto iris.

Standard Lenses

f1.8	55mm Rokkor PF	1958 onwards, on SR.
f2.0	55mm Rokkor PF	6g/5c, on the same.
f1.9	55mm Rokkor	on SRT 100 USA, 1973.
f1.8	55mm Auto Rokkor	on SR7V c. 1963-1967 (Min002).
f1.4	58mm Rokkor PF	6g/5c on 1962 cameras. There may be two types.
f1.4	50mm Rokkor PF	7g/6c? 1974, with rubber grip.
		This was also as PG, ie two types seem to exist.(1974)
f1.7	55mm Rokkor PF	6g/5c about 1966, on SR101.
f1.7	50mm Rokkor PF	6g/5c, new about 1973, 1977.
f2.0	45mm Rokkor	This may be really a budget standard lens.
f2.8	45mm	This was a scarce compact lens, 1970.
f3.5	50mm Macro	6glass, 1960.
f2.0	53mm	This was apparently for SR1, c. 1966.
f1.2	58mm Rokkor	This was new in about 1969-1977, 7g/5c, Users say 'Good but a little pushed at full aperture' but this would be true of all makes then.
f1.2	50mm MD	This was rated as "Excellent."
f2.0	50mm Rokkor PF	This was a superb lens, liked by all users, for SRT100 (1974)

Wide Angle Lenses

f4.0	7.5mm	This was a fisheye for round image circle, about 1977. 12g/8c.
f2.8	16mm	Apparently coded OK, this was a full frame fish lens, 11g/8c, and a nice item about 1974.
f4.0	17mm	This was an extreme wide angle, 11g/9c. It was reviewed in Modern Photo 10/1978 p132 at No2,016,158 with other Minolta equipments and was rated with a high proportion of "excellents" by their then standards.
f9.5	18mm	Coded UW in one list. This was an early fisheye lens, about 1967. 7g/5c.
f4.0	21mm	Coded QH, this was a deep sunk wide angle Russar type lens of 8g/4c from about 1963. On purchase, make sure the external finder is available as well as the lens caps and note that for use it must have a camera with mirror lock-up.
f4.5	21mm	This was a retrofocus type.
		There may also be a 21mm f4.0 QH version, review in Camera 35 12/1967.
f2.8	21mm	Coded NI about 1970-1977. 12g/9c.
f2.8	20mm	This was sold from about 1977, as a replacement.
f2.0	24mm	
f3.5	24mm	This was coded SI from about 1970 10g/9c.
		There seems to be a new version about 1977 of 9g/7c, both being in the 1977 lists.
f2.0	28mm	This was a 1977 lens, of 10g/9c.
f2.5	28mm	SI MC-W-ROKKOR (1972-1974), 9g/7c.
		It was also made coded HF in 1966 and this may be a different type.
f2.8	28mm	This was noted in 1977. 7g/7c type

f3.5	28mm	SG type, 1968-1977 at least. 7g/7c.
f1.8	35mm	HH type, 1974-1977 at least, 8g/6c.
f2.8	35mm	HG type, 1960's, probably about 1963-1976. 7g/6c.
		There was a new type by 1977 of 9g/7c.
f4.0	35mm	QE type about 1960-1963. 5g/4c.

Long Focus Lenses

f1.7	85mm	PF about 1971-1975 6g/5c This is a lens with slightly mixed comments, but note Matanle (below) obviously values his highly.
f2.0	85mm	
f3.5	100mm	This was coded QE, and was a nice compact lens and a favourite. 5g/4c.

About 1960-70 period.

f3.5	100mm	This was a macro lens, noted 1971 5glass.
f2.0	100mm PF	This was a heavy element glass type, and a scarce lens. 6g/5c.
		There was also a 7glass version seems to have been made in 1960.
f2.5	100mm	Coded PF noted 1977 6g/5c. Matanle (Below) notes that this specification is one of the hard ones to get as an MC but the MD version is usually there if you hunt for it.
f2.5	100mm	eg MC TeleRokkor 1974, a nice compact lens. 6g/5c.
f4.0	100mm	Coded TC, with manual iris, obsolescent in 1968. 3g/3c.
f3.5	135mm	Coded QD, a long lived item. (1963-1977?) 4g/4c.
f2.8	135mm	Coded PG, a nice long lived item. 6g/5c, Min003.
f2.8	135mm	Coded PF note there are 2 different codes here, so 2 types.
f2.8	135mm	Bellows lenshead.
f4.0	135mm	Coded TC, 3-glass, manual iris, 1960-1971? 3g/3c.
f2.0	135mm	
f3.5	200mm	CodedQF, nice lens, but a big thing to use. 6g/4c.
f5.0	200mm	Coded QE. 5g/4c.
f4.5	200mm	Coded PF, about 1969-1974. 5g/5c.
f2.8	200mm	1980's.
f4.0	250mm	TeleRokkor 1960.
f5.6	250mm	Mirror type system. Note that this was an unusual focal length for a mirror!
f3.5	300mm	Coded HE seen in 1972 list.
f4.5	300mm	Coded HF.
f4.5	300mm	Coded QD There seem to be two designs here for the same specification.
f5.6	300mm	Coded PE during the 1970's. 5g/5c.
		Coded QD in the 1960 list. 4g/5c.
f5.6	400mm	This was the first of the very costly long lenses. 7g/6c.
f5.6	600mm	Coded TD, manual iris. 1960-1970's period. 4g/3c.
f6.3	600mm	This was a 1977 item with 9g/8c.

Mirrors and Special Items.

f5.6	250mm	This was a mirror type system. Note that this was an unusual focal length for a mirror! This is why the same item is repeated here!
f8.0	500mm	Mirror system.
f8.0	800mm	Mirror at Photokina 1970, also for Leica in 1977.
f6.3	800mm	Telyt-S eg for X-M. A symbol of the firms' cooperation.
f6.3	1000mm	Mirror system. (Noted in 1974)
f11	1600mm	Mirror system (Noted in the 1970's)

Special Fast Long Lenses from the 1980's

f1.4	85mm
f2.8	300mm
f4.0	600mm

For an early Minolta advert. see B.Jnl 08/02/1963, p115.

Minolta were an early leader in coatings, with strong coloured reflexions due to multiple coats, and these allowed them to control the colour balance of their lenses. Rokkor-X was a branding for the USA market, while the lenses for Europe were just Rokkor. This was to allow the agents to see if their warranties applied. Other codes were MC for meter coupled from 1966-1974, and MD from 1977. These dates are only approximate! The f1.7/50mm MD Rokkor was reviewed by T. Hughes in B.J.P. 22/09/1978 p817 who noted that the design was much as the predecessors but the mount was lighter and with more plastic parts- and Modern Photo below noted the iris blades were lighter for a particular reason. These dates are only approximate! It 'performed well in use--general high standard'.

Matanle in Am. Photo 14/10/2000 p23-29 indicates how well Minolta lenses (etc.) have continued to work, reporting continued use of cameras such as SR1s and SRT101 and their lenses. He notes the multicoated versions of the MC lenses with rubber grips have higher contrast, and says all the MD lenses tried were excellent. He does have reservations about contrast with the early f1.4/58mm MC Rokkor and f4.5/200mm MC Rokkor and prefers the image of the f2.8/135mm MC ('magnificent') to the earlier f3.5/135mm MC Rokkor.

Celtic Lenses

These were a budget series, sold mainly in the USA and uncommon in the UK. Some six lenses were sold in this series, including: f3.5, 28mm; f2.8, 35mm; f3.5, 135mm; f2.8, 135mm; etc. (see Popular Photo 04/1977, p138 advert.) which lists f2.8/28mm, f2.8/35mm; f3.5/135mm; f2.8/135mm; f4.5/200mm; f3.5/50mm.

Vectis

This APS camera used a new lens series and mount not compatible with the old one. Thus there is no overhang of old items and all the new ones are very small and light to handle. They had to be tested on color negative film but as far as this allowed, the results were very good indeed, although very slight barrel distortion, etc. was noted. The series of lenses for the Vectis S SLR for the APS system was reviewed by G. Crawley in B.J.P. 02/10/1996, p22 as follows:

V22-80mm f4-f5.6 Zoom

V28-56mm f4-5.6 Zoom This is the normal lens sold on the cameras. The 28mm on APS roughly corresponds to 35mm on 24x36mm format, so it feels like a 35-70mm zoom normally.

V56-170mm f4.5-5.6

V80-240mm f4.5-5.66 Apo

V50 f3.5 Macro

The Vectis S-100 was claimed to be the smallest APS SLR in B.J.P. 04/06/1997, p6 and came with f4.5-f6.3/25-150mm or f4-f5.6/28-56mm zooms. A new Minolta V f8/400mm was also noted.

Enlarging Lenses

The quality of these was often praised, especially as the price was modest. One particular example was the f4.5 50mm lens. Note there was a division of types for USA and UK, the UK versions being less elaborate.

Focus	for UK	for USA
30mm	f4.5	f2.8
50mm	f4.5	f2.8
75mm	f4.5	-
80mm	-	f2.8
105mm	f4.5	-

Zooms-A full series of zoom lenses has been offered since about 1960. The big Minolta zoom ?100-500mm was discussed in Modern Photo 06/1978, p107 [with others by Nikon, Canon f4.5 85-300mm; Fujinon, f4.5 54-270mm; Sigma f6 120-300mm; Soligor f5 100-300mm].

Bellows and Macro Lenses.

f4.0 MC/QF	100mm	3g/3c 1977, This seems to be an older type.
f3.5	100mm	5g/4c 1974-1977.
f3.5	50mm	6g/4c 1974-1977.
f1.9	12.5mm	4g/4c This is a Leitz Photar.
f2.5	25mm	6g/4c Same source.

There was some confusion commented on in Modern 05/1978 p101 about the then 'new' Minolta MD lenses on the XD-11 camera. The MC lenses were said to work but the new type had thinner iris blades to give a more accurate stop down action, so that the camera could check the exposure stopped down just before

opening the shutter. It was officially said that continued use of MC lenses was OK if the exposure action was checked and proved correct.

New Lenses

Three new lenses were noted in B.J.P. 31/08/1979 p829, as:

MD Rokkor f2.0 85mm This has a 6 glass 5 components design and is smaller and lighter than before, closer focusing too.

MD Rokkor f2.8 200mm This has a 5g/5c design with a 'special' glass.

MD Rokkor f5.6 250mm This is a mirror little larger than a f1.2/50mm Rokkor and very small and compact.

Specials

Tilt and Shift lens.

Curved field lens for special subjects.

Minolta Rokkor SR f2.8 85mm (Layout Min004)

Minolta Rokkor f3.5/75mm 4g/3c for Autocord TLR.

This was famous, one reason being that the camera used a downward film track which did not kink the film and so it lay flatter than in most TLR cameras, and since the lens was really good the results were a winner.

Minolta CL A compact camera, with its own lenses in M-type Bayonet mounts.

Rokkor 40mm f2.0 and 90mm f4.0

Astro Rokkor Some 126 of these were used in the Planetarium described in Modern Photo 06/1978 p52advert.

Millenium List This is from the Am. Photographer Oct 2000. Trade names were not given but are assumed to be Rokkor.

f2.8	16mm	11g/8c	
f3.5	17-35mm	15g/12c	
f2.8	20mm	10g/9c	
f3.5-f4.5	20-35mm	13g/11c	
f2.8	24mm	8g/8c	
f3.5-f4.5	24-85mm	14g/12c	
f2.0	28mm	9g/9c	
f2.8	28mm	5g/5c	
f2.8	28-70mm	16g/11c	
f3.5-f5.6	28-80mm	10g/10c	
f3.5-f4.5	28-105mm	13g/10c	
f1.4	35mm	10g/8c	
f2.0	35mm	7g/6c	
f4.0-f5.6	35-80mm	8g/8c	
f1.4	50mm	7g/6c	
f1.7	50mm	6g/5c	
f3.5	5g/5c	5g/5c	
f2.8	50mm	7g/6c	
f4.5-f5.6	70-210mm	10g/10c	
f4.5-f5.6	75-300mm	13g/10c	
f2.8	80-200mm	16g/13c	
f1.4	85mm	7g/6c	
f2.8	100mm	7g/7c	Soft focus portrait lens
f2.8	100mm	8g/8c	Macro lens to 1:1
f4.5-f5.6	100-300mm	11g/10c	
f4.5-f6.7	100-400mm	14g/11c	
f2.8	135mm	8g/6c	
f4.0	200mm	13g/8c	
f2.8	300mm	11g/9c	
f4.0	300mm	9g/7c	
f4.5	400mm	9g/7c	
f8.0	500mm	mirror	

f4.0 600mm 10g/9c
f1.7-f2.8 macro-zoom for range 3x-1x with 7g/5c design.

Mirage

This was noted as a f2.8 28mm lens for M42, and it was probably a vendors label.

Minox, Mssrs V.E.F. Riga, Latvia; later Wetzlar, Germany.

The camera was noted by 'W.B.' in Miniature Camare world 07/1938, p431 some months before actual sales here and hailed for its compactness and ease in operation. The lens was said to give the sharpness of a 50mm lens at f12- probably more like the depth of field. Development was said to have taken some 4 years.

Minostigmat f3.5 15mm This was the lens on the original Riga cameras. It was a 3-glass triplet

Complan f3.5 This was on the postwar Wetzlar model., 4-glass Q15 type.

Minox f3.5 15mm on Minox BL.

No iris is fitted to these as diffraction tends to reduce sharpness in small lenses when closed down.

Experience is that the lens on the BL seemed to be a great improvement on the older type. Complan used a field flattener to improve performance. (Min001). Some early models used a curved film track.



Fig 026 035 Minox cameras with f3.5/15mm Complan and f3.5/15mm Minox lenses.

Ariel's list quotes Minox as the source of several examples of at least one cine lens, a :

Dralotar f2.8 12.5 and 25mm for 8mm Dralowid in 1938. This seems to be a little known side to the production and just may have been more important factor in Minox history than is now realized.

By B.J.P. 03/01/1996, p5 the relation with Leica was so close that Leica were responsible for unveiling the new model Minox G series GTX, with the Minoxar f2.8/35mm lens, iris to f16, focus to 70cm.

Minoxar f2.8 35mm This was noted on a modern Minox 35 GT-E camera.

Miranda

This trade name is best known for the Miranda SLR cameras, but was used also on lenses as on a Miranda Supreme f2.8/105mm lens for Miranda T SLR. I.Matanle (Am Photo 12/08/2000) states Miranda never made their own lenses. The USA importer was Allied Impex Corpn. and also owned Soligor and in 1963 bought Miranda and understandably Soligor was to supply the Miranda lenses. Matanle lists 5 ranges of the lenses as follows:

(1) The first used a 44mm screw mount- this was never officially imported to the UK and is therefore scarce

there.

(2) External Auto lenses with the housing to fit over the front release button. It is known in 28mm; 35mm; f1.9/50mm; f1.5/58mm; f3.5/135mm; f2.8/135mm. These were for D series cameras.

(3) The normal type found is with internal release in f2.8/28mm to 135mm. These were for F and G series cameras.

(4) These used a meter coupling at 4 o'clock to couple with the Miranda Sensorex meter.

(5) Finally, lenses clearly marked EE were for the Automex and Sensorex models.

The brand was still active in Popular Photo 11/1971, p43 with many lenses and other items. Lenses then were:

Auto Miranda	f1.8	50mm
	f1.4	same?

Two late macro lenses were really notable, the Macron f2.8/52mm and Macron f3.5/55mm. These were listed well into the 1970's and were first class and extended to 1:1 ratio. The other outstanding lens was the f1.8/50mm which was noted as well up to the best standards from Germany.

Misuzu Optical Industry, Japan.

Altanon	f2.0	50mm	This was a rigid lens for M39x26.
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Mitakon

This was an independent lens range for SLRs from Photax, of Eastbourne, UK.

f2.5, 24mm (9g/7c); f2.8, 28mm, (7g/7c); f2.8, 135mm (5g/4c); f3.5, 200mm (5g/4c); f5.3, 300mm (7g/6c); f5.6, 400mm (7g/7c); These are quite late items, with multi-coating and quite complex designs. They were well ahead of the old budget series so many firms offered.

Mitchell Camera Corp. PO Box 279, 11630 Tuxford St., Sun Valley, California 91352, USA.

The makers of the esteemed Mitchell 35mm BNCR reflex cameras for 35mm movie in 07/1976 offered lenses by B&L Baltar, Kowa Prominar Angenieux and TTH as well as their own Mitchell Hi-Speed lens series as follows:

Mitchell Hi-Speed	T1.8	28mm
Mitchell Hi-Speed	T1.3	35mm
Mitchell Hi-Speed	T1.1	55mm
Mitchell Hi-Speed	T1.7	85mm

Then the set of 4 lenses listed at \$7,975.00.

Moeller, J.D., Hamburg, Germany.

The actual name on the lens seems to be Moller-Wedel, and it seems they are well known for binoculars.

They produced a camera mounted with a pair of binoculars called the Cambinox, and it had 3 lenses interchangeable made for it. It seems they are 16mm format lenses but with a different mount and deeper register, and were used on 16mm film for 10x14mm format approx. These are scarce as is the camera, which is a regular if select auction item. Lenses are in white alloy finish. On the 135mm seen, the lens mount is fitted with 4 bolts and an adaptor to C-mount and this addition conceals a small 3-tab bayonet mount of unknown type. This may be for the Cambinox and it may be that this lens has been made over to Bolex H8 Reflex or some other camera. The few serial numbers noted are over a quite limited range suggesting a small production, although more data is really needed here. Most users seem to have chosen the 90mm option, although one outfit with two lenses- 35 and 90mm was noted.

Idemar f3.5 35mm A 4-glass design. This was noted at No 325,16x.

Idemar f3.5 90mm A 6-glass design. This was noted at No321,26x, 322,21x, 322,61x, 323,23x, 323,70x, 32490x, 32456x.

Idemar f3.5 135mm This was seen at No322,00x, in white. It seems to be a 5g/3c design, and this agrees with the advert. of a 5-glass lens.



Fig 021 018 Moller-Wedel Idemar f3.5/135mm No322,005 in C-mount.

Idemar f3.5 180mm. A 5-glass design. So far no example has been noted here.

Moller

'Moller' were the makers of anamorphic accessory lenses, eg listed by Bauer for the P6 studio projector in 1974. They may be the J.D.Moeller firm above but this is uncertain.

Molteni, Paris, France.

RR described as Molteni is listed by FBB in a *Chambre a main* for 1886. One noted at auction was in brass No12,08x on a Molteni Detective engraved A. Molteni, Paris.

van Monckhoven, Dr Desire C.E. (1834-1882)

Eder gives a 2 page biographical note on him, and mentions his , *Photographische Optik* published in Vienna (1866) and in 1867 in English. This is one of the hard to get classics for lens collectors. But it was only one aspect of a life involving solar cameras (for enlarging) paper and emulsion making, as well as devising a studio with improved lighting. As his is such an early book it is worth noting some points about it. One point is that it mentions the Periscopic and the Harrison Globe and Ross Actinic Doublet but not the Steinheil Aplanat or the Rectilinear. Historically this is interesting as it is easy to forget just in which order lenses came into

use. Monckhoven is well aware of the effect of surface reflections on degrading the image and lowering the image intensity, quoting the example of Bouguer who found that six sheets of glass caused a loss of 70% of the light at its 12 air-glass surfaces.

He also lists lens aberrations rather clearly including astigmatism (p102) and the advantages of symmetry in avoiding distortion. (p99, etc) He does discuss the minimization of astigmatism by stopping down- and in lens design by making the spherical surfaces such that the immergent and emergent light rays are nearly normal to the surface of the glass- hence the almost spherical form of old wide angle lenses. Thus he praises the Globe and the Periscopic lenses as being symmetricals but one conclusion is that there are no fast wideangle lenses.(p113).

He was well aware of the limitations of the glasses available, but seems satisfied with them- listing some then available materials:

Diamond	RI 2.47-2.75
Flint Glass	1.57-1.60
Rock Crystal	1.547
Crown Glass (St Gobain)	1.5
Ice	1.31
Water @0°C	1.333
Water @20°C	1.332
Vacum	0.000 (?should be 1.00?)

He gives the compositions of the Flint and crown glasses from two leading makers, as follows:

Material	Maker Bontemps		Maker Guinand	
	Wt	%	Wt	%*
Flints Glasses				
White Siliceous Sand	261	43.5	225	44.0
Red Oxide of Lead	261	43.5	225	44.0
Potash (First Quality)	60	10	52	10.2
Borax	18	3	4	0.78
Nitre	-		3	0.58
Manganese	-		1	0.20
Arsenious Acid	-		1	0.20
Waste from previous meltings	-		89	
Total	600	(100)	511 + 89= 600	
Crown Glasses				
White Siliceous Sand	360	60	400	66.5
Carbonate of Potash	-		160	26.6
Carbonate of Soda	150	25	-	
Carbonate of Lime	84	14	-	
Borax	-		20	3.32
Red Oxide of Lead	-		20	3.32
Peroxide of Manganese	-		1	0.17
Arsenic	6	1	-	
Waste Neither maker adds any here!				
Total	600	(100)	601	(99.9)

Thus M Guinand was using a more complex feed mix and also had access to a supply of waste to remelt- perhaps since there was production of glassware on his site leading to waste material. It is usually liked by melters as it helps the new material to melt down. If one neglects it as recycled product, the %* values are obtained. One point is that the more complex mix may have melted lower and over a wider softening range making for easier working. And he notes that M. Bontemps has observed that crown glass is less likely to exfoliate (ie ?be leached or ?devitrify) under the influence of damp if a small but not excessive amount of borax with carbonate of soda is added. But it is M. Guinand who uses it! Incidentally, both seem to work in parts in 600 in weighing in feed, but note there one would expect loss in weight in the melting. Monckhoven also refers to problems with very heavy flint and very refractive kinds of crown glasses. These he notes were made by Faraday, Dutirou and several others- but he notes these were used in telescopes but were of little use in photographic optics although he notes the occasional use of heavy flint, but says its

yellow colour is objectionable for photographic use (as it would be for colour blind emulsions!) The crown glass was said to tend to reddish or greenish colour. (p37) He is aware of the concept of 3 colour correction- ie apo-correction but says it is then not feasible (p34-5) and repeats the experience that heavy flint is too yellow coloured for use. (Much of the colour could be due to traces of iron, then present in the materials used or leached from the containers used in melting and really is an indication of the underdeveloped state of the chemical industry then. The later success of Schott may reflect improvements or a greater ability to purify chemicals as part of the process).

Monckhovens describes lens production in some detail and incidentally mentions the use of additional glasses outside the blank to be polished added merely to avoid uneven polishing of the edges. This shows how the idea of polishing many lenses on one polisher would grow up- and note he wrote in 1866 or so. He also mentions the mounting of the glasses as normally being locked in the outer ring by a screw in second ring- but in some cases makers were going over to fixing the glasses in permanently by pressing the edge of the brass over to retain them unless the glass was raised to free them- a process translated as being 'set'. Incidentally the translation is good but retains some of the original feel and also has footnotes reflecting a deep knowledge of English lens lore, eg on Mr Grubb's doublet and the triplet (p101) from the translator (who adds triplets by Mr F. Scott Archer in 1853, Mr Chevalier for Mr P.W.Fry, Mr Sutton, Mr Goddard, Mr Dallmeyer, and Mr Ross who calculated the design anew . The publication followed close on Mr Lake Price's book, with a good chapter on lenses and which did include the Rectilinear lens, and just may have been hurried as a result. Van Monckhoven refers to the following lenses in detail and discusses how they were corrected:

Aplanatics, corrected for full aperture use.

(1) The double Lens of M.Petzval (ie the Portrait)

(2) The Orthoscopic lens of M. Petzval.

Non-Aplanatics, which are sharp only when closed down.

(3) The ordinary single lens, ie meniscus but possibly achromatized.

(4) The single objective (of three lenses) of M.Dallmeyer

(5) The doublet of M.Ross (ie the actinic doublet.)

(6) The Globe lens of Harrison and Schnitzer.

(7) The panoramic lens of Mr Sutton.

(*) The doublet of M. Steinheil (ie the Periscopic.)

Note he does not include the Aplanat or Rectilinear, not the Orthographic, not the Ross Triplet among others.

In some cases, the actual design details are quoted from correspondence with Mr J.H.Dallmeyer, but the book covers have Ross advertisements (and they were agents for his enlarging apparatus), and van Monckhoven is known to have discussed lenses with Mr Steinheil.

Much of the book (Part II) is on enlarging apparatus where he uses a biconvex condenser with a prominent separate negative some distance (= the diameter of the positive) behind the positive- in effect a telephoto though the design is to limit spherical aberrations. It was derived from the Petzval portrait but not achromatised. Such apparatus was then in its infancy.

Mono Werk (R.Chaste), Magdeburg, Germany.

Mono Doppel Anastigmat f6.3 136mm

Cosmos Anastigmat

These are likely to be in a 1908 list. They are not noted in the adverts. given in Kerkmann's book. Note a Mono Cosmos was listed on a Sport Camera from B. Sommer, of Dresden in 1906. (Kerkmann, p236)

Montanus =Potthof (Montanus) Camerabau, Solingen, Germany.

These lenses were fitted to Montana and Delmonta cameras in the early 1950's.

Plascanar f3.5 75mm This was on the Plascaflex.

Deltanon f3.5 45mm. This may be spelled Deltamon actually on the adverts.

Montauk Camera Co. (G. Gennert), 24 East 13 St., New York, USA.

They agented other lenses, including Tessar, Dagor, Heliar early this Century, but did list lenses which seem to be of their own brand.

Gray's Extreme Angle Stigmatic for 90-95°

f11 4.5, 5.375, 6.5in This seems to be a Portable RR. It was suggested to use 5.375in for 10x8in (at small apertures?).

Eoscope f5.0 6-14in Portrait lens, probably a Petzval.

Sylvar Series 111

f6.8 5-17.5in It was suggested to use 12in for 10x8in. This was a symmetrical anastigmat, of 3+3 glasses, and possibly a Dagor version.
see also reference to Gennert above.

Morley and Cooper, 70, Upper St., London N.

Morley were well advertised in B.J.A. 1889, p136 as new and secondhand dealers. They were agents for Dallmeyer, Ross, and their own lenses. Thus they listed Rapid Rectilinear, New Cabinet, and Wide Angle Rectilinear lenses. Several lenses with their name have been seen and it must have been a successful business.

Morley's **Rapid Rectilinear Lens** in 1888 was supplied as f7.5 in:

No 1	5x4	1in dia.	5in back focus.	<i>about 7.5in focal length,</i>
No2	7.5x5	1.25in	7.5in	<i>about 9.3in</i>
No3	8x5	1.375in	8.5in	<i>about 10.3in</i>
No4	8.5x6.5	1.5	11in	<i>about 11.25in</i>
No5	10x8	2.0	14in	<i>about 15in.</i>
No6	12x10	2.25	17in	<i>about 17in.</i>
No7	15x12	2.5	20in	<i>about 18.75in.</i>
No8	18x16	3.0	24in	<i>about 22.5in.</i>

It seems likely they were about f7.5 and the real focal length can therefore be calculated and are given in column 5 (*italic*). This might suggest a continental origin as the UK makers made to f7.7 mostly. He did not then specify the sizes of the other lenses.

Morley engraved his name and a serial number as the engraving on a Rapid Doublet ie. Periscopic lens of some 10in No8, 08x for 1/2plate. Another lens was numbered 760x for 10x8in format. Mr Morley was a camera maker from the earliest times, and this is likely to be made for him and supplied engraved with his name. They were still active in 1901, when they listed several good but slightly old fashioned lenses for the time.

Rapid Rectilinear f8.0 This was made as 5.5, 8.0, 11, 13.5, 17.5, 21.5, 26in It was suggested to use 13.5in for 10x8in. These were sold with iris or Waterhouse stops. These may or may not be the same range as the above.

Fine Quality Portrait f4.0 This was probably a Petzval, sold in 4 sizes.

Extra Rapid Cabinet f3.0 It seems 2 series were sold.

Continental WAR Here there is evidence that the lens was imported, but the specification has not been noted.

Morrison see Harrison also.

It seems he patented a version of Harrison's lens with only 3glasses in two components, and Kingslake notes he sold a series of lenses as Wide Angle View, Quick Working Triplet, Rapid Doublet, Group Lens. These were unusual types, but not better in use than rivals, and failed to make much impact. Certainly his lenses are little seen in the UK.

Wide Angle Patent 1872, for 100°, sold by Scovill in 1890. This was made in 1.75-22in, use 3.5in for 5x4, 8in for 10x8in. (see Scovill Catalogue 1889, 'How to take Photographs'). His lens was of 2+ i +1 design, the front being a achromatis pair and the rear a single crown glass meniscus. The front was not really over-corrected for colour, the use of the crown glass single rear gave good results.

Casket Set in 5 foci (Photographic Times, VolX1V p277 (1889))

Wide Angle View Lens, for 100°, Pat. 21 May 1872 This was made in 1.75, 2.25, 3.0, 3.5, 4.25, 5.25, 6.5, 8.0, 10.5, 14, 17, 22in. Use 8in for 10x8in.

Rapid Doublet This had 4 separate glasses with 2 plano-convex lenses externally and 2 double concave lenses inside. It had the advantage that it could be made of ordinary flint and crown- but the flare level was increased. Traill Taylor thought it compared well with European RR lenses. It covered a rather narrow angle.

RR B&J listed an old f8.0 250mm Morrison lens in a barrel mount with Waterhouse stops.

Mosler There are no details about this f2.8/35mm lens, an early retrofocus for Exakta. It may be a dealers

trade name.

Mounts

Lenses in the old days were usually fitted to cameras by way of screw threads and flanges, and were slow to change- few cameras had easily changed panels. Many complaints were made about ill-fitting threads, or lack of standardization, and the time wasted in removing lenses to 'wash-leather' them- ie clean and polish especially when going from the cold to warm rooms. (See W.H.Harrison BJA 1889, 542) Bayonet change mounts were known but many did not trust them as insecure, though a Mr Addenbrooke 'had a reliable system', and others could have. (Addenbrook, Lecture to RPS, 1887-8). Mr Harrison also asked why aluminium or aluminium bronze or ebonite could not be used to lighten lenses. In this context, see notes on RPS standard threads, eg under Dallmeyer. Also the experience with a Marion lens (qv) without screw holes in the flange, as if the customer or camera maker was left to put these in wherever was convenient. This might explain some of the rather rough holes noted on old flanges.

Muller, K. Memmingen, Germany. See Novoflex.

He was the maker of a "**reproflex**" reflex unit for the M39 cameras sold with f4.5/135 Culminar or Xenar lenses and these must have been in short head mounts.(Photokina, 1950; MCM 6/1950)

Muller and Wetzig, Dresden-A, Germany.

The firm was founded in 1899. By 1936, the B.J.A. p277 describes them as perhaps the makers of the largest range of enlargers in the world. They are known here initially for a single lens. It is an obviously high quality item, and may just be an enlarging or reprographics lens. The name certainly seems to be misleading today as it would not normally be a "Doppel" layout. It is probably interwar in period. They were advertisers in the B.J.A. of enlargers in 1936 p615advert. The products then included:

Enlargers with lenses

Filmarex III No113 for up to 6.5x9cm included a "Double Anastigmat" f4.5/105mm,

Filmarus O No110 for up to 6x6cm including a "Double Anastigmat" f4.5/9cm.

It could also have an f6.3 lens, as in B.J.A. 1936, p277.

Filarus I No101 for up to 4x4cm which had a "Double Anastigmat" f4.5/5cm.

Lenses

Phonix Doppel Anastigmat f4.5 210mm It seems to be a Q15 design in a solid brass mount. At least one other has been seen recently.



Fig 007 032 Muller & Wetzig Phoenix Doppel Anastigmat f4.5/21cm.

Doppel Anastigmat f4.5 135mm An older lens, possibly a symmetrical such as "Dagor" or "Plasmat" type. This is a very good lens in a brass mount and has been used a good deal which suggests the owner liked it!

Munch GmbH, Ludwigsberg, Germany.

Ennar f3.5/75mm This was on a Rixa 6x6 camera and may be an Ennawerk lens bought-in.

Munchener Optische Anstalt (MOJA), Munich, Germany.

Helimar lens. This is pre-1919, but no information is available.

Soc. **Mundus**, France.

They used a Mundor f2.5/25mm on a double run 8mm film still camera for 10x15mm the Mundus 16 in 1950.

Murer and Duroni, Milan, Italy.

Camera and possibly lens maker in Italy, active about 1900-1925.

Rapide Aplanat f8.0 65 or 70mm for stereo cameras.

Doppio Anastigmat f6.5 102mm This may be the same as the next item:

Murer Anastigmat f6.3, f6.5, f7.0, f8.0 in 100-128mm

Doppio Anastigmat f4.5 210mm This was noted at No301,52x on a Postcard Reflex by Murer of Italy.

Murer were the makers of a Murer Salex for City Sale and Exchange, London and may have made the f4.5/108mm lens fitted to it.

Murer Anastigmat f3.9 120mm on Murer Reflex (1912).

Musashino Koki Co Ltd, Japan.

We think they made the Rittreck reflex and the Luminant lenses to match it. It was noted at No21,02x on a Luminant f4.5/21cm lens. A Rittreck IIa carried a Luminant f3.5/105 No60,94x and a f5.6/300mm No30,25x.

Mycro Japan.

UK Agent Japanese Cameras, Stoke-on-Trent, UK

Mycro made a subminiature about 1961, with an:

Una f4.5 20mm non-focusing lens. For an advert. see B.J.A. 1961, p536.